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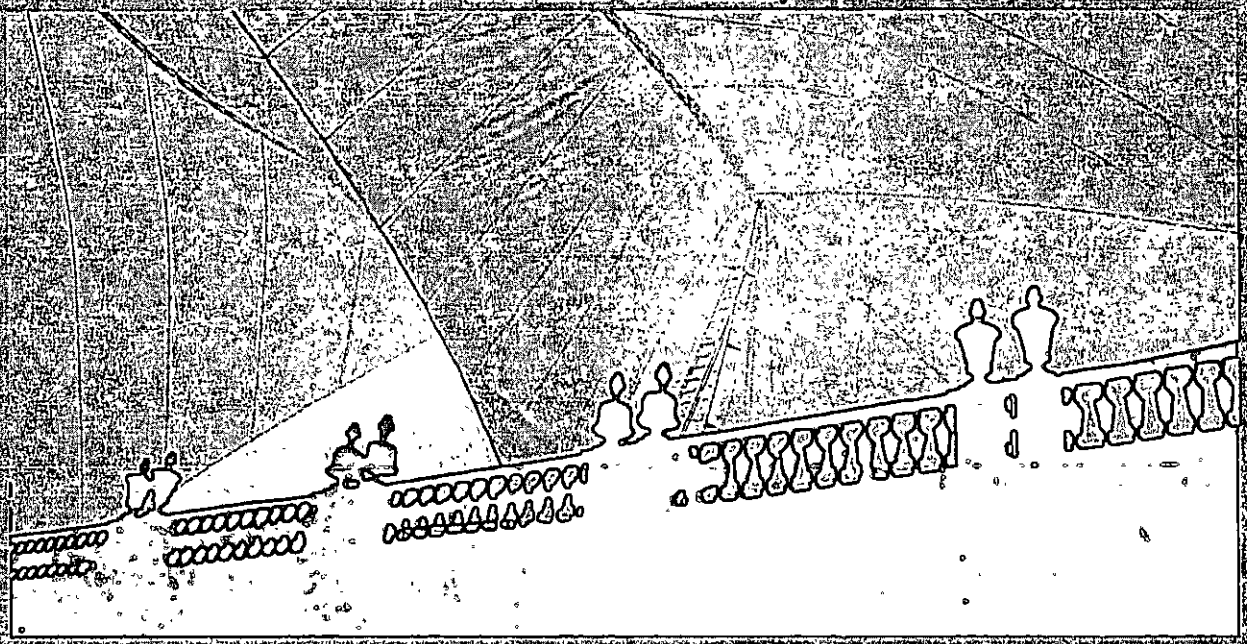

DIPLOMADO EN GESTIÓN DE PROYECTOS TECNOLÓGICOS Y PROPIEDAD INDUSTRIAL

PALACIO DE MINERÍA, JUNIO - DICIEMBRE 2006. 160 HORAS

Módulo VII. Transferencia de tecnología: negociación de proyectos tecnológicos

Material complementario

Ponente: Ing. Héctor E. Chagoya Cortés

PALACIO DE MINERÍA

Instituto Mexicano de la Propiedad Industrial

UNIVERSIDAD POLITÉCNICA DE VALENCIA

Diplomado en Gestión de Proyectos Tecnológicos y la Propiedad Industrial

Material Complementario

Módulo VII
Transferencia de Tecnología: Negociación de Proyectos Tecnológicos

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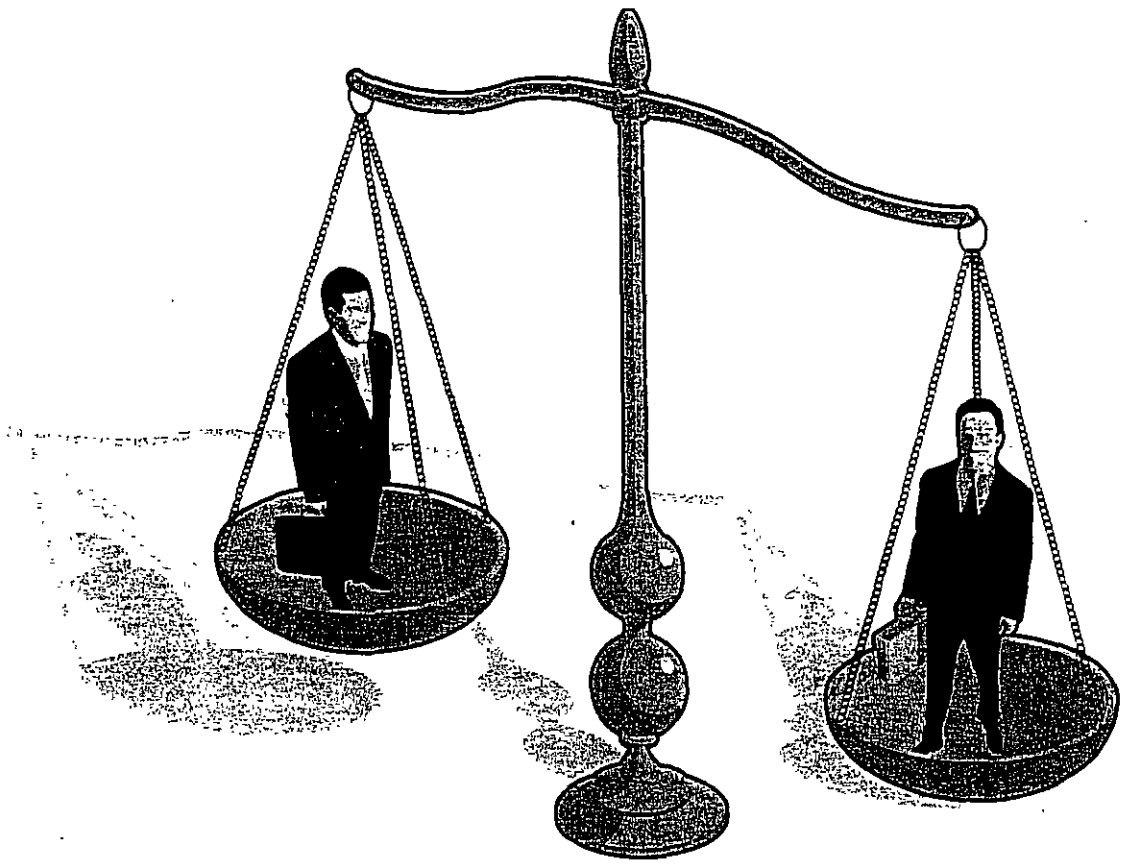


otro lo dejará de obtener. Si uno da dos pasos adelante, el otro inexorablemente retrocederá dos pasos.

Se trata, pues, de una treta más o menos cortés encaminada a aprovecharse del otro. El más ladino lleva siempre las de ganar.

Ganar-ganar

Los estrategas en cambio, conciben la negociación como el arte de construir el bien común; de explorar el terreno y comprender qué le interesa a la contraparte a corto y largo plazos, y de formar con ella un equipo capaz de interpretar el mismo hecho de manera distinta, pero persiguiendo objetivos afines.

Cuando las aspiraciones de ambas partes se oponen diametralmente y no parece haber salida, los estrategas saben encontrar una solucion que entraña un bien más atractivo que sus exigencias. En este caso, ceder permite que los dos salgan ganando. Eso se llama inteligencia.

No resulta fácil, desde luego. Sobre la marcha salen a flote innumerables intereses que a veces entran en conflicto. Y el estratega debe averiguar hasta dónde puede llegar y cuál es el mínimo del que no le dejará pasar su contraparte.

Los estrategas, amantes de la paz, usan la negociación para transformar los puntos de discusión y la relación; el presente y el futuro. En cambio, para el "talachero" la dinamica se circunscribe al momento de sentarse a hablar: la desliga de sus implicaciones.

Mas allá de definir cuestiones concretas e inmediatas, importa definir que relación se desea y como conseguir que sea maduro, sólido y duradera. Que sobreviva a las crisis.

the short and long terms, and of forming a team capable of interpreting the same facts in different ways but in pursuit of a common goal.

When the objectives of the two sides are diametrically opposed and there appears to be no way out, the strategist goes for a solution that yields the greater good. In such cases, giving ground means both sides come out ahead, which can be called intelligence

Of course it's not easy. Numerous special interests rear their ugly heads along the way, often posing conflicts. And the strategist must see how far he can go and what his partner's bottom line is

Peace-loving types that they are, strategists use negotiation to transform the discussion points and relationship, always keeping the present and future in mind. For the haggler, the dynamic is confined to the here and now of sitting down at the table, never mind the implications.

At least as important as defining concrete and immediate questions is the need to define the relationship sought and how to ensure that it be mature, solid and lasting-able to withstand crises that can develop.

When one of the negotiators takes the adversarial approach, the relationship suffers. If a company tries to put one over on a supplier, the latter will never trust it again. Company reps will sit down each year to negotiate with a suspicious individual, who invariably arrives with his sword drawn. This can get old in a hurry.

When it doesn't go that way, at least you know your partner will play it straight at crucial times Volkswagen de México, for example, fostered a congenial environment with its union. The firm knows only too well that disagreements are bound to come up, but the rules were designed to work precisely when the two sides find themselves at odds

Cuando las aspiraciones de ambas partes se oponen, los estrategas saben encontrar una solución que entrañe un bien más atractivo que las exigencias.

[illegible]

Elementos clave

[illegible]

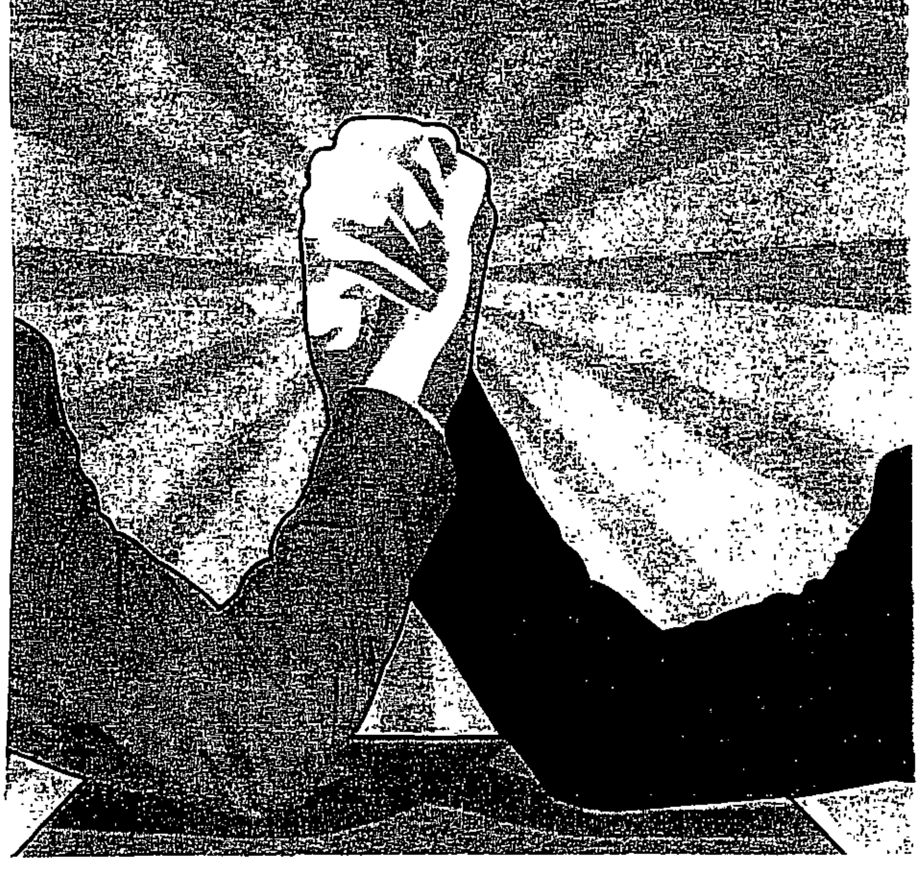
Key Factors

[illegible]

Influence factors: [illegible]

Strategies: [illegible]

Results: [illegible]



el poder de negociación, el entorno y las reacciones que se esperan de la contraparte.

Estrategias. Hay que determinar cuál conviene:

- La fuerza. Se hostiga al otro, se le golpetea, se le presiona... No se cede.
- La afabilidad. Se dialoga, se hacen concesiones, se fomenta la confianza y el espíritu de equipo.
- La evasión. Se aprovecha del paso del tiempo. En las negociaciones laborales, el tiempo obra indefectiblemente en contra del empleado.

Resultados. Hay resultados concretos, tangibles (aumento de 4.7 por ciento en el salario y dos por ciento en prestaciones) y sociales (cómo queda la relación después). De nuevo, el presente y el futuro. El "talachero" no se da cuenta de que a la larga importan más los logros sociales. Se ufana si consigue el incremento, pero no ve más allá. No se pregunta qué pasará al cabo de cierto tiempo... Con frecuencia obtiene victorias pírricas.

boasts when he gets the raise but never looks further down the line. Because he doesn't consider what will happen after awhile, his victories often end up being Pyrrhic.

How to Guarantee Failure

Five of the numerous causes that tend to undermine negotiations are:

- Attempting to win every demand, without exception. By its very nature a bilateral dynamic, negotiation cannot benefit only one side or it would be missing the point entirely.
- The proposals are considered so important that neither side is willing to budge.
- One side spends a great deal of time getting ready, considering the matter of utmost importance, whereas the other sees it as a chore that must be gotten over with, barely gives it a thought and makes no plans.
- Neither side understands the other's interests, however vital or peripheral.
- Too much importance is put on certain insignificant points. Reasons customarily cited in such cases include: "Time ran out", "They were too inflexible", "They took it personally", "They were incapable of making a decision".

Strategists use negotiation to transform the discussion points and the relationship with the other.

Cómo fracasar

Existen numerosas causas por las que se puede frustrar una negociación, elegimos cinco:

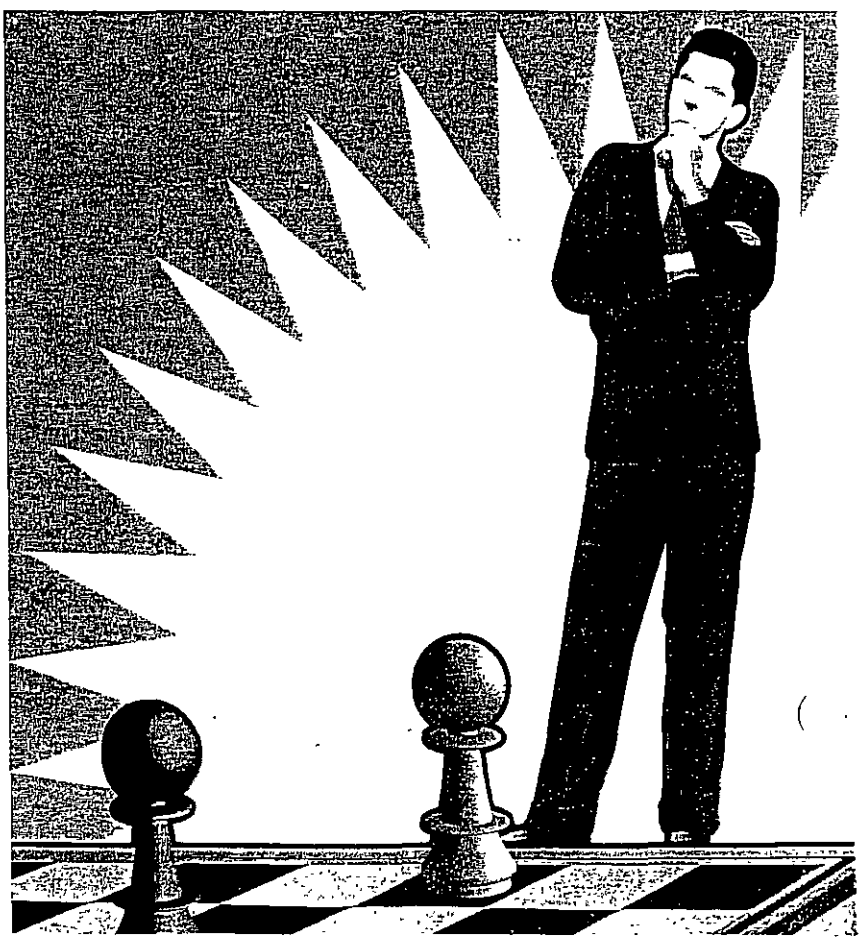
- Tratar de obtener todas las exigencias, sin excepción. Considerando que se trata de una dinámica bilateral por naturaleza, no cabe hablar de negociación cuando únicamente se beneficia uno. Pierde su razón de ser.
- Las posiciones importan tanto que nadie cede ni un ápice.
- Uno de los dos dedica largo tiempo a prepararse. Considera el asunto un gran acontecimiento. Para el otro es un bache inevitable y reflexiona apenas lo indispensable. No lo planea.
- No se entienden los intereses del otro, ni los vitales ni los periféricos.
- Se sobrevalúan ciertos puntos poco trascendentes. Suelen alegarse cosas como las siguientes: "Se acabó el tiempo", "Hubo excesiva intransigencia", "Lo tomaron de forma personal", "No tenían capacidad de decisión".

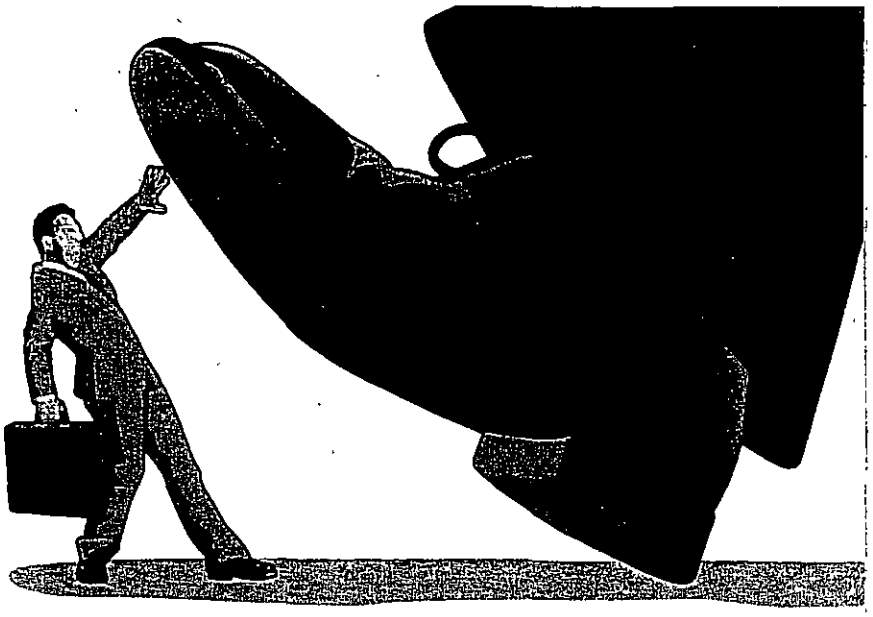
Consecuencias de una negociación injusta

Cuando se abusa del otro o el arreglo no lo satisface, tarde o temprano habrá inconformidades y reclamos. La contraparte no cejará hasta sentirse desagraviada. Decide dejar de negociar dialogando y empieza a negociar peleando. ¿Cómo? Con huelgas, protestas, marchas... Esto provocará que

Consequences of Unfair Negotiations

When one side takes unfair advantage of the other, or the agreement reached is faulty, hard feelings and complaints will surface sooner or later. The partner who feels wronged won't let up until amends are made. He discounts





los procesos subsiguientes se tornen punto menos que imposibles. En suma, se pierde mas de lo que se gana.

El talento para negociar puede traerse en la sangre o aprenderse. Si cierto ejecutivo requiere negociar y no sabe hacerlo, urge capacitarlo con el *coaching*, el *mentoring* y demás métodos no formales.

El principal peligro de quien negocia es creer que, si entiende las peticiones y argumentos de la contraparte, le dará la razón. Nada más alejado de la verdad. Una cosa es entender y otra, muy distinta, conceder. Si alguien sabe qué le interesa al otro, se hallará en condiciones de proponerle algo que aceptará sin lugar a dudas.

Una negociación resulta beneficiosa para las partes siempre que sus intereses no choquen entre sí. Lo contrario puede interpretarse como que a alguien se le dio gato por liebre o atole con el dedo. Por suerte, el estratega es capaz de articular intereses opuestos respetando sin cesar a su contraparte, dándole su lugar. En eso radica el arte de negociar ⊙

dialogue as a means of negotiating, preferring to pick a fight. How? By striking, protesting, marching... thus making subsequent stages totally unfeasible. In short, more is lost than gained.

A flair for negotiating either comes naturally or is something you have to learn. If a particular executive needs to negotiate but doesn't know how, he should be trained through coaching, mentoring or some other less formal method.

The main peril for a negotiator is to believe that simply by understanding the partner's demands and arguments, he'll be seen as weak. Nothing could be further from the truth. It's one thing to understand and quite another to concede. If you know the other side's interests, you're in the right position to make a proposal it can accept without reservation.

Negotiations can have a mutually beneficial outcome as long as the two sides' interests don't collide head on. Otherwise, one or the other will be left feeling conned, as if he's getting the short end of the stick. Fortunately, good strategists are capable of articulating opposing interests while unflaggingly respecting their partner and leaving him some room to move. Therein lies the key to the art of negotiating ⊙

Mario Zavala Ojeda

Es licenciado en relaciones internacionales y master en dirección de empresas por el IPADE, donde es profesor de dirección de personal. Además es consultor de empresas.

He has an undergraduate degree in international relations and an MBA from the IPADE, where he is a professor of personnel management. He is also a corporate consultant.

Con la colaboración de / with the collaboration of: Ramón Manuel González

El Instituto Panamericano de Alta Dirección de Empresas (IPADE) apoyó en la realización de este artículo.

The IPADE (Panamerican Top Business Management Institute) assisted with this article.

www.ipade.mx

Por Enrique Canales

e-mail: enriquecss@gmail.com

Valor y precio de las ideas

Por lo común se tiene la creencia de que las buenas ideas valen mucho, y que por lo tanto la persona muy creativa y con una buena imaginación para visualizar novedades merece ganar mucho dinero. Sin embargo, la realidad es otra: a) la mayoría de las buenas ideas no son tan buenas, b) muchas de las buenas ideas tienen valor, es decir, aportan buenas soluciones; sin embargo, a pesar de tener buen valor, no tienen buen precio, y c) para que una idea rinda frutos, se necesitan más recursos y otras buenas ideas adicionales.

Conviene separar el concepto de valor del concepto del precio, porque muchos inventores, o que se creen inventores, piensan que a las ideas de mucho valor les corresponde un alto precio. El valor casi siempre se refiere a los beneficios potenciales que una buena idea pudiera ocasionar. Por ejemplo, si yo invento un filtro de agua de modo que con materiales abundantes comunes y corrientes, sin necesidad de hervir el agua, se pueda purificar agua contaminada hasta hacerla potable, pues es probable que ese invento tenga un alto valor humanitario. Muy bien, aplausos.

Pero, la idea de ese filtro, ¿cuánto vale en pesos? Para saberlo, necesitas tratar de vender esa idea. Por eso no es lo mismo el valor de una idea, al precio de una idea.

¿Cuánto vale, en valor humanitario, el servicio de una ambulancia que te recoge en tu casa minutos después de que sentiste un dolor en el pecho y piensas que viene un infarto masivo? Pues vale mucho y ¿tiene precio en pesos? Sí, claro, pero ese precio no tiene nada que ver con ese valor.

Si tomamos como analogía lo que sucede en el mundo del arte, veremos que tampoco el valor de una obra de arte está ligada a su precio. La mayoría de los compositores musicales compusieron valiosas obras y vivieron en la tristeza y todavía se repite con harta frecuencia que muy buenos compositores apenas sobreviven.

Entonces, tenemos dos casos clásicos en donde entra la duda de qué tanto valen las ideas y si esas ideas están muy mal pagadas. En un caso tenemos a una persona que inventa o desarrolla algo afuera de una empresa o su idea no tiene nada que ver con su empleo. Como nos queremos mucho y todos nos pensamos medio genios, tal vez esta persona piensa que su invento vale mucho y que merece ser rico. Aquí no hay problema, pues lo único que tiene que hacer esta persona es tocar puertas y ofrecer su invento y averiguar en cuánto se lo pagan. Lo más probable es que nunca le guste lo que le ofrezcan por su invento y en vez de aceptar algo para ponerse a inventar otra cosa, se quede llorando.

Muchos inventores, o que se creen inventores, piensan que a las ideas de mucho valor les corresponde un alto precio

El otro caso típico es el del empleado de una empresa que se le ocurre una buena idea y que todo parece que dicha idea tiene mucho valor para la empresa y que, sin embargo, la empresa no se lo reconoce o le da un modesto reconocimiento. Entonces, el que se cree gran inventor se queda frustrado por la injusticia de la compensación. Yo nunca he promovido una compensación económica por las buenas ideas que se pudieran aportar dentro de las empresas y que tal vez produzcan beneficios calculables a la empresa. ¿Por qué?

Pues porque: a) los cálculos de los beneficios son errados porque el beneficio de algo depende de lo que haga la competencia. Por lo tanto, el beneficio de las ideas no produce dinero en efectivo, produce sobrevivencia en tal caso, si es que la competencia no nos arrasa con ideas mejores que las nuestras. b) Porque considero una obligación de todo empleado el que utilice al máximo su imaginación y su preparación para estar produciendo buenas ideas todo el tiempo. Pues en caso contrario, estamos hablando de un empleado con espíritu burocrático que no siente la obligación de pensar más allá de sus funciones establecidas.

Además, c) si existe premio en efectivo se comienza a dar un aislamiento de las personas que no quieren compartir ni los inicios de sus buenas ideas, ni quieren participar en la discusión de otras posibilidades, pues en forma natural el posible inventor no quiere compartir sus ideas incipientes para no compartir el anhelado premio. El estudio y la comunicación son la materia prima para las buenas ideas y el dar un premio por las buenas ideas atenta contra una buena comunicación entre los innovadores de las empresas.

Además: d) lo más caro de las buenas ideas en una empresa son todos los antecedentes, es decir, todo el conocimiento de la industria, de los materiales, de los procesos y productos, todas las discusiones con proveedores y clientes, todo el esfuerzo que la empresa ha realizado para preparar a sus empleados, entonces, pensar que las buenas ideas salieron de la nada es una posición vanidosa del inventor. No se le quita su mérito, pero tampoco es la única causa de su buena idea, por lo tanto, merece un buen reconocimiento no una compensación.

El autor es escritor, pintor, y tecnólogo con doctorado en filosofía de la innovación.

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PUBLIC VERSION

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION
OFFICE OF ADMINISTRATIVE LAW JUDGES

DOCKET NO. 9310

In the Matter of

ASPEN TECHNOLOGY, INC.

Peter Richman
Vadim M. Brusser
Lesli C. Esposito
Dennis F. Johnson
Mary N. Lehner
Charlotte Manning

Counsel Supporting the Complaint

John S. Martin
Senior Counsel

Evelyn J. Boynton
Merger Analyst

Matthew P. Ritchie
Jordan Coyle
Casey Homan
Honors Paralegals

Phillip L. Broyles
Assistant Director

Bernard A. Nigro
Deputy Director

Susan A. Creighton
Director
Bureau of Competition

May 5, 2004

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION
OFFICE OF ADMINISTRATIVE LAW JUDGES

In the Matter of	)	Public Version
ASPEN TECHNOLOGY, INC.,	)	
a corporation	)	Docket No. 9310

COMPLAINT COUNSEL'S PRETRIAL BRIEF

In compliance with the Court's Second Revised Scheduling Order, as amended on March 8, 2004, Complaint Counsel submit this Pretrial Brief.

Peter Richman
Vadim M. Brusser
Lesli C. Esposito
Dennis F. Johnson
Mary N. Lehner
Charlotte Manning

Counsel Supporting the Complaint

Bureau of Competition
Federal Trade Commission
Washington, D.C.

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TABLE OF ABBREVIATIONS

CX	Complaint Counsel exhibit
RX	Respondent exhibit
IH	Investigational Hearing transcript
Dep.	Deposition transcript

References to investigational hearing or deposition transcripts that have been designated as potential exhibits include the witness name and page number: CX1002 at 035-36 (Sim IH at 137-38).

Pages of exhibits are referenced by exhibit page number: CX0262 at 004.

I. INTRODUCTION

"[Unless AspenTech thinks] that our technology is superior, . . . they only want us to create a monopoly. In this case, they will, most likely, sooner or later, rationalize us to the ground, toasting us all, freezing our products and milking all the customers for a while.

– CX0262 at 004 (Cesc Batlle, Hyprotech President European Middle East and Africa Sales).

On August 6, 2003, the Commission issued its complaint ("Complaint") against Aspen Technology, Inc. ("AspenTech"), alleging that AspenTech unlawfully acquired the assets of Hyprotech, Ltd. ("Hyprotech"), a group of subsidiary companies owned by AEA Technology, in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18, and Section 5 of the FTC Act, 15 U.S.C. § 45. At trial, Complaint Counsel will offer substantial evidence that AspenTech's acquisition of Hyprotech ("the Acquisition") violates Section 7 of the Clayton Act[1] because it may substantially lessen competition in seven markets for process simulation and optimization software.[2] *FTC v. H.J. Heinz Co*, 246 F.3d 708, 713 (D.C. Cir. 2001) ("Congress has empowered the FTC . . . to weed out those mergers whose effect 'may be substantially to lessen competition'").

At the time of the Acquisition, and over a period of many years, AspenTech and Hyprotech were each other's closest competitor in a field of only three significant competitors. Immediately before the Acquisition, Hyprotech senior management estimated that, in a broadly defined market for process simulation software, AspenTech and Hyprotech combined held approximately [ ] share. AspenTech's CEO similarly estimated the company's combined market share at "80%+" after the Acquisition. Moreover, AspenTech's post-merger dominance in the broader market arguably *understates* the effect of the Acquisition in the narrower markets

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[1] An acquisition that violates Section 7 of the Clayton Act also violates Section 5 of the FTC Act. *FTC v. PepsiCo, Inc.*, 477 F.2d 24, 28 n.6 (2d Cir. 1973).

[2] Five of these markets encompass the same set of products, which consist generally of software used to model and simulate processes in various petrochemical and related industries. The broadest of these five markets comprises continuous process engineering simulation software for process industries ("continuous simulation software"). Within this market, at least four narrower markets may be defined, consisting of sales to end-users in four particular segments of the process industries: oil and gas, refining, chemical, and air separation. Two additional simulation software markets, batch process engineering simulation software ("batch simulation software") and integrated process engineering software ("integrated engineering software") also are likely to be adversely affected by the Acquisition.

for oil and gas, refining, chemicals, and air separation, where customers now face a choice of only one other supplier (SimSci-Esscor ("SimSci"), a division of Invensys), or, as in air separation, a merger to monopoly where there are no alternative suppliers at all. The Acquisition also is likely to harm competition significantly in the already-concentrated batch simulation and integrated engineering software markets, where AspenTech and Hyprotech were the only two significant competitors.

No elaborate market analysis is needed to show that the Acquisition is anticompetitive. Indeed, the parties' own documents, as corroborated by the parties' customers, will conclusively demonstrate, *first*, that Hyprotech was far and away AspenTech's closest competitor, with the two firms competing head-to-head for many customers; *second*, that AspenTech executives fully expected that the elimination of Hyprotech as a rival would enable AspenTech to acquire dominance in its markets, and hence reduce price and innovation competition; and *third,* that a wide range of customers and other witnesses agree that the Acquisition reduced competition significantly in these markets, and thus is likely to lead (and, indeed, in some instances, already has led) to higher prices and reduced innovation.

Faced with this overwhelming evidence from its own documents, as confirmed by its own customers, AspenTech has had no alternative but to conjure up implausible explanations and develop post-litigation analyses that purport to show that all of this evidence simply is wrong. For example, the former CEO of Hyprotech, Wayne Sim, agreed during his investigational hearing that Hyprotech's files show "a tremendous amount of information that identifies [AspenTech] as the number one competitor" of Hyprotech. Nonetheless, he testified that such information was simply a motivational tool, because "we needed to identify an external competitor."

Mr. Sim's explanation defies credulity. Even assuming that his employees could be motivated by fulminations against a supplier whom they never actually faced in the marketplace, the effect of Mr. Sim's strategy would be to induce Hyprotech sales employees to offer lower prices and more favorable terms than necessary to respond to this (non-existent) competition. Unfortunately for Mr. Sim, the evidence that head-to-head competition between AspenTech and Hyprotech led to better price terms and enhanced innovation is overwhelming.

AspenTech must now be required to divest all of the assets it acquired from AEA Technology, and take any other steps, including those outlined in the Complaint, necessary to reestablish two distinct and separate, viable and competing businesses in the relevant markets. This relief will serve to reestablish the engineering simulation business of Hyprotech as it would have existed but for the Acquisition.

II. STATEMENT OF FACTS

[

]

AspenTech is the largest supplier of process engineering simulation flowsheet software in the world. Its fiscal year 2003 annual worldwide revenues were approximately $323 million. Resp. Answer to Complaint ¶ 2 (Sept. 2, 2003) ("Answer"). AspenTech has an estimated 1,750 employees located around the world. AspenTech is a publicly traded company, founded in 1981 to commercialize technology developed at the Massachusetts Institute of Technology with United States Department of Energy funding. The undertaking, known as the Advanced System for Process Engineering Project, was originally intended to design non-linear simulation software that could aid in the development of synthetic fuels.

Hyprotech was founded in 1976 and had revenues of $68.5 million in fiscal year 2002. Answer ¶ 5. The only other competitor of any significance, SimSci, was formed in 1967. On or about May 31, 2002, Respondent acquired Hyprotech for $106.1 million. CX0653 at 063 (AspenTech 10-K, Annual Report for FY 2002); *but see* Answer ¶ 6.

Process industries process raw material inputs through equipment to create intermediate or end-use products. Answer ¶ 7. Process engineering simulation software flowsheets mathematically model (*i.e.*, simulate) all of the nonlinear relationships in the flow of input to, through and from units within a process plant. CX0055 at 049. Thus, the software simulates the complex physics of thermodynamics and the reactions of chemicals when heated or put under pressure. The glue holding the information together is the process engineering "flowsheet." CX1013 at 019 (Forrest Dep. at 72-73). These computer simulations improve engineering design, reduce capital investment, lower the cost of inputs (including engineering), optimize production levels, and potentially, shorten the time to market for new products. CX0654 at 004.

At the time of the Acquisition, AspenTech and Hyprotech offered integrated suites of software products "designed specifically to promote best engineering practices and to optimize and automate the entire innovation and engineering workflow process throughout" the plant. CX0863 at 001.

For approximately 20 years prior to the Acquisition, there were three significant suppliers of process engineering software, AspenTech, Hyprotech and SimSci. By 1999, SimSci's focus and competitive vigor had begun to decline. CX0072 at 006-07 ("Hyprotech gained the most market share between 1999 and 2000, . . . Simulation Sciences lost market share, as they could not keep pace."). At the time of the Acquisition, AspenTech and Hyprotech sold the two most complete sets of flowsheet engineering products demanded by continuous process and batch process industry manufacturers.[3]

AspenTech and Hyprotech also were the principal competitors in two other overlapping software tools frequently bundled with the flowsheet. In particular, batch simulation software is used in process industries like specialty chemical or pharmaceutical production to model processes with a specified recipe-like beginning and end point in each segment of the production process. Integrated engineering software allows engineers to share simulation information throughout the plant (with manufacturing processes, for example) and may allow users to improve the efficiency of engineering workflow. Answer ¶ 13.

III. ASPENTECH'S ACQUISITION OF HYPROTECH VIOLATES SECTION 7 OF THE CLAYTON ACT AND SECTION 5 OF THE FTC ACT

Benefits: Dominate the entire simulation market space, and reduce competitive and pricing pressure.

– CX0203 at 004 (Willie Chan, Director Aspen Engineering Suite).

To establish a violation of Section 7 "in any line of commerce,"[4] Complaint Counsel

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[3] AspenTech's and Hyprotech's steady state and dynamic simulation products included in Complaint Counsel's continuous simulation software markets account for the bulk of their respective engineering software revenues.

[4] Section 5(a)(2) of the FTC Act gives the Commission jurisdiction "to prevent persons, partnerships, or corporations . . . from using unfair methods of competition in or affecting commerce. . . ." 15 U.S.C. § 45(a)(2); *Kaiser Aluminum & Chem. Corp. v. FTC*, 652 F.2d 1324, at 1327 n.1(7th Cir. 1981). AspenTech has not contested the Commission's jurisdiction and admits that it is a "for-profit corporation (continued...)

"need only prove that the [acquisition's] effect '**may be** substantially to lessen competition.'" *California v. American Stores Co.*, 495 U.S. 271, 284 (1990) (Emphasis in original) (citing 15 U.S.C. § 18). The law "does not require proof that a merger or other acquisition [will] cause higher prices in the affected market. Indeed, "Congress used the words 'may be substantially to lessen competition' . . . to indicate that its concern was with probabilities, not certainties." *Heinz*, 246 F.3d at 713 (quoting *Brown Shoe Co. v. United States*, 370 U.S. 294, 323 (1962)). All that is necessary is that the merger create an appreciable danger of such consequences in the future." *Hospital Corp. of America v. FTC*, 807 F.2d 1381, 1389 (7th Cir. 1986). Section 7 is designed "to arrest in their incipiency restraints . . . in a relevant market which, as a reasonable probability, appear at the time of suit likely to result from the acquisition. . . . The section is violated whether or not actual restraints or monopolies, or the substantial lessening of competition, have occurred or are intended." *United States v. E.I. du Pont de Nemours & Co.*, 353 U.S. 586, 589 (1956).

While evidence of post-merger anticompetitive effects – such as price increases or output reductions – can obviate extensive inquiry into market definition, *see FTC v. Indiana Fed'n of Dentists*, 476 U.S. 447, 460-61 (1986); *FTC v. Libbey Foods, Inc.*, 211 F.Supp. 2d 34, 49 (D.D.C. 2002) ("'an inquiry into market power, is but a 'surrogate for detrimental effects.'") (citations omitted), such evidence is neither required nor generally to be expected, given its susceptibility to manipulation by the parties. *United States v. General Dynamics Corp.*, 415 U.S. 486, 505 (1974) ("[T]he mere nonoccurrence of a substantial lessening of competition in the interval between acquisition and trial does not mean that no substantial lessening of competition will develop thereafter; the essential question remains whether the probability of such future

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[4](...continued)
organized, existing and doing business under and by virtue of the laws of the State of Delaware." Answer ¶ 1. Respondent also admits that it "is, and at all times relevant herein, has been, engaged in commerce" as defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and is a corporation whose business is in or affects commerce as defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44; Answer ¶ 3. "Section 11(b) of the Clayton Act, 15 U.S.C. § 21(b), expressly vests the Commission with jurisdiction to determine the legality of a corporate acquisition under [Clayton] Section 7 and, if warranted, to order divestiture." *In re R.R. Donnelly & Sons*, 120 F.T.C. 36 (1995); *see also Hospital Corp.*, 807 F.2d at 1386.

impact exists at the time of trial"); *FTC v. Consolidated Foods Corp.*, 380 U.S. 592, 598 (1965) (If "post-acquisition evidence were given conclusive weight or allowed to override all probabilities, then acquisitions would go forward willy-nilly, the parties biding their time."); *Hospital Corp.*, 807 F.2d at 1384 ("Post-acquisition evidence that is subject to manipulation by the party seeking to use it is entitled to little or no weight.").

Where evidence of post-merger effects *does* exist, as in the present matter, however, it proves the absence of constraints sufficient to prevent anticompetitive effects from the Acquisition and "cements" Complaint Counsel's case. Von Kalinowski, J., ANTITRUST LAW & TRADE REGULATION (2d ed. 1996) at § 4.03[4]. As discussed below, anticompetitive effects have already occurred in this case. But this is rare, and in the absence of sufficient evidence of anticompetitive effects, one important determinant of the likely effect of a merger on competition in a market is the number of significant sellers and their market shares. When a merger combines two firms with large market shares and results in a significant increase in concentration and a high post-merger level of concentration, there is a legal presumption that the merger will reduce competition through unilateral and coordinated interaction. *See, e.g., Heinz,* 246 F.3d at 715 (explaining that high concentration "establishes a 'presumption' that the merger will substantially lessen competition); *Merger Guidelines* § 1.51 (mergers at high concentration levels are "presumed" to be "likely to create or enhance market power").

Where, as here, an acquisition greatly increases concentration in already highly concentrated markets, Complaint Counsel has established a *prima facie* case. The burden of production then shifts to the Respondent to produce evidence that "show[s] that the market-share statistics [give] an inaccurate account of the acquisition ['s] probable effect[] on competition" in the relevant markets. *In re B.F. Goodrich Co.*, 110 F.T.C. 207, 305 (1988); *United States v. Citizens & Southern Nat'l Bank*, 422 U.S. 86, 120 (1975); *United States v. Waste Mgmt., Inc.*, 743 F.2d 976, 981 (2d Cir. 1984). "The more compelling the prima facie case, the more evidence the defendant must present to rebut it successfully." *United States v. Baker Hughes, Inc.*, 908 F.2d 981, 991 (D.C. Cir. 1990).

Although Complaint Counsel retains the ultimate burden of persuasion, in this case the Respondent will be unable to show ease of entry or efficiencies that counter the likely

anticompetitive effects. *See Kaiser Aluminum*, 652 F.2d at 1341. Moreover, Complaint Counsel will have sustained its burden if it can show likely anticompetitive effects in *any* of the product markets at issue, even if they constitute a relatively small portion of the merging parties' business. *See FTC v. Food Town Stores*, 539 F.2d 1339, 1345 (4th Cir. 1976); *du Pont*, 353 U.S. at 594 n.13, *United States v. Bethlehem Steel Corp.*, 168 F.Supp. 576, 595 (S.D.N.Y. 1958). Nonetheless, as discussed below, the weight of the evidence will establish that anticompetitive effects are likely across a substantial portion of the "overlapping process simulation revenues of the parties and wide range of customers.

A. Continuous Process Engineering Simulation Software (and Narrower Markets Contained Therein), Batch Process Engineering Simulation Software and Integrated Process Engineering Software are Properly Defined Relevant Markets.

> *There is almost complete overlap between Hysis products and the entire AES suite [Aspen Engineering Suite]. . . . AspenTech can become a target for an antitrust lawsuit.*
>
> – CX0203 at 004-05 (Willie Chan, Director Aspen Engineering Suite).

To predict whether an acquisition may substantially lessen competition or tend to create a monopoly under Section 7 of the Clayton Act, and in the absence of actual anticompetitive effects, the Commission and courts consider (1) the relevant product and geographic markets in which to assess the transaction; and (2) the transaction's probable effect on competition in the product and geographic markets. *See FTC v. Swedish Match*, 131 F.Supp.2d 151, 156 (D.D.C. 2000); *FTC v. Staples, Inc.*, 970 F.Supp. 1066, 1072 (D.D.C. 1997). Thus, merger analysis typically begins by determining the relevant product market. *FTC v. Cardinal Health*, 12 F.Supp. 2d 34, 46 (D.D.C. 1998).

1. The Continuous Simulation Software Product Market.

> *I'm pleased to announce that Hyprotech will merge with Aspen Technology . . . I know this may be a shock to many of you, as AspenTech has been our most fierce competitors [sic], but Hyprotech and AspenTech chose one another for a variety of reasons, including . . . our similar history in similar industry segments . . .*
>
> – CX0311 at 002 (Wayne Sim, Hyprotech Founder and CEO).

The pivotal question in product market definition is whether an increase in price for a product or group of products would cause enough buyers to turn to other products so as to make the price increase unprofitable. If that question is answered in the affirmative, then the relevant

product market is broader than the product or group of products in question. *See Staples*, 970 F.Supp. at 1074. "In other words, when one product is a reasonable substitute for the other, it is to be included in the same relevant product market even though the products themselves are not the same." *Cardinal*, 12 F.Supp. 2d at 46.[5] The *Merger Guidelines* incorporate this analytical approach by generally taking as a relevant product market the smallest group of competing products within which a "hypothetical monopolist over that group of products could profitably impose at least a 'small but significant and nontransitory' increase in price." *Merger Guidelines* § 1.11.

There is substantial evidence supporting the existence of a broad continuous simulation software market, because the Acquisition enables the merging party to increase prices (or reduce innovation) uniformly with respect to all of its customers. An across-the-board price increase, however, is not necessary in order for a merger to violate Section 7. The evidence also establishes that one or more narrower antitrust markets may be properly identified within the broader market. *See Merger Guidelines* § 1.12 (ability to price discriminate warrants consideration of additional, narrower product markets). If, as a result of the Acquisition, AspenTech is able profitably to identify and target certain customers or groups of customers for a price increase without other purchasers buying the product and reselling it to those customers (that is, it is able to "price discriminate"), the Acquisition may be illegal in the narrower market, separate and apart from the broad market. Furthermore, where the hypothetical monopolist is able to profitably impose even greater price increases than the uniform price increase used to define the broad product market, the merger would be anticompetitive in the broader market and in the narrower product market or markets contained within. Here, as a result of the Acquisition,

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[5] "The outer boundaries of a product market are determined by the reasonable interchangeability of use [by consumers] or the cross-elasticity of demand between the product itself and substitutes for it." *Swedish Match*, 131 F.Supp.2d at 157 (quoting *Brown Shoe*, 370 U.S. at 325); *see In re Coca-Cola Co.*, 117 F.T.C. 795, 925 (1994). Interchangeability of use and cross-elasticity of demand concern (1) the availability of products that are similar in character or use to the product in question **and** (2) the degree to which buyers are willing to substitute one product for the other. *Swedish Match*, 131 F.Supp.2d at 157. The market "must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn." *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 612 n.31 (1953).

AspenTech is likely to be able to impose significant uniform price increases (or reduced innovation) to all customers, with incremental anticompetitive effects imposed on as many as four discrete categories of customers: air separation, refining, chemicals, and oil and gas.

The evidence likewise will establish cognizable antitrust product markets for batch simulation software and integrated engineering software. AspenTech's expert does not even address the integrated engineering software market, and his effort to broaden the market for batch simulation software is unpersuasive: as it seeks to include products that do not perform the same functions, for which there is no evidence of competition with AspenTech's and Hyprotech's products, and which customers do not consider to be ready substitutes.

In challenging Complaint Counsel's market definition for continuous simulation software, AspenTech does not contend that this product market is too narrow, and that other products should be included. Instead, AspenTech claims that a market for continuous simulation software is too *broad* (indeed; AspenTech claims that even Complaint Counsel's asserted narrower markets, for oil and gas, refining, chemical, and air separation, are too broad), because it contends that its products and Hyprotech's effectively did not compete for the same customers in any market segment prior to the Acquisition.

The evidence is decisively to the contrary. The parties' own pre-merger perceptions, and the experience of their customers, strongly support the conclusion that AspenTech's and Hyprotech's continuous simulation software products were head-to-head competitors. Such evidence is far more probative than AspenTech's after-the-fact claims that all of the persons actually involved in the market simply got it wrong. *Rothery Storage & Van Co. v. Atlas Van Lines, Inc.*, 792 F.2d 210, 219 (D.C. Cir. 1986) ("The industry or public recognition of the submarket as a separate economic unit matters because we assume that economic actors usually have accurate perceptions of economic realities"); *Cardinal Health*, 12 F.Supp. 2d at 46 (*quoting FTC v. Coca-Cola Co.*, 641 F.Supp. 1128, 1132 (D.D.C. 1986); vacated as moot, 829 F.2d 191 (D.C. Cir. 1987)) ("[T]he determination of the relevant market in the end is 'a matter of business reality–[] of how the market is perceived by those who strive for profit in it.'").

AspenTech, Hyprotech and SimSci each began developing and selling continuous process simulation software that targeted separate categories of process industry customers – chemicals

for AspenTech, oil and gas for Hyprotech, and refining for SimSci. All three firms targeted engineering and construction ("E&C") companies such as Bechtel or Fluor. While each firm initially focused on a specific customer segment, Hyprotech and AspenTech over the years offered successively broader sets of engineering products and increased functionality to existing products, ultimately seeking to displace each other and SimSci in the other firms' traditional end-use markets. CX0155 at 019 [

].[6] Customers noted the convergence as well: [

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While AspenTech's and Hyprotech's continuous simulation software products expanded and converged, SimSci weakened. CX1042 at 001 (BP) (investor analysis forwarded by Hyprotech) ("Hyprotech's rapid ascension over the past couple of years clearly propels them into the number two position. In fact, Hyprotech gained the most market share between 1999 and 2000, capturing the number two spot from Invensys [SimSci] and gaining on AspenTech. . . . Simulation Sciences lost market share, as they could not keep pace with the rest of the market."). SimSci's loss of focus heightened the competition between AspenTech and Hyprotech, each innovating and dropping price to take each other's and SimSci's customers. *See infra* at 24, 41.

The relevant products encompassed within the continuous simulation software market include Aspen Plus, HYSYS and Pro/II steady state simulation software. To be conservative, Complaint Counsel include AspenTech's and Hyprotech's dynamics simulation software as well as several fringe products including Chemstations' CHEMCAD and Bryan Research's

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[6] *See also* CX0038 at 052 ([

]); CX0072 at 004 ("Simulation and optimization solutions have been around for over forty years. The traditional core markets for PSO [Process Simulation and Optimization] are showing signs of maturity as indicated by the small number of dominant suppliers battling for market share and profits . . . Convergence of performance, function, and features is occurring among the various simulation and optimization tools.").

TSWEET.[7] While customers conceivably could turn to one of the fringe products or use already internally developed software, the limited amount of such switching and the fact that it would impose higher costs and significant risk of business interruption on the customer ultimately make it likely that post-acquisition price increase imposed by Respondent alone or in combination with SimSci would be profitable.[8] *See Libbey,* 211 F.Supp. 2d at 48; *Swedish Match*, 131 F.Supp.2d at 169.

Abundant evidence exists to support the continuous simulation software market. AspenTech, Hyprotech and SimSci recognized each other as offering competitive flowsheet software. For example, AspenTech's final pre-acquisition SEC filing for the quarter ended March 31, 2002 states: "Our asset optimization software competes with products of businesses such as Hyprotech, a division of AEA Technology, and Simulation Sciences, a division of Invensys." CX0652 at 036. AspenTech's first SEC filing immediately post-acquisition omits Hyprotech, stating that its "asset optimization software competes with products of businesses such as Simulation Sciences, a division of Invensys." CX0650 at 007; *see also* CX0137 at 005 (only Hyprotech and SimSci listed in "threat" category), 010 ("Hyprotech is most significant threat"). Notably, the business plan included in the offering memorandum sent to potential purchasers of the Hyprotech business similarly listed only two competitors, AspenTech and SimSci. CX0038 at 020, 048 ([

]). Similarly, SimSci competitive documents concentrate on AspenTech and Hyprotech in its competitive analysis. CX1357 at 002 (SimSci).

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[7] The AspenTech and Hyprotech dynamic options each require the purchase of the steady state flowsheet. Thus, including both dynamic and steady state products in the continuous simulation software market is both conservative and practical.

[8] It is not enough that a customer could turn to an alternative at some price; the question is whether sufficient customers would switch away to make the price increase unprofitable. Where, as here, the switch is most likely to another product in AspenTech's offerings, the "lost" profit redounds to AspenTech and it is able to absorb many more customer defections. *Swedish Match*, 131 F.Supp. 2d at 161 n.8 (price increase profitable because "the [hypothetical] monopolist would only lose a small amount of business in general, and of the lost amount most of it would be coming back because consumers would be substituting one of the monopolist's products for another.").

The existence of a continuous simulation software market is further buttressed by AspenTech and Hyprotech pricing behavior and responses to each other, and to a lesser degree, to SimSci. For example, when ABB Lummus, a large engineering and construction company sought a replacement for SimSci, Hyprotech saw this as "our best shot . . . Aspen have offered access to all of their products for one year free of charge and then half price for the subsequent year to allow for the transition costs . . . clearly the big opportunity is to head off Aspen." CX0284 at 002-4. Ultimately, AspenTech won this competition by dropping its prices. CX0270 at 002. Contemporaneous documents from both companies are replete with examples of the vigorous competition that existed between AspenTech and Hyprotech.[9]

AspenTech and Hyprotech recognized and responded to each other as competitors across a broad range of industry sectors and as each other's closet competitor within individual customer accounts. AspenTech and Hyprotech made business decisions on the belief that customers would switch in response to quality adjusted price differences. For example, Hyprotech noted in a Board of Directors report that "[b]oth Aspen and Simsci are starting to reduce prices to maintain market share in both the software and applications market places." CX0041 at 002.[10]

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[9] In markets like the continuous software market, where contract cycles are generally five years, there are fewer sales opportunities each year. Thus any competition is important, especially where the solutions are limited to a few players. *Grumman Corp. v. LTV Corp.*, 665 F.2d 10, 14 (2d Cir. 1981) (to presume that few competitive wins in thin market means no effect on the market "ignores the competitive effect they exert simply by being available to compete"). *See, e.g.*, CX0478 at 002 ("This leaves us [Hyprotech] with a good opportunity to push against an Aspen corporate agreement [with Valero] and leverage the sites currently using HYSYS . . ."); CX0439 at 002 ("I want a reverse MFN, that is they [Bechtel] will agree to terminate their Aspen and Simsci agreements as soon as possible . . ."); CX0441 at 003 (Hyprotech won a Saudi Aramco account by "absorb[ing] a huge Aspen attack on the account"); CX0422 at 001 ("Aspen has been making sales calls with the FW/BOC [Foster Wheeler/BOC] group . . . they have also been doing some visits with Air Products."); CX0477 at 002 (Sunoco explaining to Hyprotech why it did not win Sunoco's business against AspenTech: "I can tell you without question that Sunoco does not bid just to fulfill a bid requirement. We look at bidding as the best way for us to make sure we are getting the best price.").

[10] AspenTech similarly instructed the sales force on "[h]ow to respond to customers who are trying to use competition to get discounts?" CX0086 at 003. A Hyprotech salesman given access to "the prices charged by our competitors (ex Simsci and Aspen)" was surprised at the level of competition. CX0409 at 001 ("I did not know that they were going so low with their prices!"). As late as November 2001,

(continued...)

Customers clearly acknowledge only three plausible competitors in continuous simulation software: AspenTech, Hyprotech and SimSci. Of the three, SimSci is regarded as a weakened competitor by many customers. For example, [ ] identifies only AspenTech, Hyprotech and SimSci as offering continuous simulation software requested by its customers. [ ] indicates that SimSci is unlikely to constrain AspenTech's post-acquisition prices. [

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Because customers view AspenTech's and Hyprotech's products as reasonable substitutes, the customers negotiated more favorable contracts and demanded more innovative features from their suppliers. For example, Flint Hills Resources, an important refining customer, wanted Hyprotech to equal an AspenTech discount given to one of its other refineries. CX1440 at 002 ("I would like to see a matching discount to the software as Aspentech is providing. I would like to see 15% off of both the purchase price and the annual MSU."). Similarly, Rohm and Haas conducted a detailed evaluation of the AspenTech and Hyprotech continuous process simulation flowsheet software, choosing Hyprotech on technical and cost based criterion. *See generally* CX1330.

AspenTech, Hyprotech, SimSci, small niche competitors, industry analysts and customers agree that the Acquisition eliminated intense rivalry between two long-standing continuous simulation software suppliers to the process industries. The last few years of competition between AspenTech and Hyprotech were especially fierce, driving each company to discount heavily and innovate to attract customers across industries.

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[10](...continued)
AspenTech summed up the state of its aggressive competition with its closest rival, "In Chemicals Europe, AT's stronghold, Hyprotech has caught up to AT. . . . [Hyprotech] Take over SimSci, don't even hide it 'eating alive SimSci' . . . . Want our chemicals mkt. share." CX0516 at 007. The report continues that [

] CX0516 at 008. Meanwhile, AspenTech noted SimSci's decreasing significance: "Profitability falling in every business area . . . bleeding cash flow." CX0516 at 010.

2. Narrower Markets Exist Within the Continuous Simulation Software Market.

As discussed above, antitrust product markets are generally defined by asking whether a hypothetical monopolist of a group of products could profitably impose a small but significant and nontransitory price increase. *Merger Guidelines* § 1.11. Where the "hypothetical monopolist can identify and price differently to those buyers ('targeted buyers') who would not defeat the targeted price increase by substituting to other products," separate relevant product markets may be delineated for different groups of buyers. *Merger Guidelines* § 1.12.[11]

Consistent with Respondent's insistence that markets for process simulation software are no broader than the industry "vertical" sector of the buyer, there is ample evidence that narrower markets may well coexist within the broad continuous simulation software market. Prior to the Acquisition, the parties' documents show each company's belief that it could charge higher prices in the end-use markets that it initially dominated. In particular, Hyprotech and AspenTech offered higher discounts to customers in those areas where the other was relatively strong. CX0271 at 001 [

].

The parties' ability to engage in such price discrimination warrants the delineation of narrower markets. Although customization may occur through the purchase of add-on modules, there is effectively only one basic version of HYSYS and only one basic version of Aspen Plus. CX1008 at 019 (Sim Dep. at 71); CX1009 at 006 (Kotzabasakis Dep. at 018). No matter who the customer may be, it will receive the same software, with the same functionality, that any other customer receives. In order to price discriminate, Hyprotech or AspenTech would have to be

[11] In order for narrower markets to exist, the seller must believe it can charge different prices to different customers; that different customers have varied ability to substitute the currently provided by the sellers. *Swedish Match*, 131 F.Supp. 2d. at 164 ("Another factor for consideration in determining whether a submarket exists is industry or public recognition of the submarket as a separate economic entity.") (citations omitted)).

able to prevent extensive arbitrage. The parties' practical ability to do so is reflected, for example, in Hyprotech's pre-acquisition plans. To limit arbitrage by users with more than one type of plant (*e.g.*, oil and gas plus refining), for example, Hyprotech planned to break HYSYS into separate products for oil and gas, refining, and chemicals. The point of the exercise was to "segment[] our market in a manner that prohibits users from crossing over, and we can price discriminate more effectively." CX0742 at 001.

a. Continuous Simulation Software for Oil and Gas Customers.

> *Aspen have started to attack us hard in Gas Processing and put much more emphasis back on simulation, . . . Now would be a very good time to talk to your gas processing and upstream customers to protect them from an Aspen attack and position the forthcoming HYSYS 3.0.*
>
> – CX0508 at 003 (Andy Howell, Hyprotech Project Manager for Oil & Gas Vertical).

Hyprotech and AspenTech recognized Hyprotech's dominant share in continuous simulation software licensed to the oil and gas processing sector. CX0031 at 015; CX0123 at 008; [ ]; CX0028 at 005. At the same time, AspenTech recognized in 2001 that there was an opportunity for AspenTech to penetrate the $35 million oil and gas market, CX0025 at 224, and enhanced its products and took steps to interface Aspen Plus with a niche oil and gas product, TSWEET. CX0750 at 001 (Press Release "AspenTech Collaborates with BR&E To Upgrade Engineering Solutions for Refining and Gas Processing Industries"). Hyprotech's response to the competitive threat from AspenTech was immediate: "We believe our friends at Aspen are planning a 'Flank' attack on our gas processing customers. This is an area that we have left somewhat unprotected for a while. The best way to counter a flank attack is a preemptive counter strike." CX0376 at 002 ("targeted at O&G market"). Although AspenTech now denies it competed for oil and gas customers, Hyprotech was concerned that the AspenTech/BR&E alliance would help AspenTech to further penetrate the gas processing industry. CX0050 at 031; CX1057 at 002. Consequently, the mere threat of AspenTech seeking oil and gas customers evoked a strong competitive response and caused Hyprotech to expedite the release of a new HYSYS version with enhanced capabilities. CX0014 at 039.

The Acquisition has directly and adversely affected competition in the oil and gas market. As discussed below, far from engaging in the innovation competition seen pre-acquisition, AspenTech has now removed Aspen Plus from oil and gas sales efforts. *See,* RX-0090 at 055.

b. Continuous Simulation Software for Refining Customers.

> *[Can we get Conoco] over to Aspen before the [Conoco/Phillips] merger? . . . w.r.t. Conoco and Phillips, what can we do to support you to exploit this open window to promote the Aspen cause? Obviously Phillips has made a pretty strong commitment to the AES suite . . .*
>
> – CX0212 at 003 (AspenTech Sales Person).

> *Given the agreement we [Hyprotech] have with Conoco, this [Conoco/Phillips merger] should allow us to move Aspen out of Philips [sic].*
>
> – CX0272 at 001 (Wayne Sim).

AspenTech and Hyprotech competed with each other to take SimSci's disaffected customers and thus focused on the refining industry for sales growth. Each company attempted in the years prior to the Acquisition to broaden the use of simulation tools within refineries and innovated to gain a toe-hold against each other and SimSci, especially as SimSci lost its focus after Invensys purchased the company in 1998.[12] Both AspenTech and Hyprotech saw SimSci's lost momentum and product failures as an opportunity to steal its customers. CX0092 at 012 ("Winning the Race after SimSci's market with AES"); CX0803 at 028 ("Aggressively market HYSYS.Process and HYSYS.Plant oil and gas production market . . . competitor (SimSci) vulnerable.").

To distinguish HYSYS for refinery customers from SimSci (and ultimately from HYSYS for any other customer), Hyprotech designed a product that integrated HYSYS and refining reactor models, HYSYS.Refinery. Hyprotech was thus able to demand a higher price from refinery customers, even though the product's simulation aspect was identical to HYSYS.[13]

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[12] *See, e.g.*, CX0803 at 038 ("Invensys purchase has deemphasized simulation development to focus simulation development to focus on services solution via Foxboro"); CX0031 at 014 ("Lack of focus in marketplace. . . . Last few releases have been failures. Financial situation looks precarious."); CX0194 at 038 ("SimSci is loosing [sic] ground" "Battle for market share is in Oil & Gas and Refining"); CX0038 at 049 [ ].

[13] Pre-merger, AspenTech focused its efforts on meeting Hyprotech innovation, not SimSci. *See, e.g.,* (continued...)

AspenTech responded to Hyprotech with a similar targeted offering, Rxfinery, that combined services with Aspen Plus and AspenTech refinery reactor models. CX0183 at 023 ("Both Aspen Plus and Aspen Rxfinery are selling in Refining. . . . HYSYS.Refinery is our **main competition** for the off-line market. They are starting to impact Aspen Plus sales.") (Emphasis added).

Both AspenTech and Hyprotech fiercely competed on price and innovation to win refinery customers from each other and from SimSci. CX0031 at 014 (SimSci "weakness[] – Normally a higher price."). The head-to-head competition for SimSci's customers made AspenTech and Hyprotech continuous simulation software the next best substitute for the other.[14] The competition to take SimSci's share of market extended to price concessions and promised innovation. A refining customer concerned with SimSci's loss of focus and longevity had only two realistic choices: AspenTech and Hyprotech.

c. Continuous Simulation Software for Chemical Customers.

Hyprotech is growing with a flanking strategy in AspenTech's Chemicals Market
– CX0079 at 011 ("Winning Business Against Hyprotech with AES 11.1").

If we can penetrate these clients [AspenTech's chemical customers] today with our niche technology, we can create opportunities to leverage our beachhead for growth of HYSYS.Process and HYSYS.Plant usage in these accounts in the next 2-3 years as these capabilities are integrated into HYSYS.
– CX0803 at 034 (Hyprotech Consolidated Operating Plan Americas).

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[13](...continued)
CX0183 at 032 (improve Rxfinery's speed and robustness, because "[v]ery important in competitive situations (e.g. vs Hyprotech)."); CX0183 at 033 ("Create a competitor to HYSYS.Refinery. . . . This gets us into the game for the $80MM /yr refining market."). Post-merger, Respondent introduced RefSYS, also demanding higher prices, even though the simulation aspect is identical to HYSYS. CX1008 at 031 (Sim Dep. at 121) ("RefSYS is a repackaging of the HYSYS technology."). Respondent touts this "repackaging" as an innovation and an efficiency purportedly justifying the Acquisition.

[14] *See, e.g.*, CX0013 at 033 [ ];
CX0027 at 030-31 (AspenTech "FY02-03 Business Themes • Capture Refining Market . . . • Target SimSci's Refining Market and expand it"). Post-merger, AspenTech repositioned itself, no longer marketing Aspen Plus steady-state simulation sales to refiners. CX0718 at 019 ("Aspen Petroleum – Engineering . . . • Simulation & Optimization (HYSYS)"); CX1008 at 023 (Sim Dep. at 87) ("I have heard instance of salespeople making that claim.").

Prior to the Acquisition, Hyprotech estimated AspenTech supplied 85% of the process simulation software sold to chemical customers. CX0123 at 009. AspenTech touted the "*unique* application expertise" of its "Chemicals solution" and cited its "large advantage in applications and capabilities in Chemicals" as a reason for customers to purchase AspenTech's chemicals solution. CX0028 at 027 (Emphasis in original). Hyprotech, however, also looked to bring simulation software to the chemicals market and developed HYSYS 3.0 [ ] to the chemical market. CX0013 at 020. Hyprotech's goal was to sell customers 'Solutions' To Targeted Vertical Markets," including a solution for the chemicals industry. CX0058 at 008. Hyprotech continually sought to "take away some of Aspen's business" by improving the capability of its software for use in the chemical industry. CX0029 at 014.

The increased competition from Hyprotech into AspenTech's traditional chemical stronghold has startling similarities to AspenTech's competition with Hyprotech for oil and gas customers. At times, AspenTech offered discounts only to new customers or customers up for contract renewal in its core market segment in order to protect its market share within that segment from Hyprotech. CX0028 at 10 (responding to increased penetration of HYSYS with "[f]lexible/lower pricing on our core products."). Hyprotech also offered lower prices only to certain customers by keeping [ ]. CX0271 at 001. Hyprotech realized that "pricing which is appropriate for our core market of oil and gas may not be appropriate in our non-core markets (fuel cells, **chemicals**, etc.)." CX0298 at 002 (Emphasis added). Thus, it is clear that prior to the Acquisition, AspenTech's pricing in chemicals was constrained by Hyprotech's aggressive discounting and product innovation activity in that market.

d. Continuous Simulation Software for Air Separation Customers.

Own . . . Air Separation marketplace.
– CX0031 at 015 ("HYSYS.Process Level I Sales Kit").

At the time of the Acquisition, AspenTech and Hyprotech were the only active suppliers of simulation software to the air separation industry, making this a merger to monopoly. CX1053 at 002 (BP). Moreover, SimSci believed that supplying simulation software to air separation customers "would be a difficult undertaking" and that SimSci lacked the "process

expertise" and resources to enter this market. CX1339 at 002 (SimSci) ("[W]e lack the key element here – process expertise . . . I think this would be a difficult undertaking at the moment.") Similar to the other narrow markets, the Acquisition eliminates the competition previously faced by AspenTech from Hyprotech and will enable it to increase prices to air separation customers. CX0058 at 008 ("Targeted Vertical Markets . . . • Air Separation").

3. The Batch Simulation Software Market.

Batch simulation software is used primarily in the pharmaceutical and fine chemical process industries, and provides a consistent, standardized environment to develop, model and test batch-recipe-based processes. Unlike the relatively mature continuous simulation software markets, batch simulation is a new, growth market. Hyprotech and AspenTech each sought to develop and take this new market and viewed each other as the only significant competitors in the batch simulation software market. CX0008 at 008, 019 (Hyprotech describing the batch software market as having "only one major competitor (Aspen Technology's Batch Plus)"); CX0025 at 219; CX0533 at 011. AspenTech recognized Hyprotech's aggressive competition [ ] CX0799 at 006. Indeed, after the Acquisition, AspenTech Vice President of Engineering Manolis Kotzabasakis testified that AspenTech stopped developing BDK "Because it has a lot of overlapping functionality with Batch Plus." CX1009 at 026 (Kotzabasakis Dep. 99); *see also* CX0146 at 053; CX0105 at 003.

Further, the two companies focused almost exclusively on each other's market position and products during development of their respective batch software. Hyprotech characterized its batch software, BDK, as the "market aggressor" competing with "market leader" Batch Plus (AspenTech's product). CX0008 at 019; CX0533 at 011. Hyprotech planned to improve BDK in order to "Bury Aspen BatchPlus" and worked to expand sales of BDK at AspenTech's expense. CX0401 at 020. [ ]. CX0008 at 027.[15] Similarly, AspenTech offered BatchPlus software to UOP

[15] Hyprotech's competitve strategy against AspenTech's Batch Plus product proved successful. [ ]; (continued...)

at no cost so that UOP would not license Hyprotech's competing batch software. CX0126 at 003; [ ]

AspenTech was the dominant supplier of batch simulation software. CX0078 at 003 (AspenTech estimated it controlled "90% of the dollar market share for this type of simulation software"). [

]. Thus AspenTech's 2002 marketing strategy stated: "Do not give any chance to Hyprotech's BDK." CX0092 at 019. [16]

4. The Integrated Engineering Software Market.

Integrated engineering software allows engineers to share simulation information throughout the plant (with manufacturing processes, for example) and may allow users to improve the efficiency of engineering workflow. Answer ¶ 13. There are no substitutes for integrated engineering software in the event of a small but significant and nontransitory increase in price. AspenTech and Hyprotech, as well as their customers, viewed AspenTech's Zyqad software and Hyprotech's AXSYS software as competitive products, and as the only significant integrated process engineering products. Hyprotech described the technology: "These products are direct competitors so obviously they will have features in common as well as some distinguishing features." CX0163 at 002; CX0080 at 002 (AspenTech wrote: "AXSYS is an

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[15](...continued)
CX0640 at 001 (noting that the Bristol Meyers Squibb and Pfizer deals were partly a result of the "dissatisfaction" with AspenTech). Hyprotech was also actively trying to displace Batch Plus with BDK as a part of a larger deal with Rohm and Haas. *See generally* CX0541. Hyprotech also targeted operating companies such as [ ] Solutia, [ ] and Monsanto for its batch products. CX0038 at 064-5; CX0640 at 001; CX0056 at 011.

[16] A third product from Intelligen has some biotechnology application and has been successful in that niche. Intelligen's product has no thermodynamic capability, however, and is an unlikely price constraining substitute to batch processes that involve heat reactions. *See, e.g.*, Expert Report of Professor Robert D. Willig (April 23, 2004) ("Willig Report") [ ]. To be conservative, Complaint Counsel include Intelligen's product in this relevant market.

integrated engineering database, similar in nature to Aspen Zyqad."). Respondent's expert chose not to offer any expert opinion on the integrated engineering software market. *See* Willig Report ¶ 7.

Hyprotech categorized Zyqad as the "Market Leader" and "Market Aggressor" and identified Zyqad as AXSYS's only major collaborative engineering software competitor. CX0017 at 014; CX0533 at 014. Hyprotech developed and improved AXSYS's capability and functionality specifically to "Exceed Zyqad's Capabilities." CX0017 at 018; CX0051 at 017. Hyprotech considered AXSYS as the market "challenger" and "innovator" and determined that AXSYS would compete against Zyqad on price. CX0017 at 013 (Stating that "Zyqad too expensive to implement" at mid-size companies and that companies had "Bad experiences with Zyqad" based on implementation time and cost.); CX0533 at 013-14.

While AspenTech acknowledged itself as the "proven and chosen market leader," it recognized Hyprotech's AXSYS as its primary competitor and conducted detailed comparisons between the two products for the purpose of developing a sales strategy against AXSYS. CX0080 at 003 (AspenTech discussing that Hyprotech was positioning AXSYS as a "lower cost" alternative to Zyqad and that AXSYS had more "out-of-the-box functionality."); *see generally* CX0163. AspenTech reported that it had observed "increased competitive account activity in the past few months," and in response, formalized a strategic message detailing why Zyqad was a better product than AXSYS, CX0080 at 002, and noted that Hyprotech was conducting a "Strong attack on to [sic] Zyqad." CX0516 at 007.

B. The Relevant Geographic Market is the World.

The relevant geographic market is the "area of effective competition . . . in which the seller operates, and to which the purchaser can practicably turn for supplies." *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961). Respondent agrees that "the relevant geographic market is worldwide for purposes of analyzing the effects" of this Acquisition. Resp. Obj. and Responses to CC First Set of Interrogatories at 5 (Jan. 8, 2004).

C. The Acquisition Gave AspenTech a Very High Share in the Relevant Markets and Resulted in a Significant Increase in Concentration.

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– CX0038 at 048 (Hyprotech Offering Memorandum).

Mergers that significantly increase market concentration to high concentration levels are presumptively unlawful because the fewer the competitors and the bigger their respective market shares, the greater the likelihood that a single firm, or a group of firms, could raise prices above competitive levels. *See Hospital Corp.*, 807 F.2d at 1389. After relevant markets have been delineated, the antitrust analysis of a merger proceeds to determining the market shares of the merging firms and the level of concentration in the relevant market. "[A] merger which significantly increases the share and concentration of firms in the relevant market is 'so inherently likely to lessen competition' that it must be considered presumptively invalid and enjoined in the absence of clear evidence to the contrary." *Cardinal,* 12 F.Supp. 2d at 52 (quoting *Phila. Nat'l Bank*, 374 U.S. at 363).

Market concentration may be measured by combining the market shares of the largest firms or by the Herfindahl-Hirschman Index ("HHI"). *Heinz,* 246 F.3d at 716; *FTC v. PPG Indus. Inc.*, 798 F.2d 1500, 1503 (D.C. Cir. 1986); *FTC v. University Health, Inc.*, 938 F.2d 1206, 1211 n.12 (11th Cir. 1991) (HHI, which is calculated by summing the squares of the market shares of all firms in the market, is "most prominent method" of measuring market concentration); *Merger Guidelines* §§ 1.5, 1.51. Nonetheless, there is no requirement that market concentration be measured by HHIs. *See, e.g., United States v. Franklin Electric Co., Inc.*, 130 F.Supp 2d 1025, 1033-35 (W.D. Wisc. 2000) (HHIs never mentioned). As Judge Chappell held in his Initial Decision in the Chicago Bridge and Iron matter, "where, as in the instant case, the two largest competitors in thin product markets merge, the increase in market concentration and substantial lessening of competition are merely common sense conclusions."

In the Matter of Chicago Bridge & Iron Company N.V., D.9300, Initial Decision at 89 (June 12, 2003). Prior to the Acquisition, AspenTech and Hyprotech were each other's largest and closest competitors. With significant competition limited to AspenTech and a weakened SimSci following the Acquisition, the "common sense conclusion" is clear – the merger is illegal.

There is no requirement of pinpoint accuracy in the delineation of market shares or industry concentration. *See General Dynamics,* 415 U.S. at 521 (dissent) ("the Government is not required to delineate Section 7 markets by 'metes and bounds.'") (quoting *United States v. Pabst Brewing Co.*, 384 U.S. 546, 549 (1966)). There are only two public data sources that attempt to track market shares in the process simulation area, ARC Advisory Group and Daratech – both market research and advisory service companies. Both data sources are inherently unreliable.[17] Where reliable data is lacking, the case for using the companies' internal estimates is compelling. The best contemporaneous pre-investigation information compiled by AspenTech indicates that Respondent would control between [ ] percent of the continuous simulation software market. CX0246 at 003 [ ]; CX0038 at 048 [ ]; CX0296 at 002 ("... defining the market – process simulation – significant 70-75% of market share."). AspenTech has revised its market share estimates post-FTC investigation [ ] to approximately 67%. CX1002 at 037 (Sim IH at 144); *but see* CX0189 at 009 (AspenTech alone has "more than 50% market share with our engineering solutions.").

Although market share data are imperfect, the documentary record is consistent with Hyprotech and AspenTech management estimates. Customers describe a pre-acquisition market for continuous simulation software with only three competitors – AspenTech, Hyprotech and SimSci.[18] Customers recognize that the Acquisition reduced the number of competitors from

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[17] *See, e.g.*,CX1000 at 035 (Evans IH at 137); CX1002 at 035-36 (Sim IH at 137-38); [ ]; CX0079 at 007 ("**ARC's Numbers are very underestimated**" for AspenTech) (Emphasis in original); CX1012 at 028 (Muller Dep. at 107) (Daratech data "not . . . reliable. . . . I don't trust Daratech.").

[18] *See, e.g.*, [ ]; CX1126 (Citgo); CX1153 at 002 (Cytec); CX1156 at 001 (Cytec); CX1330 at 016 (Rohm and Haas); CX1400 at 001 (Jacobs).

three players to two, giving AspenTech a 75-80% market share.[19] More tellingly, shortly before the Acquisition was consummated, AspenTech published on its Internet site a third-party analysis of the Acquisition that AspenTech edited before publication: "The combination promises to create a behemoth in process simulation. . . . Together, the two companies accounted for more than two-thirds of the market." CX0842 at 001; CX0168 at 003; CX0114 at 001.

In a highly concentrated market, one with HHIs over 1,800 points, any change in HHI exceeding 50 points is "likely to create or enhance market power or facilitate its exercise." *Merger Guidelines* § 1.51(c). Concentration figures [

], demonstrate a post-merger HHI of 7,048 points, with an increase of 3,360 points as a result of the Acquisition. The Acquisition also significantly increased concentration in the narrower markets contained within the continuous simulation software market, with post-acquisition concentration increasing significantly and resulting in HHIs of greater than 4,500 points in oil and gas and in refining, greater than 5,000 points for chemicals, and 10,000 points (a monopoly) for air separation. *See* CX0123 at 008-09. The Acquisition similarly significantly increased concentration in the batch simulation and integrated engineering software markets, resulting in HHI estimates approaching monopoly levels.

Calculating HHIs with SimSci at its historic market share is likely to overstate the competitive significance of the company. In recent years, both AspenTech and Hyprotech recognized SimSci as a weaker competitor. CX0450 at 002 ("keep in mind 24 months from now ProII will only be a memory"); CX0073 at 053 ("SimSci is struggling"). SimSci also viewed itself as a weakened competitor. CX1366 at 001 ("I believe we need to convince companies operating in this sector that SIMSCI is a worthwhile, reliable alternative."). All three firms reported that SimSci fell behind in developing and updating its continuous simulation software

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[19] *See, e.g.*, [ ]; CX1046 at 003 (BP) (BP response to AspenTech threat of price increases due to "80%+" market share: "and Manolis [Kotzabasakis at AspenTech] said they didn't have a monopoly position! I wonder what would happen if we showed this to the competition authorities?"); CX1126 at 001 (Citgo) (As a result of the Acquisition , AspenTech "becomes the proverbial 500 pound gorilla in the simulation market. I think their share of the steady state flow sheet simulation market in the HPI would be over 80%. In dynamic simulation it would be even larger.").

after it was acquired by Invensys. CX0137 at 091 ("Lack of recent investment into application[s]"); CX0029 at 014 ("[T]hey have no product offerings to compete with HYSYS.Refinery and HYSYS.Plant. . . ."); CX1348 at 003 (SimSci) ("Our once competitive edge in the areas of robust, rigorous, and effective software are no longer valid."). Hyprotech's offering memorandum includes several observations from customers regarding the weakening of SimSci in recent years. CX0038 at 005 ([ ]), at 049 ([ ]).[20]

Nor is it likely niche players will be able to effectively respond to AspenTech's efforts to raise prices or engage in any anticompetitive conduct post-acquisition. Associating market share to these companies for the purpose of HHI calculation for an overly-conservative market analysis, the niche players' significance is also likely overstated. Thus ARC Advisory mentions the "large number of . . . suppliers with market shares less than 2 percent . . . [including] niche players such as Chemstations and Bryan Research & Engineering. . . . Although their solutions are limited in scope and lack complementary products, they tend not to compete directly with the big three." CX0055 at 049. Chemstations' product, ChemCAD, according to Hyprotech, "lack[s] the resources to compete head to head." CX0030 at 019; CX0029 at 015 (company lacks resources); CX0137 at 005 (ChemCAD as a niche product). Hyprotech's strategic business planning documents concluded that software providers such as WinSim, BRE and Chemstations were "minor competitors" that could sell software only to "single user shops," and that these companies lacked the resources necessary to develop software for larger companies. CX0029 at 015; CX0030 at 019; *see also* CX0103 at 022 (Chemstations, BRE and WinSim as low cost providers).

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[20] As will be discussed below, AspenTech and Hyprotech anticipated that it would be easier for them to take business from SimSci as a result of SimSci's weakened condition. CX0029 at 014; *see also* CX0120 at 001-01; CX0387 at 002; CX0450 at 002-04; CX0295 at 002-03. Further, AspenTech concluded that if SimSci can make a comeback, it is expected to take several years. CX0103 at 022. AspenTech's Strategic Account Manager stated that he did not believe that SimSci has "kept up with the technological advances in software," that it was a "good company going bad" because it was not "keeping up with changing technology," and that people at AspenTech wondered if SimSci still existed. CX1014 at 15 (Anand Dep. at 56). Customers also viewed SimSci as a distant competitor, notwithstanding its market share. *See, e.g.*, Section III.E.5.

D. The Relevant Markets are Insulated From New Entry

To rebut the presumption of likely anticompetitive effects arising from the highly concentrated post-acquisition markets, Respondent must demonstrate that entry will be timely (*i.e.*, occur within two years); likely to be profitable at pre-merger prices; and sufficient to deter the possible anticompetitive effects of the Acquisition. "Ease of entry is the ability of other firms to respond to collusive pricing practices by entering to compete in the market." *Cardinal,* 12 F.Supp. 2d at 54-55. Entry into the relevant markets adversely affected by this Acquisition is unlikely because (1) the costs and time necessary to develop, validate and establish a reputation for reliability are substantial and unrecoverable if the entry is unsuccessful, and (2) customers will be reluctant to engage the services of a new entrant because of the potential economic loss associated with new software.

New entry sufficient to defeat the exercise of market power is unlikely because the cost and time for entry is prohibitive. Even Respondent's economic expert sees "no compelling evidence that entry sufficient to affect future license prices is likely in the foreseeable future." Willig Report ¶ 55. A new entrant would need to write a substantial volume of complex computer code, validate the new software, establish a reputation for reliability, and build a distribution and support organization. For example, although development of the current Microsoft Windows-based version of HYSYS began in 1989, it was not commercially released until 1995. CX0142 at 003. In its current state, HYSYS includes approximately "300 man years of effort" and "~2.0 million lines of code" CX0142 at 008. In fact, it took both AspenTech and Hyprotech nearly [ ] years to develop a critical mass of software to fully support their customers. CX1011 at 019 (Chan Dep. at 72-73). Additionally, according to AspenTech, the market is not attractive for entry because, among other things, customers require integrated offerings and require more scale than any existing niche players can bring to bear. CX0103 at 023 ("Competitive Barriers to Entry . . . Demands for complex, integrated software will make it very difficult for a new player").

Customers also consider supplier reputation key to purchase decisions. According to Hyprotech, "Because of the nature of engineering software, users need extreme confidence in the calculations. A new player would have a huge hurdle to overcome in establishing itself as one of

the 'standard' providers of simulation software." CX0029 at 016; CX1225 at 002 ("First and foremost, the program must be accurate. If you can't get good results, then a simulator serves no purpose."); CX1369 at 001 (SimSci) ("They **DO NOT** want to use a less expensive alternative, because they have to put a 'Guarantee' on the work they do."). The same software design costs and reputation impediments that constrain entry also limit the likelihood of growth by the niche players.[21] The fringe competitors, whether foreign or domestic companies, are unlikely, any time in the near future, to replace Hyprotech as a competitor to AspenTech across a significant number of markets and a broad range of customers. Hyprotech stated: "There are no signs that these companies [the niche players] will be able to acquire the resources necessary to be providers to major corporations. . . . All of these companies lack the development, marketing, and sales resources to compete heavily with us." CX0029 at 015.

E. The Acquisition is Likely to Substantially Lessen Competition and Result in Anticompetitive Price Increases, Reduced Discounting, Reduced Innovation and Less Customer Choice in the Relevant Markets.

Customers realized substantial benefits (including lower prices and more innovative products) from aggressive pre-merger competition between AspenTech and Hyprotech. "[O]ne factor that is 'an important consideration when analyzing possible anti-competitive effects' is whether an acquisition 'would result in the elimination of a particularly aggressive competitor in a highly concentrated market.'" *Libbey Foods,* 211 F.Supp. 2d at 47 (quoting *Staples,* 970 F.Supp. at 1083). Hyprotech was just such a competitor.[22] The merger increased concentration in numerous already highly concentrated markets, substantially increasing AspenTech's market

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[21] Only a few remaining companies have an internally developed and currently supported product. *See, e.g.*, CX0803 at 019 ("15 year trend of reducing in-house technology capabilities continues"); CX0304 at 001 ("They [Linde] also use OPTISIM, their internal simulator, but they are phasing it out"); CX0767 at 013 (post-acquisition, AspenTech intended to displace BASF's in-house simulator); CX1238 at 002 (in-house development by Praxair was considered too costly).

[22] *See, e.g.*, CX0028 at 009 (Hyprotech "[p]rice to 'flood' the desktop with core Hyprotech products"), 011 (Hyprotech "Responsive to customers' customization requests"); CX0146 at 023 (Hyprotech redesigned its software to make it easier to use; "In 80% of the cases Ease of Use is more important then [sic] engineering capabilities and solving power."); CX1340 at 001 ("I remember reading an article about the disruptive technologies a while back, and thinking similarities with Hyprotech and SIMSCI.") (SimSci).

share and making it more profitable for AspenTech to raise prices unilaterally therein. Also, a reduction in the number of potentially significant competitors from three to two in every market but air separation and batch simulation software increased the likelihood of substantial harm to competition through tacit or explicit coordination between AspenTech and SimSci. With only two firms in the relevant markets, the obstacles to reaching a consensus on the terms of coordination, monitoring compliance, and punishing deviations are greatly diminished.

1. Effects in the Market for Continuous Simulation Software.

> ***Goal*** *Simply, give Aspen a swift kick (or make them bleed, whichever makes you happier). Heck, if we're lucky, kill 'em.*
>
> – CX0061 at 001 (Emphasis in original) (Hyprotech Marketing Department).

Both companies' business documents and day-to-day activities confirm that Hyprotech and AspenTech were each other's closest competitor. *See, e.g.*, CX0092 at 011-13 ("AES 11.1 changes the tide . . . AES as a suite beats SimSci and Hyprotech . . . Derail Hyprotech's attempts in chemicals"); CX0070 at 002 ("**How can AspenTech grow?** Take market share . . . [or] Buy market share in existing businesses – Buy competitors") (Emphasis in original). This intense rivalry drove prices and margins down. [

] CX0519 at 008, 013 (Emphasis in original); CX0025 at 176 ("Excessive discounting" one of the biggest risks to AspenTech's engineering software business).

In the years leading up to the Acquisition, competition between AspenTech and Hyprotech broadened and intensified. First, both firms discovered that they had increased opportunities to displace SimSci, primarily in refining applications, because SimSci was falling behind in its product development.[23] Second, AspenTech was expanding its efforts to gain refinery customers (from both SimSci and Hyprotech) while Hyprotech was expanding efforts to sell its software to chemical industry customers, which historically had accounted for the bulk of AspenTech's software application revenue. Clearly, the two firms were invading each other's

[23] *See, e.g.*, CX1348 at 003 (SimSci) ("Our [SimSci's] customers frequently ask us about future development and capabilities similar to our competitors [AspenTech and Hyprotech]. . . . Our once competitive edge in the areas of robust, rigorous, and effective software are no longer valid. Our competitors have made major strides in these areas.").

traditional customer base.[24] But for the Acquisition, they would have continued to be fierce competitors in continuous process software applications.[25] Third, mergers between customers created increased opportunities to compete where one customer had a relationship primarily with AspenTech and the other with Hyprotech. These situations created an opportunity for one incumbent to partially or fully displace the other. *See, e.g.*, CX0212 at 002-04. Fourth, until AspenTech and Hyprotech reached a pre-acquisition agreement not to support CAPE-OPEN standards, *infra* page 36, the customer demand for open software interfaces led to increasing competition among continuous simulation software vendors.[26]

Competitive discounting between AspenTech and Hyprotech reached remarkable levels, and included the provision of free software so that the customer "would not go with the competitor[']s product." CX0126 at 003.[27] There is also substantial evidence of discounting that occurred, in large part, because of competition between AspenTech and Hyprotech. *See, e.g.*, CX0443 at 002-03 (Hyprotech offered large discounts as part of an effort to switch additional

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[24] *See, e.g.*, CX0167 at 004 ("We [AspenTech] are trying to penetrate the Oil & Gas / Refining market – the core of Hyprotech's users."); CX0038 at 049 [

]."); CX0029 at 014 (Hyprotech sought to "take away some of Aspen's business" by improving the chemical capability of its software.).

[25] *See also* CX0445 at 002-03 [

]; CX0129 at 002 (Hyprotech noted "Threats to value pricing . . . BPA [BP America] Use SimSci and Aspen as competition."); CX0300 at 002-03 (Hyprotech offered 50% discount to Toyo Engineering to win business away from SimSci and AspenTech); CX0410 at 001 (Sim instructed sales person to "feel free to match the Aspen price" at Sincor (PdVSA)).

[26] CX0264 at 002 ("Operating companies have realized that there is little value in using isolated, stand-alone tools and models. . . . The CAPE software tools supplier that is able to provide a framework that can embed these third-party solutions will easily gain a wider market share."); *see also* CX0092 at 010 (CO-LaN to "[c]reate and promote competition among vendors").

[27] For example, Hyprotech observed that "both Aspen and Simsci [sic] are starting to reduce prices to maintain market share . . .," CX0041 at 002, "SimSci and Aspen are dropping prices in some situations," CX0383 at 002, or "are having to defend their position by heavy discounting." CX0129 at 002.

AspenTech users to Hyprotech). Customers also sought to use knowledge of discounts in one transaction to exert pressure for discounts in other sales.[28]

Prior to the Acquisition, customers benefitted from innovation competition between AspenTech and Hyprotech. Hyprotech's competitive impact strengthened, forcing AspenTech to compete more vigorously. For example, AspenTech recognized that it should "re-visit our differentiation message" because it was "seeing a more aggressive campaign by [Hyprotech's] Hysys.refinery [sic] folks." CX0181 at 004. In November 2001, only six months prior to the Acquisition, AspenTech assembled its views of Hyprotech's plans to attack AspenTech and SimSci's traditional markets over the coming years. This analysis contemplated that there would be further switching of SimSci customers and AspenTech chemical customers to Hyprotech, starting in Europe. CX0516 at 007 (Hyprotech "want[s] our chemicals market share, starting with Europe.").

AspenTech and Hyprotech engaged in software development efforts to take customers from each other and from SimSci, particularly in refining and chemicals. Technical competition between AspenTech and Hyprotech increased in the three years before the merger and likely would have led to more rapid software enhancements and lower prices absent the merger. The loss of innovation competition between AspenTech and Hyprotech is likely to harm customers of all types because some of the technical innovations engendered by this competition would have likely benefitted affect all continuous simulation software customers (as well as batch simulation and integrated engineering software customers).

The merging companies' contemporaneous documents regarding the motivations behind, and the likely effects arising from, an acquisition provide strong evidence on likely effects.[29]

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[28] *See. e.g.*, CX0353 at 002 (Flint Hills Resources, while evaluating Hyprotech's software, relayed: "Since they [the Corpus Christi refinery] have decided to go with the AspenTech software we will need to explain why we went a different route. I can explain that you have better software (more value returned) but I would like to see a matching discount to the software as Aspen is providing. I would like to see 15% off of both the purchase price and the annual MSU.").

[29] Post-acquisition evidence can be manipulated by the respondent and thus, must be viewed with suspicion. *See, e.g., General Dynamics*, 415 U.S. at 504-05 ("If a demonstration that no anti competitive effects had occurred at the time of trial or of judgment constituted a permissible defense to a § 7

(continued...)

These statements (which were made before the government's investigation) provide the candid business judgment of the market participants. AspenTech Board minutes reflect that [

] CX0089 at 001.[30] [

]. Surprisingly, even in the face of the FTC investigation, AspenTech evidenced an intent to increase prices in various markets post-acquisition. CX0246 at 003 [

];[31] CX0108 at 001 ("The more I think about it the more I believe we should stick to 19% SMS [service/software maintenance fee] just to make sure Customers can't tell AT [AspenTech] is increasing prices.").

Hyprotech senior management predicted the direct anticompetitive effects of the merger. Hyprotech's Chief Operating Officer wrote in May 2001 that the merger "will create a market

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[29](...continued)
divestiture suit, violators could stave off such actions merely by refraining from aggressive or anticompetitive behavior when such a suit was threatened or pending.") (footnote omitted); *Consolidated Foods*, 380 U.S. at 598 (If "post-acquisition evidence were given conclusive weight or allowed to override all probabilities, then acquisitions would go forward willy-nilly, the parties biding their time."); *Hospital Corp.*, 807 F.2d at 1384 ("Post-acquisition evidence that is subject to manipulation by the party seeking to use it is entitled to little or no weight."). However, as we highlight below, there is evidence of post-acquisition price increases and output restriction that proves the broad continuous simulation software market.

[30] *See also* CX0134 at 001 [

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[31] [

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CX0525.

monopoly . . . Market dominance and technology lead will continue in mid-term for the combined company . . . Conclusion: Very positive short term for the combined entity . . . Positive mid term." CX0273 at 002.[32] Cesc Batlle, Hyprotech's President of European, African and Middle East Sales, similarly commented on the Acquisition to Hyprotech's management team: "[Unless AspenTech thinks] that our technology is superior, . . . they only want us to create a monopoly. . . . In this case, they will, most likely, sooner or later, rationalize us to the ground, toasting us all, freezing our products and milking all the customers for a while."[33] AspenTech identified an immediate benefit of the merger was the "[e]limination of developments aimed at meeting the competition features." CX0185 at 004.[34] Similarly, Hyprotech saw a possible acquisition of AspenTech as "tactical." acquisition:" CX0499 at 089 ("Synergies from a merger amount to US$40-million per year from **loss of competition**, rationalization of R&D efforts.") (Emphasis added).

AspenTech also targeted Hyprotech for acquisition to prevent it from being acquired by software vendors who could use Hyprotech to expand into the continuous simulation software market. AspenTech was worried that absent the Acquisition, Hyprotech would become an even more vigorous competitor. For example, AspenTech declared that the Acquisition would be "a blocking maneuver so that our largest competitor does not get acquired by a well-funded competitor to Aspen Tech, such as ABB, Siemens, etc. Such an acquisition . . . could seriously jeopardize the long-term value of the AES franchise[.]" CX0207 at 002-03. Similarly, in response to Steve Doyle and Manolis Kotzabasakis, two of AspenTech's senior executives,

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[32] Salva Clave testified in his investigational hearing that the monopoly would be created "[i]n the process simulation in the general terms," [sic] across the verticals of oil and gas, refining, and chemicals. CX1003 at 037 (Clave IH at 144-45). Attempting to back-pedal from his statement, Clave (a native Spanish speaker) eventually stated, "Probably my English was not good enough to qualify this correctly." CX1003 at 038 (Clave IH at 149).

[33] CX0262 at 004. Wayne Sim, Senior Vice President of Sales for AspenTech, explained that "milking" the customers was most likely a reference to reduced innovation. CX1002 at 057 (Sim IH at 222-23).

[34] AspenTech's financial situation and the government's investigation likely have diluted the immediate price impact of the merger. The evidence of ongoing price effects are discussed *infra* Section III.E.6.

reporting that SAP was bidding for Hyprotech, AspenTech's Director of Mergers and Acquisitions advised "we should bid for Hermes [Hyprotech] even if it is only to disturb that process." CX0196 at 002.[35] AspenTech explained to its employees: "A company may make an acquisition for different reasons. One is certainly to fill gaps in their offerings. However, another is to build **dominance in an existing area of strength**. With the Hyprotech acquisition, AspenTech will be the premier provider of simulation, engineering, economic evaluation and optimization solutions." CX0310 at 002 (Emphasis added).

There is no question that AspenTech viewed the Acquisition as a means to eliminate competition.[36] Willie Chan, chief product architect for AspenTech's continuous simulation software suite, analyzed the Acquisition's potential to allow AspenTech to: "Dominate the entire simulation market space, and reduce competitive and pricing pressure." CX0203 at 004. An AspenTech Strategic Planning document dated in 2001 noted: "Customers communicate about Pricing and are likely to find out about excessive discounts, deals with unlimited numbers of users, and 99 year licenses if we fail to stop these practices very soon." CX0025 at 263. AspenTech framed the competitive challenges to their business simply, [

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CX0516 at 029.

Contemporaneous expressions of customer concerns, which are present here, may also be a good indicator of likely future impact, especially as they came from large, sophisticated customers. For example:

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[35] *See also* CX0516 at 030 [

]; CX0193 at 002 ("this acquisition would be a unique opportunity for AspenTech's [sic] to take control of its core market. In contrast, if they were sold to ABB or Honeywell this work [sic] create a formidable competitor."); CX0205 at 002 ("if they [Hyprotech] are sold to Honeywell they could become a formidable competitor – do you think we could participate in the negotiation to drive up the price to Honeywell and / or adopt other tactics that would make the acquisition less appealing for them?").

[36] AspenTech's pre-acquisition intent is highly probative of the likely effects of the Acquisition. *See United States v. Hammermill Paper Co.*, 429 F.Supp. 1271, 1287 n. 48 (W.D. Pa. 1977) ("evidence indicating the purpose of the merging parties, where available, is an aid in predicting the probable future conduct of the parties and thus the probable effect of the merger").

- BP upon hearing of Hyprotech's potential sale: "We certainly need to try to get some protection if [AspenTech] are the purchaser. [AspenTech] would have the whip hand if they had all our business, and no real competitor in sight. Would there be any scope for an appeal to the EC on competition grounds? Presumably it is too small an issue for US anti-trust to be raised." CX1038 at 001;[37]

- According to AspenTech documents, Technip, one of the world's ten largest E&C firms, CX0038 at 019, "saw the AT news with horror. Their concern[s]: a company with a monopoly[;] a potential loss of technology" CX0343 at 001;[38]

- DSM expressed "[s]ome concerns because of lack of competition as competition generally pushes vendors to make better products." CX0535 at 006.

Eliminating a company's closest competitor, as happened here, often enhances the prospects for unilateral anticompetitive effects – those that do not require the support of the remaining competitors in a market. AspenTech executives and employees acknowledge that the Acquisition will lead to price increases. Wayne Sim, Hyprotech founder and CEO, now AspenTech Senior Vice President told BP: "The only risk I see which has been brought about by this merger is price escalation and our people are putting something on the table to help avoid this." CX1035 at 001. David McQuillin, then AspenTech CEO-elect told BP that that "[w]e are going to raise prices . . ." [ ]; CX1046.

Respondent's employees, at least until shortly after the Commission investigation was announced, focused on pursuing license renewal business by intimidation. BP was not the only customer threatened with a price increase. Respondent reported that Genesis, a wholly owned subsidiary of Technip-Coflexip, "complained that Aspen/HyproTech, now [a] monopolist, [was]

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[37] Respondent's documents prove BP's fear of AspenTech post-acquisition market power was well-founded. [

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[38] *See also* CX0218 at 002 (Dow wrote to AspenTech: "For Engineering Heat and Material balances, who else are you going to recommend? Two years ago I would have highly recommended Hyprotech to anyone who asked. Now you own them as well. There is no one else."); CX0535 at 006 (Dow also expressed "worries about AspenTech's control of the market place.").

threatening to increase the price if he wouldn't sign by a certain date . . . He felt he needs the software to run his business, so he didn't see any other option than sign, although he does not feel comfortable about it." CX0339 at 002. Another AspenTech document states that members of the Foster Wheeler account team would "steer this one forward using an eventual price increase threat." CX0517 at 001.[39]

In a merger resulting in a reduction of competitors from three to two in markets, as here, and where the demand for the relevant products is relatively inelastic, increased likelihood of anticompetitive coordination by the remaining two firms may be presumed. Even though SimSci has some remaining market presence, it is nonetheless likely to support and profit from AspenTech's highly probable across-the-board prices increases (or reduced discounts). With AspenTech the dominant market leader and its only competitor of any significance, SimSci has strong incentives to follow AspenTech's pricing, *i.e.*, the markets under examination are more conducive to tacit coordination post-acquisition. Further, documentary evidence suggests that tacit coordination is possible. The threat of this type of coordinated interaction is highlighted by examples of contacts between Hyprotech and SimSci management and between AspenTech and Hyprotech management.[40]

For example, Hyprotech prepared in September 2000 an offer to reduce competition by Hyprotech selling SimSci products or linking SimSci products to HYSYS.Refinery. CX0436 at 002-03; CX0468 at 002-03 ("We need to become a technology provider to Simsci not take over their customers, we provide them with a product which they rebrand ProIII and we continue to compete with them."). Hyprotech approached SimSci on several occasions regarding similar offers, such as providing the dynamic simulation capability that SimSci lacked. CX1002 at 011-

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[39] *See also,* CX0331 at 001 (Foster Wheeler) ("Please call URGENTLY FW Reading and advise them that closing a contract before June 15 and for five years may protect them from any eventual price increase or price policy change once the merger with Aspen is finalised . . . Please let them know that we may have our commercial department constrained by a number of companies in the same situation as they are."); CX0340 at 001 (SARAS); CX0347 at 002-3 (Colt Engineering); CX0348 at 001 (SNC-Lavalin); CX0492 at 003 (Petrobras); CX0800 at 001 [ ].

[40] Respondent's expert trivializes the likelihood of coordinated effects arising from this transaction, [ ].

12 (Sim IH at 40-6). Had SimSci been more enthusiastic about entering into such an agreement, Hyprotech planned to suggest that Hyprotech would take over product development, "gradually cease support for ProII and substitute Hysys. . . . As an agent for Hyprotech Simsci would have to agree [on] accounts, pricing strategies etc." CX0587 at 001.

Actual coordination pre-merger strongly suggests an industry conducive to coordination. Starting in 1995, customers made efforts to establish standards for compatibility between products of the significant continuous simulation software vendors. These efforts included organizations such as CAPE-OPEN, Global CAPE-OPEN, and CO-LaN.[41] AspenTech believed CAPE-OPEN removed "some entry barriers." [ ]; CX0025 at 262. Pre-acquisition discussions between AspenTech and Hyprotech culminated in an agreement in late 2001 not to support continued open interface development through the structure favored by CAPE-OPEN participants.[42] The episode demonstrates that pre-acquisition, AspenTech and Hyprotech could and would work together outside the public standard-setting arena. It also demonstrates the Acquisition's effect; AspenTech now has the option to make "CAPE-OPEN happen in a very short period of time . . . killing CAPE-OPEN and establishing a [de]-facto new standard, . . ." CX0466 at 002.[43]

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[41] CX0055 at 027-28. CAPE-OPEN was the original, European-funded organization to set standard interfaces for simulation software among other types. Global CAPE-OPEN was the follow-on organization to CAPE-OPEN. CO-LaN is the private-funded continuation for Global CAPE-OPEN.

[42] An e-mail exchange between Hyprotech CEO Sim and AspenTech Senior Vice President Kotzabasakis lays out the agreement: AspenTech told Sim that they would not join the follow-on organization "even though we get a lot of complaints: we do not plan to join CO-LaN as it stands currently." CX0426 at 002. Sim replies: "We have discussed Co_lan internally and will not join if Aspen maintains its stance of not joining as there is little point in trying to achieve a standard as a lone vendor, please let us know if the Aspen position changes." CX0426 at 002. AspenTech responds: "We really appreciate your taking this position and let in [sic] us know in advance. Many thanks. Our position is the same, we will not join." CX0426 at 001. Although Respondent says there was nothing untoward to the exchange, Sim deleted the language: "We really appreciate your taking this position . . . [o]ur position is the same, we will not join" from the message when he forwarded the agreement to his staff. CX0427 at 002; CX1008 at 48 (Sim Dep. at 186).

[43] It is interesting to note that Respondent is asking to make this entire subject *in camera* describing it as "corporate development."

2. Effects in the Narrower Markets Contained Within the Continuous Simulation Software Markets.

AspenTech and Hyprotech were active competitors in each of the narrower customer group markets within the continuous simulation software market, namely oil and gas, refining, chemicals, and air separation. The other supplier in oil and gas, refining and chemicals is SimSci, whose competitive position weakened in the years leading up to the merger. The merger significantly increased concentration in these narrower markets, each of which has substantial entry impediments for firms outside of the broader relevant market. For many customers, AspenTech and Hyprotech were the closest competitors, and AspenTech emerged as the largest supplier in each of these potential narrower markets. Consequently, the merger is likely to substantially reduce competition in these narrower markets both through unilateral effects and coordinated interaction.

a. Oil and Gas Customers

Oil and gas customers benefitted from competition. For example, AspenTech and Hyprotech competed for Norsk Hydro's business based between AspenTech and Hyprotech on functionality and price. CX0232 at 003 ("[Norsk Hydro] has everything in place to make AspenTech and Hyprotech compete for providing the best service."). AspenTech also provided an alternative to Hyprotech at Chiyoda: "I think Chiyoda are considering introducing either A+ or Hysys. They have a lot of work in the Oil & Gas area. We should work with them to show the benefits of A+ ASAP over Hysys and emphasize our relationship with BRE (TSWEET)." CX0219 at 003.

Although Hyprotech had the dominant market share in oil and gas simulation software licenses prior to the Acquisition, AspenTech had improved its simulation software capability to attract oil and gas processing industry customers. CX0073 at 038; CX0077 at 003; CX0750 at 001. The Acquisition eliminates the competitive vigor that caused Hyprotech to plan "a campaign of defence [sic] to give Aspen a bloody nose." CX0014 at 039. For example, to better serve oil and gas customers' needs and in response to AspenTech, Hyprotech linked HYSYS 3.0 with an add-on module produced by another company to give "Hyprotech customers the ability to model the complete Gas Plant or Refinery. This is an equal if not better offering compared to

Aspen + TSWEET." CX0494 at 002. Hyprotech aimed to garner a "premium" for these kinds of "vertical maket solutions." CX0058 at 007. Now Respondent is free to segment oil and gas customers from other customer groups: "By focussing [sic] on industry verticals, we have segmented our market in a manner that prohibits users from crossing over, and we can price discriminate more effectively." CX0742 at 001 (Hyprotech, pre-acquisition). [

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b. Downstream Refining Customers.

Customers benefitted from AspenTech and Hyprotech competition to take market share in refining. CX0092 at 012 ("Winning the Race after SimSci's market with AES"); CX0803 at 030 ("Aggressive sales and services campaign to establish HYSYS.Refinery as the simulation platform market leader . . . [SimSci] is very vulnerable"). The competition between AspenTech and Hyprotech to take SimSci's customers led to lower prices and increased innovation. CX0031 at 014 (SimSci "weakness" "Normally a higher price."). For example, when Tesoro felt that it was not getting the best deal for its simulation software, it solicited AspenTech for a bid on Aspen Plus, Aspen Dynamics and TSWEET. CX0233 at 002 ("Hyprotech is pursuing a corporate license with Tesoro, but so far we've rejected it over individual site licenses based on total cost."). Similarly, both AspenTech and Hyprotech sought to take all of the Phillips (standardized on Aspen Plus) and Conoco (standardized on HYSYS) refining business from the other when those companies merged. *See generally* CX0150 (Hyprotech); CX0212 at 003 (AspenTech).

c. Chemical Customers.

Chemical customers, but for the merger, would have continued to enjoy the benefits of aggressive competition between AspenTech and Hyprotech. *See, e.g.*, CX0455 at 002 ("quite a lot of people in Sasol would be pleased with a bigger share of Hyprotech products . . . finishing with years of Aspentech 'monopoly.'"). For example, Hyprotech in a strategy session to deal with AspenTech's inroads into Hyprotech's customer base, recommended: "Predatory pricing of HYSYS (with electrolytes) in the Bulk Chemicals market." CX0063 at 005. After the Acquisition, AspenTech's planning documents expressly outlined a narrow market strategy

where it sold customers "Business Process Suites for vertical industries." CX0718 at 012. HYSYS would serve as the simulation and optimization engine behind "Aspen Petroleum," while Aspen Plus's "vertical focus" would be in the chemicals vertical. CX0718 at 019; CX0848 at 003. AspenTech has already repositioned Aspen Plus as its only offering for chemical industry simulation. [

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d. Air Separation Customers.

AspenTech can now raise prices discriminate to air separation companies because it no longer faces competition from Hyprotech, its only competitor to air separation companies. CX0028 at 10 (AspenTech noting that they were facing "growing HYSYS usage in all of our markets, e.g., 85 users at Linde"). Pre-merger, for example, Hyprotech noted that Air Products, even after standardizing on AspenTech simulation products, "left the door open" to Hyprotech "in an effort to hedge against sole supplier issues." CX0386 at 002. Because only AspenTech and Hyprotech supplied continuous simulation software with the necessary tool-set for air separation, the ability to price discriminate to these customers was only limited by the customers' ability to "arbitrage" by using a broader competitor set for the air processing companies' E&C business. Now that AspenTech controls both possible continuous simulation software products, customers' ability to arbitrage is largely if not totally lost. Thus, after the acquisition, several air separation companies realized that they no longer had any alternative to AspenTech for continuous simulation software and raised concerns about decreased competition.[45]

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[44] [

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[45] CX0392 at 003 ("There is a lot of concern at [Praxair] right now about Aspen having monopoly pricing power."); CX0535 at 007 (Air Products expressed "concern about lack of competition"); CX0535 at 035 (For Linde, "pricing still a concern. Perceived lack of competition is a topic that is present.").

3. Effects in the Market for Batch Simulation Software.

Prior to the acquisition, AspenTech and Hyprotech were the only two significant suppliers in the emerging market for batch simulation software. AspenTech was the leader in the market and recognized Hyprotech as its only challenger. As a result, both companies were actively developing better batch simulation software and engaging in aggressive sales activities in trying to win over the market. *See* Section III.A.3. Customers clearly benefitted from this competition by receiving more innovative products at lower prices. Post-acquisition, AspenTech concluded that either Batch Plus or BDK would be able to [ ] CX0102 at 006. With ownership of both product lines, however, AspenTech no longer needs to compete with Hyprotech to produce a competitively priced, innovative product to capture the market. Instead, AspenTech has put Hyprotech's BDK into "maintenance mode", ceasing to actively innovate and market the product because of its overlap in functionality with Batch Plus. CX1009 at 022, 026 (Kotzabasakis Dep. 82, 98); [ ]. Consequently, the combination of AspenTech and Hyprotech has eliminated the pre-merger competition that resulted in lower prices, enhanced products and reduced actual customer choice in the market for batch simulation software.

4. Effects in the Market for Integrated Engineering Software.

AspenTech has already placed AXSYS in "maintenance mode," meaning that it is neither actively innovated nor sold. [ ]; CX1009 at 022 (Kotzabasakis Dep. at 82-3); [ ]. Prior to the Acquisition, AspenTech and Hyprotech competed in the market for integrated engineering software and AspenTech's contemporaneous business documents show that AspenTech and Hyprotech viewed each other as the only competition in this market. The incumbent (AspenTech) and the challenger (Hyprotech) both were actively developing and selling their software to gain market share in a developing product market. *See* Section III.A.4. As a result, customers benefitted by receiving greater innovation at lower prices. With the integrated engineering products of AspenTech and Hyprotech under one roof, it eliminated competition and customer choice for integrated engineering software.

As early as the first attempt to buy Hyprotech in 2001, AspenTech planned to [

] in the event of an acquisition of Hyprotech. CX0194 at 054. Soon after the acquisition occurred, AspenTech recommended [ ]

. CX0156 at 003 ([

] CX0695 at 001.

5. SimSci Is Unlikely to Constrain AspenTech Pricing in Any Market.

> *About SIMSCI I agree with you on the two possible approaches, and I fully agree that we don't need to go down the price war road. Right vision is the way to go. We are playing on [sic] a different league here.*
>
> – CX0295 at 002 (Cesc Batlle, Hyprotech President European Middle East and Africa Sales).

Post-acquisition, SimSci is a weak second in engineering simulation software.[46] Pre-acquisition, SimSci "acknowledge[d] Hyprotech in 2nd position after AspenTech. They acknowledge as well that they need to 'regain' market share. They acknowledge that Hyprotech's and AspenTech's products are far more superior. They see that the times when . . . their science and technology was the best has gone. The [sic] recognise [sic] that both Hyprotech and Aspen science and engineering technology are at the same level or superior in the [sic] SimSci's core markets." CX0360 at 001. SimSci, suffering from years of market share erosion due to its failure to follow AspenTech's and Hyprotech's commitments to technical innovation and product development, is unable to competitively constrain AspenTech on pricing or potential

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[46] [

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innovation decreases. Hyprotech succinctly dismissed SimSci's impact on the combined AspenTech and Hyprotech: "On the subject of clients buying SIMSCI because of the dominant position of 'New Aspen' I have two thoughts: We can destroy SIMSCI if we compete with them on price . . . My preferred strategy is to say that we don't view SIMSCI as a competitor." CX0295 at 002.

Consistent with Hyprotech's pre-acquisition offers to SimSci (CX0436; CX0468 at 002-3, CX0587 at 001), AspenTech might simply allow SimSci to retain its existing customer base, ignoring the company, as suggested by Cesc Batlle immediately prior to the merger. CX0295 at 002 ("About SIMSCI . . . I fully agree that we don't need to go down the price war road. . . . We are playing on [sic] a different league here.").

Customers may decide to support SimSci with some business to "represent at least a modicum of competition for AspenTech." [ ]. Nonetheless, this would be a higher cost option if SimSci's technology is behind that of AspenTech and Hyprotech. [

]).[47] Similarly, [ ] one of Respondent's witnesses, described the competitive landscape: [

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6. The Acquisition Has Already Resulted in Anticompetitive Effects.

Complaint Counsel are not required to demonstrate that the Acquisition has already led to actual anticompetitive conduct or post-acquisition price increases to sustain a Section 7 challenge to this Acquisition. *Hospital Corp.*, 807 F.2d at 1389. Nonetheless, proof of actual

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[47] [

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[48] *See also* CX1126 at 002 (Citgo); CX1156 at 001 (Cytec); CX1330 at 016 (Rohm and Haas).

anticompetitive effects is sufficient to establish that the Acquisition is likely to lessen competition. *General Dynamics*, 415 U.S. at 505, n.13 ("[P]ost merger evidence showing a lessening of competition may constitute an 'incipiency' on which to base a divestiture suit . . ."); *FTC v. Toys "R" Us Inc.*, 221 F.3d 924, 937 (7th Cir. 2000). Nonetheless, as predicted by Respondent in contemporaneous pre-acquisition business documents and substantiated by economic theory, the elimination of AspenTech's closest competitor already has resulted in likely anticompetitive effects.

One might expect that a company is unlikely to engage in illegal behavior while under investigation. Indeed there is evidence that AspenTech employees specifically attempted to delay such behavior in the short term. Because AspenTech knew of the many customer concerns over the exercise of monopoly power, especially prevalent just after the announcement of the Acquisition, AspenTech has tried to hide such behavior. For example, an AspenTech document post-merger notes: "We don't want the perception we would be increasing our prices . . . SMS increase from 19% to 20% moderate." CX0108 at 020. Another document indicates that management specifically forbade post-merger fee changes or mentioning fee changes to customers without the approval of management. CX0151 at 002.[49]

The announcement of the Acquisition caused Hyprotech and AspenTech employees to question the prices of competing offers from Hyprotech and AspenTech that were still pending at some customers. After the merger, the combined firm's sales personnel were directed to "coordinat[e] closely to make sure that the customer doesn't use our offers against each other to minimize the $$." CX0243 at 002. "Obviously, if we finally leave the two options on the table, we should make a point of the strategy to win the projects, to ban discounts from any of the two sides, such that we don't diminish the company's $$." CX0244 at 003. Absent the merger, the

[49] Efforts to avoid the appearance of post-merger anticompetitive effects during the FTC investigation of the merger have extended beyond pricing issues. For example, in April 2003, AspenTech staff questioned whether software development decisions should be modified because of the FTC investigation. CX0688 at 010. [
] CX0604 at 001.

customer likely would have benefitted through price discounts or other concessions that AspenTech and Hyprotech would have offered in competition with each other.[50]

A focus of AspenTech's post-merger pricing policy was to [

] CX0184 at 015 (Emphasis in original). AspenTech's approach to discounting shifted after the merger. "We implemented discipline in the organization. We adopted the Hyprotech discounting process, which is a well-disciplined process." CX1008 at 049-50 (Sim Dep. at 193-94). SimSci documents also report that AspenTech likely increased the prices for Hyprotech products after the merger.[51] One such document states: "Significant pricing change for Hyprotech clients ~ 100-300% increases reported by clients." CX1342 at 007 (SimSci). This is consistent with the experience of one small refiner, NCRA, which faced a 218% price increase by the sixth year of a renewal contract offer. CX1230.

As discussed above, AspenTech used the threat of post-acquisition price increases to get customers to sign early renewal contracts. *See supra* page 34. There is no way to determine just how many of these threats were delivered and how many were successful. The evidence does show, however, that Respondent used a new licensing mechanism ("token licensing") to offer customers the "benefit" of licensing both companies' products, but only with the expectation of raising prices down the road. *See, e.g.*, CX0628 at 001 [

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AspenTech planned to have customers [

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[50] For example, discussing the Phillips Petroleum contract, Hyprotech noted "[t]he consequence of not acting [pre-acquisition] could result in a complete re-negotiation of an ASPEN contract with Phillips. I would not envision that this would be completed at more favourable [sic] pricing for Phillips Petroleum Company." CX0496 at 010.

[51] CX1335 at 002 (SimSci) ("I would note that Hyprotech was always lower priced than [AspenTech] and us . . . [t]hat lower pricing is being removed by" AspenTech.); CX1347 at 004 (SimSci) ("Hyprotech's increased pricing"), 007 ("With the acquisition by Aspen, . . . Aspen management is forcing increases in net prices for the Hyprotech prices."); CX1342 at 005 (SimSci) (Hyprotech "[u]sed to be low price alternative, now part of [AspenTech] higher pricing.").

AspenTech increased prices for continuous simulation software by applying whichever of the two companies' pricing was higher. For example, Respondent planned to apply AspenTech's standard pricing for on-site Hyprotech training programs in December 2002. This increase was greater than the difference in list prices because "under the old Hyprotech model this training was often given away as a sales incentive to drive license revenue." CX0197 at 002. Similarly, documents as recent as [

]. RX-0182 at 023; CX0214 at 035-36. AspenTech also proposed [

]. CX0214 at 022 ([

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There is ample evidence of actual or likely price increases post-acquisition. For example:

- *Repsol*: "Raising MSU to Repsol (or any other customer) can be done and doesn't have repercussions anywhere else. Let's move ahead." CX0325 at 001 (6/13/02);

- *Kvaerner:* "Their existing deals have been hugely discounted — between 50% and 90% discount. What we propose is the removal of this discount and a token mechanism to dictate the number of licenses available." CX0334 at 001. Salva Clave, Chief Operating Officer at Hyprotech wrote: "If they don't want to sign now . . . they can wait and face the new company after [the acquisition] . . . Let's NOT give a discount." CX0329 at 001 (5/17/02);

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- *SNC-Lavalin:* "I [a representative of SNC-Lavalin] hereby acknowledge having received verbal notice that as of June 1st 2002 our maintenance and support fee (MSU) will be increased . . . in about 28 months, you unilaterally increased our MSU by a factor of 3.1. This was done without our consent and without providing us with any additional value." CX0348 at 001; CX0349 (5/31/02);

- *[ ]*: After the merger, AspenTech notified *[ ]* that the price for its annual maintenance contract on its existing 20-year license for HYSYS.Process would increase by 79%. CX0493 at 002, 005 (10/1/02);

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- *NCRA*: Proposed software package price increased by 63% in year one following the merger and by 218% in year six following the merger. CX1230 (NCRA) (10/21/02).

F. AspenTech Cannot Meet its Burden of Establishing that the Acquisition Will Enhance Competition by Producing Cognizable Efficiencies.

The Commission considers appropriate efficiencies in evaluating a merger's likely competitive effect. *Merger Guidelines* § 4.0. Efficiencies must be merger-specific and cognizable. Merger-specific efficiencies are those "likely to be accomplished with the proposed merger and unlikely to be accomplished in the absence of either the proposed merger or another [practical] means having comparable anticompetitive effects." *Id.* § 4.0. Cognizable efficiencies are those that have "been verified and do not arise from anticompetitive reductions in output or service." *Id.* "[G]iven the high concentration levels, the court must undertake a rigorous analysis of the kinds of efficiencies being urged by the parties in order to ensure that those 'efficiencies' represent more than mere speculation and promises about post-merger behavior." *Heinz,* 246 F.3d at 721. Moreover, "[e]fficiencies almost never justify a merger to monopoly or near-monopoly." *Merger Guidelines* § 4.0.

Respondent flatly denied the allegations contained in the Complaint, and never offered any comprehensive efficiency claim. *See generally* Answer. Based on its expert report, Respondent's purported efficiencies appear to fall into three broad categories: headcount reductions, real estate savings, and new product development. The evidence will show that the claimed efficiencies are not likely to benefit consumers, are speculative,[52] and can be achieved through means with fewer anticompetitive effects than the Acquisition. Therefore, efficiencies are not a defense to the anticompetitive effects likely to result from the Acquisition. *See Cardinal,* 12 F.Supp. 2d at 62.

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[52] Speculative claims are not countenanced. *Merger Guidelines* § 4.0. AspenTech identified as one of its "Risk Factors" in SEC filings that "[w]e have experienced in the past, and may experience again in the future, problems integrating the operations of a newly acquired company with our own operations." *See, e.g.*, CX0652 at 038. Similarly, AspenTech identified one of the "Characteristics of Successful Acquisitions" as "Little Product Overlap," suggesting any efficiencies here are unlikely, not just speculative. CX0528 at 009.

Respondent's purported cost savings cannot be credited for at least two reasons.[53] First, they will not overcome the injury to competition resulting from the Acquisition. The Acquisition is a near merger to monopoly in numerous relevant markets in which substantial unilateral anticompetitive effects are likely. Without Hyprotech's competitive rivalry, the forces that have driven price competition and spurred innovation are impermissibly diminished. lost. *See United States v. United Tote, Inc.*, 768 F.Supp. 1064, 1084-85 (D. Del. 1991) (rejecting efficiency defense in merger to duopoly; efficiencies insufficient to outweigh loss of competition since "even if the merger resulted in efficiency gains, there are no guarantees that these savings would be passed on to the consuming public."); *Merger Guidelines* § 4.0.

Second, Respondent must also show that the efficiencies are specific to the Acquisition. Respondent's efficiency claims fail because any of the cost savings they attribute to the acquisition could have equally been achieved by cost cutting measures that do not adversely affect competition. Although mergers "have the potential to generate significant efficiencies," the *Guidelines* specifically caution against efficiencies "such as those relating to research and development, . . . generally less susceptible to verification and may be the result of anticompetitive output reductions." *Merger Guidelines* § 4.0; *see also FTC v. Coca-Cola Co.*, 641 F.Supp. 1128, 1141 (D.D.C. 1986); vacated as moot, 829 F.2d 191 (D.C. Cir. 1987) (efficiencies, insofar as they benefit customers, were to be "developed by dominant concerns using their brains, not their money by buying out troubling competitors.").

G. Divestiture and Other Relief Are Needed to Restore Competition That Would Have Occurred But For the Illegal Acquisition.

The purpose of an antitrust remedy is to restore competition. The Commission has "wide discretion" in its choice of remedy, *see Atlantic Refining Co. v. FTC*, 381 U.S. 357, 376 (1965), with all doubts resolved in the government's favor. *United States v. E.I. du Pont de Nemours & Co.*, 366 U.S. 316, 334 (1961). For violations of Section 7 of the Clayton Act, divestiture is favored – it "is simple, relatively easy to administer, and sure." *Id.* at 329-31. Divestiture of assets and intellectual property beyond what was acquired is appropriate if necessary to put the

[53] Respondent's efficiency claims also cannot be credited where the purported cost savings comes from reductions in competition, *e.g.*, no longer innovating against one other or reducing the sales force.

new competitor "in the same *relative* competitive position" as the acquired firm when it was independent, *Utah Public Serv. Comm v. El Paso Natural Gas Co.*, 395 U.S. 464, 470 (1969) (Emphasis added).

The appropriate remedy to AspenTech's illegal Acquisition is divestiture of a free-standing business that will replace the relative competitive position of Hyprotech but for the merger. Such a divestiture would include Hyprotech and all related assets and intellectual property (as constituted at the time of divestiture) necessary to restore competition lost as the time of the acquisition and that likely would have developed absent the acquisition. A divestiture of Hyprotech (rather than a clone of the combined AspenTech/Hyprotech engineering products) is feasible and preferable. The most significant AspenTech and Hyprotech pre-acquisition products in the relevant markets have been maintained and supported (and in some instances, improved) since the Acquisition. Divestiture is preferable because it creates an independent competitor rather than a licensee of an existing firm.

Certain minimum elements are needed for an effective divestiture. For example, the acquirer should be offered exclusive rights to the former Hyprotech intellectual property and a perpetual, non-exclusive right to all post-merger improvements of such products. This is necessary to ensure that the divested business is viable and to preserve incentives to improve the Hyprotech products post-divestiture.[54] The divestiture must also include the customer contracts (license and maintenance) for former Hyprotech products since these customers and revenue streams are needed to make the new company viable. Also, the remedy may need to include for a transition period a requirement that AspenTech maintain existing interfaces. Otherwise, AspenTech could threaten the viability of the divested business by diminishing its ability to bring the acquired software up to the current commercial standards that Hyprotech likely would have attained but for the Acquisition.

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[54] For any Hyprotech product that was discontinued or not updated post-acquisition, the acquirer should receive a choice between the AspenTech intellectual property sufficient to update the Hyprotech product or a perpetual, no-cost license to use and further develop the AspenTech product (as it exists at the time of divestiture) that replaced the discontinued or outdated Hyprotech product. The acquirer would then be free to enhance, further develop and introduce a viable replacement for the discontinued Hyprotech product if there is demand for the product.

To ensure the new Hyprotech will be a viable competitor, additional provisions may be needed to allow the acquirer to recruit and hire existing AspenTech employees, particularly former Hyprotech managers and AspenTech employees who have been working on customer service, quality control, sales, software updates, and software improvements.[55] In addition, the divestiture order should also allow customers of pre-merger AspenTech products to switch to the acquirer without financial penalty or disincentives during a specified transition period. This includes eliminating restrictions or disincentives to terminate or rescind contracts between AspenTech and customers wishing to switch to the acquirer. All payments received by AspenTech for long-term licenses for divested products should be treated as pre-paid consideration and returned to customers wishing to switch.

Additionally, in order to prevent additional risk of coordinated interaction between AspenTech, the acquirer and SimSci, correspondence or meetings between AspenTech, the acquirer and SimSci should not be allowed without prior notice to the FTC. Further, no AspenTech discussions or offers of co-marketing, joint ventures or mergers should take place involving any of the above-mentioned firms without the prior approval of the FTC. Finally, AspenTech should be required to cease and desist from any horizontal agreements with competitors to prevent or deter standards-setting organizations from adopting standards that benefit consumers.

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[55] This is especially necessary because AspenTech has purged its sales and engineering staff and thus potentially reserved the best engineers and sales force for itself.

IV. CONCLUSION

[T]here is a substantial probability that the FTC will prevail in its challenge to our acquisition of Hyprotech.

– Aspen Technology, Inc. SEC 10Q filing for the quarter ended December 31, 2003 at 10.

AspenTech's acquisition of Hyprotech may substantially lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act and Section 5 of the FTC Act. Remedying these violations by restoring the level of competition that would have occurred but for the illegal Acquisition requires that AspenTech (1) divest all of the acquired Hyprotech assets and intellectual property, all newly developed intellectual property related to the Hyprotech assets and intellectual property and any other intellectual property necessary to remedy the halt of product development and product withdrawal from the market that occurred; (2) allow customers to rescind existing contracts and allow employees freely to join the acquirer of the divested business; and (3) adhere to reasonable constraints and reporting requirements on communications and horizontal agreements with competitors.

Respectfully submitted,

/s/

_____

Peter Richman
Vadim M. Brusser
Lesli C. Esposito
Dennis F. Johnson
Mary N. Lehner
Charlotte Manning

Counsel Supporting the Complaint

Bureau of Competition
Federal Trade Commission
Washington, D.C.

Dated: May 5, 2004

CERTIFICATE OF SERVICE

I, Evelyn J. Boynton, hereby certify that I caused a copy of the public version of the attached Complaint Counsel's Unopposed Application Motion for the Issuance of Subpoenas *Ad Testificandum* to be delivered this day:

By hand delivery:

Hon. Stephen J. McGuire
Chief Administrative Law Judge
Federal Trade Commission
Room H-112
600 Pennsylvania Ave., N.W.
Washington, D.C. 20580

By electronic mail and by hand delivery:

Donald S. Clark, Secretary
Federal Trade Commission
600 Pennsylvania Ave., NW, Rm. H-159
Washington, D.C. 20580

By electronic mail and by first class mail to:

Mark W. Nelson
George S. Cary
Cleary, Gottlieb, Steen & Hamilton
2000 Pennsylvania Ave., N.W.
Washington, D.C. 20006
mnelson@cgsh.com
gcary@cgsh.com

/s/

Evelyn J. Boynton
Merger Analyst
Federal Trade Commission

Dated: May 13, 2004

021 0153

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION

COMMISSIONERS: Timothy J. Muris, Chairman
Mozelle W. Thompson
Orson Swindle
Thomas B. Leary
Pamela Jones Harbour

In the Matter of	)	
	)	Docket No. 9310
ASPEN TECHNOLOGY, INC.	)	

COMPLAINT

The Federal Trade Commission ("Commission"), having reason to believe that Aspen Technology, Inc. ("AspenTech"), a corporation subject to the jurisdiction of the Commission, acquired Hyprotech Ltd., ("Hyprotech"), in violation of Section 5 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 45 and Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18; and that a proceeding by the Commission in respect thereof would be in the public interest, hereby issues its complaint, stating its charges as follows:

I. Respondent AspenTech

1. Respondent AspenTech is a for-profit corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its principal place of business located at Ten Canal Park, Cambridge, Massachusetts 02141.

2. AspenTech is a developer and worldwide supplier of manufacturing, engineering, and supply chain simulation computer software, including non-linear process engineering simulation software used by the refining, oil & gas, petrochemical, specialty chemical, air separation, pharmaceutical, fine chemical and other process manufacturing industries and by engineering and construction companies to support those industries. AspenTech has long offered steady state and dynamic process engineering simulation software under the Aspen Plus trade name and a suite of complementary products within its Aspen Engineering Suite. In fiscal year 2002, AspenTech reported an $83.5 million loss on revenues of over $320 million.

3. Respondent AspenTech is, and at all times relevant herein has been, engaged in

commerce as defined in Section 1 of the Clayton Act, as amended, 15 U.S.C. § 12, and is a corporation whose business is in or affects commerce as defined in Section 4 of the Federal Trade Commission Act, as amended, 15 U.S.C. § 44.

II. The Acquisition of Hyprotech

4. Prior to the acquisition by Respondent, Hyprotech was a wholly-owned operating division of AEA Technology plc., a corporation organized, existing and doing business under and by virtue of the laws of the United Kingdom. Hyprotech was headquartered in Calgary, Canada, with offices in the United States and other parts of the world.

5. Since its founding in 1976, Hyprotech had been a developer and worldwide supplier of manufacturing, engineering and supply chain simulation computer software, including nonlinear process engineering simulation software used by the refining, oil & gas, petrochemical, specialty chemical, air separation, pharmaceutical, fine chemical and other process manufacturing industries and by engineering and construction companies to support those industries. Hyprotech offered steady state and dynamic process engineering simulation software under the HYSYS trade name and a suite of complementary products within its HYSYS engineering suite of products. In fiscal year 2002, Hyprotech had revenues of approximately $68.5 million.

6. On or about May 31, 2002, Respondent acquired Hyprotech for approximately $106 million ("the Acquisition"). The transaction was not reportable under the Hart-Scott-Rodino Act.

III. Trade and Commerce

7. Process industries are those in which a chemical continuous or batch process is used to produce intermediate or finished consumer products. Continuous process industries include hydrocarbon, chemical and air separation industries. Batch process industries include the pharmaceutical and fine chemical industries.

8. Flowsheet simulation software, using non-linear variables, mathematically models a process, creating a virtual plant on a personal computer. Flowsheet programs are the backbone of process simulation and optimization software. The flowsheet, using established chemical engineering properties or "1st Principles," accurately predicts what happens in a process unit or system. Through a graphical interface, the flowsheet allows its user to take into account the process units in a plant, the dynamics between units and the chemistry of the processed materials. Such computer simulations improve engineering design, reduce capital investment, lower the cost of inputs and optimize production levels and potentially shorten the time to market for new products.

9. There are two fundamental types of flowsheets: steady-state and dynamic. Steady-state

flowsheets model a process at one point in time; they are snapshots of a plant operating at its intended optimum. Aspen Plus (AspenTech), HYSYS.Process (Hyprotech) and Pro/II (Simulation Sciences (SimSci)) are the most widely used steady-state flowsheets to model continuous process industries. In dynamic simulation, the flowsheet models the same variables as the steady state simulation, adding the ability to measure the effect of changes over time. A flowsheet with dynamic capabilities can model start-ups, shutdowns, upsets and changes that occur in a continuous process over time. Aspen Plus with Aspen Dynamics and HYSYS with the dynamic option are the two leading dynamic simulators for continuous process industries. Both Aspen Dynamics and the HYSYS dynamic option require customers to purchase the steady-state flowsheet to access the dynamic.

10. Flowsheets are designed to rigorously represent the processes that they simulate. The mathematic rigor necessary to model reactions and interactions in the process industries makes these programs very slow to solve any given question. For this reason, they have limited utility in solving plant-wide optimization exercises. Prior to the Acquisition, next-generation flowsheet solutions – non-linear simulators that can solve whole plant optimization questions in an economically reasonable time-frame – were in commercial release and on-going development by Hyprotech and AspenTech.

11. Batch process simulation is the modeling of processes that entail a single production run with a finite beginning and end. With a batch process, a manufacturer combines a set of ingredients in a single piece of equipment that performs multiple tasks to arrive at a finished substance. Batch process differs from continuous process in that continuous process experiences an ongoing flow of inputs and outputs. Batch flowsheet simulation software is essentially continuous flowsheet simulation tailored expressly for batch processes. Batch process software is particularly suited to pharmaceutical and fine chemical production. Prior to the Acquisition, BatchPlus from AspenTech was the leading batch simulator ahead of the BaSYS suite from Hyprotech.

12. Many customers of flowsheet simulation software have operations in multiple process industries and therefore license software for more than one industry. For example, many engineering and construction companies design both hydrocarbon process plants and chemical plants. Those companies license flowsheet software for both industries. Other engineering and construction companies may be engaged in only one discrete industry and thus license flowsheet software for only that industry. For example, some engineering and construction companies are involved solely in air separation and license flowsheet software for only that industry. However, there are large, vertically integrated companies that license software that is used in all parts of hydrocarbon and chemical processes. Whether they license software for application to many process industries or one specialized industry, there are still only three companies that license the necessary software: AspenTech, Hyprotech and SimSci.

13. Integrated engineering software gathers information generated from process engineering

software and allows users to store, update and retrieve data depending on their needs. The software allows for the more efficient use of process engineering tools. Prior to the Acquisition, AspenTech's Zyqad was the leading application for these uses and Hyprotech's integrated engineering product, AXSYS, was in development and ready for release to committed buyers.

14. Prior to the Acquisition, competition between AspenTech and Hyprotech to develop, license and support continuous and batch process engineering simulation flowsheet software and integrated engineering software was direct and vigorous and helped to hold down prices and to promote product innovation.

IV. Relevant Product Markets

15. Relevant product markets in which to assess the likely effects of the Acquisition are:

a. continuous process engineering simulation flowsheet software for process industries;

b. continuous process engineering simulation flowsheet software for upstream oil and gas process industries;

c. continuous process engineering simulation flowsheet software for downstream refining process industries;

d. continuous process engineering simulation flowsheet software for chemical process industries;

e. continuous process engineering simulation flowsheet software for air separation process industries;

f. batch process engineering simulation flowsheet software for process industries; and

g. Integrated engineering software for process industries.

V. Relevant Geographic Market

16. The relevant geographic market in which to assess the likely effects of the Acquisition in each of the relevant product markets is the world.

VI. Concentration

17. Each of the relevant product markets is highly concentrated.

18. Prior to the Acquisition, AspenTech and Hyprotech were direct and actual competitors in the development, license and support of continuous and batch process engineering simulation flowsheet software in each of the relevant product markets. AspenTech and Hyprotech competed with each other on price and service, and competed through innovation to provide software that would enhance the efficiency and performance of customers' process plants.

19. The Acquisition combined the two most significant and closest competitors providing continuous process engineering simulation flowsheet software. AspenTech documents admit a share post-acquisition between 67% and 80% of the continuous process flowsheet market. The Acquisition may create a worldwide dominant firm in continuous process engineering simulation flowsheet software.

20. The Acquisition combined the two most significant and closest competitors providing continuous process engineering simulation flowsheet software to upstream oil and gas process industries. The Acquisition may create a worldwide dominant firm in continuous process engineering simulation flowsheet software for upstream oil and gas process industries.

21. The Acquisition combined the two most significant and closest competitors providing continuous process engineering simulation flowsheet software to downstream refining process industries. The Acquisition may create a worldwide dominant firm in continuous process engineering simulation flowsheet software for downstream refining process industries.

22. The Acquisition combined the two most significant and closest competitors providing continuous process engineering simulation flowsheet software to chemical process industries. The Acquisition may create a worldwide dominant firm in continuous process engineering simulation flowsheet software for chemical process industries.

23. The Acquisition combined the two most significant and closest competitors providing continuous process engineering simulation flowsheet software to air separation process industries. The Acquisition may create a worldwide dominant firm in continuous process engineering simulation flowsheet software for air separation process industries.

24. The Acquisition combined the two largest and closest competitors providing batch process engineering simulation flowsheet software. The Acquisition may create a worldwide dominant firm in batch process engineering simulation flowsheet software.

25. Prior to the Acquisition, AspenTech and Hyprotech were direct and actual competitors in the development, license and support of integrated engineering software for process industries. AspenTech and Hyprotech competed with each other on price and service, and competed through innovation to provide software that would enhance the efficiency and performance of customers' process plants.

26. The Acquisition combined the two firms providing integrated engineering software for process industries. The Acquisition may create a worldwide dominant firm in integrated engineering software for process industries.

27. At the time of the Acquisition, Respondent, Hyprotech and SimSci were the only providers of a substantial, if not complete, set of features and capabilities in process engineering simulation software. SimSci had been losing market share to Hyprotech and AspenTech since the mid-1990s.

VII. Conditions of Entry

28. Entry into the licensing, sale, development and enhancement of the relevant product markets would not be timely, likely or sufficient in its magnitude, character and scope to deter or counteract anticompetitive effects of the Acquisition. Customers consider supplier reputation key to purchase decisions in each of the relevant markets. Customers are reluctant to engage the services of a new entrant because of the potential economic loss associated with simulation software bugs and potential loss of legacy data. Entry is difficult because of the substantial cost and time needed to develop, validate and establish a reputation for reliability.

VIII. Anticompetitive Effects of the Acquisition

29. The Acquisition may substantially lessen competition in the following ways, among others:

    a. it eliminates actual, direct and substantial competition between AspenTech and Hyprotech, which both had the ability and incentive to compete, and before the acquisitions did compete, on price and product development and enhancements;

    b. it increases the level of concentration in the relevant markets;

    c. it eliminates price competition between AspenTech and Hyprotech and may lead to reduced price competition, leading to increased prices;

d. it eliminates innovation competition between AspenTech and Hyprotech and may lead to reduced innovation competition, withholding or delaying product development and enhancements;

e. it enhances AspenTech's power to raise prices above a competitive level;

f. it may give AspenTech market power in the relevant markets;

g. it may allow AspenTech unilaterally to exercise market power in the relevant markets, through the combination of AspenTech and Hyprotech, the two closest competitors on price and innovation;

h. it prevents other suppliers of process engineering or supply chain software from acquiring Hyprotech and increasing competition; and

i. it creates a single entity that could undermine the ability of open standard setting organizations to decrease barriers to entry, thereby limiting innovation and third-party entry to provide niche applications except with AspenTech approval.

IX. Violation Charged

30. The allegations contained in paragraphs 1 through 29 are repeated and realleged as though fully set forth here.

31. The effect of the Acquisition may be substantially to lessen competition or tend to create a monopoly in violation of Section 7 of the Clayton Act, as amended, 15 U.S.C. § 18, and Section 5 of the FTC Act, as amended, 15 U.S.C. § 45.

32. Respondent's acquisition of Hyprotech will continue to cause, absent the relief described in the attached Notice of Contemplated Relief, the anticompetitive effects identified above.

NOTICE

Proceedings on the charges asserted against you in this complaint will be held before an Administrative Law Judge ("ALJ") of the Federal Trade Commission, under Part 3 of the Commission's Rules of Practice, 16 C.F.R. § 3.1 *et seq.* A copy of Part 3 of the Rules is enclosed with this complaint.

You may file an answer to this complaint. Any such answer must be filed within 20 days after service of the complaint on you. If you contest the complaint's allegations of fact, your answer must concisely state the facts constituting each ground of defense, and must specifically admit, deny, explain, or disclaim knowledge of each fact alleged in the complaint. You will be deemed to have admitted any allegations of the complaint that you do not so answer.

If you elect not to contest the allegations of fact set forth in the complaint, your answer shall state that you admit all of the material allegations to be true. Such an answer shall constitute a waiver of hearings as to the facts alleged in the complaint and, together with the complaint, will provide a record basis on which the ALJ will file an initial decision containing appropriate findings and conclusions and an appropriate order disposing of the proceeding. Such an answer may, however, reserve the right to submit proposed findings and conclusions and the right to appeal the initial decision to the Commission under Section 3.52 of the Commission's Rules of Practice.

If you do not answer within the specified time, you waive your right to appear and contest the allegations of the complaint. The ALJ is then authorized, without further notice to you, to find that the facts are as alleged in the complaint and to enter an initial decision and a cease and desist order.

The ALJ will schedule an initial prehearing scheduling conference to be held not later than 14 days after the last answer is filed by any party named as a respondent in the complaint. Unless otherwise directed by the ALJ, the scheduling conference and further proceedings will take place at the Federal Trade Commission, 600 Pennsylvania Avenue, N.W., Washington, D.C. 20580. Rule 3.21(a) requires a meeting of the parties' counsel as early as practicable before the prehearing scheduling conference, and Rule 3.31(b) obligates counsel for each party, within 5 days of receiving a respondent's answer, to make certain intial disclosures without awaiting a formal discovery request.

A hearing on the complaint will begin on November 6, 2003, in Room 532, or such other date as determined by the ALJ. At the hearing, you will have the right to contest the allegations of the complaint and to show cause why a cease and desist order should not be entered against you.

NOTICE OF CONTEMPLATED RELIEF

Should the Commission conclude from the record developed in any adjudicative proceedings in this matter that the acquisition challenged in this proceeding violates Section 7 of the Clayton Act, as amended, or Section 5 of the Federal Trade Commission Act, as amended, the Commission may order such relief against respondent as is supported by the record and is necessary and appropriate. Such relief may include, but is not limited to, an order to:

1. Cease and desist from any action to effect the acquisition or continued holding by AspenTech of any assets or businesses of Hyprotech.

2. Rescind the acquisition.

3. Reestablish two distinct and separate, viable and competing businesses, one of which shall be divested by AspenTech to a buyer acceptable to the Commission, engaged in the design, license and continued development and support of all of the lines of commerce

alleged in the complaint, including but not limited to:

a. divesting all Hyprotech software, intellectual property, contract rights, and other assets for the operation of such business, including but not limited to all Hyprotech applications, features, enhancements, and library functions for all operating systems and computer platforms, source code, object libraries, executable programs, model development, test problems, test results, development support software, trade secrets, trademarks, patents, know-how, interfaces with complementary software, APIs, manuals, guides, reports, and other documentation;

b. divesting, replacing and reconstituting all research and development, improvements to existing products and new products developed by AspenTech or Hyprotech, and such other businesses as necessary to ensure each of their viability and competitiveness in the lines of commerce alleged in the complaint and each possessed;

c. reconstituting and divesting customer contracts; and

d. facilitating the acquirers' recruitment of Respondent's employees, including but not limited to providing employee lists, personnel files, opportunities to interview and negotiate with the acquirers, eliminating any restriction on or disincentives to accepting employment with the acquirers, and providing incentives for such employees to accept employment with the acquirers.

4. Destroy any copies of Hyprotech intellectual property, including source code and executable code.

5. Prohibit the use of any Hyprotech competitive or technological information gained since the Acquisition.

6. Cease and desist from any horizontal agreements with competitors to prevent or deter standard setting organizations from adopting standards to benefit consumers of products covered under the appropriate standards; provided that no relief shall require the competing companies to participate in any standard setting activity.

7. For a defined period, not restrict, preclude or influence a supplier of complementary software or services from dealing with the acquirers or the acquirers' products.

8. Provide such other or additional relief as is necessary to ensure the creation of one or more viable, competitive independent entities to compete against AspenTech in the manufacture and sale of relevant products with features and capabilities at least equal to those offered by Hyprotech prior to the Acquisition.

9. Require AspenTech to provide the Commission with notice in advance of the acquisition of the assets or securities of, or any other combination with, any person engaged in the manufacture or sale of any relevant product.

WHEREFORE, THE PREMISES CONSIDERED, the Federal Trade Commission on this sixth day of August, 2003, issues its complaint against said Respondent.

By the Commission, Commissioner Harbour not participating.

Donald S. Clark
Secretary

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION

COMMISSIONERS: **Deborah Platt Majoras, Chairman**
Orson Swindle
Thomas B. Leary
Pamela Jones Harbour
Jon Leibowitz

In the Matter of **ASPEN TECHNOLOGY, INC.,** a corporation.	**Docket No. 9310** **DECISION AND ORDER** **[Public Record Version]**

The Federal Trade Commission ("Commission") having heretofore issued its complaint charging Aspen Technology, Inc. ("Respondent"), with violations of Section 5 of the Federal Trade Commission Act, as amended, and Section 7 of the Clayton Act, as amended, and Respondent having been served with a copy of that complaint, together with a notice of contemplated relief, and Respondent having answered the complaint denying said charges but admitting the jurisdictional allegations set forth therein; and

The Respondent, its attorneys, and counsel for the Commission having thereafter executed an agreement containing a consent order, an admission by the Respondent of all the jurisdictional facts set forth in the complaint, a statement that the signing of said agreement is for settlement purposes only and does not constitute an admission by Respondent that the law has been violated as alleged in such complaint, or that the facts as alleged in such complaint, other than jurisdictional facts, are true and waivers and other provisions as required by the Commission's Rules; and

The Secretary of the Commission having thereafter withdrawn the matter from adjudication in accordance with § 3.25(c) of its Rules; and

The Commission having thereafter considered the matter and having thereupon accepted the executed consent agreement and placed such agreement on the public record for a period of thirty (30) days, now in conformity with the procedure prescribed in § 3.25(f) of its Rules, the Commission hereby makes the following jurisdictional findings and enters the following Order:

1. Aspen Technology, Inc., is a corporation organized, existing and doing business under and by virtue of the laws of the State of Delaware, with its principal place of business located at Ten Canal Park, Cambridge, Massachusetts 02141.

2. The Federal Trade Commission has jurisdiction of the subject matter of this proceeding and of the Respondent, and the proceeding is in the public interest.

ORDER

I.

IT IS ORDERED that, as used in this Order, the following definitions shall apply:

A. "AspenTech" or "Respondent" means Aspen Technology, Inc., its directors, officers, employees, agents, representatives, predecessors, successors, and assigns; its joint ventures, subsidiaries, divisions, groups and affiliates controlled by Aspen Technology, Inc., and the respective directors, officers, employees, agents, representatives, successors, and assigns of each.

B. "Acquisition" means Respondent's acquisition of Hyprotech on or about May 31, 2002.

C. "AEA Partnership Agreement" means the AXSYS.Integrity Development Partnership Agreement, dated July 26, 2001, between AEA Technology plc, and Respondent under which AEA Technology plc, licenses Integrity Modules, as defined therein, to Respondent.

D. "AXSYS" means AXSYS collaborative engineering Software and other products for collaborative engineering and knowledge management for plant engineering and design automation including but not limited to AXSYS.Engine, AXSYS.Process, AXSYS.Integrity, AXSYS.Server, and PlantSchema and the associated Interfaces.

E. "AXSYS Assets" means the following:

1. all of Respondent's interests in and rights to all Software and other products (including all development work in process for existing and proposed or terminated products) comprising the AXSYS collaborative engineering and knowledge management software solution for plant engineering and design automation, including but not limited to:

   a. AXSYS.Engine, AXSYS.Process, AXSYS.Integrity, AXSYS.Server, and PlantSchema; and
   b. all associated Interfaces, including but not limited to process,

sizing, and costing interfaces;

2. all inventories (including but not limited to all inventories of finished AXSYS products and all development work) of the AXSYS Business, and the computer equipment listed in Schedule 1.2 of the Bentley Purchase Agreement;

3. a copy of all books, records, and financial files relating to the AXSYS Business;

4. all rights to all licenses, license agreements, and customer contracts described in Section 4.10 of the Disclosure Statement of the Bentley Purchase Agreement, including the AEA Partnership Agreement;

5. all Owned Intellectual Property Rights used solely in the operation of AXSYS Business;

6. a non-exclusive right to all Owned Intellectual Property Rights used both in AXSYS and in other of Respondent's Software and other products;

7. rights to all Licensed Intellectual Property Rights necessary to the operation of the AXSYS Business; *provided, however,* that, after divestiture to the Commission-approved Acquirer, Respondent shall not be responsible for payment of any fees or charges associated with the Commission-approved Acquirer's use of the Licensed Intellectual Property;

8. for material relating solely to the AXSYS Business, all marketing and sales materials used anywhere in the world, including but not limited to all advertising materials, training materials (including all electronic files of training materials), sales materials (including product data, price lists, and mailing lists), promotional and marketing materials, marketing information, educational materials, competitor information (including research data, market intelligence reports, and statistical programs), customer information (including customer sales information, customer lists, customer files, customer contact information, and customer support log data bases), sales forecasting models, Website content, and advertising and display materials; *provided, however,* that Respondent may retain a copy of such material to the extent necessary for tax, accounting, or legal purposes, including as required by applicable laws and regulations; and

9. for material relating both to the AXSYS Business and to other of Respondent's businesses, a copy of all marketing and sales materials used anywhere in the world to the extent such materials relate to the AXSYS Business, including but not limited to all advertising materials, training materials (including all electronic files of training materials), sales materials (including product data, price lists, and mailing lists), promotional and marketing materials, marketing information, educational materials, competitor information (including research data, market intelligence reports, and statistical programs), customer information (including customer sales information, customer lists, customer files, customer contact information, and customer support log data bases), sales forecasting models, Website content, and advertising and display materials.

"AXSYS Assets" shall not include:

1. items listed in Schedule 1.3 of the Bentley Purchase Agreement;

2. except to the extent used solely in the AXSYS Business, business names, registered and unregistered trademarks, service marks, trade names, logos, Internet domain names, and corporate names and applications, registrations and renewals related thereto (or portions thereof), and associated goodwill;

3. rights to third-party Intellectual Property that the Commission-approved Acquirer either has or obtains independent of its acquisition of the AXSYS Assets;

4. any other of Respondent's products that Interface with AXSYS; and

5. contracts for support and maintenance services with customers who have not consented, or because of contractual constraints cannot consent, to the assignment of the contract to the Commission-approved Acquirer; *provided, however*, that if the Commission-approved Acquirer provides maintenance relating to AXSYS to these customers, then Respondent shall transfer all such maintenance payments due pursuant to the contracts to the Commission-approved Acquirer.

F. "AXSYS Business" means the business of researching, developing, designing, marketing, selling, licensing, providing, maintaining, servicing, supporting, improving, enhancing, and updating AXSYS.

G. "Bentley" means Bentley Systems, Incorporated, a corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its offices and principal place of business located at 685 Stockton Drive, Exton, PA, 19341.

H. "Bentley Purchase Agreement" means the Asset Purchase Agreement by and among Bentley Systems, Incorporated, and Respondent, dated May 22, 2004, and includes all schedules, exhibits, and ancillary agreements, attached as Confidential Appendix B.

I. "CAPE-OPEN Standards," "CAPE-OPEN Thermo and Units Standards," and "CAPE-OPEN Thermo Standard" mean the uniform standards for interfacing process modeling software components developed specifically for the design and operation of chemical processes developed by CAPE-OPEN, currently operating as the CAPE-OPEN Laboratories Network ("CO-LaN"), a Standard-Setting Organization in the process simulation and optimization industry.

J. "Commission" means the Federal Trade Commission.

K. "Commission-approved Acquirer" means (1) any acquirer of the Engineering Software Assets approved by the Commission pursuant to Paragraphs II. or VI. of this Order, or (2) any acquirer of the AXSYS Assets approved by the Commission pursuant to Paragraphs III. or VI. of this Order, including Bentley.

L. "Defect" means a material error in programming logic or documentation in the Hyprotech Process Engineering Simulation Software attributable to Respondent that prevents the performance of a principal computing function as set forth in Respondent's published specifications for the Hyprotech Process Engineering Simulation Software.

M. "Delivered Intellectual Property" means Intellectual Property relating to the Hyprotech Process Engineering Simulation Software that is transferred pursuant to this Order, in the form such software is delivered by Respondent to the Commission-approved Acquirer of the Engineering Software Assets as of the date of delivery (without modification of any kind by any Person other than Respondent).

N. "Divestiture Agreement" means any agreement or agreements approved by the Commission pursuant to which Respondent or a trustee divests assets as required by this Order.

O. "Engineering Software Assets" means OTS Assets and Hyprotech Process Engineering Simulation Software Assets.

P. "Hyprotech" means Hyprotech, Ltd., which, prior to May 31, 2002, was a wholly-owned operating division of AEA Technology plc, a corporation organized, existing, and doing business under and by virtue of the laws of the United Kingdom and, subsequent to the Acquisition, became a wholly-owned subsidiary of Respondent, and includes all subsidiaries.

Q. "Hyprotech Process Engineering Simulation Software" means the Hyprotech family of products, which includes the products and interfaces sold or licensed under the HYSYS name and the related batch process development, conceptual engineering, heat exchanger and hydraulics software identified in Appendix A(1), but shall not include the products identified in Appendix A(2).

R. "Hyprotech Process Engineering Simulation Software Assets" means the following:

1. all of Respondent's interests in and rights to all Software and other products (including all development work in process for existing and proposed or terminated products) comprising Hyprotech Process Engineering Simulation Software;

2. all Owned Intellectual Property Rights used solely in the operation of the Hyprotech Process Engineering Simulation Software Business;

3. a non-exclusive right to all Owned Intellectual Property Rights used both in Hyprotech Process Engineering Simulation Software and other of Respondent's Software and other products;

4. rights to all Licensed Intellectual Property Rights relating to Software embedded in Hyprotech Process Engineering Simulation Software; *provided, however,* that, after divestiture to the Commission-approved Aquirer, Respondent shall not be responsible for payment of any fees or charges associated with the Commission-approved Acquirer's use of the Licensed Intellectual Property;

5. a license to use trademarks owned by Respondent to the Hyprotech Process Engineering Simulation Software products for a period of one (1) year from the date of divestiture of the Hyprotech Process Engineering Simulation Software Assets;

6. a copy of all marketing and sales materials used anywhere in the world to the extent such materials relate to the Hyprotech Process Engineering Simulation Software Business, including but not limited to all advertising materials, training materials (including all electronic files of training materials), sales materials, promotional and marketing materials,

marketing information, educational materials, Website content, and advertising and display materials; and

7. a list of all Hyprotech Process Engineering Simulation Software customers as of the date of the Acquisition and, if different, as of the date of divestiture of the Hyprotech Process Engineering Simulation Software Assets, including the name and address of the customer; the name of a contact person, and his or her mailing address, e-mail address, and telephone number; the products licensed or serviced; and the termination date of the customer's contract.

"Hyprotech Process Engineering Simulation Software Assets" shall not include:

1. any business names, registered and unregistered trademarks, service marks, trade names, logos, Internet domain names, and corporate names and applications, registrations and renewals related thereto (or portions thereof), and associated goodwill;

2. any other of Respondent's products that Interface with Hyprotech Process Engineering Simulation Software;

3. rights to third-party Intellectual Property that the Commission-approved Acquirer either has or obtains independent of its acquisition of the Hyprotech Process Engineering Simulation Software Assets; and

4. materials related to the pricing or discounting of Hyprotech Process Engineering Simulation Software, including but not limited to pricing or discount lists, plans, policies, practices, forecasts, strategies, or analyses.

S. "Hyprotech Process Engineering Simulation Software Business" means the business of researching, developing, designing, marketing, selling, licensing, providing, maintaining, supporting, improving, and updating Hyprotech Process Engineering Simulation Software.

T. "Intellectual Property" means all of the following throughout the world:

1. all patents, patent applications and patent disclosures and utility models, together with all re-issuances, continuations, continuations-in-part, revisions, extensions, and re-examinations thereof;

2. copyrightable works, copyrights and applications, registrations and renewals related thereto;

3. know-how, trade secrets, improvements, designs, techniques, and

processes;

4. business names, registered and unregistered trademarks, service marks, trade names, logos, Internet domain names, and corporate names and applications, registrations and renewals related thereto (or portions thereof), and associated goodwill; and

5. all other intellectual property rights of a proprietary nature, including but not limited to derivative rights.

U. "Interface" means (1) (as a noun) the language and codes that two independent Software applications use to communicate with each other and with the hardware; and (2) (as a verb) to connect with or interact with by means of the language and codes that two independent Software applications use to communicate with each other and with the hardware.

V. "Licensed Intellectual Property Rights" means all of Respondent's sublicensable interests in and rights to Intellectual Property that is licensed to Respondent by any third person pursuant to an agreement under which Respondent has the right to grant a sublicense to a Commission-approved Acquirer.

W. "New Product" means any product, technology, innovation, or module that is not available from Respondent as part of its standard support and maintenance agreements.

X. "OTS Assets" means the following:

1. all of Respondent's interests in and rights to all Software and other products (including all development work in process for existing and proposed or terminated products) and associated Interfaces identified in Appendix A(3);

2. all inventories (including but not limited to all inventories of finished products and all development work relating to the products identified in Appendix A(3)) of the OTS Business, and the equipment and other tangible personal property necessary to the operation of the OTS Business;

3. a copy of all books, records, and financial files relating to the OTS Business;

4. all customer contracts relating solely to the OTS Business;

5. subcontracted rights to perform and receive payment for all operator training services and Software (and only to the extent such rights to

perform and receive payments are for operator training services and Software) included in customer contracts that also include rights to perform and receive payment for other of Respondent's Software or other products;

6. all Owned Intellectual Property Rights used solely in the operation of the OTS Business;

7. a non-exclusive right to all Owned Intellectual Property Rights used both in the Software and other products described in Paragraph I.X.1 and in other of Respondent's Software and other products;

8. rights to all Licensed Intellectual Property Rights necessary to the operation of the OTS Business; *provided, however,* that, after divestiture to the Commission-approved Acquirer, Respondent shall not be responsible for payment of any fees or charges associated with the Commission-approved Acquirer's use of the Licensed Intellectual Property;

9. for material relating solely to the OTS Business, all marketing and sales materials used anywhere in the world, including but not limited to all advertising materials, training materials (including all electronic files of training materials), sales materials (including product data, price lists, and mailing lists), promotional and marketing materials, marketing information, educational materials, competitor information (including research data, market intelligence reports, and statistical programs), customer information (including customer sales information, customer lists, customer files, customer contact information, and customer support log data bases), sales forecasting models, Website content, and advertising and display materials; *provided, however,* that Respondent may retain a copy of such material to the extent necessary for tax, accounting, or legal purposes, including as required by applicable laws and regulations; and

10. for material relating both to the OTS Business and to other of Respondent's businesses, a copy of all marketing and sales materials used anywhere in the world to the extent such materials relate to the OTS Business, including but not limited to all advertising materials, training materials (including all electronic files of training materials), sales materials (including product data, price lists, and mailing lists), promotional and marketing materials, marketing information, educational materials, competitor information (including research data, market intelligence reports, and statistical programs), customer information (including customer sales information, customer lists, customer files, customer contact information, and customer support log data bases), sales

forecasting models, Website content, and advertising and display materials. .

"OTS Assets" shall not include:

1. rights to third-party Intellectual Property that the Commission-approved Acquirer either has or obtains independent of its acquisition of the OTS Assets;

2. any of Respondent's other products that Interface with the Software and other products described in Paragraph I.X.1.; and

3. except to the extent used solely in the OTS Business, business names, registered and unregistered trademarks, service marks, trade names, logos, Internet domain names, and corporate names and applications, registrations and renewals related thereto (or portions thereof), and associated goodwill.

Y. "OTS Business" means Respondent's business of researching, developing, designing, marketing, licensing, selling, providing, maintaining, servicing, supporting, improving, enhancing, and updating software and providing services to the extent used for the development and implementation of a computer system connected to a real or emulated distributed control system that simulates by use of dynamic simulation models the performance and reactions of a designated process plant for the training of process plant operators.

Z. "Owned Intellectual Property Rights" means all of Respondent's interests in and rights to Intellectual Property that is owned by Respondent.

AA. "Person" means any natural person, partnership, corporation, company, association, trust, joint venture or other business or legal entity, including any governmental agency.

BB. "Release" means the following: (1) new versions of a Software product and related documentation with new features and/or significant enhancements or (2) revisions to a version of a Software product and related documentation with changes and/or Defect corrections, which, in each case, AspenTech makes generally available to its customers as part of its standard support and maintenance services without any separate charge. "Release" shall not include "New Product."

CC. "Software" means any type of computer code, including but not limited to, source code, object code, executable programs, software scripts, modules, add-ons, patches, bug fixes, library functions, object libraries, test programs, testing and

quality control information (including lists of known bugs), test results, regression test software, enhancements, customization, development tools, development environments, and proprietary programming languages.

DD. "Specified Proceedings" means the following:

1. the arbitration proceeding pending in London before Philip Naughton, or his successor, between KBC Advanced Technologies plc and KBC Advanced Technologies, Inc., on the one hand, and AEA Technology plc, Hyprotech, Ltd., and Hyprotech, Inc., on the other hand, for which an award was issued on or about April 22, 2004; and

2. any governmental proceedings, and any orders or judgments issued in connection with the above proceeding, relating to or arising out of such arbitration, including without limitation the Interlocutory Order signed and filed on or about May 7, 2004 in the matter captioned *KBC Advanced Technologies plc and KBC Advanced Technologies, Inc. v. AEA Technology plc, Hyprotech, Ltd., and Hyprotech, Inc.* pending before the District Court of Harris County, Texas, Cause No. 2002-44783.

EE. "Standard-Setting Organization" means any formal group, organization, association, membership or stock corporation, or other entity that, through voluntary participation of interested or affected parties, is engaged in the development, promulgation, promotion or monitoring of product or process standards for the process simulation and optimization industry, or any segment thereof, anywhere in the world.

FF. "Third-party Developer" means an entity, other than Respondent, the Commission-approved Acquirer of the AXSYS Assets, or their respective customers, that is engaged in the development of Software for process industries.

GG. "Zyqad" means the AspenTech software that integrates front-end engineering processes with the management of process data and knowledge.

II.

IT IS FURTHER ORDERED that:

A. Respondent shall either:

1. (a) divest the Engineering Software Assets, absolutely and in good faith, and at no minimum price, only to an acquirer that receives the prior approval of the Commission and only in a manner that receives the prior approval of the Commission, no later than ninety (90) days after this Order becomes final; and (b) submit to the Commission, pursuant to Rule 2.41(f) of the Commission's Rules of Practice, a complete application (including an executed purchase agreement) for approval of the divestiture required by Paragraph II., no later than five (5) days after this Order becomes final;

or

2. if Respondent has not submitted to the Commission a complete application in compliance with Paragraph II.A.1. above, divest the Engineering Software Assets, absolutely and in good faith, and at no minimum price, no later than sixty (60) days after this Order becomes final, only to an acquirer that receives the prior approval of the Commission and only in a manner that receives the prior approval of the Commission;

provided, however, that Respondent shall have a right to obtain from the Commission-approved Acquirer: (1) for any purpose, a perpetual, world-wide, royalty-free right to prepare derivative works of, modify, enhance, improve, maintain, support, make, have made, use, develop, reproduce, demonstrate, promote, sell, offer to sell, distribute, transmit, and import Hyprotech Process Engineering Simulation Software products (in source code form, object code form, executable code form, or any other applicable form) and all Owned Intellectual Property used solely in the operation of the Hyprotech Process Engineering Simulation Software Business; and (2) for any purpose other than the OTS Business, a perpetual, world-wide, royalty-free right to prepare derivative works of, modify, enhance, improve, maintain, support, make, have made, use, develop, reproduce, demonstrate, promote, sell, offer to sell, distribute, transmit, and import MUSIC and OTISS (in source code form, object code form, executable code form, or any other applicable form).

B. Any Divestiture Agreement between Respondent and the Commission-approved Acquirer shall be deemed incorporated into this Order, and any failure by Respondent to comply with any term of such Divestiture Agreement shall

constitute a failure to comply with this Order.

C. Prior to the date of divestiture of the Engineering Software Assets to the Commission-approved Acquirer, Respondent shall secure all consents, approvals, and waivers from all Persons (other than Respondent or the Commission-approved Acquirer) that are necessary for the divestiture of the Engineering Software Assets to the Commission-approved Acquirer or for the continued use, development, designing, enhancement, improvement, production, licensing, sale, marketing, distribution, or servicing of the Engineering Software Assets by the Commission-approved Acquirer. In the event that Respondent is unable to satisfy all conditions necessary to divest any intangible asset as contemplated in this Order, Respondents shall: (1) with respect to permits, licenses, or other rights granted by governmental authorities (other than patents), provide such assistance as the Commission-approved Acquirer may reasonably request in the Commission-approved Acquirer's efforts to obtain comparable permits, licenses or rights, and (2) with respect to all other intangible assets, including but not limited to Software, Intellectual Property (including patents), or contractual rights, substitute functionally equivalent assets or arrangements, subject to the approval of the Commission.

D. Respondent shall:

1. for two (2) years following the date of divestiture of the Engineering Software Assets, at no additional cost to the Commission-approved Acquirer of the Engineering Software Assets, provide the Commission-approved Acquirer with all Releases (in source, object, and executable code form and including all related documentation) for Respondent's Hyprotech Process Engineering Simulation Software. Respondent shall ship Releases in source, object, and executable code form to the Commission-approved Acquirer of the Engineering Software Assets on or before the same date as Respondent ships such Releases to Respondent's manufacturing vendor for mass production of such Releases; *provided, however,* that, notwithstanding the above, Respondent shall provide any Releases, the sole purpose of which is to correct Defects, to the Commission-approved Acquirer of the Engineering Software Assets on or before the same date that such Releases are provided to Respondent's customers; and

2. no later than fourteen (14) days after the end of the two-year period described in Paragraph II.D.1, deliver to the Commission-approved Acquirer of the Engineering Software Assets a copy of the Releases for Respondent's Hyprotech Process Engineering Simulation Software in source, object, and executable code form that are under development by Respondent as such Releases exist on the second anniversary of the date of divestiture of the Engineering Software Assets.

E. For two (2) years following the date of divestiture of the Engineering Software Assets, Respondent shall provide to the Commission-approved Acquirer of the Engineering Software Assets, upon reasonable notice and at reasonable times and levels, personnel, information, assistance, advice or training relating to Hyprotech Process Engineering Simulation Software as necessary or appropriate to effectuate the purposes of this Order. Respondent shall not charge the Commission-approved Acquirer of the Engineering Software Assets more than Respondent's own direct, out-of-pocket expenses of labor and travel in providing such services, not including overhead or administrative expenses.

F. Respondent shall, for a period of two (2) years from the date of divestiture of the Engineering Software Assets:

1. allow any customer who uses Hyprotech Process Engineering Simulation Software, without penalty, to:

   a. modify its current agreements with Respondent to allow for renewal of annual software maintenance and support with respect to less than the complete range of products covered by the current agreements and to allocate fees for the products remaining in the agreement on a pro rata basis, to enable such customer to deal with the Commission-approved Acquirer; and

   b. obtain additional copies of Software from the Commission-approved Acquirer of the Engineering Software Assets without effecting a termination of an existing license agreement or maintenance and support services agreement with Respondent with respect to Software licensed by Respondent; *provided, however*, that Respondent shall not be under any obligation to provide maintenance and support services with respect to software licensed to customers by the Commission-approved Acquirer.

2. remove any license impediment or grant any requisite intellectual property rights to allow the Commission-approved Acquirer of the Engineering Software Assets:

   a. to provide software maintenance and support services for Software that has been installed by Respondent; and/or

   b. upon expiration of the customer's license agreement with Respondent, to grant new licenses to the Hyprotech Process Engineering Simulation Software installed on its computers without requiring the deletion and re-installation of such Software.

G. Respondent shall, within fourteen (14) days after the date of the divestiture of the

Hyprotech Process Engineering Simulation Software Assets:

1. provide notice either by electronic mail or by first class mail to all of Respondent's customers of Hyprotech Process Engineering Simulation Software of their rights as set forth in this Paragraph II.; such notice to the Hyprotech Process Engineering Simulation Software Customers shall be made by means of a letter in the form of Appendix C to this Order; and

2. and for a period of six (6) months from the date of posting, post a notice, prominently displayed in the top portion of Respondent's home page of its web site, immediately below any header information, that provides a link to the complete copy of the complaint and Order in this matter in Adobe Portable Document Format.

H. Respondent shall indemnify the Commission-approved Acquirer of the Engineering Software Assets in respect of, and hold the Commission-approved Acquirer of the Engineering Software Assets harmless against, any and all liabilities, monetary damages, fines, fees, penalties, costs, and expenses incurred or suffered by the Commission-approved Acquirer of the Engineering Software Assets from any claims, liabilities, or obligations relating to or arising out of the Specified Proceedings, including any claims that would restrict, or attempt to restrict, the use of the Engineering Software Assets.

I. In the event that the use of the Delivered Intellectual Property by the Commission-approved Acquirer is held in the Specified Proceedings to infringe any intellectual property rights of a party to the Specified Proceedings (or constitute the misappropriation of a trade secret of a party to the Specified Proceedings) and the use of such Delivered Intellectual Property is enjoined, or Respondent or the Commission-approved Acquirer of the Engineering Software Assets reasonably believes that it is likely to be found to infringe or constitute a misappropriation or likely to be enjoined, then Respondent shall, at its sole cost and expense, either (at the option of Respondent):

1. procure from a party to the Specified Proceedings the right for the Commission-approved Acquirer of the Engineering Software Assets (and its then-existing, and any future, licensees) to (or to continue to) design, sell, offer for sale, manufacture, reproduce, distribute, develop, modify, create derivative works of, display, perform, import, export, and use the Delivered Intellectual Property;

2. modify such Delivered Intellectual Property so that it becomes non-infringing or no longer constitutes a misappropriation or otherwise falls outside the subject matter of the Specified Proceedings, without affecting the basic functionality of such Delivered Intellectual Property; or

3. replace the applicable Delivered Intellectual Property with a new item that does not infringe or constitute a misappropriation or otherwise falls outside the subject matter of the Specified Proceedings, and that is functionally equivalent to the applicable Delivered Intellectual Property.

J. Notwithstanding anything to the contrary in Paragraphs II.H. and II.I., Respondent shall have no obligation or liability under Paragraphs II.H. or II.I. for any claim of infringement arising from:

1. any combination of the Delivered Intellectual Property with any other product or technology not supplied by Respondent, where such infringement would not have occurred but for such combination;

2. the adaptation or modification of the Delivered Intellectual Property by any Person other than a Person employed by Respondent at the time of the adaptation of modification, where such infringement would not have occurred but for such adaptation or modification;

3. the use of the Delivered Intellectual Property in an application for which it was not designed or intended, where such infringement would not have occurred but for such use; or

4. a claim based on intellectual property rights (other than the Delivered Intellectual Property) owned by the Commission-approved Acquirer of the Engineering Software Assets or any of its Affiliates.

K. The purpose of the divestiture of the Engineering Software Assets is to allow the Commission-approved Acquirer to engage in the continued development and licensing of Hyprotech Process Engineering Simulation Software and to remedy the lessening of competition as alleged in the Commission's complaint in the markets for: (1) continuous process engineering simulation flowsheet software for process industries and smaller markets contained therein, and (2) batch process engineering simulation flowsheet software for process industries.

III.

IT IS FURTHER ORDERED that:

A. Respondent shall divest the AXSYS Assets to Bentley, absolutely and in good faith, no later than ten (10) days after the Commission places the Agreement Containing Consent Order on the public record (but no earlier than the day after the Commission places the Agreement Containing Consent Order on the public record), pursuant to and in accordance with the Bentley Purchase Agreement (which agreement shall not vary or contradict, or be construed to vary or contradict, the terms of this Order, it being understood that nothing in this Order shall be construed to reduce any rights or benefits of Bentley pursuant to the Bentley Purchase Agreement or to reduce any obligations of Respondent under such agreement).

B. If, at the time the Commission determines to make this Order final, the Commission notifies Respondent in writing that Bentley is not an acceptable purchaser of the AXSYS Assets or that the manner in which the divestiture was accomplished is not acceptable, then, after receipt of such written notification, Respondent shall:

1. immediately notify Bentley of the notice received from the Commission;

2. effect a termination of the Divestiture Agreement, a rescission of the acquisition, and a transfer of the AXSYS Assets no later than ten (10) business days from the date of receipt of the Commission's notice; and

3. divest the AXSYS Assets, absolutely and in good faith at no minimum price, to an acquirer that receives the prior approval of the Commission and in a manner that receives the prior approval of the Commission no later than six (6) months from the date of receipt of the Commission's notice.

C. Unless the Commission rejects it pursuant to Paragraph III.B., the Bentley Purchase Agreement, attached as Confidential Appendix B and made a part of this Order, shall be incorporated by reference into this Order, and failure by Respondent to comply with any term of the Bentley Purchase Agreement (or other Divestiture Agreement, as applicable) shall constitute a failure to comply with this Order.

D. Prior to the date of divestiture of the AXSYS Assets to the Commission-approved Acquirer, Respondent shall secure all consents, approvals, and waivers from all Parties (other than Respondent or the Commission-approved Acquirer) that are necessary for the divestiture of the AXSYS Assets to the Commission-approved

Acquirer or for the continued use, development, enhancement, improvement, production, sale, marketing, distribution, or servicing of the AXSYS Assets by the Commission-approved Acquirer. In the event that Respondent is unable to satisfy all conditions necessary to divest any intangible asset, Respondents shall: (1) with respect to permits, licenses, or other rights granted by governmental authorities (other than patents), provide such assistance as the Commission-approved Acquirer may reasonably request in the Commission-approved Acquirer's efforts to obtain comparable permits, licenses or rights, and (2) with respect to all other intangible assets, including but not limited to Software, Intellectual Property (including patents), or contractual rights, substitute functionally equivalent assets or arrangements, subject to the approval of the Commission.

E. For a period of five (5) years from the date of divestiture of the AXSYS Assets, Respondent shall provide to the Commission-approved Acquirer of the AXSYS Assets access to all Releases (and all related data and documentation) of Respondent's products (including Respondent's process simulators) that Interface with any AXSYS product, at least as early as, and on at least as favorable terms as, offered by Respondent to any Third-party Developer.

F. Respondent shall provide to the Commission-approved Acquirer of the AXSYS Assets support on all Interfaces to Respondent's products relating to the AXSYS products on the following terms:

1. for a period of two (2) years following the date of divestiture of the AXSYS Assets to the Commission-approved Acquirer, at no cost; and

2. thereafter, for a period of not less than the maximum duration of any term license assumed by the Commission-approved Acquirer, on at least as favorable terms as offered by Respondent to any Third-party Developer.

G. Respondent shall, within fourteen (14) days after the date of the divestiture of the AXSYS Assets, provide notice either by electronic mail or by first class mail to all customers of Respondent with license rights to AXSYS or Zyqad by means of a letter in the form of Appendix D to this Order. Respondents shall attach to or enclose in that notice a complete copy of the complaint and Order in this matter.

H. The purpose of the divestiture is to ensure the continued use and development of the AXSYS Assets in the same business in which the AXSYS Assets were used prior to the acquisition by Respondent and to remedy the lessening of competition alleged in the Commission's complaint in the market for integrated engineering software for process industries.

IV.

IT IS FURTHER ORDERED that, for a period of five (5) years from the date of divestiture of the Engineering Software Assets:

A. Respondent shall maintain technical standards with respect to Respondent's Hyprotech Process Engineering Simulation Software to provide:

1. compatibility of HYSYS cases so that HYSYS cases created with Version 3.2 of HYSYS will be compatible with all additional and subsequent versions of HYSYS released by Respondent; and

2. support for:

a. version 1.0 of the CAPE-OPEN Thermo and Units Standards;

b. upgrading HYSYS to CAPE-OPEN Thermo Standard 1.1;

c. new versions of the CAPE-OPEN Thermo and Units Standards as new versions become available; and

d. new CAPE-OPEN Standards on Math solvers and Reactors.

B. Respondent shall publish, and make available on an unrestricted basis:

1. all Interfaces for HYSYS and Aspen Plus, completely and accurately, no later than ten (10) days after the date of divestiture of the Hyprotech Process Engineering Simulation Software Assets for Interfaces in existence as of the date of divestiture of the Hyprotech Process Engineering Simulation Software Assets; and

2. thereafter, any new Interfaces for HYSYS and Aspen Plus, completely and accurately, no later than ten (10) days after Respondent distributes Releases of HYSYS and Aspen Plus.

C. Respondent shall provide support for all published Interfaces in the same manner and on terms comparable to those that, as of the date this Order becomes final, Respondent offers to third parties, including but not limited to cooperating with Third-party Developers to resolve any questions, issues, or problems that arise in connection with any published Interface.

D. Respondent shall not enter into or enforce any agreement with any competitor that has the purpose of impeding or obstructing the conduct or organizational structure of any Standard-Setting Organization, which agreement has not been explicitly

disclosed to the members of that Standard-Setting Organization, and that is inconsistent with the purpose of Paragraphs II.K. and III.H. of this Order.

V.

IT IS FURTHER ORDERED that:

A. Respondent shall, not later than ten (10) days after execution of the Divestiture Agreement:

1. provide to the Commission-approved Acquirers a list of all non-clerical employees of the AXSYS Business, the OTS Business, or Hyprotech, as applicable, who were employed by Respondent as of the date of execution of the Divestiture Agreement or who were employed by Respondent any time within the three (3) years prior to the date this Order becomes final;

2. to the extent permissible under applicable laws, and for a period of six (6) months from the date of divestiture of the AXSYS Assets or the Engineering Software Assets, as applicable, allow each Commission-approved Acquirer to inspect the personnel files and other documentation relating to such employees; and

3. and for a period of six (6) months from the date of divestiture of the AXSYS Assets or the Engineering Software Assets, as applicable, provide an opportunity for each Commission-approved Acquirer:

a. to meet personally, and outside the presence or hearing of any employee or agent of Respondent, with any one or more of the employees of the AXSYS Business, the OTS Business, or Hyprotech, as applicable; and

b. to make offers of employment to any one or more of these employees.

B. For a period of six (6) months from the date of divestiture of the AXSYS Assets or the Engineering Software Assets, as applicable:

1. Respondent shall not interfere with the employment by a Commission-approved Acquirer of any employee of the AXSYS Business, the OTS Business, or Hyprotech;

2. Respondent shall not offer any incentive to employees of the AXSYS Business, the OTS Business, or Hyprotech to decline employment with a

Commission-approved Acquirer or to accept other employment with Respondent; and

3. Respondent shall remove any impediments that may deter employees of the AXSYS Business, the OTS Business, or Hyprotech from accepting employment with a Commission-approved Acquirer or that may interfere with the ability of such employee to accept employment with a Commission-approved Acquirer, including but not limited to waiving any confidentiality or non-compete provisions of employment or other contracts with Respondent that would affect the ability of those individuals to be employed by a Commission-approved Acquirer.

C. Respondent shall continue all employee benefits, including regularly scheduled raises, bonuses, and vesting of pension benefits (as permitted by law), offered by Respondent to employees of the AXSYS Business, the OTS Business, or Hyprotech until, for the employees of the AXSYS Business, the date of the divestiture of the AXSYS Assets; and, for the employees of the OTS Business and Hyprotech, until the date of the divestiture of the Engineering Software Assets.

D. Respondent shall not, for two (2) years following the date of the divestiture of the AXSYS Assets and the Engineering Software Assets, directly or indirectly, solicit, induce, or attempt to solicit or induce any employees of Respondent who have accepted offers of employment with a Commission-approved Acquirer to terminate their employment relationship with the Commission-approved Acquirer unless such individual is no longer employed by the Commission-approved Acquirer; *provided, however,* it is not a violation of this provision if: (1) Respondent advertises for employees in newspapers, trade publications or other media not targeted specifically at the employees, or (2) Respondent hires employees who apply for employment with Respondent, as long as such employees were not solicited by Respondent in violation of this Paragraph.

VI.

IT IS FURTHER ORDERED that:

A. If Respondent has not divested, absolutely and in good faith and with the Commission's prior approval, the Engineering Software Assets within the time and in the manner required by Paragraph II.A. of this Order, or the AXSYS Assets within the time and in the manner required by Paragraphs III.A. or III.B. of this Order, the Commission may appoint a trustee to accomplish either or both divestitures, at no minimum price. In the event that the Commission or the Attorney General brings an action pursuant to Section 5(*l*) of the Federal Trade Commission Act, 15 U.S.C. § 45(*l*), or any other statute enforced by the

Commission, Respondent shall consent to the appointment of a trustee in such action. Neither the appointment of a trustee nor a decision not to appoint a trustee under this Paragraph shall preclude the Commission or the Attorney General from seeking civil penalties or any other relief available to it, including a court-appointed trustee, pursuant to Section 5(*l*) of the Federal Trade Commission Act, or any other statute enforced by the Commission, for any failure by Respondent to comply with this Order.

B. If a trustee is appointed by the Commission or a court pursuant to Paragraph VI.A. of this Order, Respondent shall consent to the following terms and conditions regarding the trustee's powers, duties, authority, and responsibilities:

1. The Commission shall select the trustee, subject to the consent of Respondent, which consent shall not be unreasonably withheld. The trustee shall be a person with experience and expertise in acquisitions and divestitures. If Respondent has not opposed, in writing, including the reasons for opposing, the selection of any proposed trustee within ten (10) days after receipt of written notice by the staff of the Commission to Respondent of the identity of any proposed trustee, Respondent shall be deemed to have consented to the selection of the proposed trustee.

2. Subject to the prior approval of the Commission, the trustee shall have the exclusive power and authority to divest the AXSYS Assets and/or the Engineering Software Assets.

3. Within ten (10) days after appointment of the trustee, Respondent shall execute a trust agreement that, subject to the prior approval of the Commission, transfers to the trustee all rights and powers necessary to permit the trustee to effect either or both of the divestitures required by this Order.

4. The trustee shall have twelve (12) months from the date the Commission approves the trust agreement described in Paragraph VI.B.3. to accomplish either or both of the divestitures. If, however, at the end of the twelve-month period, the trustee has submitted a plan of divestiture or believes that divestiture can be achieved within a reasonable time, the divestiture period may be extended by the Commission, provided, however, the Commission may extend the period for no more than two (2) additional periods of twelve (12) months each.

5. The trustee shall have full and complete access to the personnel, books, records, and facilities related to the AXSYS Assets or the Engineering Software Assets or to any other relevant information, as the trustee may request. Respondent shall develop such financial or other information as

such trustee may reasonably request and shall cooperate with the trustee. Respondent shall take no action to interfere with or impede the trustee's accomplishment of either or both of the divestitures. Any delays in divestiture caused by Respondent shall extend the time for divestiture under this Paragraph in an amount equal to the delay, as determined by the Commission.

6. The trustee shall use his or her best efforts to negotiate the most favorable price and terms available in each contract that is submitted to the Commission, subject to Respondent's absolute and unconditional obligation to divest expeditiously at no minimum price. Either or both of the divestitures shall be made only in a manner that receives the prior approval of the Commission, and only to an acquirer that receives the prior approval of the Commission. Provided, however, that in connection with a particular divestiture, if the trustee receives bona fide offers from more than one acquiring entity, and if the Commission determines to approve more than one such acquiring entity and to allow the Respondent to choose from among them, then the trustee shall divest such assets to the acquiring entity or entities selected by Respondent from among those approved by the Commission; provided further, however, that Respondent shall select such entity within five (5) days of receiving notification of the Commission's approval.

7. The trustee shall serve, without bond or other security, at the cost and expense of Respondent, on such reasonable and customary terms and conditions as the Commission may set. The trustee shall have the authority to employ, at the cost and expense of Respondent, such consultants, accountants, attorneys, investment bankers, business brokers, appraisers, and other representatives and assistants as are necessary to carry out the trustee's duties and responsibilities. The trustee shall account for all monies derived from the divestiture and all expenses incurred. After approval by the Commission of the account of the trustee, including fees for his or her services, all remaining monies shall be paid at the direction of Respondent, and the trustee's power shall be terminated. The trustee's compensation shall be based at least in significant part on a commission arrangement contingent on the trustee's divesting the AXSYS Assets or the Engineering Software Assets.

8. Respondent shall indemnify the trustee and hold the trustee harmless against any losses, claims, damages, liabilities, or expenses arising out of, or in connection with, the performance of the trustee's duties, including all reasonable fees of counsel and other expenses incurred in connection with the preparation for or defense of any claim, whether or not resulting in any liability, except to the extent that such losses, claims, damages, liabilities,

or expenses result from misfeasance, gross negligence, willful or wanton acts, or bad faith by the trustee.

9. If the trustee ceases to act or fails to act diligently, a substitute trustee shall be appointed in the same manner as provided in Paragraph VI.A. of this Order.

10. The Commission may on its own initiative or at the request of the trustee issue such additional orders or directions as may be necessary or appropriate to accomplish the divestiture required by this Order.

11. The trustee shall have no obligation or authority to operate or maintain the AXSYS Assets or the Engineering Software Assets.

12. The trustee shall report in writing to the Commission every thirty (30) days concerning the trustee's efforts to accomplish the divestitures required by this Order.

VII.

IT IS FURTHER ORDERED that, until the divestitures of the AXSYS Assets and of the Engineering Software Assets are completed, Respondent shall not cause, and will use commercially reasonable efforts to avoid, the wasting, deterioration, or loss of the AXSYS Assets or the Engineering Software Assets, nor shall Respondent sell, transfer, or encumber the AXSYS Assets or the Engineering Software Assets.

VIII.

IT IS FURTHER ORDERED that:

A. Within thirty (30) days after the date this Order becomes final, and every sixty (60) days thereafter until Respondent has complied with its obligations pursuant to Paragraphs II.A., II.C., II.G., III.A., III.B., III.D., III.G., V.A., V.B., V.C., VI., and VII. of this Order, and at such other times as the Commission may require, Respondent shall file a verified written report with the Commission setting forth in detail the manner and form in which it has complied and is complying with the above-listed paragraphs of this Order.

B. Within thirty (30) days after the date this Order becomes final, and, if later, within thirty (30) days after each divestiture required by Paragraphs II. and III. are completed, and then annually for two (2) years after each divestiture required by Paragraphs II. and III. are completed, Respondent shall file a verified written report with the Commission setting forth in detail the manner and form in which it has complied and is complying with Paragraphs II.D., II.E., II.F., III.F., and V.D.,

C. Within thirty (30) days after the date this Order becomes final, one year from the date this Order becomes final, and then annually for four (4) years thereafter, Respondent shall file a verified written report with the Commission setting forth in detail the manner and form in which it has complied and is complying with Paragraphs II.H., II.I. II.J., III.E., and IV.A.-D.

IX.

IT IS FURTHER ORDERED that Respondent shall notify the Commission at least thirty (30) days prior to any proposed (1) dissolution of the Respondent, (2) acquisition, merger or consolidation of Respondent, or (3) any other change in the Respondent that may affect compliance obligations arising out of this Order, including but not limited to assignment or the creation or dissolution of subsidiaries.

X.

IT IS FURTHER ORDERED that, for the purpose of determining or securing compliance with this Order, upon written request, Respondent shall permit any duly authorized representative of the Commission:

A. Access, during office hours and in the presence of counsel, to all facilities and access to inspect and copy all books, ledgers, accounts, correspondence, memoranda and other records and documents in the possession or under the control of Respondent relating to any matters contained in this Order; and

B. Upon five (5) days' notice to Respondent and without restraint or interference from it, to interview officers, directors, employees, independent contractors, or agents of Respondent, who may have counsel present, relating to any matters contained in this Order.

XII.

IT IS FURTHER ORDERED that this Order shall terminate on December 20, 2014.

By the Commission, Commissioner Harbour not participating.

Donald S. Clark
Secretary

SEAL:
ISSUED: December 20, 2004

Appendix A(1)

Hyprotech Process Engineering Simulation Software

HYSYS
HYSYS Dynamics Option
MASSBAL
HYSYS Amines Interface
HYSYS for Ammonia Plants Interface
HYSYS Upstream Interface
HYSYS OLGA Transient Interface
HYSYS OLGAS 3-Phase Interface
HYSYS OLGAS Interface
HYSYS OLI Interface
PIPESIM Interface
HYSYS PIPESYS Interface
HYSYS RTO Offline Interface
HYSYS RTO Online Interface
HYSYS Synetix Reactor Models Interface
HYSYS Synetix Reactor Models DYCAT Interface
COMThermo
BDK
Hyprotech Explorer
Hyprotech Server
DISTIL
HX- Net
ACOL
APLE
FIHR
FRAN
MUSE
PIPE
PPDS Package Interface
TASC-Thermal
TASC-Mechanical
ProFES 2P Erosion Option
ProFES 2P Tran
ProFES 2P Wax Option
ProFES 3P Tran
ProFES Tranflo

Appendix A(2)

Excluded Hyprotech Process Engineering Simulation Software

HYSYS Upstream Steady-State Option
HYSYS Upstream Dynamics Option
SULSIM
HYPROPIII
BatchCAD
HYSYS Pipesim Net Option
HYSYS UREA++ Option
FLARENET
TICP
Harwell Math Library
Proconex SX006

Appendix A(3)

Operator Training Software

OTISS
MUSIC
AMCL Translator - Desktop
Bailey Infi90 Link
CIMIO Link
CL Tracer
Column Builder
CONCERT
CONTRALTO
CPGEN
Cplink
CrEdit Macros
Cslink
Custom Hard Panel Links
Datatracker
Deltcomd
diffpara
DMC Ref File Generator
Dmccomd
Engineering Spreadsheet
FSC Unplot
FSIMlink
Generic IEC 1131 system handling
History Extraction Spreadsheet
Honutils
idef/ odef
Imcomd
IssueMonitoring
jpdef
mdef
O/I/Flink
Olgacomd
PCON
pdef
PMCL Translator
Potential Control Checkout Toolset
Proconex SX003
Proserve
Recomd
Remlink
Steady State Report Generation Spreadsheet
Stream Checker Spreadsheet
T3 TDC Emulation
TDC_Builder
TDC3000 Functions
Tdcomd
TriconImp
Visio Graphics Generation Kit
VPC-Honeywell - AMCL add on
VPC-Honeywell TDC3000 Web update system
Web enablement of Melody tools
Xeng
Xstation
Yocomd-HP
Yocomd-NT
ZOE
Alarm Manager
Automated Training Exercises
Command Channel
CS3000 offline tools
DDLGen
deltaV DCS Link
EB Parser
EB Viewer
Hygreen Instructor Station
Hylinker
IS tester
Performance Evaluation and Record Keeping
Proconex SX003 Interface
Siemens Interface
Simulation Coordinator
Simulation Server
SX003 driver
T3 Emulation Link
Trend
Yokogawa CS Link
Yokogawa CS offline tools
Yokogawa CS3000 Interface
ATUKOPCSERVER
MOORCOMD

RTAP	OPCCOMD
Softex HTL	serialpan

Appendix B – Confidential

Bentley Purchase Agreement

[Redacted From Public Record Version, But Incorporated By Reference]

Appendix C

[Aspen Technology, Inc. letterhead]

[date]

[Name of customer]
Attention: [name of contact person at customer]
[Address of contact person at customer]
[telephone number of contact person]

Dear [contact person]:

This letter is to inform you that, pursuant to an order of the Federal Trade Commission ("FTC"), Aspen Technology, Inc. ("AspenTech") is required to notify certain customers that it has divested its operator training simulator business and rights to Hyprotech Ltd.'s ("Hyprotech") process engineering software to [insert name of Commission-approved Acquirer].

The FTC order is part of a settlement between AspenTech and the FTC resolving the FTC's action challenging AspenTech's acquisition of Hyprotech. Under the settlement, AspenTech has the right to obtain a license back from [insert name of Commission-approved Acquirer] and to continue selling and developing all of its existing engineering software products, including those acquired in its acquisition of Hyprotech (with the exception of AXSYS and certain operator training products).

The order requires AspenTech, for a period of two years from [date of divestiture], to allow customers of Hyprotech process engineering simulation software to choose without penalty to maintain their current agreements for annual software maintenance and support with AspenTech or to pursue similar agreements with [insert name of Commission-approved Acquirer]. The order also provides for customers to be able to obtain additional copies of Hyprotech process engineering software from [insert name of Commission-approved Acquirer] without affecting current license agreements with AspenTech. AspenTech is further required to maintain certain published and open interface standards with respect to HYSYS, Aspen Plus and certain CAPE-OPEN standards.

A link to [copy of] the Federal Trade Commission's complaint and final order in this matter may be found at www.aspentech.com [is attached].

Sincerely,

David L. McQuillin
President and Chief Executive Officer
Aspen Technology, Inc.

Appendix D
[Aspen Technology, Inc. letterhead]

[date]

[Name of customer]
Attention: [name of contact person at customer]
[Address of contact person at customer]
[telephone number of contact person]

Dear [contact person]:

This letter is to inform you that, pursuant to an order of the Federal Trade Commission, Aspen Technology, Inc. ("AspenTech"), is required to notify all AspenTech customers with license rights to use AXSYS or Zyqad that it has divested its assets relating to AspenTech's AXSYS business to Bentley Systems, Incorporated, and that, as of [insert date], Bentley will provide all license, development and services relating to AXSYS, unless otherwise subcontracted.

A link to [copy of] the Federal Trade Commission's complaint and final order in this matter may be found at www.aspentech.com [is attached].

Sincerely,

David L. McQuillin
President and Chief Executive Officer
Aspen Technology, Inc.

Capital emprendedor

EL RIESGO

Entre 2001 y 2003, un tornado dejó a América Latina prácticamente vacía de capitalistas aventureros. Los venture capital, aquellos financistas dispuestos a invertir en pequeñas empresas recién creadas, transformados en Pop Stars durante los 90, se hicieron humo tras la explosión de la burbuja puntocom. El efecto fue claro: mientras que en 1998 se invirtieron US$ 3.700 millones en capital de riesgo y private equity en América Latina, en 2003 esa cifra sólo llegó a US$ 400 millones.

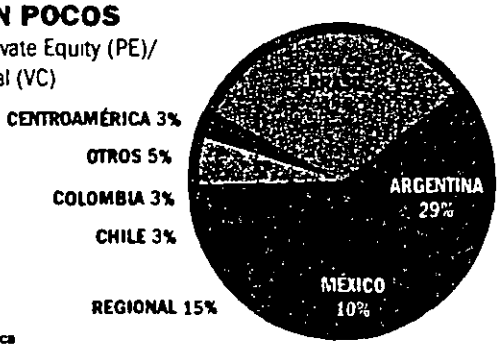
Pero hoy se ven sonrisas. El año pasado los fondos levantados por la industria de venture capital (VC) y private equity (PE) enfocados a América Latina llegaron a US$ 1.000 millones, según un estudio de Venture Equity Latin America (Vela), de EE.UU. "La región vuelve nuevamente al mapa de los inversionistas", dice Judy Kuan, de Vela. No es la única: "El mercado vuelve a tomar el rumbo y unos US$ 1.000 millones serán recaudados en 2005", dice Christina Kappaz, directora ejecutiva en Chicago de la Asociación de Capital de Riesgo de las Américas (Lavca). Las razones no son sólo la recuperación de los mercados financieros latinoamericanos. También se debe a la existencia de reglas más acordes con la industria, empresas a precios atractivos y mejores condiciones para establecer estrategias de salida capaces de generar buenos retornos para estos inversionistas.

Pero ojo: no crea que los VC de hoy serán tan dilapidadores como los de ayer. Los de ahora son más realistas. Y es que en los diez primeros años de la industria del capital de riesgo en la región, han debido aprender lecciones a la fuerza. "En América Latina, invertir en compañías nacientes generó retornos negativos", dice José Miguel Musalem, presidente ejecutivo y fundador del fondo chileno Proa, en Santiago. Por eso, los gestores de fondos

...ENTRAN POCOS

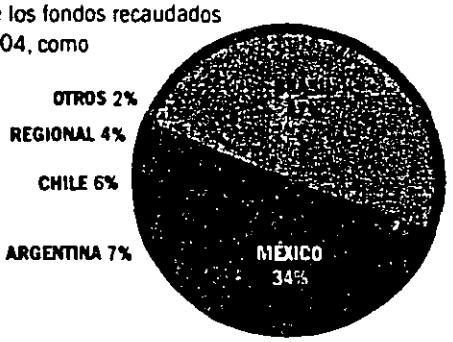
Destino de Private Equity (PE)/ Venture Capital (VC)

PROMEDIO 1993-2004



Fuente: Venture Equity Latin America

Distribución de los fondos recaudados por país en 2004, como % del total



Axxon Group, Brasil

LAS MIL RAZONES DE BRASIL

"EL CAPITAL de riesgo despertó", dice **Nick Wollak**, director socio de Axxon Group, entidad apoyada por el grupo francés Natexis. Con oficinas en Río de Janeiro y São Paulo, su fondo invierte entre US$ 5 y US$ 15 millones en *start-ups* brasileños. Es también optimista sobre la estrategia de salida. "Las empresas brasileñas tienen hoy grandes posibilidades de ser compradas por jugadores estratégicos", señala Wollak.

Pegasus, Argentina

MARCANDO LA PAUTA

PEGASUS, experta en el private equity en Argentina, también pone hoy atención a emprendedores con alto potencial de crecimiento. La compañía busca proveer el "eslabón perdido" en el espectro de inversiones latinoamericanas, disponiendo hasta de US$ 10 millones por ronda de financiamiento. Su salida: el mercado financiero o a través de sus relaciones con jugadores en el mercado interno o externo.

RESUCITA

dedicados al rubro han debido confundirse con sus colegas del private equity, una especialidad dedicada a invertir en empresas más maduras que los VC, pero en potencial de crecimiento. "El riesgo implícito en Latinoamérica explica que los límites entre ambos negocios sean confusos", dice Kappaz, de Lavca.

Además hay un reenfoque. "Hay un retorno a los orígenes, a las industrias tradicionales de la región", señala Arturo Saval, socio director del mexicano Nexxus Capital. Para los VC hoy la tecnología es sólo un activo más y sus principales apuestas van a la agroindustria, la construcción, las manufacturas, el turismo y metalurgia.

Tampoco cree que es para todos. Brasil y México, que acapararon el 81% de los montos levantados en la región en 2004, y en menor medida Chile y Argentina, serán los privilegiados. En el resto de los países, la presencia de los VC es nula. La razón es simple: la estrategia de salida. La debilidad de los mercados financieros latinos hace difícil apostar a una IPO como mecanismo para liquidar una inversión. Ante eso, la venta a una empresa internacional surge como el camino más apropiado. "Lamentablemente, las empresas internacionales sólo ponen sus ojos en esos cuatro países", dice Mario Malta, de Advent International.

Salvo un par de excepciones, la región andina y Centroamérica han buscado alternativas en otros fondos. La Corporación Andina de Fomento ha hecho serios esfuerzos de fomentar el pequeño emprendimiento, al igual que Fondo Multilateral de Inversiones del BID, el que ha invertido unos US$ 170 millones en el desarrollo de la industria de capital de riesgo en América Central. Así que es cierto: están de vuelta. Pero esta vez no espere regalos.

Ombu, Argentina:

EL SOBREVIVIENTE

ALGUNOS dicen que toda inversión que se hace hoy en Argentina es de riesgo. No obstante, sólo queda un inversionista de riesgo propiamente tal y activo en Argentina. Se trata de Ombu, fondo creado en 2003 y basado en Buenos Aires. "Hay mucha necesidad de inyección de capital", dice **Alberto Sassón**, su director. "Aunque los inversionistas cambiaron de carácter, sí hay proyectos viables". En un mercado donde las pymes no tienen acceso al sistema financiero y cero ayuda estatal, aumenta la necesidad de capitalistas. Pero ojo: nada se regala. "Se buscan negocios con proyecciones regionales, como en el sector agroindustrial", dice. "Nuestra labor es entregar el soporte financiero y administrativo".

Moneda Asset Management, Chile

TODAVÍA NO TAN ARRIESGADOS

AFORTUNADAMENTE para Moneda Asset Management, Chile es uno de los pocos que reciben algo del capital de la región. Pero con prerrogativas, pues ya se aprendió que invertir en empresas nacientes era un mal negocio. "Hoy se buscan compañías que puedan salir al mercado o venderse en un período de tres años", dice **José Miguel Musalem**. "En Chile sólo crecen quienes invierten en compañías consolidadas, y no en el riesgo". Y eso que el país tiene una reglamentación clara, lo que no sucede en otros países. Por lo mismo, el gran desafío de la industria –en Chile y el resto de la región– es demostrar que los inversionistas sí pueden obtener rentabilidades. "Cuando el mercado vea que los retornos son buenos, los fondos buscarán empresas más riesgosas".

GP Investimentos, Brasil

JUGADOR EXPERIMENTADO

LA BRASILEÑA GP Investimentos es uno de los más tradicionales fondos de Brasil. Y sigue creciendo. "Estamos por levantar un nuevo fondo en los mercados externos de US$ 300 millones para invertir en Brasil", dice **Fersen Lambranho**, socio de GP.

Advent International, regional

SÓLO BRASIL, MÉXICO Y ARGENTINA

EN LAS oficinas regionales de Advent International se respira optimismo. Con sedes en México, Argentina y Brasil, invertirá unos US$ 300 millones en los próximos meses en empresas de estos tres países. "Este es el tercer fondo de Advent en Latinoamérica y comenzará a operar a mediados de 2005", dice **Mario Malta**, de Advent en São Paulo. La multinacional ya colocó dos fondos –en 1996 y 2002–, recaudando US$ 500 millones para la región. "Desde 2004 se ve un marcado apetito de extranjeros por llegar a la región y ello explica la creación del tercer fondo", dice. Advent es uno de los pocos fondos que han logrado rentabilidades positivas en estos 10 años de existencia de la industria en América Latina. ¿Cómo? "Se buscan empresas con planes de negocios claros, buena gerencia y posibilidades de crecimiento a corto plazo".

Nexxus Capital, México

CON SALIDA

CON ARGENTINA y Brasil desdibujándose en la mente de los inversionistas a comienzos de 2000, México apareció como la nueva promesa regional. Así lo vivió **Arturo Saval**, socio director de Nexxus Capital, uno de los mayores fondos mexicanos. Las cifras lo avalan: si los fondos recaudados por las empresas mexicanas promediaron 10% entre 1993 y 2004, ese porcentaje escaló a 34% solo en 2004, según el estudio de Vela. Sume a ello la firma del Nafta con EE.UU. y Canadá. El efecto de todo esto es muy simple para el VC. "Hoy es más fácil vender empresas mexicanas a grandes jugadores extranjeros", dice. "Y en un mercado financiero poco profundo, esta es una estrategia de salida que garantiza buenos retornos".

CRP Companhia de Participações, Brasil

A LAS INDUSTRIAS TRADICIONALES

CRP COMPANHIA de Participações es una de las mayores empresas de fondos de capital de riesgo de Brasil. Y está optimista. "El mercado vuelve a estar activo", dice **Dalton Schmitt Jr.**, su gerente de inversiones, quien sabe que la tecnología es solo un activo más y hoy brillan las compañías de agrobusiness, el sector metalúrgico y aeroespacial. "Se supo como explotar las ventanas competitivas", agrega. Sume a ello que Brasil posee un marco legal que protege a la industria desde 1994, cuyo eje es fomentar la inversión en empresas emergentes. Sin embargo, no todo son buenas noticias: los emprendedores que no tienen un plan de negocios definido "no tienen acceso al venture capital", concluye.

Mercuries Ventures, Colombia

EL ANDINO SOLITARIO

CERO DESARROLLO de la industria. Así describe al mercado de capital de riesgo en Colombia **Juan Diego Fajardo**, representante de Mercuries Ventures, único fondo de esta naturaleza en el país. Las razones son simples: escasos incentivos por parte del gobierno y legislación poco clara. "Aún no se logra que el Estado entregue exenciones tributarias o protección a los inversionistas minoritarios", dice Fajardo. En este escenario, los emprendedores colombianos están cruzados de brazos. Según Fajardo, será difícil ver cambios en el corto plazo. Pero él está dispuesto a invertir.

LatinIdea, México

NO SE BUSCAN IDEAS

A PESAR del momentum mexicano, el venture capital de ese país observa aquellas que además de poseer buen management y un plan de negocios defendible, ya tengan mercado conquistado. Tal como lo hace LatinIdea. Su fórmula le permitió levantar en 2000 un fondo por US$ 3,5 millones. Y lanzará en los próximos meses uno por US$ 35 millones. A pesar del nombre del fondo, **Humberto Zesati** aclara que "no buscamos ideas: estamos tras compañías que ya tengan ventas". Los intentos por financiar a proyectos más embrionarios son un desafío que tomó el gobierno nacional, la estatal Nacional Financiera –Nafinsa– busca la fórmula para apoyar a los emprendedores mexicanos a través de su inversión en fondos locales.

Prudencial, México

DINERO EN LOS LADRILLOS

EN MEXICO la estrella de los inversionistas son los bienes raíces. Especialmente para Prudencial que a pesar de su nombre es considerado un inversionista de riesgo que ha puesto un ojo especializado en el real estate mexicano. "En México, el sector vivienda nunca estuvo tan activo", dice **Roberto Charvel**, director de portafolio para México de Prudencial Real Estate. Hoy Prudencial posee un fondo industrial de 5 millones de pies cuadrados de edificios y uno de residencial de 75.000 viviendas. "El país es una referencia para los administradores", dice

Citigroup Venture Capital, Nueva York

PREOCUPADO POR LA SALIDA

AUNQUE ASIA es un mercado donde Citigroup Venture Capital ve mayores oportunidades para crecer, America Latina tiene presencia en su mapa. Pero "hoy estamos muy selectivos", dice **Bruce Catania**, su director para la región. En 2004 invirtió US$ 80 millones en cinco proyectos, aunque principalmente en el área del private equity. "Hoy miramos con fuerza a México, Brasil y Chile", señala.

Actis, regional

EL ALTERNATIVO

NO TODO es Brasil y México. "En los países más pequeños y pobres con escasez de capital se encuentran buenas oportunidades", dice **Michael Till**, socio gerente de Actis Latin America. Con sede en Bolivia, su fondo de unos US$ 200 millones concentra esfuerzos en Centroamérica y la Región Andina. Han tenido buenas experiencias, como en la cadena de cines peruana Cineplanet. Pero pronto apuntarán también a Brasil y México.

Precursor, Chile

EMERGIENDO

DORMIDOS en los 90, los VC chilenos despiertan en estos tiempos, motivados por un cambio en la normativa que apoya sus inversiones. Uno de los más nuevos es Precursor. "Los emprendedores chilenos no tenían a quién acudir a falta de capital", dice **Patricio Arrau**, gerente general de Precursor, en Santiago. "Sólo crecía el apoyo a las medianas empresas con un mercado consolidado". En pocos meses de funcionamiento, Precursor ya ha analizado unos 60 proyectos. El fondo cuenta con US$ 15 millones e invertirá entre US$ 500.000 y US$ 1,5 millón por empresa, con un plan de permanencia de tres a cuatro años. La fórmula de salida: vender a un tercero.

DGF Gestão de Fundos, Brasil

INTERÉS POR INVERTIR

LA ADMINISTRADORA brasileña DGF que administra un fondo de US$ 6 millones y que lanzará próximamente otro cercano a los US$ 12 millones confía. Pero sin perder los estribos. "Solo analizamos empresas económicamente viables", dice **Fredenco Greve**, socio de DGF, en São Paulo. La administradora apoyada por el BID, ABN Amro Bank y Sistema Sebrae, invierte entre US$ 1 millón y US$ 2 millones en *start ups* o en firmas que ya están en una etapa más avanzada. Sus focos: tecnología de punta, determinadas áreas de negocios tradicionales y reestructuraciones de empresas.

OTROS JUGADORES

REGIONALES: Darby Technology Partners, Southern Cross, Exxcel Group, Hicks, Muse, Tate & Furst, Intel, Morgan Stanley VC, Deutsche Bank Capital Partners, Goldman Sachs Capital Partners, Bain Capital. **ARGENTINA:** ADV Capital Partners, ASFE, Inverpyme, Dolphin Fund, Coinvest, Irsa. **BRASIL:** Aig Capital Partners, Draxer Investimentos, Dynamo, Eastman Ventures, Eccelera (Grupo Cisneros), Fir Capital, IdeaCapital, Invent, Latin Valley, Mifactory, CVC Opportunity, Orbe Investimentos, Pactual. **CHILE:** Celfin Capital, Chiletec, CMB Prime, Columba, Las Americas Emergente, Halcón, Prime Infraestructura, Toronto. **MÉXICO:** Nafta Fund, Discovery, Sinca Inbursa, Visionario, MIF/WAMEX. **PERÚ:** Nexus, Seaf Value Investment Perú.

Negotiating Complex Licensing Agreements

BY WESTON ANSON*

INTRODUCTION

In this overview of licensing negotiations we will address three areas: In Part One of the article, our focus is on the art and artistry, the issues and interests, the options and opportunities, and the alternatives and end-games that occur in a complex licensing negotiation. In Part Two, we briefly review opportunities to extend a licensing program during the renegotiation process. Part Three is a case history of a complex negotiation.

PART I—THE PROCESS AND ART OF NEGOTIATION

Part One is applicable to all licensing negotiations (and most other negotiations, in fact). The second part is aimed at existing licensors and licensees—those with both mature and growing programs in renegotiation—and is meant to stimulate some creative thinking on the part of program managers as they face a new negotiation with a key licensee. We also deal with the single most important concept for any negotiation: the BATNA—best alternative to a negotiated agreement. Finally, we conclude with a brief case history of two large companies negotiating a new license in the food industry.

The Process and Art of Negotiation

There are a variety of viewpoints written on negotiating a license, but the most important element may be sensitivity towards the other side and its positions. In this section we look at some considerations and techniques for managing the negotiating process and bringing it to a successful conclusion. Much of this is based on our own experience over the last two and one-half decades, as we have engaged in license renegotiations for trademarks, technologies, brands, copyrights and software; and have engaged in those negotiations in North America, Asia, Europe and Latin America.

We in the licensing business often think that the problems of negotiating are unique, particularly the problems of coming to a fair and successful agreement. Licensing people all agree that the licensing business is very interesting and very different, and in some ways is unique in the service that it sells. However, we are certain that the negotiation process that one goes through in licensing, while complex, is not unique.

Whether the issue is a successful negotiation of a merger or acquisition deal, a reorganization under Chapter 11, a personal appearance contract, or a major licensing agreement, there are great similarities in the process. The essence of the negotiating process is basically the same, the core motivations of the parties are the same, the types of self-interest can be categorized into a few groups, and common negotiating techniques can be made effective across all types of negotiations.

What is a Successful Negotiation?

In an ideal world, a successful negotiation is one where both parties get everything they want. This, however, never happens. Each license agreement that is negotiated calls for givebacks and takeaways on the part of each party. A successful negotiation then is one in which each party feels that on balance their goals and interests have at least been advanced through joint decision and joint action on the negotiations. Even if those goals have not been fully met, each party must feel that they have attained a meaningful portion of their goals.

Perhaps the best way to define a successful negotiation is as a means to advance the full set of your own interests through joint decisions and actions of the two parties in the negotiation. The key is to understand your own interests and those of the other party, and then to identify alternatives that will address both sets of concerns. In addition, it is important to understand what is happening away from the negotiating table. While the facts and issues being negotiated face to face at the table appear to be of paramount importance, oftentimes the behind-the-scenes plans, processes, positions and postures can be equally important as internal in-fighting and/or jockeying for position may be taking place behind closed doors, on one side of the table.

Identify, Assess and Prioritize Interests of Both Parties

Success in negotiating an agreement is to understand completely the interests of your own team and those of the other negotiating team. We not only need to understand what those interests are, we have to assess them and then prioritize them as a reality check. However, understanding the key interests of the other side is, if anything, more important to a successful negotiation.

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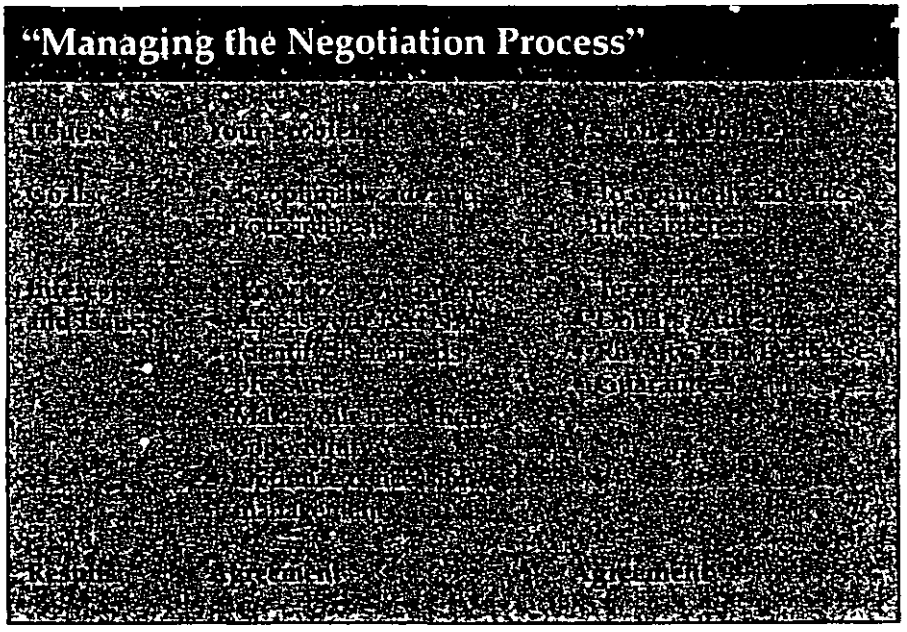
*Weston Anson is Chairman of CONSORSM, an intellectual asset consulting firm specializing in trademark, patent and copyright licensing, valuations, and expert testimony. The firm is headquartered in La Jolla, California, and has offices in New York and London.

There are both tangible and intangible interests on the table, some visible and some invisible. The tangible interests are obvious and include such things as a longer term, more frequent renewals, broader product definition, a higher royalty rate or greater guarantee of royalties. Perhaps better advertising allowances or other marketing considerations come into play. On the other hand, the intangible interests, while less obvious, may be equally important. They can include reducing tensions between the two parties, building a relationship of mutual trust with an established licensee, ensuring that the licensor's reputation is maintained at the highest level, and helping to see that there is a friendly, if not cordial relationship between the two parties as they move through the negotiations into implementation. Each of these intangibles can have as much bearing on the negotiating process as the tangible and specific financial interests and goals.

It is important to understand that when negotiating, the interests of your side are both objective and subjective. There are objective standards such as an absolute royalty percentage below which you will not go. On the other hand, a subjective interest might be a requirement for a creative commitment to the licensing program by the licensee that is more difficult to measure and negotiate. It is also important not to allow the hard or tangible issues to drive out these critical soft issues. For example, objective negotiating goals in terms of dollars or time cannot totally push out considerations such as reputation, quality, creativity and emotional commitment.

Interests drive specific issues and positions. Each party in a negotiation has specific interests and these form the bases that drive the negotiating process. If one can distinguish core interests from specific issues or positions then one has taken the first step toward ensuring that an effective negotiation can follow. Too often, one of the negotiating parties will focus solely on a specific issue such as maximizing percentage royalty rates. In fact, what the overall interest may represent is a need to maximize early cash flow as opposed to the specific issue of high-end royalty rates. Recognizing this key interest can then lead to many different solutions to address it.



It is important that the parties at the table be able to identify the important differences in their interests. In other words, if one party has a key interest to keep early cash flow to a minimum and the other party can recognize this, then they are well on their way to addressing the underlying issue of royalties, advances and guarantees to satisfy that interest. The key concept is interests versus issues: Identifying the underlying interests and reconciling the various issues that flow from then.

Negotiation is a Means to an End—The Concept of BATNA

Often, the process of negotiating appears to become the end in and of itself. In fact, we believe that in the licensing industry parties often allow the negotiations themselves to become the object. Too often people lose sight of the fact that negotiating is a means to solve problems for both licensor and licensee. When in negotiations, ask yourself a question: What is my BATNA? BATNA means The Best Alternative To A Negotiated Agreement. Ask yourself: If we can't negotiate an agreement here, what are my alternatives? Do I have alternative licensees? Are there product lines I can add to existing contracts? Can I wait a year to introduce this product line? Can I contract and manufacture it myself, or perhaps import it?

The BATNA becomes the minimum threshold that the negotiated deal must exceed in order for it to be acceptable. With the concept of BATNA in mind while negotiating, you realize that there are a range of possible agreements. BATNA allows you to focus on the key alternatives, and when necessary, actually change the game; instead of negotiating a license agreement, for example, consider bringing in more partners on your side. Or, away from the table, find a way to diffuse or spread the risk, or enlist others in a joint venture. Considering any of these alternatives gives a new view of the negotiating process. Remember that moves and changes away from the negotiating table can improve your BATNA.

Assuming that you understand your alternatives, and have identified the best of those, then it becomes time to look at the other side's alternatives. The more one can identify feasible and viable alternatives for the licensee or other party facing you across from the negotiating table, the better one can understand the maximum advantage to be gained at the table. In other words, if the party on the other

side of the table has relatively few alternatives then your negotiating position becomes much stronger. If on the other hand their BATNA has a high degree of attractiveness, it will mean that the relative inclination to negotiate more favorable terms will decline, as the other side looks at the possibility of moving to that best alternative.

Their Problem is Part of Your Problem: The Art of Concession Management

One of the most important concepts to bring to the table when negotiating a license agreement is to understand that the opposing side's problem really becomes yours if you are going to have a successful negotiation. You must put yourself in their shoes. Far too often I have heard the statement made in a negotiation, "Well, that's their problem. I am not going to worry about it." In fact, that problem becomes both your problem and theirs, because if you can't help them solve their problem, they cannot solve yours. Consequently, it is important to the greatest extent possible, to understand the other side's egos, needs, pressures, marketing strategy, and internal organization. The classic error we most often see in negotiations is for one side to focus on its own position without understanding the position or problems of the other side.

The best illustration of an effective way to handle the issue of "their problem is your problem" is found often in Japanese negotiations and contracts. Oftentimes when the Japanese negotiate a complex agreement that spans multiple years with multiple permutations, they put in a paragraph known as the Otawara clause (there are other descriptive terms for this clause). The so-called Otawara clause addresses the following issue: Should relative conditions between the two parties that are negotiating the agreement change substantially, then that party which has accrued greater power than the other has a commitment to renegotiate and make things fair. While this is a common approach and philosophy in Japan, it is a virtually unknown concept in American negotiating.

Someone once described negotiation to me as: "The art of letting them have their own way. To our advantage." We agree. It fully implies that making their problems part of your problem brings you to successful conclusion. The essential task becomes to get them to see their problem in your terms. In other words, get them to focus on their problem and encourage them to do so, but within the context of your terms, conditions, mobility, and alternatives. Each side tries to optimally advance their own interests, which (hopefully) then leads to agreement. However, in order to reach that agreement, the art of concession management comes into play. Make the licensee see that your need or problem is their opportunity to advance their own economic and other business interests.

The art of concession management is straightforward. It is the ability, while negotiating, to play key elements against each other: Time versus dollars, now versus later, lower royalty rates versus higher minimums, and exposure versus obscurity. Sometimes, however, concession management becomes the end play in a negotiation and, unfortunately, too many people see it as the process of negotiation itself. Concession management is simply the means that one uses during the negotiation to get to an agreement that best addresses the most important issues. Concession management is an art form in many negotiations.

Summarizing The Art of Negotiation

Let's return to our original question: What is a successful negotiation? It is that negotiation that best advances the interests of both parties through joint decisions and actions. The key first step is for each party to identify, assess, and prioritize their full set of tangible and intangible interests. Once the parties understand their real interests, they can then move on to the specific issues and positions that each needs to address. It is important not to let the hard issues drive out the critical soft issues that can be equally important over time. Remember too, that negotiations are a means to an end, not an end in and of themselves. In negotiating, both parties' BATNA must always be kept firmly in mind. If there is no BATNA for one party, the rules of the game change.

Most importantly, remember that their problem is part of your problem. Understand what their needs and pressures are, and do not make the classic error of thinking that "It's their problem, they have to solve it." Part of the process is the art of concession management, and effectively using some of the techniques we have described here.

PART II—OPPORTUNITIES TO EXTEND A LICENSING PROGRAM IN THE RENEGOTIATING PROCESS

In this brief article we take a moment to identify ways to best extend the life of a successful licensing program. In today's constantly changing society, and in a licensing industry faced with increasing compression and competition, the ability to hold licensees and renegotiate successful agreements with them becomes increasingly important. In the face of the pressures within the licensing industry (and within consumer goods in general), the rising importance of successful renegotiation cannot be overestimated.

Time is the enemy of most licensing programs. With more rapid technology change, shorter and quicker product introductions, shorter retail lead times, smaller retail orders, shorter attention spans among consumers, the faster pace of societal change, and greater licensing competition, one must continuously adapt—and adapt more rapidly: As a general rule, the life span of a licensing program is continually going to shrink, with few exceptions. The average licensing program cycle time is substantially shorter today than it was 10 or 20 years ago.

When a corporation is trying to revitalize and extend its licensing program it is important to brain-

storm, identifying and discussing alternative ideas and concepts prior to entering a critical negotiation. Conceptually, the management team starts with a broad scope so that many ideas will be considered and discussed. From this point, it is important to narrow the scope so the strategy will be focused.

Alternative Negotiating Strategies and Techniques

There have been many books written on the negotiating process. This brief article is intended to be a helpful guide when negotiating license agreements, whether for trademarks, technology, character licenses, celebrities, patents or music rights. Some of the negotiating techniques to be aware of include the following:

• Bulwarism – Bulware, the infamous GE Labor Relations Manager, is the father of this technique, based on the principle that the first offer given is the best and only offer that will be given. However, a more realistic way to look at it is the refusal to bargain in good faith. Clearly, it is a bankrupt technique, and one that is rarely successful although it is still seen occasionally in negotiations..

• The unbundled approach to negotiating a license agreement is one that we often use. In this approach we break the agreement into two or three sections; each is treated as a separate piece. When the separate piece is fully negotiated, then the next piece of the agreement is brought to the table. While the advantages of the technique are that it breaks down the negotiations into more manageable pieces, it can artificially separate integral parts of a single negotiation.

• The components of value approach to negotiating a license agreement is a technique that we helped pioneer in licensing. The underlying principle states that in any negotiation there are three, five, or ten primary items that have to be negotiated. These items can include the term, royalty rates, guarantees, separate fees for product design, advertising, etc. This approach is useful when there is a hybrid agreement to be negotiated; one that involves perhaps a trademark, a technical process, copyright and/or patent. (See Part III)

• The final technique we always use is: Nothing is agreed upon until everything is agreed upon. In other words, as one goes through the negotiation process, addressing specific issues, the two parties may agree (for example) on minimum annual financial guarantees. However, later in the negotiating process that agreement on minimum guarantees may have to be readjusted in order to get agreement on other issues such as length of the contract or number of product categories involved.

There are, of course, other negotiating techniques or postures that we often see. Among those is "the unique market syndrome," and "the sky is falling" doomsday technique. In the first case, "the unique market syndrome," the position is basically the following: You can't work this market without us. The one party takes the position that they are the only alternative in the negotiation and that the other side should recognize this immediately. This is a form of brinkmanship (although it is also often a form of hubris). The second, "the sky is falling technique," is seen quite often. In this scenario, typically put forward by the licensee, the blackest possible picture is painted—this technique is based on the hope that by painting such a black picture, the other party at the negotiating table will immediately lower its sights and become more flexible in its negotiations. There are permutations and combinations of all these techniques and combinations that can be used in any negotiation.

In sum, the licensing industry has become more complex over the last decade, and has gone through a period of consolidation, retrenchment and decline. As a consequence, the negotiating process is more important today than it ever has been. As one sits down to renegotiate with existing licensees or to bring a new licensee together in a negotiation, each party must be far more critical and concise in assessing their interests, issues and realistic solutions—the process of negotiating a license agreement is not becoming simpler, it is becoming more complex.

Creative Re-negotiation

In the face of these facts, then, the most critical issue facing a licensing manager is how to extend a successful but mature program. However, a mature program doesn't mean a stagnant or static program. The following outlines some suggestions on how to renegotiate and extend a mature, successful program so that it remains viable—and profitable.

• Add new licensing elements (sub-brands, new technology, etc).

• Try co-branding or co-licensing.

• Extend licensee product lines with new designs, logos, etc.

• Modify existing terms and restrictions. In other words, if you need to be flexible, do so.

• Add parallel licensees. If you have a retail licensee, add a direct-mail licensee. If you have a mass-market licensee, find a specialty market licensee.

• Modify the definition of your licensee's product lines.

• Extend retail distribution up, down or sideways, go up the chain, down the chain or expand sideways with direct marketing.

• Modify pricing strategies and price points.

• Begin working with the licensee's distribution channel and retailers. Involve them in timing, product selection and off-peak promotions.

• Expand geographically. Go to China. Go to Europe. Export.

• Reduce dependence of the program on its core vehicle. If the core vehicle is a patent or single logo element, find ways to make the program live beyond its lifespan.

• Encourage sub-licensing. At the beginning of the program, you may not want much sub-licensing, but when you are in the fourth, fifth or tenth year, you may want a lot of sub-licensing.

• Help your licensees when they get into trouble. If they have poor products, help them dispose of them.

• Finally, a new look: New graphics, new characters, new colors, new logo treatments.

Maturity does not have to mean stagnation. Remember, in licensing and in the consumer marketplace, the only constant is change. The final thought is to remember that the licensee always has a BATNA (Best alternative to a negotiated agreement). Therefore, an analysis of their alternatives, their interests, their issues, their needs and their positions is of paramount importance prior to beginning the renegotiating process. If this analysis is undertaken by a licensor in advance, then the chance of renegotiating and extending a mature program increases dramatically.

PART III—HYBRID LICENSING: A CASE HISTORY

We were involved as consultant and advisor in a complex licensing deal between two multinational food companies. The deal would affect both companies' basic business for perhaps the next 50 years.

Company A, our client, is a publicly traded manufacturer and marketer of consumer and commercial food products. Well known for its corporate name and brand, along with other trademarks and brands it controls, it is also respected for its consumer marketing abilities in a highly competitive environment.

Company B is a very strong publicly traded multinational focused on consumer foods. The parent company has several strong divisions and this deal involved its snack foods operations. The division is well known and thoroughly respected for its ability to deliver, to distribute and to merchandise in tens of thousands of outlets.

This complex deal had five key elements: use of the trademark and brand name, production and technology know-how, manufacturing capabilities, physical distribution and delivery, and finally, merchandising and marketing of product. These five core elements were then divided into two distinct agreements and two sets of negotiations. The first agreement covered the manufacturing elements including plant construction, testing, product development, etc. It also covered the basic elements of marketing, merchandising and distribution. The second agreement, the licensing agreement, covered the use of the brand name and of packaging and other production technology, all provided by Company A.

There was substantially more than simply a trademark and patent involved: First, the marketing bundle of rights along with the brand name and trademark. Second, the technical intangibles licensed in the technology section of the agreement.

(See Table 1)

Table 1: Bundle of Rights

Marketing Bundle of Rights	Technical Bundle of Rights
Umbrella Brand Name	Packaging Technology
Sub-brand Names	Baking Technology
Product Names	Formulae and Blending
Trademark Registrations	Product Shape/Designs
Copyrights	Process Technology
Graphics	Key Patents
Corporate Name and Logo	Equipment Design
Labeling and Package Design	

General Background

The two companies had mutually identified a product category that was ripe for a new competitor. The category had been in existence for several decades and was dominated by a handful of competitors who were strapped by high production and distribution costs combined with low efficiencies. Consequently, Company B saw an opportunity to build a market quickly that offered annual sales volume between $300 million and $1.5 billion. However, they lacked the product know-how and suitable brand franchise which Company A had.

There was a good marketing match. Company A does an effective job of consumer advertising and promotion and is superb at pulling product through the distribution channel via consumer advertising and promotion. Company B, on the other hand, is superb at pushing product through multiple channels via merchandising and pricing. Jointly, therefore, they would decide on and control effective trade and consumer marketing programs. Finally, there was good use of Company A's general product technology. However, it meant that in addition to negotiating the manufacturing and distribution deal, it was necessary to put together a license agreement to cover the trademark and brand name, along with the technology.

We were hired to help our client review some of its alternatives, including the possibility of having a joint venture with Company B, a pure licensing agreement, simply private labeling and packaging for them, or a combination of the above. In the final analysis, we believed that a combination deal of manufacturing agreement and licensing agreement was best. Company A agreed. We used the set of key factors that helps predict success in a licensing environment like this. As shown in Table 2 there are 10 key factors we considered in this licensing deal. The match appeared to be exceptionally good in this case.

Company A had broad goals or primary issues they needed fulfilled from this licensing agreement. The first was to generate incremental income from all of the assets employed in the license agreement, both trademark assets and technology assets. The second key interest was to broaden their consumer and trade franchise, increasing distribution and production while, third,

ensuring that their image was not cheapened or damaged.

Company B had four interests that were clear to us. First, and most important, was to better utilize its distribution capabilities. The second was to spread distribution costs over product lines. Third, was to launch a new product line that it could not make. The fourth and final interest was maximum cash flow and income.

The issues, which are secondary to the key interests, also differed for the two companies. The key issues for Company A were:

- Potential damage to the name.
- The danger of a short-term arrangement.
- The loss of proprietary technology.
- The need for market-based royalty rates.
- Annual royalty guarantees.
- Effective escape clauses.

For Company B, the issues included:

- Use of unique technology.
- That new products were continuously developed.
- That the costs of promotion and royalties remained manageable.
- That this not be a short-term affair.
- That the total cash paid to its partner not be excessive in any given year.
- Effective escape clauses.

Finally, there was a key difference in overall corporate philosophy, operating style and management. Company A is a production and marketing-driven company. Company B is distribution driven and has a distribution mentality. Those two diverse points of view and corporate strategies had to be reconciled in the license agreement, at the juncture where sales and distribution intercept manufacturing and marketing. With these key thoughts in mind we moved to establish a framework for negotiating the deal.

Negotiating a Framework for the Deal

We identified as many comparable licensing transactions as were appropriate, and determined that a royalty rate for use of the brand name and other marketing intangibles would be between 2.0% and 6.0%. We then undertook a similar exercise for food technology licensing and determined the royalty rates were somewhere between 0.5% and 5.0%.

Table 2: Key Factors in Consumer Goods Licensing

Licensor Contribution	Company A Rating
Support for Licensee	
1. Consumer awareness of licensor	
2. Retailer acceptance of licensor	
3. Strength of licensor's core products	
4. Advertising/promotion by licensor	
5. Piggyback on licensor's distribution	
6. Volume potential for licensed product	
7. Selling void for the licensee	
8. Manufacturing/product fit	
9. Higher attainable margins for licensee	
10. Potential for efficiencies/profits for licensee	

Comparable Transactions

Trademark Royalty Rates	2.0%	6.0%	3.5%
Technology Royalty Rates	0.5%	5.0%	2.0%

After further research, we provided Company A guidance as to trademark royalty rates and technology royalty rates. We suggested royalty step-ups with price increases and royalty rates with volume discounts. We helped establish minimum sales levels and minimum royalties. We recommended proportionate pricing formulas, and addressed the issue of branded product sales versus unbranded product sales. We also created a framework of approvals over marketing, packaging, labeling, etc. And, finally, we provided to each company a number of unique escape mechanisms or exit clauses that could be exercised in five-year intervals—with a substantial fiscal penalty should the escape-clause mechanism be exercised.

By reducing the key terms and conditions of the proposed license agreement to a common deal memo, we were able to help Company A and Company B reach an agreement on the following:

- Term and renewals
- Royalty rate scales
- Options
- Minimum sales clauses
- Minimum royalty clauses
- Test market details
- Channels of distribution
- Product definition

In essence, by reducing the negotiating process to address the key interests and issues, we were able to condense the wanted result into a one-page deal memo, from which a full-fledged license agreement was structured.

Conclusions

What conclusions do we draw from this long but ultimately successful process? First, that complex issues can be resolved and unified

via a licensing agreement. Second, that trademarks and technology can be married in one deal. Third, this combination or hybrid deal will play an ever-larger role in the future of corporate licensing and corporate transactions in general. Finally, when negotiating, get the parties to separate their key interests from the more minor issues. And, make sure that each party understands its BATNA.

A Guide To Licensing Biotechnology

BY KATRINA BILLS*

A discussion of the merits of licensing, structure and elements of a licence, how royalties are calculated and the issues to be considered in drafting and negotiation a licence agreement. This article based upon an essay which won the LES ANZ Prize.

1 Introduction

Biotechnology by definition is the use of biological processes to solve problems or make useful products.[1] Since the 1970's our understanding of biology has expanded significantly. We now talk about biotechnology as "a collection of technologies that capitalise on the attributes of cells, such as their manufacturing capabilities, and put biological molecules, such as DNA and proteins to work for us."[2]

In 2001 in Australia there were an estimated 190 biotechnology companies and 460 related biotechnology companies generating combined estimated revenue of $1 billion.[3] Whilst publicly listed biotechnology companies spent approximately $112 million on R&D, an average of $3.2 million private biotechnology companies spent $1 million on R&D.[4] For the same period, biotechnology represented approximately 9% of the total government expenditure on R&D.[5]

In 2001 the Federal Government allocated $20 million to the Biotechnology Innovation Fund which aims to increase the rate of commercialisation of Australian biotechnology ventures. If an organisation meets the programs eligibility criteria BIF will fund up to 50% of the costs of establishing proof of concept to a maximum individual grant of $250,000.[6] In parallel all state governments have setup assistance programs for biotechnology companies who are at proof of concept stage.

But why are the governments so keen to support this industry? The United States Department of Commerce recently completed a survey of more than 3,000 firms engaged in biotechnology-related areas, they reported that:[7]

- They employ more than 1.1 million people;
- Have total annual net sales of US$567 billion, operating income of US$100.5 billion, capital expenditures of US$29.5 billion and R&D expenditures of US$41.6 billion;
- Have 33,131 pending patent applications for biotechnology products or processes and 23,992 current portfolio biotechnology patents;
- Growth for biotechnology net sales of just over 10%;
- They are investing about twice as much in their biotechnology-related lines of business as in their businesses as a whole;
- Biotechnology related R&D expenditure represents approximately 10% of total R&D expenditure U.S.A.

In short, biotechnology business is big business and is rapidly growing; the possibility of increased employment, turnover, profit and taxes is very real. The promise of a cure looming for many diseases which plague humankind is also a powerful incentive. More than 325 million people worldwide have already been helped by more than 155 biotechnology drugs and vaccines approved in the U.S.[8] whilst more than 370 biotech drug products and vaccines are currently in clinical trials in the U.S.

However, organisations need assistance to move from unprofitable to being profitable, and that assistance is in commercialising their research. Many R&D organisations do not have the skills, finance or time to commercialise their research. Biotechnology firms also have a need for large investments of funds whilst not being able to offer a return on that investment for many years,[9] if at all.

Why? Because biotechnology companies are essentially selling unproven technology, often without an identifiable use or market.

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Katrina Bills is a lawyer with Clarke & Kann in Brisbane, Queensland, Australia; and is the LES Australia & New Zealand Prize winner for the Queensland University of Technology 2003.

Even if there is a known use and market, it will still take many years, to receive approval for the product then produce it in sufficient quantities and quality for the end consumer and provide a return on investment. Added to this is a high-risk of unpredictable catastrophic liability[10] and particularly in the area of human health whether the use of technology is "moral."

This paper is to discuss the most common commercialisation method in the biotechnology industry, licence agreements[11] and offer some advice on the factors to be considered in drafting and negotiating a licence agreement. Firstly, it discusses the merits of licensing then the structure and elements of the agreement and finally provides an explanation on how royalties and other payments are calculated.

2 Why License?

A license is, according to Oxford Compact dictionary, "a permit from an authority to own or use something, do a particular thing, or carry on a trade." A licence agreement may also co-exist with other types of agreements such as to purchase equipment, transfer employees, provision of training or subsequent technical assistance or to supply certain products or materials.[12]

Licensing did not gain favour as a commercialisation method until the 1970s in western economies even though it was used very effectively by Japan to rebuild its industry, develop dominance in a number of fields including consumer electronics and modernise its chemical and pharmaceutical industries after World War II.[13] Today, licensing is the most common method of commercialisation in biotechnology.[14] Robert Goldscheider attributes[15] the rise in the use of licensing agreements to four factors:

1. Stronger patent protection;

2. Emergence of information technology (enabling the sharing, recording and analysing of information);

3 Internationalisation of the market place; and

4. The transient nature of many workforces (has lead to an increased focus on knowledge management).

Accompanying this is an increased understanding of the value of intellectual property (IP) and the importance of realising a return on their investment. Within the biotechnology industry this is often achieved by licensing their patents. Many biotechnology companies do not plan to commercialise patents themselves. Instead they are simply interested in creating IP. Other companies recognise that they do not have the skills, resources or expertise to successfully commercialise or can only do so in a specific geographic area or field of use.

Licensing patents to other organisations (licensing out) is a mechanism which creates a revenue stream which will support further R&D efforts.[16] It also allows them to retain control over the use of the patent[17] whilst contracting with someone who has the expertise to commercialise the technology,[18] ultimately providing a better return than if they attempted to do it themselves. The licensee in return obtains products or technology which would have been more expensive and less efficient to develop in-house.[19]

A licence, if the terms are reasonable and additional items such as know-how are offered can also discourage patent infringement.[20] However, a licence does have some disadvantages; ultimately what these are will depend on the agreement negotiated between the parties. Commonly, these are:

- Difficult and time consuming process of calculating license payments (royalties) which are intended to recover for costs in developing the IP[21] and provide a reasonable income stream for the licensor whilst maintaining sufficient return for the licensee;
- The licensor may be limited in how they can use their own IP[22] once the licence has been granted;
- Time and cost of ensuring the performance of the licensee;[23]
- May end up negotiating with more than one party;[24]
- Technology may not be able to be commercialised or may be superseded during the term of the agreement.[25]

Many of these disadvantages are common to all methods of commercialisation (e.g., acquisition, strategic alliance, joint ventures) however, none offer the flexibility afforded by a licence, for both the licensor and licensee. A licence agreement can encourage the use and dissemination of technology, provide income and avoid legal challenges to the patent, if drafted carefully. In addition, all

10 Ibid.
11. Medius Associations, 3 Oct 2001, "Royalty Rates: Current Issues and Trends," available: *http://pharmalicensing.com/features/disp/1002119137_3bbb1fe183dfe*, accessed: 30/09/03.
12 Razgaitis, R., *Valuation & Pricing of Technology-Based Intellectual Property*, John Wiley & Sons Inc., New Jersey, 2003
13. Goldscheider, Robert, ed., *The LESI Guide to Licensing Best Practices*, John Wiley & Sons, New York, 2002, p4
14. Medius Associations, 3 Oct 2001, "Royalty Rates: Current Issues and Trends," available: *http://pharmalicensing.com/features/disp/1002119137_3bbb1fe183dfe*, accessed: 30/09/03
15. Goldscheider, Robert ed 2002 *The LESI Guide to Licensing Best Practices*, John Wiley & Sons Inc., New York, p7.
16. Nielsen, J., "Biotechnology Patent Licensing Agreements and Anti-Competitive Conduct," *Regulating the New Frontiers. A Symposium*, Dec. 2001, p43
17. Biotechnology Australia, *Biotechnology IP Management*, AusInfo, Canberra, 2001, p143.
18. Ibid.
19. Schreck PA & Simkin MM, "Licensing and Intellectual Property concerns Relative to Pharmaceutical and Biotechnology Collaborations," available: *www.foleylardener.com/FILES/tbl_s31Publications/FileUpload137/1412/IPCollaborations1.pdf*, accessed: 21/9/03.
20. Ibid.
21. Schreck PA & Simkin MM, "Licensing and Intellectual Property concerns Relative to Pharmaceutical and Biotechnology Collaborations," available: *www.foleylardener.com/FILES/tbl_s31Publications/FileUpload137/1412/IPCollaborations1.pdf*, accessed: 21/9/03.
22. Ibid.
23. Middleton, G., "Licensing of Intellectual Property," *ICCIR* Iss 5 Sweet & Maxwell Ltd, 2000, p156.
24. Biotechnology Australia, *Biotechnology IP Management*, AusInfo, Canberra, 2001, p143.
25. Ibid.

non-profit organisations were given royalty free licences and all licences were non-exclusive.[26]

A good example of this is the license agreement for the Cohen-Boyer patents which was held jointly by Stanford and Columbia University which expired in 1999.[27] The terms of the licence were deliberately[28] designed to be generous to encourage the uptake of licences and as a result, decrease the risk of litigation. The licence required an upfront and annual licensing fee of US$10,000.[29] If the licence was executed within five months of the first patent being issued, five times the licence and annual fees were credited back against the earned royalties which were between 1-3% depending on the use and products sold.[30] For example, earned royalties were 2% of net sales for use of the patented claimed methods for transfected cells whilst for recombinant proteins made by the transfected bacteria (produced using the claimed methods but not covered in the patent) a royalty rate of 3% of net sales applied.[31] The result was more than 350 companies were licensed, no legal challenge was made and US$225 million in royalties were collected.[32]

3 Key Components of the Licence Agreement

The reason for licensing will often affect the content of the licensing agreement and, in particular, how royalties are calculated. The most common reasons for entering a license agreement are:

- Licensor (owner of IP) believes it has the right and opportunity to enforce its ownership of IP such as an existing patent and seeks a remedy against another party, who if successful, will often become a licensee. This is known as enforcement licensing.
- Licensor has IP and other assets which it believes will be of value to the licensee. This is known as opportunity licensing.
- Licensor is exiting a particular business area or redefining its role in that area. This is known as divestiture licensing.
- Licensor seeks a business partner to provide certain resources to a joint effort in further R&D. This is known as partnering licensing.
- Licensor licenses to a new business being formed expressly for the purpose of commercializing the technology by making and selling products and services. This is known as start-up licensing.
- Licensee seeks out a licensor for the purpose of securing rights to a technology or preventing another from doing so. This is known as opportunistic licensing.

The licence agreement itself is made up of three parts: preliminary information, terms and definitions and the grant. It is important that all parts are carefully drafted to ensure that the licence agreement reflects the wishes of both parties. Each part will now be considered in turn and wherever possible examples of clauses will be provided to illustrate the discussion.

3.1 Preliminary Information

Every licence agreement will contain preliminary information that will include identifying the parties, the purpose and background to the agreement (especially if prior agreements between the licensor and licensee existed), and representations by the licensor and licensee.

The licensor will be required to state that they own the technology referred to in the licence whilst the licensee should state why they are licensing the technology and anything else which is relevant.

3.2 Terms and Definitions

It is extremely important that terms used in the licence agreement are clearly defined. These will not only be used by the Licensor and Licensee but by the court, should a problem occur. Some common terms are discussed below.

3.2.1 Parties

It is important that the parties are described fully, if the licence is granted to a parent company and its subsidiaries. It is prudent to identify each of them, not just the parent company.[34]

3.2.2 Licensed Property

This will typically include patents, the licensors know-how and confidential information.[35] It may also include trade secrets and trademarks. The property being licensed should be listed in a schedule attached to the main license agreement. This schedule should include the patent application or patent number, type of patent, patent title, countries where patent is issued or filed, filing and issued date.[36]

3.2.3 Improvements

An improvement is "any modification of a licensed product described in a licensed patent, provided such modifications, if unlicensed, would infringe one or more claims of the licensed patents."[37] Improvements may include:

- "Anything that performs the same function as the specifically licensed invention in better or more economical way;
- Any beneficial modifications of a component (or biological material) useful in the licensed invention; or

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26 Ibid.
27. Goldscheider, Robert, ed., *The LESI Guide to Licensing Best Practices*, John Wiley & Sons Inc, New York, 2002, p206
28. Ibid
29. Ibid
30. Ibid.
31. Ibid
32. Ibid.
33. Razgaitis, R., *Valuation & Pricing of Technology-Based Intellectual Property*, John Wiley & Sons Inc, New Jersey, 2003, p7-8.
34. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.
35. Biotechnology Australia, *Biotechnology Intellectual Property Manual*, 2002, p149.
36. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.
37. "Chapter 6A Government, University and Biotechnology Licensing," available: *www.lexisnexis.com/practiceareas/ip/pdfs/53/CH6a.pdf*, accessed: 21/9/03.

• Anything that performs functions similar to those of the licensed invention as described in a licensed patent and infringes the claims of the licensed patent."[38]

In many cases the Licensor will require that the Licensee provide them with a right to use any improvements—this is known as a grant-back. The Licensor will also typically want the right to sub-licence its right to use any improvements to other licensee's.

3.2.4 Field of Use

This is used by a Licensor to narrow the uses of a licensed product by the licensee. It may be using technology for a particular purpose, dealing with technology for or within a particular industry. In biotechnology and pharmaceuticals the field of use is often based on a particular medical condition.[39]

3.2.5 Net Sales

Net sales is often defined as gross sales less discounts, commissions, returns, taxes and other credits. It is important to be clear on what is included in net sales, particularly if it will be used in calculating royalties payable under the license agreement.

3.2.6 Type of Licence

A licence can be exclusive, sole or non-exclusive. Exclusive means that the Licensee is the only party who may make, have made, use and sell the technology subject to any other terms and conditions of the licence.

A sole licence, however, is similar to the exclusive licence except that it may include the right for the Licensor to also carry out some or all of these activities in the same territory or field of use.[40] Whilst a non-exclusive means that the Licensor may license to other parties in addition to the Licensee. The Licensee may also be granted the right to sub-licence.

3.2.7 Licensed Territory

This is the geographical area where the Licensor will be able to make, have made, use and sell the technology. Depending on the agreement between the parties, this may be a particular state, country or worldwide. Often the Licensor may also want to restrict the licensee from selling to any entity who may sell the licensed products outside their licensed territory.[41]

3.3 Grant

This section of the licence contains the details of the agreement between the parties, such as the rights that have been granted and restrictions imposed.

3.3.1 Exclusive versus Non-Exclusive

An exclusive licence is the highest risk of the two types of licence. The Licensor is banking on the licensee being able to commercialise the technology successfully and provide the anticipated returns. An exclusive licence can be tied to a particular territory and/or field of use to lessen this risk.

If the Licensee wants the Licensor to continue research and development on the technology then it may request a sole licence. This allows the Licensor to continue using the technology in the same territory as them but restrict it to a field of use of research and development.

A non-exclusive licence allows a Licensor to spread the risk of a Licensee being able to successfully commercialise the technology by being able to licence to more than one Licensee in a territory and field of use.

3.3.2 Sub-licensing

If sub-licensing is allowed it is important that the Licensor's consent be required. This has the dual purpose of making the Licensor aware of the existence of a sub-license and allows them to determine whether the grant of a sub-license to that party is in its best interests. Often, sub-licences will need to be granted to enable the manufacture, distribution and marketing of the final product.[42]

Regardless of the reason, the Licensor should require that the Licensee use a standard license agreement which will bind the sub-licensee to the same terms and conditions as the Licensee. Once the sub-license has been granted, the Licensor should receive a copy of the licence and regular updates from the licensee.[43] The Licensee should also indemnify the Licensor against any actions by the sub-licensee and be required to collect any royalties payable.[44]

3.3.3 Assignment

If assignment of the licence is allowed, the Licensor's permission should be required before the licence can be assigned. The Licensor may also want to include a provision which allows it to revoke the license should the ownership of the Licensee alter. This is to protect competitors of the Licensor's obtaining access to a license through acquisition.

3.3.4 Know-How & Technical Information

In order to be able to make efficient use of the patented technology, it is often necessary that the Licensor transfer its know-how (knowledge of how to use it) to the Licensee.

Often some disclosure of know-how and/or technical information is provided prior to entering the licence agreement. A formal agreement, mirroring the requirements

38 Ibid.
39. Ibid.
40. Middleton, G., "Licensing of Intellectual Property" *ICCIR* Iss 5 Sweet & Maxwell Ltd. 2000, p155.

41. Schreck PA & Simkin MM, "Licensing and Intellectual Property concerns Relative to Pharmaceutical and Biotechnology Collaborations," available: *www.foleylardener.com/FILES/tbl_s31Publications/FileUpload137/1412/IPCollaborations1.pdf*, accessed: 21/9/03.

42. McGinness, P., *Intellectual Property Commercialisation*, p235.
43. Ibid.
44. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.

in the licence to keep the know-how and technical information confidential should be entered into between the Licensor and prospective Licensee before disclosure is made.

The know-how transferred should be treated as confidential unless an equitable exception applies, that is:

- The licensee can prove, with written records, is already known to a licensee or is already in their possession;[45]
- It was in the public domain prior to disclosure by the licensor;[46]
- Becomes a part of the public domain by publication or by any other means except an unauthorised act or mission by the licensee;[47]
- Is received from third parties who are under no obligation to maintain such information in confidence;[48]
- Licensee can prove, with written records, was developed by licensee independent of disclosures from licensor.[49]

Particular care is to be taken when the patent has not yet been filed. The usual practice is that the Licensor will communicate the information in their possession on commencement of the agreement.[50]

Often the right to use the know-how and technical information under a licence agreement will not incur the payment of an additional fee[51] although reimbursement of expenses may be required. The licence should specify:

(a) What information is regarded as confidential? This should include any technical information and know-how which is useful or necessary to make use of the Licensed Product as specified under the licence. If the know-how is not already documented, then it is important that either at, before, or at the time of making the licence or after the know-how is transferred that it is documented and confirmed in writing. Any technical information such as manuals, results, protocols, etc., should be specified.

(b) Purpose for which it may be used. This should be consistent with the licence grant in a particular field of use, territory and type of license provided.

(c) Person(s) to whom and circumstances when it may be disclosed. This should be consistent with the licence grant in a particular field of use, territory and type of license provided.

(d) Require that all technical information and any other written documentation relating to know-how of the Licensed Products be returned on expiration of the licence[52] and that this extends to all employees, suppliers and associated entities of the Licensee.

3.3.5 *Improvements*

It is likely that the Licensee may identify or discover improvements to the Licensed Products during the term of the license. As the improvements will be owned by the Licensee the Licensor will want to ensure that Licensee is required to provide them with a non-exclusive licence (with the right to sub-license) any such improvements.[53]

This allows the Licensor to offer the improvements to any other licensees for an additional fee and may improve the value of the Licensed Products to potential licensee's and may extend the term of the licence.

3.3.5.1 *Restraints*

A Licensor will want some control over the way in which the Licensee uses the licensed property. Usually this will be that the Licensee must obtain permission before sub-licensing the technology and that they do not use, make or sell a competing product.[54]

The Licensor will also want to ensure that the Licensee, when selling product using the licensed property, does not sell it to a company which exports or sells into a market outside the Licensee's territory. A Licensor may also restrict the Licensee production of products using the licensed property according to a minimum or maximum quantity or volume of products sold or used.

3.4 Payments

Payments made under a licence agreement can vary considerably, however the most common way payments are made are as either a lump sum or a percentage of sales (royalties) or a combination of both.

An initial payment is usually made when the licence agreement is executed. Although it may be some time before the Licensee can recoup this cost, an initial payment serves as a reminder of their obligation and will encourage them to make their best-efforts to commercialise the technology. Milestone payments may also be made—these are lump sum payable on the occurrence of specified events. Examples of these are on filing or granting of patent, commencing a particular stage of commercialisation such as pre-clinical development, obtaining government approval or product launch.[55]

The type, amount and frequency

45. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.
46. Ibid.
47. Ibid.
48. Ibid
49. Ibid
50. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.
51. Ibid.
52. Middleton, G., "Licensing of Intellectual Property," *ICCIR* Iss 5 Sweet & Maxwell Ltd, 2000, p156.
53. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.
54. McGinness, P., *Intellectual Property Commercialisation*, p245.

of payments, will be determined by a range of factors, including:

- Value of licensed property.
- Type of licence (i.e., exclusive or non-exclusive).
- Whether sub-licensing is allowed?
- Whether royalties are paid in advance or in arrears?
- Whether running royalties are to be paid.
- The minimum amount of royalties.
- Length of the period for which royalties are payable.

3.4.1 Royalties

Royalties are the most common method of calculating payments under a licence agreement. Royalties are a fee paid for the use of the technology which is calculated according to a base formula, and are usually paid on a periodic basis. These are often calculated with reference to the Licensees net sales for products[56] incorporating the licensed property[57] or cost savings. Why? This is simply because net sales are a concept which is understood by the general community and the Licensee generally will be more willing to disclose this information.[58]

Separate royalty calculations can be used for use of the patented technology and/or the know-how. If know-how royalties are included, they can often extend past the expiration of the licence agreement.[59] However, in biotechnology licence agreements more often than not, only patent royalties are included in the licence agreement.

There are also different types of royalties, these are:[60]

- Wedding cake—these decreases in rate with increasing sales.
- Escalating royalty—rate annually increases in-line with sales .
- Multi market royalty—different, specified royalties are used for individual products (fields of use) and/or territories.
- Royalty free—as an aid to market introduction, for goods that they might anticipate selling as a result of selling goods using the licensing technology.
- Kicker—royalty premium paid on occurrence of some milestone.

3.4.2 How do you find out the appropriate royalty?

An appropriate royalty, is one that is fair to both Licensor and Licensee. Negotiations will often start at a rate considered usual in that industry.[61] The 25% rule is often referred to amongst Licensing Executives. Whilst an industry standard rate, or range is a useful starting point it does not offer any guidance as to what should be contained in the licence agreement or how the rate should change depending on the terms and conditions agreed.

Surveys show that where technology is licensed in, the royalty rate is generally lower than if the same technology was licensed out.[62] Obtaining quality information on the actual range of royalty rates in any given industry is difficult. A number of companies in the United States and United Kingdom provide a subscription based service where you can search within industries and technology groupings to find out what figures have been used. However, these are expensive and the value is limited.

Licensing executives are often guided by their client's instructions on what is acceptable to them; this is often based upon ad-hoc inquiries and personal knowledge of the industry. Whilst this suggests that the rate is open to negotiation, in reality both the Licensor and Licensee will calculate the value of the technology before commencing negotiation. There are numerous methods for calculating the value of technology. The five most commonly used are:

1. **Cost method.**[63] This is how much it cost the Licensor to create the technology and is often the minimum figure which will be acceptable to the Licensor. However, Licensors typically do not keep accurate records of how much the research and development cost, and as a result, this can often only be an estimate.

The cost of development thus far should not be used as the minimum figure by the Licensor, as it does not represent the cost to the buyer in developing the same technology. They may not have the same skills and resources, the cost of their resources may be higher and they may not already be working in the field of use or territory proposed.

2. **Industry Standards.**[64] As mentioned earlier, these are difficult to ascertain and rarely have an exact match to the type of technology and particular arrangements of the proposed licence. However, they are a useful starting point.

3. **25% Rule.**[65] This is a rule of thumb used by Licensing Executives as the starting point for negotiations. It has been suggested that for biotechnology the figure is lower which represents the higher risk associated with that industry.

55. Medius Associations, 3 Oct 2001, "Royalty Rates Current Issues and Trends," available *http://pharmalicensing.com/features/disp/1002119137_3bbb1fe183dfe*, accessed 30/09/03.
56 McGavock, Haas & Patin, "Factors Affecting Royalty Rates," *les Nouvelles*, Licensing Executive Society, Jun 1992, p112
57. Razgaitis, R., *Valuation & Pricing of Technology-Based Intellectual Property*, John Wiley & Sons Inc, New Jersey, 2003 , p44.
58. McGavock, Haas & Patin, "Factors Affecting Royalty Rates," *les Nouvelles*, Licensing Executive Society, Jun 1992, p112.
59. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido html*, accessed: 7/11/03 sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.
60 Goldscheider, Robert, ed , *The LESI Guide to Licensing Best Practices*, John Wiley & Sons Inc, New York, 2002 , p32
61 Marshal Lee, WM, "Determining Reasonable Royalty " *les Nouvelles*, Licensing Executive Society. Sep 1992, p124.
62. McGavock, Haas & Patin, "Factors Affecting Royalty Rates," *les Nouvelles*, Licensing Executive Society, Jun 1992, p109.
63. Goldscheider, Robert, ed., *The LESI Guide to Licensing Best Practices*, John Wiley & Sons Inc, New York ,2002 , p39.
64. Goldscheider, Robert, ed., *The LESI Guide to Licensing Best Practices*, John Wiley & Sons Inc, New York (Ch 2: Technology Valuation, Dr. Richard Razgaitis), 2002 , p40

4. **Discounted Cash Flow.**[66] This is where the projected cash flows to buyer, net of all costs and investments are used to identify the likely profit of the Licensee in using the technology. This is often combined with a calculation of the net present value of that return, the idea that a dollar paid now is worth more than a dollar paid at some time in the future.

5. **Monte Carlo Method.**[67] This is a statistical model, which will calculate the range of possible outcomes. It does not, however, consider the effect of particular decisions along the path to commercialisation.

3.4.3 What factors need to be considered in determining royalty rates?

In *Georgia-Pacific v. United States Plywood*,[68] in 1970 the courts in the United States listed 15 factors to consider in determining a reasonable royalty rate. These were subsequently modified in *Honeywell v. Minolta*, as follows:

- "Relative bargaining strengths of the parties;
- Anticipated amount of profits that the prospective Licensor reasonably thinks they would lose as a result of licensing the patent compared to the anticipated royalty income;
- Anticipated amount of net profits that the prospective Licensee reasonably believes they will realise;
- Commercial past performance of the invention in terms of public acceptance and profits;
- The market to be tapped;
- Any other economic factor that normally a prudent business would, under similar circumstances, take into consideration in negotiating the hypothetical license;
- Royalties received by the patentee in licensing the patent, providing or tending to prove an established royalty;
- Rates paid by the licensee for the use of other patents comparable to the patent;
- Licensor's established policy and marketing program to maintain their patent monopoly by not licensing others to use the invention or by granting the licenses under special conditions designed to preserve that monopoly;
- Commercial relationship between the licensor and licensee; and
- The effect of selling the patent."[69]

The courts have also accepted that an infringer should pay more than a willing Licensee.[70] However, from a strategic point of view, a Licensor and Licensee will consider a number of factors, some of which are based on those applied in *Georgia-Pacific v. United States Plywood*[71] including:[72]

- **Scope and strength of IP rights.** Generally, the stronger the IP protection available the higher the value because it is easier for the Licensor to enforce their rights. For example, the licensing of a patent will attract higher payments than the use of know-how because the patent is published and hence, the Licensor is afforded a statutory right of exclusivity of the patent for a specified period.
- **Territory and field of use granted.** The value of the territory and field of use will be determined in biotechnology, by the potential applications of the technology. If it is a technology which for example, will treat Alzheimer's, the potential for its use is world-wide. With the cost of commercialising a drug estimated at more than $200 million[73] the territory must be large enough to not only recover the costs of taking the drug to market, but also provide an acceptable level of profit to the Licensee.
- **Type of Licence.** An exclusive licence has more value than a sole or non-exclusive licence. This is because the Licensee alone has the ability to commercialise the technology and hence, 100% of the return on the technology, less any obligations under the license agreement are returned to them.
- **How innovative is the technology?** If the technology represents a great leap forward which will result in large cost savings in production of technologies or provides the first solution to a problem which is widespread, such as a cure for cancer, the value of the technology will be higher than if it has simply made a process more efficient.
- **What is the useful life of the technology?** If the technology represents the first solution, the useful life may be the same as the patent life. However, if there is a lot of research and development occurring in this area, there is a real risk that at any time, another organisation may patent a technology which supersedes the licensed technology.
- **What is the risk of commercialisation?** This is not just the potential liability if something went wrong for the consumer, but also the likelihood of being able to successfully commercialise technology at or below a particular cost. If the cost of commercialising the technology exceeds the potential returns, no matter what advances it represents, the Licensee will make a loss.
- **Is the technology aligned with the Licensee's strategy?** The closer aligned the technology is with the Licensee's strategy the more appealing it will be. Thus, a willing Licensee should pay a higher price than one which needs to be convinced of the worth of the technology.

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65. Ibid., p42-44.
66. Ibid., p44-45.
67. Ibid., p45-6.
68. 318 F.Supp. 1116. 1120. 166 U.S.P.Q. 235, 238 S.D.N.Y. (1970); modified 446 F 2.2d 295, 170 U.S.P.Q. 369 (2nd Cir 1971)
69. Civil Nos. 87-8748, 88-1624 (D.N.J. Jan 28, 1992) as quoted in Cullen, JG, "Panning for Biotechnology Gold: Reach-through royalty damage awards for infringing uses of patented molecular sieves," *IDEA: The Journal of Law and Technology, PTC Research Foundation of Franklin Pierce Law Centre*, 1999, vol 39 at 553.
70. Marshal Lee, WM, "Determining Reasonable Royalty", *les Nouvelles*, Licensing Executive Society, Sep 1992, p123.
71 318 F.Supp. 1116. 1120. 166 U.S.P.Q. 235, 238 S.D.N.Y. (1970); modified 446 F 2.2d 295, 170 U.S.P.Q. 369 (2nd Cir 1971)
72. Medius Associations, 3 Oct 2001, "Royalty Rates: Current Issues and Trends," available: *http://pharmalicensing.com/features/disp/100 2119137_3bbb1fe183dfe*, accessed: 30/09/03.
73. Yamaski, M., "Determining Pharmaceutical Royalties," *les Nouvelles*, Licensing Executive Society, Sep 1996, p112.

• **What is the current stage of development?** Generally, the closer a technology is to commercialisation the higher the royalty rate.[74] In a survey completed in 2001 by Medius Associates, it was reported that the average royalty rates by stage of development were: pre-clinical 0-5%, Phase I 5-10%, Phase II 8-15%, Phase 3 10-20% and launched upwards of 20%.

• **The financial stability and history of the Licensee.** As with any transaction, the Licensor will want to ensure that the Licensee will continue to operate through the license period and that they have a track record of successfully commercialising similar technologies.

• **Does a market already exist or will it need to be created?** This is the classic technology push/pull dichotomy. Technology is either created in response to a demand (technology pull) or must create a demand in the market (technology push).[75] This holds true for biotechnology. Often the technology pull will be the need for a treatment or cure for an ailment or problem. Whilst applications which do not solve a specified problem or do so in a radical way will require the market to understand the technology and feel safe in using it before the market will it accept it. A good example of this is genetically modified foods. Whilst the idea is good, the perceived risk by consumers is high, until this is reversed, those that commercialise in this area will have to expend significant funds to convince consumers to purchase their products.

• **Does the technology incorporate any third party IP?** If so, will additional royalties be paid to the third party and what, if any, are the terms of their licence agreement. This is known as reach-through royalties. If additional royalties are to be paid, the Licensee will want to deduct these from the total royalties to be paid to the Licensor and either remit them to the third party directly or require that the Licensor do so.

3.5 Patent Provisions

Generally, the Licensor has the responsibility for prosecuting and maintaining licensed patents, however, it is not uncommon to make the Licensee responsible for prosecuting and maintaining the licensed patents in their territory, particularly if they are an exclusive licensee.[76] This may also extend to improvements to the licensed patents, if specified in the licence agreement.

If the Licensor is responsible, they will want the Licensee to notify them in writing of any potential infringement to the licensed patent that they become aware of. The Licensor will often reserve the right to decide whether to prosecute an infringer. If they decide not to prosecute,[77] the Licensee may wish to have the right to prosecute. The Licensee should also request the inclusion of a payment relief clause which comes into effect if the Licensor does not prosecute an infringer who is active in their territory.[78]

3.6 Duration & Termination

A licence agreement which is based on a patent will usually expire when the last of the licensed patents expires or if none of the licensed patents remain in effect.[79] In Australia, if the term of the licence extends past the actual expiry date of the licence, regardless of the provisions within the licence itself, either party upon giving three months notice to the other party may terminate the licence agreement. This notice will not represent a breach of contract even if contrary to terms of the contract.[80]

A licence agreement may also be terminated because of a breach by either party such as non-payment, late payment, insolvency or receivership or change of ownership.[81] On termination, it is important that it is clear what the continuing obligations of both parties are, it is suggested that at a minimum it should include:

• A requirement for prompt payment for all money due or accrued including interest for the time in arrears.

• Immediate return of all confidential information, not only the initial copies provided but any subsequent copies made.

• A clause specifying that the use of the licensed technology is no longer permitted.

• A penalty which is comparable to the lost income whilst finding a replacement Licensee and for that Licensee to be returning to the Licensor the same level of income as the previous Licensee.

• A clause reminding the Licensee that confidentiality obligation survives the termination of the licence.

3.7 Most Favoured Licensee (MFL)

The purpose of a most favoured licensee clause is to prevent a subsequent licensee from obtaining a

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74 Medius Associations, 3 Oct 2001, "Royalty Rates Current Issues and Trends," available: *http://pharmalicensing.com/features/disp/1002119137_3bbb1fe183cfe*, accessed: 30/09/03.

75. Betz, F., *Strategic Technology Management*, Mc-Graw-Hill Engineering and Technology Management Series, Mc-Graw Inc USA, 1993, p8, 14, 113-14, 132, 135 and Twiss, B., *Managing Technological Innovation*, 4th ed, Pitman Publishing: London, 1992, p9, 89

76. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed. 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.

77 "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996

78. Ibid

79. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.

80. s145(2) Patents Act 1990 (Cth).

81. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed: 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996.

license on more favourable terms than them. Whilst a simple concept, drafting a clause which works is not s easy as it sounds.

The main problem is how to compare licence agreements. What if the licence is for different territories, fields of use or is calculated using different payment options? Should it only be a comparison of financial obligations or all the terms and conditions of the licence agreement? In drafting a MFL clause you should consider whether it:

- Extends to all other licenses for the licensed property or only future;[82]
- Applies to other licenses that have the same/substantially the same scope;[83]
- Applies to express licence or extends to implied;[84]
- Applies only to royalties or other consideration terms?[85]

It is also important to consider to what extent the licensor has an obligation to disclose terms of alternative licence. A simple compromise may be to give the Licensee first right of refusal for any subsequent licences the licensor may propose to give.[86] It is also important to consider what, if any, rights the Licensee is entitled to if the Licensor breaches its obligations for example, non-disclosure of a more favourable licence agreement.

3.8 Warranty and Indemnification

Licensor may not agree to warrant the validity of the licensed patents and may not assume an obligation to defend or indemnify the licensee against a third party suing the licensee for patent infringement.[87]

However, a Licensee will require some level of warranty by the Licensor before they enter into the licence agreements, at a minimum[88] the Licensee will want the Licensor to warrant that:

- They own or have the right to use the licensed patents;
- They have disclosed all the relevant know-how and/or technical information;
- There is no current or threatened action regarding the Licensed Property;

The Licensee will also want the Licensor to indemnify them with respect to these.

3.9 Other Provisions

The standard notices with respect to severability, entire agreement, force majeure, notices, taxation, insolvency, dispute resolution and applicable laws should not be overlooked. It is also important to consider how defaults by either party under the agreement will be treated.

If royalties are to be paid and definition of what records will need to be produced and kept by the Licensee with respect to royalty payments will also be required. As will a provision which will enable the Licensor to audit the Licensee to ensure that they are adhering to the terms of the licence.

4 Conclusion

It has been suggested that when negotiating a licence agreement particular attention should be paid to:

- Amount of and structure of compensation to licensor, in particular if payments are linked to achievement of milestones then due-diligence provisions must be included to ensure that the Licensee makes best-efforts to commercialise the technology at the expected rate;[89]
- Termination provisions;[90]
- Confidentiality[91]—not only with respect to the Licensed Property but also that the Licensor treats any information provided by its Licensee as confidential;
- Control of patent prosecution & litigation which should remain with licensee to avoid its patent rights being jeopardized/biased towards licensor's field.[92]

However, I believe that the most important consideration is the strategic objectives of the Licensor and Licensee and that all decisions to be made in negotiating the licence agreement will be based on these objectives. It is also imperative that you understand the general principles of intellectual property protection and understand, at least generally, what the licensed technology is and it's potential [93]

In the biotechnology industry, where the primary IP is patents, licence agreements can offer organisations a real alternative to commercialising the technology themselves. Whilst there are advantages and disadvantages to consider in deciding whether a licence is appropriate, in the end it will depend on the strategic objectives of the organisation.

If the organisation is solely focussed on research and development, they are more likely to licence out their technology. However, if they are an organisation, such as a large pharmaceutical company whose research and development area is part of the same or an affiliated organisation, they are less likely to licence out the technology.

Licence agreements, if they are negotiated to meet the strategic objectives of both the Licensor and Licensee, can provide a win-win outcome for both parties.

EDITOR'S NOTE: The full text of the original essay upon which this article is based, including a bibliography of materials and a collection of suggested clauses to implement the recommendations in this article, can be found at <www.clarkekann.com.au> or obtained from the author at <katrina@taltingan.com.au>.

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82. McGinness, P., *Intellectual Property Commercialisation*, p238-9.
83. Ibid.
84. Ibid.
85. Ibid.
86 Ibid., O'Reilly, DP & Morin MA, "Troubles for Most-Favored Licensees," *les Nouvelles*, Licensing Executive Society, Mar 1998, p31.
87. "Structure of a Technology Transfer Agreement (check-list)," available: *www.100ventures.com/technology_transfer/tt_contract_checklist_byunido.html*, accessed. 7/11/03, sourced from *Manual of Technology Transfer Negotiation*, General Studies Series, United Nations Industrial Development Organisation, Vienna 1996
88. Ibid.
89. Goldscheider, Robert, ed., *The LESI Guide to Licensing Best Practices*, John Wiley & Sons Inc, New York, 2002 , p211-212.
90. Ibid
91. Ibid.
92. Ibid.
93 Ibid.

as other restrictions related to sponsored developments, that should be carefully considered depending on the kind of copyrights involved. A highlight to consider is that assignments cannot be definitive and are only allowed for a maximum of 15 years unless a justification of a longer term due to the investment needed for exploitation or the like is shown.

Although the above are the general provisions concerning some of the major areas in technology licensing in Mexico, in every sector there are specific provisions to consider, such as compliance with official standards, and other regulations and laws that should always be taken into account when licensing in Mexico.

Federal Economic Competition Law

Although licensing, technology transfer contracts and other IP intensive transactions are not specifically restricted by law, it is also very important to take into account that, as in other jurisdictions, the operation of these contracts in the market may affect competition.

The mere use of IP rights is not considered a monopolistic action under Mexican law. However, under the Mexican Economic Competition Law, any relationship that could prevent competition can be studied and punished by the Commission in charge of these affairs if a third party informs the Commission of such an allegedly illegal agreement.

Although licensing contracts have not been analysed by the Commission up to now, not informing the Commission of a determined contract that could have the risk of affecting competition may lead to fines and other punishments for the parties. Therefore, international general rules of competition should be followed in drafting a contract involving competitors' costs or other conditions affecting the market.

Taxation and valuation of intangible assets

In signing licensing, manufacturing or joint development contracts, the free trade agreements of Mexico, the taxation benefits provided for R&D investment and the special taxation provisions for royalties in Mexico should be taken into account.

Mexican accounting practices are still very reluctant to allow for intangible asset values to be expressed. However, the trend towards allowing the incorporation into accounting practices of intangible assets is under study and development and, as in other jurisdictions, technology transfer makes it possible to give IP assets a value.

Contract/assignment registration

For all licensing contracts to have effect on the proof of use of an IP right by the licensee, or to make an assignment effective before third parties, it is necessary to register the contract or assignment with the authority in charge of prosecution of the corresponding right.

As the main provisions of the contracts are left to the parties, the general principles of licensing should be applied to licensing contracts in Mexico, such as IP ownership, royalty payment calculation and reporting, confidentiality obligations, ownership of future developments of IP, termination conditions and rights for IP enforcement.

Remarks on R&D contracts

Possibly one of the most important and complex issues in R&D contracts in Mexico is IP ownership. Mexican law is silent in regard to ownership of sponsored work, except in the case of employees' inventions or copyrights where the rights are assigned, at least in part, to the inventor unless otherwise agreed upon by the parties.

There are clear provisions in the Federal Law on Labour and in the Federal Copyright Law and the IPL governing ownership of inventions of employees that should always be taken into account. In any other cases, the lack of provisions of the law in regard to ownership of sponsored work could potentially benefit the inventor or its employer. Therefore, ownership of joint developments or sponsored developments should be defined beyond any possible doubt in an agreement.

In this context, and in order to ensure IP ownership to the sponsor of a project, a contract for the joint development of a technology with a Mexican entity should be drafted including at least the following provisions:

- Name of the researchers or scientists that will participate and an obligation not to include further researchers unless authorised by the parties.
- IP ownership assigned to the sponsor clearly in the contract, including that which results both from the project or from the use by the sponsor after the project.
- Obligation to obtain an assignment from the researchers of the inventions resulting from the project.
- A statement from the Mexican party that the researchers will be paid in accordance with the Mexican laws for the inventions developed under the project with no further obligation to the sponsor.
- If the outcome of the project can be protected through copyrights (eg computer programs, architectural projects or the like),

it is necessary to state clearly in the contract that the rights belong to the sponsor and that the outcome will be considered as a sponsored work under Mexican laws

In addition, it is very important to verify whether the researchers are employees or consultants. If the advice of an external consultant is used for the project, then the consultant should sign the same agreement or a separate agreement in order to ensure the IP ownership goes to the sponsor.

On the other hand, if materials are collected within Mexico and the research is to be conducted within Mexico by a Mexican research institution, permissions and assignment of ownership of the result to the sponsor will probably be relatively simple.

As for the governing law, in any contract involving R&D activities to be performed in Mexico by a Mexican firm, choosing Mexican law for interpretation of the contract seems to be the best thing to do. In the first place, usually the researchers are employees of the Mexican firm and law assigns their inventions and copyrights to the employer. Therefore, if the contract includes a clear provision assigning IP rights from the Mexican firm to the sponsor, it could be easier to recover IP rights in case of controversy.

Finally, it is important before initiating the R&D activities to look for benefits in governmental R&D programmes. In some cases government funding can be helpful to reduce investment risk. However, extreme care should be exercised in regard to the conditions of such funding, because conditions may include restrictions in IP ownership or obligations to operate the resulting technology under certain conditions.

Dealing with IP in Mexico

Mexico and other Latin American countries are no longer the investment options they were for global manufacturing facilities. However, says ***Hector E Chagoya*** *of* ***Becerril Coca & Becerril*** *in Mexico City, investors should turn their eyes to Mexico as a good option for undertaking R&D activities at low cost*

As a country involved in a large number of free trade agreements, a majority of the investors that have shown interest in Mexico have focused on analysing the safety and convenience of investing in production, manufacturing or sales of goods and services. By contrast, they have never seen Mexico as a potential site from which to develop intellectual assets. However, for those prepared to look, Mexico offers great opportunities to develop intellectual assets at low cost.

Why Mexico?

The Mexican IP system provides for sufficient protection for technology through a variety of legal resources such as patents, trade secrets, trademarks and other IP rights, all of which are compatible with international IP standards.

Of note is that Mexico has two legal provisions protecting R&D activities: namely, a clear and direct law protecting freedom to research, and also an express provision for prior use of technology as non-infringing activity – this means that putting into practice a technology or making the arrangements to do so before the filing date (or priority date) of a third party's Mexican patent cannot be considered patent infringement. This is a good opportunity for US companies to avoid potential legal action in the US given the recent US court decisions restricting the scope of the freedom to research.

Another very important point to consider is that collecting Mexico's overwhelmingly vast biological material and genetic resources will become more and more difficult as negotiations at WIPO on treaties protecting traditional knowledge and access to genetic resources advance. In fact, certain ecological regulations have already made these kind of activities more difficult by restricting the ability to collect to those who have been issued with an authorisation by the community to which such materials pertain. This will increasingly make it more appropriate to conduct research on these materials inside Mexico rather than transferring them abroad.

As for R&D capabilities, according to the statistics of the National Council for Science and Technology (CONACyT, after its Spanish initials), a council in charge of R&D activities in Mexico, for the years 1998 to 2002, the average impact of science and technology publications (number of citations/number of publications) of some countries with high scientific activity was between 5.0 and 6.1. The average impact of the scientific work of Mexico is 2.5. However, under the classification of the Institute of Scientific Information (ISI) in the areas of astrophysics, immunology and molecular biology, the impact of the work of Mexicans is above 5.8, two of which are areas of great importance in the area of biotechnology. In addition, the industry science relations statistic of the OECD reveals that Mexican scientific article citations in US patents are among the first 10 in percentage, well above the OECD countries average. Surprisingly, R&D funded through venture capital in Mexico does not exist to a significant extent.

One other factor to consider is that since 2002 the Mexican government has made efforts to provide taxation and financial benefits to companies with R&D projects. Unfortunately, these benefits have been underused, with only 20% of the resources available used for years 2002 and 2003.

The above facts lead to the conclusion that

rforming R&D activities in Mexico should be aluated carefully as a very good option for taining intellectual assets in key areas of chnology at low cost

Mexico is attractive not only as an option to vest in R&D, but also as a place in which to ense technology packages for the internal arket, primarily in its main cities. As an ample, according to the statistics of the exican Association of Franchising, there are out 550 franchisors in more than 65 areas th 35,000 sale points all over the country, th about 60% of the franchises being of exican origin and about 35% from the US e relevant areas in franchising are food and staurants, services, clothing and nstruction, and real estate. According to the me organisation, 96% of the franchises chieve ROI in four years or less and 36% of e franchises in the second year.

ne relationship between IP laws d other laws relating to industry or mmercial sectors

general, licensing, technology transfer or her IP-related contracts are not specifically gulated by Mexican law. However, depending n the kinds of rights to be negotiated, fferent laws should be taken into account in ansactions involving IP because there are me provisions affecting licensing or ssignment of rights.

In franchising contracts, there are several sues that must be included in contracts nder the Mexican Industrial Property Law PL) and its regulations. The provisions in neral relate to the kind of information that e franchisee will receive and other general spects of definition of the IP rights involved the franchise licence. However, franchise ntracts should be analysed in view of the L in order to avoid any possibility of their llification.

Franchisors should exercise extreme care to sure that their IP rights are duly registered Mexico in order to be able to enforce them roperly in case of termination of the anchising contract and to avoid further isappropriation of technology by the former anchisee. It is also wise to bear in mind that e concept of trade dress is not defined in exican law and that protection of trade ess is usually achieved in Mexico through a mbination of various IP rights covering fferent aspects of the franchise, mainly rough provisions on unfair competition cluded in the IPL.

In the pharmaceutical sector, the Mexican w on Health and the IPL are always tremely important for licences or ansactions involving pharmaceutical products. Recently both laws have been modified to provide for the so-called linkage system, which provides for a mechanism through which the health authorities are able to obtain a formal opinion from the Mexican Institute of Industrial Property (the Mexican Patent Office) on whether or not a pharmaceutical product is covered by a patent. In addition, there is an obligation on sanitary registration applicants to declare that the product for which they are seeking registration is not patented. Furthermore, the Mexican Patent Office issues an official gazette that must include all granted patents covering an active pharma principle.

It should also be taken into account that as a result of the WTO's Doha negotiations, the compulsory licensing provisions of the IPL were modified in Mexico to make them consistent with the principles of Doha in regard to access to medicines. Therefore, compulsory licensing is possible in regard to pharmaceutical products, but only in cases of national (ie, Mexican) emergency or threats to national security, although up to now there has been no case where this provision has been invoked. Mexico has not officially become an exporting country under the Doha procedure; neither is it recognised as a suitable importing country.

For licensing or IP transfer contracts related to manufacturing, distribution and engineering projects, all the standard international commercial rules and provisions should be taken into account, and the provisions of the free trade agreements of which Mexico is a part should be looked at very carefully to determine taxation issues and responsibilities for importation and exportation.

When it comes to contracts of any kind involving biotechnology, it is customary and advisable, as in other countries, to sign material transfer agreements before evaluating a biological material and before obtaining a licence for it.

However, in the performance of biotechnology related R&D activities and the contracts governing the same, the provisions of other laws such as the Law on Ecology, the Industrial Property Law, the Copyright Law, as well as the provisions of international treaties that might be entered into at WIPO related to access to genetic resources, should be taken into account. Lack of compliance with any of these could lead to loss of ownership of IP rights or nullification of provisions of the contract.

Copyrights licensing, including computer programs, is probably the most complex area for technology transfer. The Mexican Federal Copyrights Law includes restrictions limiting the term of assignments of copyrights, as well

Hector E Chagoya

Becerril, Coca & Becerril SC, Mexico City

Mexico
The Mexican employees' inventions system

Recent court decisions in the US have narrowed the freedom to research criteria of universities and institutes in that country. Although the *Madey v Duke* (2003) case has been criticised because of the narrow interpretation of the concept of "philosophical experiments" contained in the experimental use defence based on the *Whittemore v Cutter* case (1813), it is clear that the decision makes it very difficult for universities and research institutes to use the experimental use defence for their R&D activities.

In view of the above, some companies have started to seek out other jurisdictions with clear provisions that see R&D as a non-infringing activity. However, one other factor that is moving companies to look for other jurisdictions for R&D activities is the employees' inventions system.

The well-known decisions of Japanese courts, such as the *Nichia, Olympus, Hitachi* and *Ajinomoto* cases, which have led to multi-million dollar awards to employees for "reasonable remuneration", have rendered the consideration of the employees' inventions system a very important issue in deciding where to invest in R&D.

In the case of Mexico, not only are R&D activities of an experimental, research or educational nature excluded from the rights conferred by a patent through a direct provision of the Mexican Industrial Property Law (MIPL), but also, the provisions in regard to employees' inventions offer important benefits to employers as compared to other jurisdictions.

Ownership of employees' inventions under Mexican law

Article 9 of the MIPL states that any natural person that develops an invention, or his assignee, shall have the exclusive right to exploit the same either by himself or through authorisations to third parties. Additionally, Article 10 bis of the MIPL states that the right to obtain a patent pertains to the inventor and that this right can be transferred.

Now then, more specifically in regard to employees' inventions, Article 14 of the MIPL states that the Mexican Federal Law on Labour (MFLL) shall apply to those inventions of persons subject to a working relationship (employee/employer).

In turn, the MFLL, in its Article 163, states in regard to inventions made in a company the following:

- The inventor shall have the right to be named and recognised as such.

- In cases where the employee performs for the employer work related to research or development sponsored by the employer, the employer will own the inventions.
- In any other case, the employee or employees that developed the invention shall own the same, but the employer shall have a preferential right to obtain an exclusive licence or to acquire the invention and the corresponding patents.

Accordingly, in order to make the provisions of paragraph 2 of Article 163 of the MFLL effective, inventions must be invented by an employee, the activities for which the employer hired the employee must be R&D and the employer must have sponsored the invention.

The employee would own the invention only if at least one of the above conditions were not complied with. Furthermore, it is very important to consider that this is a direct provision of the law and applies even if the contract between the employer and the employee is silent in regard to IP or inventions, and that either party may challenge contrary provisions in case of dispute.

It is important to stress that a very important advantage of the Mexican law in regard to employees' inventions is the case of inventions of employees developed without sponsorship of the employer or by an employee not devoted to R&D activities. In such cases, the employer has a preferential right to obtain an exclusive licence or to acquire the invention and the corresponding patents, as a first option. This means that the employee must grant a licence or the assignment to the employer if the employer makes the best offer for such a licence or assignment or its offer equals a third party's offer.

Copyrights

In terms of technology, the provisions of the Mexican Federal Law on Copyrights (MFLC) are relevant for software-related inventions because computer programs are protected through copyrights in Mexico.

The MFLC states in its Article 84 that when a copyright is developed as a consequence of an employment contract, unless agreed by the parties to the contrary, the employer and the employee will jointly own the rights. However, the employee cannot disclose in any case the work without the consent of the employer, although the employer can disclose the work without the consent of the employee.

Considering that the MFLC states that the copyright shall be owned jointly by the employer and the employee in the absence of a contrary provision, it is very important to ensure that, in any industry involving copyrights, such as the software industry, an employment agreement should clearly state that the employee will develop copyrights and that the parties agree that such copyrights shall be assigned to the employer under the MFLC. Otherwise, as it is a clear provision of the law, in the absence of any provision in the employment agreement, both the employer and the employee will have the same rights, except for the disclosure right, which belongs to the employer.

Confidentiality

Another very important issue to consider is confidentiality obligations for employees. The MIPL provides protection to trade secrets under Articles 82 to 86 bis 1. In general, revealing, using, or obtaining a trade secret without the consent of its owner is considered a criminal act. A trade secret is defined as any confidential information providing its owner competitive or economic advantages over third parties and with industrial or commercial application. A trade secret requires proof of its existence (paper, magnetic, electronic, etc) and evidence that measures for keeping confidentiality were taken.

An inherent obligation to being an employee according to Article 134 of the MFLL is scrupulously keeping the technical, commercial and manufacturing secrets relating to the creation of products to which the employee is directly or indirectly engaged, or of which the employee acquires knowledge in virtue of the work performed for the employer, as well as of any administrative affairs whose disclosure may be prejudicial to the employer, regardless of the activities performed by the employee.

However, perhaps the most important provision of the MIPL in regard to trade secrets and proprietary confidential information is that, under Article 86, any person that hires another person with the objective of acquiring the trade secrets of a third party will be responsible for the damages caused to such third party. This means that even if an employee's invention is not patented, companies have suitable legal tools for preventing employees from revealing the inventions to third parties.

Remuneration to employees for their inventions

The MFLL states that when the importance of the invention and the benefit to the employer is out of proportion as compared to the regular payment to the employee, the employer shall pay the employee an additional amount, over and above, and independent of, his regular remuneration.

This payment shall be determined through agreement of the parties or by a Conciliation and Arbitration Board (governmental board mandatory as first instance in employment cases) in case of dispute.

In fact, because Mexico has a civil law system in the presence of a contract stating in advance an amount to be paid or how such payment shall be determined regarding the employee's inventions, the Conciliation and Arbitration Board would be obliged to reject any claim filed by an employee related to this issue.

Under Mexican contract law, the employee could try to challenge the contract before a civil court by arguing that the amount agreed upon under the contract was not proportional to the benefit of the company. However, under Mexican law the analysis of contracts is made according to the actual circumstances at the moment of signing the contract. Future events modifying the value of the transaction are not considered sufficient to render a contract provision invalid.

Moreover, if a contract were silent as to the remuneration to the employee and the case were to be analysed by the Conciliation and Arbitration Board, the board would analyse the benefit of the invention directly to the employer only. This means that in those cases where the technology is transferred by the employer to a third party, according to Mexican law the obligation to pay the inventor is exclusively on the employer; therefore, the employee would not be able to claim benefits from the income of the third party, but only from the royalties and payments that such third party could have made to the employer.

Comparison of Mexican law with other jurisdictions

In the US, the employees' inventions system is fully regulated by contract law. This means that these issues rely to a very large extent on the ability of both the employer and the employee to negotiate the figures related to inventions.

However, if a contract is silent with regard to ownership, litigation is not only necessary but could lead to loss of rights for one party or the other. In comparison, Mexico offers the opportunity of obtaining ownership of inventions readily if the employee undertakes R&D activities as an integral part of his job. Furthermore, even if the employer is not able to prove that the employee was hired for R&D activities, the employer will still have the opportunity of obtaining at least a first option for acquiring the technology, even if the employee developed the invention independently.

As for remuneration provisions the contract between the parties will govern in both the US and Mexico. However, when the contract is silent, Mexican law more clearly provides for a possibility for the inventor to claim additional benefits if the employer is not willing to compensate the employee for its inventive efforts.

German law is probably the most detailed with regard to employees' inventions. German law clearly defines two kinds of inventions, namely "free inventions" and "service inventions". This is very similar to Mexican law but is different in that Mexican employers will always be able to obtain a first option right on employees' inventions.

As for remuneration, German law leaves remuneration to a contract between the employee and the employer. However, there are detailed guidelines for calculating the value of an invention and the share of such value that the inventor should receive.

In this sense, Mexican law is very similar to German law. However, in the case of German law, the obligations on both the employer and the employee for deciding the category of "service inventions" or "free inventions" makes the determination of value a case-by-case issue that cannot be determined beforehand by more general provisions. In the case of Mexican law, it is possible for the employer to negotiate with the employee beforehand on the remuneration that will be acceptable to the parties. This means that, upon signature of the resultant contract, the employee will not be able to succeed in a claim before the Conciliation and Arbitration Board.

As in the case of Germany, the Japanese Patent Act also provides for definitions of "service inventions" and "free inventions". However, a very important difference in respect to Mexican law is that the employee can file a patent application for a service invention, while in the case of Mexico a filing by the employee is not legal because by law he is no longer the owner of the invention because he is an employee.

Perhaps the most controversial issue in Japanese law is the remuneration provisions and the interpretation that courts have made of the term "reasonable". In fact, the recent cases that awarded employees very considerable amounts caused a revision of the Japanese Act that was intended to give more force to contracts between employers and employees. However, so far there has not been a satisfactory outcome because if there is a previous contract, this contract can be challenged if the employee considers that the remuneration is not "reasonable".

Again, as compared to Mexican law, if there is an agreement between the parties in Mexico, this agreement cannot be challenged through the Conciliation and Arbitration Board and invalidation of such contract through Mexican civil courts is very unlikely.

Final remarks and advice

Mexican law provides for a very good employees' inventions system suitable for performing R&D activities. However, companies must take the necessary steps to benefit from it.

Some advisable measures include obtaining an assignment from the employee for each invention regardless of the

provisions of the law. Otherwise, the employer may have to demonstrate to the Mexican Institute of Industrial Property or other patent authorities that the invention was developed under the sponsorship of the employer and that the employee was hired for R&D activities, which is more complicated than obtaining an assignment.

It is also advisable to include either in the employment contract, or through a separate contract, clear rules concerning remuneration for inventions. These could include such things as a royalty or bonus when sales or savings related to the invention are above a certain amount.

In addition, in the case of joint development agreements, it is very important to verify whether the researchers involved in the project are employees or consultants, because the MFLL applies only to employees. If one of the parties uses the services of an external consultant for the project, then the consultant should sign a separate agreement in order to ensure the IP and any resulting revenue belongs to the sponsor.

These contracts with consultants are subject entirely to contract law because in the case of sponsored inventions the MIPL is silent. Although it is a controversial issue whether the provisions of the MFLL can be used as a reference in litigation of sponsored inventions, the issue is not very clear and most probably contract law will prevail and the invention will be assigned to the inventor if the contract is silent in regard to ownership.

In the case of copyrights the Mexican law states that the sponsor will own the copyrights in the case of sponsored work, but it is still advisable to make this fact clear in any contract.

Interaction between Industry and Universities

FILIP DE CORTE*

COLLABORATIONS BETWEEN UNIVERSITIES AND INDUSTRY: THE CONCEPT

Collaborations between certain departments of university and industry have always existed in modern times However, something has clearly changed over the last years. Particularly in the area of biotechnology and chemistry, collaboration between universities and the pharmaceutical industry has increased dramatically. Even well into the 1980s, the R&D organizations within European industry only had but a few formal research collaboration agreements with universities Nowadays, negotiating and managing contracts, be it research collaborations, agreements for research fellows, agreements for contract work, Material Transfer Agreements, secrecy agreements, is becoming a key process within an industrial R&D organization. So what has happened? Pharmaceutical companies started to realize that they did not have the monopoly on good ideas and that any one company could not expect to generate more than a fraction of the totality of valuable intellectual property. It dawned upon the industry that no company could expect to survive solely on what it can generate internally. Moreover, the investment community started sharing these thoughts. Indeed the stock market rewards those companies that announce one research collaboration deal after another. On the other hand, universities started to realize that their research actually generated important intellectual property and that they could become crucial partners for the industry. Said partnership could then generate income for university laboratories where money is always a scarce resource. This trend of increased collaboration between industry and universities started in the United States and, particularly, the enactment of the Bayh-Dole act of 1980 changed a lot in the United States: it allowed the universities to reap the actual benefits of the intellectual property they themselves had created.

EXPECTATIONS OF UNIVERSITIES VERSUS EXPECTATIONS OF PHARMACEUTICAL INDUSTRY

The relationship between universities and industry is not a marriage made in heaven. There clearly is a clash of two different worlds. And this clash is the basis of some of the difficulties that are encountered with research collaborations between industry and universities.

Universities

Researchers at universities are trained in the scholarly tradition that holds academic freedom as a valuable good. It is generally held that academic freedom can be hampered or frustrated if research were to be restricted by religious, political or economic pressures. Hence, universities feel very strongly about full freedom in research and especially full freedom in the publication of the results. Based upon that same idea of academic freedom that research should not be hampered by—amongst others—economic influences, the university inherently is embedded in a "not-for-profit" environment or atmosphere. The topics of research are more determined by human curiosity and the field of interest of a researcher. It is not uncommon that the focus of the research that is performed in a laboratory shifts over time. New, more interesting avenues are explored and create the basis for other and further research. University laboratories have a limited project portfolio due to increasing specialization. Concerning compensation, a university laboratory is probably seeking two things: a short term income independent upon results but rather dependent upon the amount of effort that has been invested and (hopefully) a royalty stream related to a product that would hit the market.

Industry

How different is industry! There, knowledge is perceived as a property that has been acquired by investing money in research. This intellectual property should be protected and industry expects this knowledge to give a certain return on investment. Hence, publishing—although not contrary to the objective—is not always a priority. Clearly industry is for-profit. The main objective of the pharmaceuti-

* *The author is a European Patent Attorney and the Senior Director General Services JRF and Head of the Patent Department at Janssen Pharmaceutica NV, Beerse, Belgium.*

cal industry is to discover and develop new marketable drugs. Therefore, the research effort is more focussed. However within the research organization, many projects have to compete for the same resources (be it money or people). At a senior management level in industry, portfolio management is performed using not only scientific criteria Often it is not understood or fully appreciated by the academic collaborator that the project related to the research collaboration will be one of many. Priority will be determined on the basis of given criteria and the strategic value may change over time. So however interesting from a scientific point of view a project can be, the decision can be taken to stop or at least lower the priority of that project because of portfolio reasons. Another difference is that the pharmaceutical industry wants to make payments dependent upon results linked to concrete milestones. Moreover (depending upon the situation), the pharmaceutical industry will often not readily be inclined to grant royalties linked to sales of end products.

THE PROCESS OF REACHING AN AGREEMENT ON RESEARCH COLLABORATION

Theory

Theoretically the process to set-up research collaboration is quite simple. The process starts with the non-confidential phase where the university's general, non-confidential information and possible assets in the light of a potential collaboration are investigated. Following the evaluation of the non-confidential information of the external party and the decision to proceed, a secrecy agreement is signed. Subsequently, the confidential phase starts during which a more in-depth analysis of the proprietary information is performed. Then the final agreement is discussed wherein topics like inventorship, ownership of intellectual property, publication, payments, indemnification et cetera are discussed.

Practice

The non-confidential phase. The actual process often looks quite different. Collaborations can start because a researcher from the industry has met his colleague from academia at a conference, for example. The relationship at that point in time is often a friendly one and the thing that unites them is the scientific interest in a certain topic. They encounter a mind alike and in an atmosphere of academic freedom they start talking about their research.... and—very important detail—there are no lawyers around to sour their relationship. Hence, collaborations often start off completely contrary to the prescribed process. Confidential information is already exchanged without the necessary precautions in place. It is important to mention that there are at least two dangers involved. The first risk is the disclosure of novelty destroying information and the second is contamination. It is important to note that both parties are exposed to those risks.

- *Novelty Destroying Disclosure* Novelty is an important criterion for patentability. Novelty means that the invention does not form part of state of the art. And according to Article 54(2) of the European Patent Convention: "The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application." Case law has made it quite clear that disclosure to a single person not bound by a confidentiality agreement even in an oral form is making the information "available to the public." Hence, disclosing confidential information over a drink during the closing dinner of a conference is sufficient to endanger the patentability of the invention related to that information.

- *Contamination.* The second problem with exchanging information before a secrecy agreement is in place is the problem of contamination. What is contamination? Contamination occurs when unwanted confidential information is received. Basically the problem with receiving such information is, that if the receiving party would exploit his own but similar information (say by filing patent applications on it) the receiver will have to prove that he already had his own information before receiving the external information. Providing proof in court proceedings of when someone knew something is very hard to do. It should be noted again that contamination for the Academic World almost seems counter intuitive. In the spirit of academic freedom, it is very much appreciated that information is exchanged. How can knowing more be bad?

The confidential phase. The confidential phase starts after the secrecy agreement is signed. Notwithstanding the fact that a secrecy agreement is in place, it is generally perceived that confidentiality in a university laboratory is difficult to maintain. In view of the concept of academic freedom, often students (even students that are not related to that particular laboratory) can walk freely in the laboratories and scientific problems are discussed with every interested person.

A further problem is what could

be coined as the problem of "non-unity of the university."When a research collaboration with an industrial partner is negotiated, the requirement that the partner does not have a collaboration with another party in the same field is likely to be entered into the agreement. For universities, this seems to be difficult to maintain. The university department can offer exclusivity. However, it seems almost impossible to ensure that nobody else within the university would be doing related work in a similar agreement with another party.

In addition, also the discipline to mark all the information "confidential" during the confidential phase is lacking as well as the usage of putting orally discussed items on paper. It should be noted that many problems would never have arisen if during the initial discussions one had made proper note of who had the initial idea for a certain invention

The final agreement. The main topics discussed during the negotiations leading up to the final agreement are inventorship, ownership of intellectual property, publication,, and payments.

• *Inventorship* Not too many problems are encountered with inventorship. However it is important to mention that inventorship is a legally defined concept Yet there are still people who consider a patent or a patent application simply as another publication, so they are inclined to name everyone who was involved in the project as an inventor. This is not in accordance with the concept of inventorship in patent law. On the other hand, there is still the odd research leader who thinks that he or she and preferably he or she alone is the inventor just because he or she runs the laboratory This seldom is the case. It is also hard to explain that in the case where the invention is already clearly suggested in the scientific program, the inventorship resides with the person who designed the scientific program and not with the person who carried out the program.

• *Ownership of intellectual property.* In most cases, the pharmaceutical company will want to own the intellectual property that is created during the collaboration. This depends upon the type of arrangement. When the work is purely commissioned work (following a previously designed protocol) there should be no problem. When it is established that the academic partner is an inventor, the pharmaceutical partner will still try to obtain the ownership of the intellectual property. In such a case there should be a reasonable compensation linked to that transfer of rights. It is worthwhile to note that problems concerning the ownership of intellectual property mostly arise as a result of arrangements being informal and undocumented.

• *Publications.* Publications constitute a difficult issue. Again referring to the academic freedom, academics want (and are put under severe pressure) to publish. Industry wants to make publication dependent upon the filing of patent applications. In general a 60 day period for the evaluation whether or not there is valuable intellectual property in a potential publication, is considered acceptable Depending upon the type of invention, the pharmaceutical company will demand the right to withhold publication for a certain time period. For example, in the case where the subject of the research collaboration is a set of novel compounds that could be developed and marketed as drugs, the pharmaceutical company might insist on a publication ban of up to 18 months starting from the filing of the first patent application. The reason for this is that patent applications are published 18 months after first filing and that up until such time the applicant can either amend (during the first 12 months) or withdraw the patent application. Amending and/or withdrawing a patent application are measures that often may be necessary in view of ongoing research.

• *Payments.* Until recently universities were insisting more and more on royalties related to the outcome of the research collaboration, independent upon whether or not the outcome of a research collaboration was a product that could be brought to the market. However, some change in that position is perceived. It has become clear that for both parties royalties are not always the best solution. This depends upon the type of invention. For the pharmaceutical industry, royalties are only taken into consideration when the invention is the actual product that can brought to the market place, e.g. a new molecular entity. The pharmaceutical industry is not readily inclined to grant royalties relating to inventions that only indirectly lead to products on the market, e.g. when the invention concerns a molecular target. However, it is a free market and the forces of supply and demand rule that market. Consequently examples will be found where companies have awarded royalties in cases where the invention was not a sellable end product. Common sense dictates that where the invention does not relate to a product that can be brought to market, royalties are probably not the best solution. First, because in the pharmaceutical business, royalties only "deliver" money 8 to 10 years

down the road, certainly when talking about pharmaceuticals. Secondly it is often an uncertain type of income because the attrition rate during clinical development is still very high. Thirdly, in view of the fact that the pharmaceutical industry often has a large project portfolio, the project—unless it is really a breakthrough achievement—will probably be rated lower during portfolio management evaluations because of the "strings" that are still attached to it.

A more preferred solution seems to be offering milestone payments at the different stages of the development of the potential drug linked to the research collaboration. In that way the university gets access to funds in a quicker and more predictable way, yet still shares in the success of the product during the development phase.

CONCLUSION

Although the relationship between industry and university is not based on a common set of expectations, the collaborations between industry and universities are increasing and are maturing, i.e. both parties experience the collaboration as a win-win situation. Serious difficulties often originate from sloppy (legal) preparation of research collaborations. Most universities and pharmaceutical companies have put a lot of effort into educating scientists in the reasons why agreements are so important and what the risks are related to careless preparation of research collaboration. Even more fundamentally, the fact that both industry and universities have created and developed Technology Transfer departments has been a big step forward. It is very likely that the European situation will evolve to resemble more and more the U.S. situation where collaboration between industry and universities have proven to be important seeds for innovation, the basis for further growth.

Partnering Deals: Solutions Through Synergy

BY KATHLEEN DENIS*

The 2004 Annual Meeting of LES (USA & Canada) began Monday morning October 18, 2004 with an opening plenary panel discussion. This panel focused on high profile licensing deals and the partners involved in those deals. We explored how the deals came about, the challenges faced and the synergies that were created through the partnership. The program was moderated by the President of LES (USA & Canada).

Below is an edited transcript of the "Partnering Deals: Solutions Through Synergy" panel discussion in Boston.

An Introduction of the Panelists

Kathleen Denis. I'd like to introduce our Monday morning panel here. Last year we had a wonderful "leaders of licensing" panel, where the issues surrounding the managing of programs, the metrics and the philosophy of licensing at Fortune 500 companies was discussed by a group of leaders in this field. There were many questions to that panel from the audience about finding partners and partnering issues, so this year we decided to follow up with a partnering panel. In the early spring, we sought four pairs of deals that had been done in the past year that were of note and put those together to ask these individuals questions on the deals that they did and their partnering strategies.

First, I'd like to start by introducing all eight members of our panel. I will only introduce them by name and title, and at that point I will turn it over to them to do further introductions briefly of themselves, their companies, and the deal that they did recently.

First, on my left, we have Scott Foraker, vice president of licensing for Amgen, and his partner, Paul De Potocki, senior vice president of commercial operations at Biovitrum AB. Next we have Lita Nelsen, who's the director of the technology licensing office at the Massachusetts Institute of Technology, and Susan Whoriskey, vice president, licensing and business development, Momenta Pharmaceuticals. Over on my right, we have Lisa Jorgenson, who's the vice president, intellectual property and licensing at ST Microelectronics and Joe Beyers, the vice president of intellectual property and licensing at Hewlett Packard. Our fourth group is Mark Peterson, director of external business development and global licensing for Proctor & Gamble Company, and finally Gary Cleary, president and chief technology officer of Corium International Inc.

I'm going to ask Scott and Paul to start.

Scott Foraker: Good morning, it's a pleasure to speak to you this morning. I'm in charge of licensing at Amgen. We're primarily a buyer of technology, not a seller. Amgen is the world's largest biotechnology company, located in southern California.

Licensing is integral to our future success; it's as simple as that. Even though we have an R&D budget of $2 billion per year, which seems like a lot and it is, it pales in comparison to the amounts that are spent in life sciences throughout the world. It's foolish to think that even with the $2 billion R&D budget that you could have some monopoly on innovation. So with that philosophy, we think that probably 30-50 percent of the growth, the pipeline of the future of the company, is dependent on licensing of products and technologies from outside of Amgen. So licensing for us is mission critical.

It was with that in mind that we did the deal last year with Biovitrum. It was one of the largest deals in the industry that was done within the past year. We'll talk a little bit about that deal in a minute, but first I want to introduce my partner, a colleague that I have tremendous respect for through the deal process—Paul De Potocki of Biovitrum.

Paul De Potocki: Thank you, Scott. I'm head of commercial operations at Biovitrum. Biovitrum is Stockholm's largest biotech company. We are about 550 people working primarily in metabolic disorder R&D. We were formed three years ago as a spinout from Pharmacia Corporation. Our core business model is to take internally developed programs to clinical stages and then enter into strategic alliances with larger pharmaceutical companies.

Paul De Potocki, left and Scott Foraker.

**Kathleen Denis, Associate Vice President of Technology Transfer at The Rockefeller University in New York City.*

Scott Foraker: The collaboration we did involved a molecule that was in early stages of clinical testing in humans. It's called 11 Beta HSD 1 is the name of the target. It represented for us and for others in the industry a potentially novel treatment for Type II diabetes and other metabolic diseases. As you probably know, Type II diabetes is just a huge medical problem, particularly here in the United States but also in other parts of the world as well.

Kathleen Denis: Thank you, Paul and Scott. Susan and Lita.

Lita Nelsen: I guess I'll start, since we were at the beginning of this transaction. I'm with the Massachusetts Institute of Technology, Technology Licensing Office For us, Momentum was probably our approximately 200th start-up company, although it was certainly going to be one of the bigger ones. The formation or the idea of forming a company started with some innovative technology in sequencing and understanding the function of the different pieces of polysaccharides. In 1999, we ended up with a disclosure on the sequencing of polysaccharides. The inventor was interested in forming a company that would concentrate on polysaccharide chemistry and pharmacology.

We found out that he had other patents, some of which went back to 1991 and had been licensed to other companies. There was also technology going on at MIT that related to the technology but with different principal investigators, some of whom had their own entrepreneurial ambitions. But what we then had to do was spend about two years cleaning up the case. That involved meeting with other companies, trying to work out sub-licenses; meeting with other investigators, trying to work out peace treaties. I think the message at that point and later was that it was people, people, people. We knew, but we learned again the hard way, that e-mail is a blunt instrument and that if you want to solve problems you have to get human beings in the same room, even if that involves 6:30am meetings and coming in at 6:00 to prepare the coffee, and we had several of those.

Ultimately, we started moving toward a deal. At that point, of course, the usual negotiations went back and forth. Susan had by then joined the company—was it a company yet?

Susan Whoriskey: Starting to be. I'm Susan, the vice president of business development at Momentum Pharmaceuticals. In 2001, I was a biotechnology consultant to a venture capital firm, Polaris Venture Partners. Three MIT professors came in that had been working for the last ten years on trying to understand how to sequence sugar molecules, complex carbohydrate structures.

So in late 2001, we completed a license with MIT to access that technology. We began to build a biotechnology company focused on that. Today, we have close to sixty employees. We took the company public in June of this year. We are applying the technology directly to the development of novel therapeutics.

In 2003, we actually formed a partnership with Novartis to develop a product so that we can file it with the FDA and bring it to the marketplace. It was very clear to us that with a strong technology base, we needed a partner that could help us both in process manufacturing as well as commercialization of that product.

So we very quickly took the MIT technology that we had licensed, went back and forth with MIT to amend that license a couple times as we evolved the business model of the company, and then formed a partnership, which is essentially a sub-license of that technology, with Novartis. So in addition to that program, which is fully funded by Novartis, we are applying the technology to the development of other innovative products, and looking at collaborations with other biotech and pharmaceutical partners to apply the technology to their specific product.

Kathleen Denis. Thank you very much, Susan and Lita. Lisa and Joe.

Lisa Jorgenson: I'm Lisa Jorgenson, I'm the head of the intellectual property and licensing group on a worldwide basis for ST Microelectronics. ST is a European company with its worldwide headquarters in Geneva, Switzerland. Kathleen mentioned that they were looking for two high-tech partners that had completed a recent deal. ST and our partner HP have a partnership that has completed a recent deal—because ours is alive, well and ongoing. Our partnership actually began back in the 1993-94 timeframe. Our partnership began with what I'm sure you're familiar with, the Inkjet printer cartridge for the HP Inkjet printers. Joe?

Joe Beyers: I'm Joe Beyers, the vice president of intellectual property and licensing for HP. I joined HP about thirty years ago and have been in this job about two years. The company started this effort to drive toward better protecting our intellectual property and getting greater value for our intellectual property, and that's really my function.

Lisa Jorgenson: ST began as purely a silicon foundry for HP. As you may know, on the Inkjet printer cartridges, when you pull the tape off to insert the Inkjet printer cartridge into the HP printers, there is a small semiconductor chip on the end of every printer cartridge. That's an ST semiconductor chip.

As time went on, ST became more of an integral design partner with HP. We became more integrated into the actual design process. ST decided to open up two design centers, so that we could have design centers in California that could interface with the designers or the engineers, between HP and ST. The highly qualified engineering teams that we had between the two companies, took those core competencies and put them inside both companies so that we could move into other products inside both companies.

Joe Beyers: So this relationship between the two companies is a prime example of one good thing leading to another. Based on the success of that first relationship, there was a follow-on project. In HP, we had created this concept of a high-perfor-

we actually weren't sure what we were going to do with it. We knew it was good, we knew it was powerful, and we knew it had product potential. But subsequently, the business model of the company evolved. So we kept going back to MIT and evolving the license accordingly.

In addition to that, I often meet with Lita with no objective in mind other than to keep her informed about what we're doing and where we're going, so that when I do want to go back and amend it, to be nimble and facile, which is really a key important thing for a biotechnology company, we can move quickly when we need to do that. So I think the combination of keeping MIT informed has helped us recruit for our company, license additional technology, amend the license, and move our company forward very quickly.

Lita Nelsen: You know, it's a little bit easier with biotech companies, strangely enough. The reason is that biotech companies are culturally much closer to the universities. They have just spun out, many of the people spent their graduate school or post-doc—they all had to—in university environments. So they have a better understanding of the fact of the university ground rules. We have to publish. We can't keep it confidential. You must have milestones and develop the technology. So there are fewer cultural barriers to overcome than in some of the more conventional companies.

Kathleen Denis: Thank you. The next question, I'm going to start with Paul and Scott. The audience is often interested in the timeframe of deals. How long did your deal take from conception to execution, and what factors helped to lengthen or shorten the time period?

Paul De Potocki: Maybe I should start. There are two ways of answering that question. One is that this was a record-breaking deal. We first met on June 12 of last year, and we signed a very complex deal on September 6, which means less than three months.

I guess we also, as a biotech company, we had been working quite diligently a few months prior to that, making sure that we had the partner selecting criteria in place that we knew exactly what we wanted There was also a sixteen-page term sheet in place prior to that meeting. But I must say that the interactions between ourselves and Amgen were the fastest that I've ever experienced in my life, in the Pharma industry.

Scott Foraker. I think that's true. I'm looking at the timeline here. From the time we first met on June 12 of last year to completing the deal on September 6, things just moved rapidly. I think there were a couple of reasons for that. One is that there was prioritization from the top of both organizations that speed was important. Something that also helped us tremendously is, early on in the deal, we sat down with each other and decided what the size of the pie was.

What happens so many times in negotiations is that you kind of talk past each other, and we made sure that we didn't do that. We sat down at a very early stage and shared with each other what we thought the opportunity was. We each had our respective models, we shared those models with each other They were very much in sync, and to the extent they weren't in sync, we worked together with each other to really tear apart each other's assumptions, so that we could come up with some common ground for valuation of the deal and just a basic framework for thinking about the deal. So the fact that we were grounded as we were at such an early stage really helped us move quite rapidly through the process.

Then, superb execution was the last piece of it, which was just an incredible commitment by the teams that were working to actually execute and get it done. Whether that meant working around the clock or what have you. So I think those were the factors that made it go so swiftly and smoothly.

Kathleen Denis: Thank you. Lisa and Joe, you've been doing deals for eleven years. Can you help us understand the timeframe of some of those individual deals?

Lisa Jorgenson: Sure. The initial deal was actually quite short. It probably only took, back in 1993-94, six to twelve months from the execution until we started shipping products to HP. I think the most critical component was that we had a core management team with long-term objectives and goals that stayed in place. In fact, today we still have many of the same people still working between the two companies that have six-plus years of experience with a lot of personal ties between themselves and people from each of the other company. They have stayed in place to ensure the continuity of the original deal and the follow-on deals with the Inkjet printer technology as well as the other deals that we've done between the two companies.

Joe Beyers: What's unique about this relationship is that it is a true relationship; it's not just an isolated transaction. It's a framework in how we work together and several deals have come from it, some of which have been joint development activities over several years. They tend to feed on each other, each success leading to follow-on new projects, some of which were unanticipated when the relationship started.

Kathleen Denis: Thank you. For Lita and Susan. the business partnerships often find that they have created some unexpected and tangible benefits by working together. Tell us about some examples you found of that in your relationship.

Lita Nelsen: I think we've been talking about it the whole time, which is basically we have the good fortune of being located within a five-minute walk from each other. That means that our faculty who are involved in the company can interact easily. I get to call people like Susan and say, do you want to be on a panel with me? People who graduate from the university come over and talk to these guys. But there's more than that that isn't related to one company.

What happens, when you have a

lot of that going on in a community, is it builds a whole infrastructure by which new companies can get started. Where people have role models for how you start a company, where graduate students get ambitions to do things because they see it happening in Ron's lab across the hall That impact on our students of not a single deal, but the way in which we do deals, with these continuing relationships, is actually changing our ability to educate students to see how the real world works, and how research leads into products.

Susan Whoriskey: I would echo that theme. I think we've retained and maintained a closer relationship with MIT than I might have expected in the early days when we first did the license. As opposed to the technology just being thrown over the wall to a biotech company, everything from hiring some of the graduate students and post-docs to join the company, staying close.

Last week, for instance, MIT and Momentum published a paper together—scientifically focused on what the science is, and business-wise focused on how we're developing that science into the business. So we've stayed close in terms of developing the technology as well. We've filed additional patents that we've developed at Momentum that have broadened the technology and led to technology licenses that we've done with universities outside of MIT.

So I think the growth and evolution and staying closer together with MIT has been a pleasant surprise that's benefited both of us.

Joe Beyers, left and Lisa Jorgenson.

Lita Nelsen. You certainly haven't moved into your new quarters because of the cost of the real estate.

Susan Whoriskey. Yes, Lita's referring to the fact that we moved the company within a five-minute walking distance of MIT just last week.

Lita Nelsen: And I'm sure it wasn't for economic reasons.

Susan Whoriskey: That's correct.

Kathleen Denis: Thank you. How about Mark and Gary? What sort of intangible benefits have you derived from your relatively short relationship?

Mark Peterson: The biggest intangible benefit I think that we pick up as Proctor & Gamble from the relationship is—Gary talked about our scale and his appreciation of the challenge of moving our top-line perspective—over the next ten years we need to find 500 $100 million ideas to achieve our sales revenue targets. So when I tell you we're open for business, we're serious about it.

Gary and Adrian and his other colleagues have an amazing network in the health care industry, with their knowledge, to make connections and to help us find some of those $100 million ideas on an inbound basis. So we're looking, in all of our relationships, really to access the network of our colleagues.

Gary Cleary: I think in reverse, there's a lot of outbound technology that could be coming out of Proctor & Gamble, and I would imagine there's a lot of outbound technology out of other very large companies where a lot of things are just either stalled or they don't fit the strategic direction of that company, that smaller companies like mine could possibly use to become larger. I think that's the group I've been working with at Proctor & Gamble, and it's a great way for two companies to work together that are synergistic.

Kathleen Denis: Lisa and Joe, relationships can force you to define things more clearly so you end up understanding yourself and your company somewhat better. What new understandings of your own company did you come out with because of this partnership?

Lisa Jorgenson: ST is a very European company, with its roots as a Franco-Italian company. With HP's roots as a California company, I'm sure you can understand there are significant cultural differences and very different decision-making processes between the two companies. Even though English is the primary language of ST, there still can be a lot of misunderstandings, a lot of miscommunication.

What the two companies did early on, for one thing, is that they actually conducted an inter-company cultural training and diversity training. We did find that we have some business processes, certain decision-making processes that were the same, that we could use to help solve problems and solve certain processes or decisions that we could hopefully use down the road that would help us in our engineering decisions. Then we could avoid going into dead-end situations and having to backtrack in engineering. It did help us down the road, in the future generation products. We obviously realized that between ST and HP, there were going to be some significant cultural differences.

Joe Beyers: There were several other things that I think were really key in the relationship. Let me list a few of them.

One is the fact that the teams brought complementary skills to the relationship. HP was very strong in architecture and compilers, and ST on micro architecture and design. Those complementary skills were very helpful in getting a good outcome..

Another key thing was the fact that there was a lot of work done early on to make sure that the IP rights were clearly defined in the relationship. In a joint activity like this, that can be quite complex and can cause a lot of problems. I'll just give you an example. In another situation where HP had done a joint development agreement with

mance embedded processor that allowed execution of 2-10 times faster than normal embedded processors of the day. We did joint development of this processor. It was aimed for an embedded printer processor.

Then our printer needs changed somewhat, and this processor was no longer being deployed in our product. We worked together on a broader multimedia processor and then we did a technology transfer to transfer the technology to ST Micro, where they now have taken that technology, productized it and shipped it in the form of their LX processor

So this is a clear example of building on the success of one relationship to a second success that went through several generations. We did another follow-on with some compatible technology for that processor, which we also have recently completed.

Kathleen Denis. Thank you, Lisa and Joe. Finally, Mark and Gary.

Mark Peterson. Good morning. I'm Mark Peterson, I'm with a small Midwestern company called Proctor & Gamble, out of Cincinnati, Ohio. A few of you may have heard of it. Primarily in consumer goods, but our story this morning is around a drug delivery technology, plastic micro needles that were developed in 1999-2000 by our scientists when we were looking at Type II diabetes as a potential field that we may want to get into the diagnostics and treatment of.

We had a terrific technology around our plastic micro needles, patents that we had reduced to proof of principle and prototypes,

Gary Cleary, left and Mark Peterson.

but we didn't have a path forward and we had an orphaned technology. Once those patents were granted, we opted to seek a general partner for that technology. He's sitting to my right, so I'll let Gary introduce himself.

Gary Cleary: Thank you, Mark. My name is Gary Cleary, I'm the president and chief technology officer at Corium International. Corium was founded about four years ago with the notion that we would be a manufacturing company at the outset, to develop and become a robust manufacturer of film and film-like products that would be used in wound care, over the counter products and ethical pharmaceutical products. To that end, we've licensed products—a polymer technology from the Russian Academy of Sciences in Moscow—and like P&G, we're a global company. We have now acquired the micro needle technology and I'll explain in a minute why this is important for us.

But, we wanted to develop the robust manufacturing side early on, as opposed to doing the technology part first with the new ideas. This was to develop a revenue stream that would allow us to do things that we're doing now, like licensing technology in. At the same time, it allowed the manufacturing facilities and the automated assembly equipment to get into place as we're producing the quick to the marketplace products that generates our revenue stream.

At the moment, we have a very robust polymer technology that can be applied in different areas. We've more recently strategically decided to move forward into the ethical pharmaceutical side of drug delivery, putting drugs through the skin in the way of transdermals and also through mucosa in the oral area and other biomembranes that have wet surfaces, that our polymer technology can be utilized to deliver a drug through that.

One of the problems with putting drugs through these biomembranes is that there are great barriers and that limits the number of molecules that you can put through those biomembranes. So to have something like micro needles now opens up a larger universe where we can now put large proteins, large molecular weight products. We can have more rapid onset of drug activity. We can have different ways and different designs of micro needles applied here. To that end, I've been working with Mark and his team on this technology transfer.

Mark Peterson: I think what's unusual about our technology transfer, and one of the reasons that Kathleen asked us to join the panel, was when we made the decision to take the technology out, we made a very public decision to do so. We proactively identified the players, we were going to run an auction on the technology as opposed to simply seeking out, working our rolodex, one-on-one contacts, which is certainly where we started. We also employed an organization to help us do a broader search for potential partners.

Actually they played a role in bringing Gary and I together. Gary wasn't in my rolodex, I'm ashamed to say. He is now. In fact, we were joking about—I caught him on one of the deal discussions in his garden, and he caught me in a couple of hockey rinks over time. So cell phones are a wonderful enabler to getting these deals done.

Questions addressed to the panel

Kathleen Denis: Okay, we'll start with the first question. Partnerships tend to succeed when both sides are pulling together toward a common goal. How have you incentivized people to play nicely together? Mark and Gary, since you've just spoken, I'll let you pick that one up first.

Gary Cleary: One of the things is some commonalities we have with Proctor & Gamble—we have about 200 employees and they have 100,000 employees. In order to understand their culture, I began to read their annual report. I actually read part of "Rising Tide," which gives you a little more insight about Proctor & Gamble. We are about, $51,000,000,970 odd dollars less revenue stream than they have.

So this is the beginning of an understanding of who we're working with, and it seemed a little scary at first But working with Mark, I felt like we were playing on a very level playing field. I could not feel the largeness of Proctor & Gamble, but the good relationship between the person that I'm having to deal with. That helped move the project along. I think it is important to know each other's culture and to have the respect of what each other is—where we're coming from. I've learned a lot more jargon than I dare to say. I've now become transparent. When I first heard that, I thought he wanted me to disappear, but now I know it means something else. And I think both sides want to be fair and have a win-win situation.

Mark Peterson: Despite the disparity in size, we were looking for a general partner. So you're looking at the general partner for taking the micro needles technology forward to my right, and we're very much in a minority position.

We think the micro needles offer a terrific opportunity to improve the health of the world's consumers, to do pain-free drug delivery, to do painless interstitial fluid sampling. We really want to see the technology get out. We actually worked with Gary and his team to structure the deal so our economic interests were aligned, so that everything we did was to encourage our organization to support the further development of the micro needles in every way possible. We consciously worked to avoid any part of the agreement that would lead to what we think of as aberrant behavior, where we have any incentive for people to not collaborate or not work together in the deal structure.

Gary Cleary: Very early on we got to meet the inventors of the micro needles from Proctor & Gamble. So between both companies, we were able to see at the beginning, particularly after we went through the auction process—maybe Mark could talk about it a little bit further—as, I guess we won the beauty contest and were able to then open up with each other and talk about everything from concept to commercialization with respect to the business here. So as we were moving through the discussions of negotiating, we were under a firm commitment and understanding from the inventors all the way through how these micro needles can be manufactured and how the prototypes are made. I think by opening up like that, also encouraged the relationship to move forward.

Kathleen Denis: Thank you. Lita and Susan, how do you incentivize people to play nicely together?

Lita Nelsen: I'll start at the beginning, because we're always there at the beginning, and build on something Mark said—we really want to see that technology developed. Lots and lots of arguments of why universities are in the tech transfer business—people always forget the real thrill, the real reason, which is making a paper in the Journal of Obscure Science turn into something real that helps people. It's a hell of a thrill. So people really work through it. In that way, particularly a small company wrapped around the technology has the same incentive.

The other thing we've learned through a lot of experience is the vast majority of our licenses that will go anywhere, that don't just flop, will be renegotiated within the first four years. That's because we're licensing technology at such an early stage that we don't know what we have and neither do you. So it's very much a mantra for both sides that are in this game to leave enough goodwill on the table because you're going to be back dealing with each other and you will need to be friends at that stage.

Susan Whoriskey: Just following up on that theme, almost organically there was an incentive to play well together, both organizations had a mutual respect for what each was trying to achieve. Obviously, MIT is in the business of doing fabulous basic research and disseminating that information worldwide. Momentum Pharmaceuticals is in the business of developing drugs. We both understood and appreciated that we weren't competing with each other, but in fact, by working together we could both respect and help each other achieve those mutual objectives.

So it really wasn't that difficult to pull together a license in that regard, because MIT realized that the team that we had pulled together, the board of directors, which came from ex-CEOs of major pharmaceutical companies and ex-legal counsel to the FDA and ex-business development executives of pharmaceuticals, that Momentum would be an organization that could really move the technology into the product development and into the patients a lot quicker than anything that could be done at MIT. So working together, that organic respect has driven a lot of what has made this successful partnership.

Lita Nelsen: And the fact that we continue to need each other. We have new findings that fit within the basic technology that Momentum is now controlling the development of. If we want these new findings to be incorporated, we have to stay friends.

Susan Whoriskey: Yes, and following again up on that, we signed the license, as I said, in 2001. We have amended it four times since then, and a driver for those amendments has been—when we first licensed it,

Susan Whoriskey, left and Lita Nelsen.

another company, the IP rights weren't clarified that well and that situation is now the subject of a $1 billion lawsuit between two other companies, just because of lack of clarity in the IP rights in the joint development agreement. So there can be severe consequences if you're not clear about what are the IP rights when you have two teams working together.

Another factor is the teams really had a lot of focus on mutual respect and openness. I think it was a really good comment that was made earlier regarding the fact that you want to have enough goodwill in the relationship so that the following negotiations can be effective. Also you need to consider the fact that you can't think of everything in the agreement when you first engage in an activity of this type.

Then a last point that I think was really key in the relationship was the concept of co-location. In a lot of these complex technologies, the fact that there were engineers co-located at each other's sites made a big difference in how the teams could work together and how the technology could be improved in a meaningful way and transferred in an appropriate way.

Kathleen Denis: The two most recent deals had a lot of competition, so I'm going to ask both of you this question, but I'm going to start with Paul and Scott. I know the Biovitrum technology had a lot of suitors and I know you used an auction. So Scott and Paul, could you tell us a little bit of what led you to one another, rather than some of the other possible suitors?

Paul De Potocki: If you recall, our strategy was to find partners for our phase II clinical stage programs. In the last year, we had just started a phase II trial and we were about to initiate the partnering process. But in February, we had 36 companies that proactively had contacted us with an interest in licensing this asset. I can't say that all 36 were credible as global partners, but every single large Pharma company except one were among these 36.

As a biotech company, that's a nice problem to have, but it's a problem. You can't possibly handle the number of potential partners. So we had to somehow reduce the number of potential partners without actually showing what we had to the entire world, because this is a very competitive field and we know that many other companies were working on the same target and the same program. We were fortunate to be the first in the world at that stage.

We actually chose about a dozen of these potential partners and asked them to come in with a letter to Biovitrum explaining how they viewed the metabolic disease market in the future and how they saw us working together, a number of things. We got very good responses. So we had to go a second round, where we send a second letter asking for very detailed things, like what are the frameworks of the financials in terms of milestones and royalties? Are you prepared to consider quids? Are you prepared to consider split geographics? Such things.

Here it became a bit more difficult for some companies to answer, because many large pharmaceutical companies, and I have respect for that, had difficulties in committing to any numbers without actually seeing the asset. It's pretty difficult. Anyhow, we were down to about five companies that we invited to Sweden, where we gave fairly detailed program presentations, after which we entered into discussions. This was now the end of May of last year.

The first week of June, I got a call from Scott, who had not been in the process during that spring. Scott made a very convincing case, together with the head of R&D of Amgen, to actually get together. At that time, we didn't know Amgen very well. We learned things about Amgen that we didn't know and sounded very intriguing.

So we invited Amgen to Sweden and we talked about the program and the selection criteria that we had set up for a partner. Amgen were extremely rapid in responding to our strategic needs, not just the physical asset, but also the things we wanted around the deal, in terms of quids, in terms of collaborations and cross-development and a few other things. In July, we chose Amgen as our partner of choice and the only company that went into due diligence. Then we had three weeks to conclude the final agreement.

That was a fairly short process of going down from a very large number of potential partners to our final selection of Amgen as our partner of choice. Maybe you want to give your view on the process.

Scott Foraker: I think the fact that Biovitrum had certain timelines in mind was actually helpful to both parties. But you might ask, in such a competitive environment, what things did Amgen do to respond? I think there's a couple.

I think one thing we did was we really tried to listen carefully to the needs of Biovitrum. They were a small biopharmaceutical company, spun out of a larger big Pharma company, but they had a desire to become a fully integrated biotech company. That meant revenue sooner than the products in their pipeline would dictate. So we found a way to provide them with a quid for an earlier stream of revenues than they would have received from products in their own pipeline.

We tried to listen to some of their other needs. They had excess capacity in process development. We had, at the time, some bottlenecks in our own process development organization. We had too many projects going through needing process development work. So we found a win-win situation there, where as part of the deal there was a side deal, if you will, on not having to do anything with this target on process development work.

The bottom line is that we really tried to listen to the needs of Biovitrum and tried to create a checklist of those needs and see what we could do to respond to those needs in a way that perhaps other organizations may not either be able to or be willing to. This made a big difference in terms of the collaboration.

Paul De Potocki: I guess there have been a few raised eyebrows regarding us licensing this asset to Amgen. We all know Amgen is a hugely successful company, but this was the small molecule GP product, whereas Amgen made their fame and fortune in niche indication proteins more than anything. But we looked at this, and looked at the franchise that Amgen had been building in terms of small molecule expertise, metabolic disease expertise—which is quite impressive at this stage.

But we also tried to project what the industry's going to look like in five and ten years from now. We've placed our bets that Amgen is going to be one of the companies who will be strong in the future. We can all make our bets around which large Pharma companies will be there five and ten years from now, and I guess the answer is out there. But it's not obvious that the company that is strongest today will be the company that's going to be strong five or ten years from now. That was also one consideration.

I've had the privilege of working fairly closely with most large Pharma companies in the U.S., in Europe and in Japan over the last three years. While there are great similarities in the initial contact with the very professional business development organizations, there are also some profound differences in how they do licensing and dealmaking. As a biotech company, we have very quick decision processes, like most smaller companies. I'm very impressed by Amgen keeping their nimbleness despite growing larger and larger by the day.

But really, most large Pharma companies have this hierarchy of committees and decision bodies that make it impossible to make a quick decision regarding large deals. Here we were, from the very first time we met, less than three months we had signed, the biggest deal ever by a European biotech company.

Kathleen Denis: Thank you. Mark and Gary—I know you used a rather unique, not totally unheard of, but rather unusual way of finding a partner. If you could tell us a little bit more about that.

Mark Peterson: When we elected the auction process, we did adopt a principle of transparency that Gary referred to. We had that discussion with everybody who contacted us. For us, that means saying what you mean and meaning what you say in order to enable you to go fast and get to the real issues. We probably had twenty companies that did what I'll call non-confidential casual inquiry, kicking the tires, if you will, to see what the technology was about and what might potentially be there. Six companies came in on our deadline. Gary and the Corium team came in relatively late to the process and put an offer in. We asked for not only an offer but a business plan. One of the interesting correlations was the more robust the business plan, the more robust the financial offer, because as folks got deeper into the potential for the technology, the value went up.

We ended up with three partners who we invited in for a final round of discussions, to allow them to fully present their business plan. Remember, what we really wanted to see was the technology in the marketplace improving the lives of the world's consumers. The financials got to where you could throw a net over them, in all candor. Really what we ended up selecting was a strategic partner who we felt had the best opportunity to successfully commercialize the technology and take it to market, and had complementary capabilities and a very robust business plan.

Gary Cleary: For Corium, it was an interesting set of events that took place. We were pretty much minding our own business, trying to stay alive and grow Corium with what we had. When we were invited to take part in this auction, it was strange for us in the beginning, because there was sort of a one-way confidentiality agreement. We could not really tell too much about Corium without revealing confidential items. It was a little agonizing to not be able to—it was like you're behind a mirror and you can't see out there, can't tell people who you really are.

We don't have public annual reports, we're a rather young company, emerging. So we don't have any reference for someone like Proctor & Gamble to understand who we are. It was a little nerve-racking until we were able to sign a two-way agreement. Then we could open up a little bit more about what our financials were, what we're all about, and some of the confidential things that one would like to share in order to have the other party gain some confidence. During that period, it was a little disconcerting. Deep down inside, we were always wondering, how will they know we are going to be the best partner they could have without having the chance to really explain things?

At the end, somehow they did recognize that, and I'm very happy and pleased that they did. But it was that process, it was sort of like being on eBay where you don't know who the other party is and all you know is there's money being bid.

Mark Peterson: But it's interesting, when you do your public due diligence and Gary's name ends up on an awful lot of patents in the same space you're talking about, hoping to be successful, it does tend to build your confidence a little bit. So we picked up a little bit of the publicly available info.

Gary Cleary: I guess we have to thank Google for that.

Kathleen Denis: Thank you. My next question is for Joe and Lisa. I really hate, after the Red Sox win, to use a football analogy, but this country is really fond of Monday morning quarterbacking, and it is Monday morning. You've been together a long time. What things have you learned along the way to do a little different?

Lisa Jorgenson: The high-tech electronics industry, the technologies change very rapidly through the market changes, the customer demands and needs. I think we have to keep pace with that, it puts a great deal of demand on our engineering teams, on our management, and that

causes a great deal of stress.

I would say that the one thing that we really learned from all of this—and I think we've managed it relatively well because we're still together as partners—is that we could have done much better at dealing with all of the issues much earlier on and much quicker. Do you agree?

Joe Beyers: Yes. The other thing I would probably add is a better expectation or requirement for flexibility. In this type of engagement, things will never work out quite the way you anticipate. Sometimes the teams were a little bit reluctant to change. As some of the business objectives changed, the technology had to change, and there was a little bit of a transition there. It worked, but it caused a lot of angst. I think just recognizing that the industry, the technology, is moving quickly and whatever you start on will change and you sort of build that into the psyche of the project.

Questions from the audience

Kathleen Denis: I'm going to start with my first question from the audience. What role did corporate counsel—as you know, there's a number of our members who are lawyers—have in any of your deals? I'd throw this out to anybody, so I hope somebody volunteers. What impact did they have on the content and schedule of the deal? Anybody want to pick that up?

Paul De Potocki: I'll give it a shot. Representing the smallest company here and without a huge legal department internally, and being a Swedish company doing business with Americans, we certainly rely on external help. We have an agency and a particular person we've been working with for, I guess, fifteen years as Pharmacia and all the name changes. That is very important for a smaller company to get that kind of expertise aboard before you enter into negotiations with the larger Pharma companies. You all know that large Pharma companies have hoards of lawyers and they're very effective, and when you come as a biotech company without having done your homework and know exactly what you want and turn that into some kind of legal document, you will always have problems. So for us, that has been very important to get that kind of long-term relationship with a professional U.S. lawyer and have that person and that firm in the process well before you actually go into negotiations and customer contacts.

Scott Foraker: If I could add to that, I'd actually like to make an advertisement for Paul's counsel, who's sitting here in the second row, his name is Jim Farrington. It's difficult when you go through a tough negotiation to say that you have incredible respect for the lawyer on the other side of the table, but I in fact do.

The reason for that is that Jim was able to—Jim was not just a hired bulldog, as we know some lawyers can be. He was a guy who listened to both sides' point of views that were raised, saw the different needs of the companies, and even though he represented Biovitrum was willing to engage in an open-minded fashion and address the needs of Amgen in creative ways that sometimes we didn't even think about as business people. So I think the role of counsel in this particular deal and in my experience in other deals can be very critical, and was definitely instrumental to the success of our deal.

Joe Beyers: Having done business transactions for 20-30 years, a basic philosophy I deploy, while there are exceptions, I start with the premise that the business folks don't understand the legal issues and legal folks don't understand the business issues. That's my basic premise. Therefore the two have to work together as partners in any business transaction. I believe that always leads to a better outcome.

So the question is what the role of legal counsel is—the role of legal counsel is a key partner with the business folks in doing a deal like this. That's just the basic philosophy we try to push.

Kathleen Denis: I think that's reasonable. I heard a number of you say—everyone from MIT, which you'd expect, to Proctor & Gamble—is that your major impetus is to get a product out to the people. You may have different motivations, but I think all of us are in licensing and business development to get products out to people.

Lita, you had referred to having a complicated intellectual property situation. I know that sometimes it's not a clear path to getting something on the market. Can you give us a little bit of insight on what you had to do to gather up the right pieces to get Momentum?

Lita Nelsen: If you haven't dealt with a university before, you may not know that although we own the intellectual property, we don't exactly control the intellectual property all the time. People think that faculty members are employees of the university. Well, we pay their Social Security tax, but they sure as hell don't act like employees. So if you have IP from three different faculty members and they're not getting along, the fact that you have a common ownership is only a fiction.

So we had to do a lot of horse-trading. We had to give nonexclusive licenses in defined narrow fields of use for the professor who didn't want to be a part of the company. So that was part of it, it was just a lot of jawboning. One of those 6:30am meetings took place because I knew somebody in another company who had nothing to do with this company, but who was an expert in the same field, and who happened to have gone to grad school with the professor who didn't like us. We got him in the meeting to explain business terms to the professor who didn't trust us. Pretty nice of him to do it for a cup of coffee and some stale bagels.

Then you just keep chugging away at it, looking at how, for example, in some of the background technology—yes, I know you have an exclusive license but I'm willing to give this to get back some of the rights that I licensed to you seven and a half years ago. You just keep chugging away at it because

you want to get it done. You keep explaining to the other side, some things I don't want to give you, some things I oughtn't to give you because of public policy, and other things I'd love to give you but I can't, and how can we work together to make a deal that works? There's no magic other than people, people, people.

Kathleen Denis: Thank you. More questions from the audience. One for Mark and Gary. Why was Proctor & Gamble not interested in just buying Corium and its technology?

Mark Peterson: Once we made the strategic decision that we didn't want to be in the drug delivery business, making an acquisition that wasn't central to our strategy didn't make sense from a direction standpoint. Recall, at the time our stock had gone from about $118 to about $55 and Dirk Jager had exited stage left when we were making that strategic decision about what business we wanted to be in, and A.G. Laffley was leading the company through that kind of strategic focus.

So in the interest of continuous employment on my part, suggesting that we change strategy to get in the drug delivery business didn't seem particularly bright. So I didn't even propose it.

Kathleen Denis: Anything you considered, Gary?

Gary Cleary: No, that never entered our minds. P&G never made an offer like that. I don't think we would sell, because we're really only four years old and we're still having fun.

Kathleen Denis: This one is for Joe and Lisa. It sounds to the individual posing the question that the relationship with ST evolved from a supplier to a licensee in a fairly seamless and natural fashion. How did the intellectual property organization play a role in this and what was the handoff mechanism from procurement to licensing?

Joe Beyers: Yes, it did start out initially as a procurement relationship. Then as it evolved into a joint development, that's when the licensing function activity got more heavily involved. As I said earlier, the IP issue had become quite problematic. But at all times, the business focus was the main driver through the relationship, because it was an evolving business relationship that involved more and more complex IP issues. Then it got involved in a lot of joint development activity, so again the business and technology people really were the key drivers in the relationship, with the intellectual property rights issues monitored and properly managed along the way.

Kathleen Denis: You said there are people who work across sites. How do you handle the intellectual property?

Lisa Jorgenson. As seamless as it may seem, it hasn't always been an easy task. The important thing is the communication. HP has a lot of very proprietary technology, as well as ST developing within the confines of what ST can bring to the party, so to speak. So we are developing the semiconductor chip and developing inside that envelope, if you will, of the HP proprietary technology. So we've had to delineate lines of what ST will own in terms of the ultimate intellectual property of what we are developing.

So we've had to work very closely together. What we develop that we will own solely, what we will have to give up ownership rights to within the confines of the HP proprietary technology, and what we jointly develop, we will continue to jointly own. It's been a very different model in some respects, that ST is not used to, but it's also helped with the overall final relationship down the road. It is also something that creates the follow-on technologies that works for both sides.

Joe Beyers: It was interesting, in two of these examples that we discussed, there were different models. In the first example, it was mostly HP's very proprietary IP that a lot of inventions that ST Micro might make in that relationship would be owned by HP, because it was derived from our IP. But in the follow-ons, it was more collaborative and there is more joint ownership and more independent development by ST Micro on the LX microprocessor. So there were two different models. It really is highly dependent on the nature of the criticality of the proprietary of the IP and what the expected follow-on would be. With the LX, the expectation was there could be some relationship where ST Micro owns more of it, and in that one the IP model was more flexible.

Kathleen Denis: Thank you. We're getting close to the end of our time and I'd like to pose a final question to all of the groups. This, too, is from the audience. We've been talking about the successful partnerships that you all have put together. Could you each take a couple of minutes and tell us about the future risks that you see ahead and how you intend on addressing those? Could I start with Scott and Paul?

Scott Foraker: Whenever you do a deal of this type, particularly that involves science, there's tremendous risk. You can't anticipate every outcome. I would echo Lita and other panelists' sentiments about the need for continuing strong relationships. There's already been one issue that has cropped up over the past year which has required just that type of relationship. I think when we structured the deal, we did it as best we could to account for the future risks and the unanticipated consequences of the deal. In that I'd really like to echo and emphasize what Mark said earlier about aligning the interests. If you align the interests, then everything else is going to pretty much fall into place. So the risks and the unanticipated consequences of the deal are going to be dealt with in a satisfactory manner if the economic interests of the parties are fundamentally aligned. We've learned this lesson the hard way in some cases over the years. So we make it an absolute requirement of our deals that the economic interests are aligned. Even if we're interested in a product or a technology, if we can't find a way to align our economic interests, we won't do the deal. It's as simple as that.

Paul De Potocki: It's a very broad question. The answer ranges from how will the U.S. pharmaceutical industry develop over the next 5-10 years and what are prices going to be, all the way down to what's the probability of success for a phase II B clinical study in diabetes with a new mechanism. But apart from

the scientific risks or the technical risks that are always present in every R&D program in the industry where we're active, we don't have any hot list of risks that we see in this particular relationship with Amgen.

I'd like to echo what Scott is saying. If you structure a license deal right, it should be the most obvious win-win relationship you could ever think of. I'm not saying that ours is perfect, but we certainly don't see any big major red flags.

Lita Nelsen: Universities can't simply say that economic interests are aligned, because they have everyone else to please. The biggest risks that we can see from our point of view are not economic, but are first that Momentum might run out of money or run out of ambition for this technology, and therefore be sitting on an exclusive license and not developing it, or much worse than that, developing it just enough that we can't exert our diligence milestones and get it back. That includes being acquired by big Pharma who doesn't find this long-range stuff sure enough to risk it. So that's first, that the technology might not get developed, and we would get highly criticized for that and feel bad about it.

The second is that Momentum might be outrageously successful and we will then be accused of having given an exclusive license to such important technology to only one company. So now, you know, damned if you do, damned if you don't.

Susan Whoriskey: From Momentum's perspective, clearly the value we built in the company to date has been on the key core strength of the technology and it's a cutting-edge technology, at the beginning of what we think is going to be a much larger important field—success begets success. There are other people working in this area in different places. Continuing to evolve the technology is something that is critically important to the success of Momentum going forward. We're mitigating that in a number of ways, by continuing to work closely with MIT to evolve what we think is our head start on the technology.

We're also doing a lot of work in-house, internally, independent of MIT, obviously to build our intellectual portfolio, and reaching out to universities beyond MIT, and pharmaceutical companies. So mitigating the risk of a technology going obsolete by staying at the cutting edge of it is something that's very important to us.

Lita Nelsen: I think I need one clarification point. Although we're good friends, these people are not supporting work at MIT, in that our conflict of interest policies would not allow it. It is a friendship but not a collaboration.

Susan Whoriskey: Yes, that's fair.

Kathleen Denis: Lisa and Joe?

Lisa Jorgenson: I think for ST, probably two major risks and/or opportunities. The first is, can we keep pace with the technology? Can we keep pace with our customers' demands to meet the design cycles, and can we keep pace with our competition? I think the second is the third-party patents that are coming at us left and right on a constant basis. We see new patents being thrown at us almost on a weekly basis. So we have to be able to keep up our intellectual property portfolio at almost the same pace.

Joe Beyers: The question is a very good one in terms of the future risk in a relationship like this. The business environment is constantly changing very dramatically. The risk is more that while we have great goodwill between the two companies, we're working well together, if the environment changes—one interesting example is the fact that the senior executive at HP who was behind establishing the initial relationship with ST Micro now is the CEO of one of our top competitors, who also now works with ST Micro.

You always have to be on your guard in working with another company, especially two major companies together, for business environmental changes of any kind, and to make sure you have the right legal agreements and right working relationship to deal with the changes that might occur.

Kathleen Denis: Thank you. Finally, to the "newlyweds."

Mark Peterson: From P&G's standpoint, as we look at the challenges facing Corium as they really take on the micro needles as a second technology platform, the financial wherewithal, we think, will be there to finance the development work, as we've done our due diligence on it. I think the bigger challenge, as it is in many young companies, is finding the right management talent so that Gary isn't trying to do a one-man band act as he takes on more and more customers and clientele.

This is certainly something we've talked about and tried to support via our networks. If we see talented folks looking for opportunities, we'll try to steer them Gary's way. But he's certainly so deep in the area, we think it's a real risk but a nominal one.

Gary Cleary: I think there are a couple of risks but they can be overcome with some hard work. One is there's still some more inventing that needs to take place. We have micro needles, but we need to make a final product which has several other components that need to be put together. I think we can come up with that, but it's going to take a little bit of inventing. The other is the regulatory hurdle with micro needles. I don't know how that's going to be accepted by the regulatory folks in Washington, D.C. I would think it would be easy, but it's an unknown, unpredictable event that will most likely take place. I think it will take place positively but sometimes these things don't take place positively right off the bat. That might delay the entrance of this product into the marketplace.

Kathleen Denis: Thank you. I thank the audience for being respectful and listening to this great panel this morning. I thank all eight of our panelists. A lot of interesting facets of partnering came out this morning and we appreciate your candor.

rights is unlikely to agree with the conclusions reached by the patent attorney for the other party. Moreover, the legal conclusions on inventorship and patent ownership reached by a patent attorney for one party are frequently unpopular with (if not unacceptable to) that party, i.e., the attorney's own client.

Under the above system, the second problem stated above becomes apparent. It takes a very short period of time for business managers and technical people to realize that, since lawyers and the law are frustratingly unpredictable and uncertain, the only acceptable and predictable way to conduct the joint development program in order to get ownership of the patents on the new technology may be to avoid working with the technical people of the other party. If technical ideas are not disclosed to or discussed with the other party, then you have a better chance of preventing the other party from ownership or co-ownership of the new patents by preventing them from being inventors or co-inventors on the new technology. Thus, the prescription for disaster and failure of the joint project is complete. This arrangement for ownership of the new technology patents is a complete incentive for the technical people not to work together jointly to develop new technology Even worse, the two parties who are not communicating may independently develop the same invention and file separate, competing patent applications, which end up in an expensive interference proceeding in the USPTO to determine who invented the invention first.

Finally, the first problem stated above also becomes apparent. If those involved in a project do not think they can invent everything themselves, and preclude the technical people from the other party from being co-inventors, their natural tendency may be the opposite of the above. They will try to be co-inventor on everything the other party is working on. This is based on a belief that it is better to be co-inventor and co-owner than it is to have no ownership. If this happens, most patents resulting from the project will be co-owned, and, as noted above, will not provide a patent either party can use against third party competitors, in the absence of that all-important agreement to the contrary.

The futility (and frustration) of a technology joint development arrangement which bases future ownership of property rights on inventorship determination is obvious. There must be a better way, and there is. The allocation of future property rights which are expected to result from a joint project for development of new technology can be based on an arrangement which makes inventorship irrelevant to determinations of patent ownership and which encourages the technical people to work together for the best possible technology result and for the maximum patent position to benefit both parties in a predictable fashion.

Prescription for Success: Market-Defined, Field of Use Exclusivity for Each Party, Plus the Unknown

This approach may make it difficult for business managers to define and to agree upon project terms from a technology standpoint. It takes more effort to get the project defined/planned and the appropriate agreement in place. It is tiresome for business managers to keep answering all of the lawyers' "what if" and "what about" questions before agreement can be reached and the project started. However, it is less difficult dealing with defining the project in market terms at the beginning of the project and reaching actual agreement on the issues than it is to deal with the uncertainties of not having appropriate patent rights at the conclusion of the project because those patent rights are to be allocated based on inventorship determinations. Business managers always fear "leaving something on the table" in negotiations, or giving up rights to something that they didn't understand or that was unknown to them. This market-defined approach enables the business manager to negotiate for rights on the basis of existing market, desired market development and future market protection, which are aspects that they understand best.

On the positive side, forcing the business managers to define a joint technology development project in terms of market-defined, exclusive fields of use for future rights will result in a much better planned project with better defined technology and performance goals. Business managers usually know their markets extremely well, and they can usually define with a fair degree of certainty the exact market they want to improve as a result of the joint project, as well as any future market they want to develop and enter as a result of the joint project. Business managers also usually know very well the other party with whom they propose to conduct the joint development project, whether the other party is or will be supplier, customer, competitor or other relationship.

In the context of the present market, the business managers of each party can define their own business and the competitive objectives they expect to achieve for their company from the joint development project. The two sets of objectives can then be put together, first to determine where the common advantages and benefits of the joint project exist, i.e., what each party can do that the other party cannot do themselves, and second, to determine the problem areas that must be resolved to reach a workable agreement. Issues can best be resolved on the respective market (field of use) interests of each party. This process will facilitate defining the scope of the technology research and development and designating the particular personnel to be dedicated by each party to the project. With the scope of the project thus defined, the future property rights (ownership rights and exclusive license rights) can be allocated and agreed to on a market by market basis.

The basic elements and checklist

for assembling a project structure and the defining agreement for this market-defined approach to a joint technology development project include the following:

- Define the present market in which Party A operates and desires to have exclusive use of the new technology, including the right to enforce patent rights against its competitors in that market.
- Define the present market in which Party B operates and desires to have exclusive use of the new technology, including the right to enforce patent rights against its competitors in that market.
- Define any future market in which Party A plans to enter and desires to have exclusive use of the new technology, including the right to enforce patent rights against its future competitors in that market.
- Define any future market in which Party B plans to enter and desires to have exclusive use of the new technology, including the right to enforce patent rights against its future competitors in that market.
- Define any license market in which Party A is best positioned to license the new technology and desires to have exclusive rights to the new technology including, the right to enforce patent rights against the competitors of a licensee in that market.
- Define any license market in which Party B is best positioned to license the new technology and desires to have exclusive rights to the new technology including, the right to enforce patent rights against the competitors of a licensee in that market.
- Define any remaining markets as the unknown remainder markets.
- Define the technology area in which the parties will work together.
- Define the new technology as any invention in the technology area conceived by either party separately or by the parties jointly between the beginning date of the project and a definite ending date of the project. Thus, the new technology governed by the agreement is clearly defined and is trackable by invention conception records. This also defines the beginning and the end of the period of time the technology people are working together under the joint project.
- Define background technology as any technical information and related intellectual property rights owned by one party which may be desirable to use by the other party in the commercial use of the new technology in the other party's present, future or license market.
- Require both parties to keep strict laboratory notebook-type records (signed, witnessed, dated) of each invention conception event occurring between the specified beginning and ending dates. Similar records are to be kept for reduction to practice events. These records are critical for the parties to determine what inventions are new technology subject to the joint development agreement, i.e., those conceived within the agreement time period. Having the new technology defined for purposes of rights under the agreement, as inventions conceived between certain fixed dates provides an objective and predictable way for the parties to determine the new technology and consequent patents which are under the agreement and which are not. As noted above, the new technology includes those inventions conceived in the period between the fixed dates but reduced to practice during or after the specified time period. These invention and reduction to practice records are also the exact evidence records required in a USPTO interference for establishing priority of invention date against any third party who files a patent application on the same invention, thus providing protection for both parties against a third party.
- Require both parties to have their dedicated technical personnel attend regular technical meetings to discuss new ideas and progress on new technology. Require both parties to provide regular technical reports on new technology to the other party.
- Require that there be no further technical discussion between the parties after the end date of the project.
- Provide for follow-up after the end date of the project. At least two residual things will happen after the project end date after which the parties are no longer working together. Either party may reduce to practice a new technology invention (conceived in the joint project), and the other party will have full defined rights to that new technology invention. Patent filing and prosecution on new technology inventions will continue after the joint project termination date, and each party will have full defined rights with respect to each of the resulting patents. Continued communication and cooperation on these two aspects will be required.

Under this market-defined, exclusive field of use approach, each party will have sole ownership of all new technology inventions and the related patents which primarily relate to its own present market, including control of the prosecution, issuance, maintainance and enforcement of those patents in its market. These inventions and related patents will be exclusively licensed to the other party for the other party's present, future and license markets. The best way to determine which party should have ownership of a particular patent, is to determine which party will most likely need to use that patent to sue infringers to stop competition and protect its competitive position in its present market. That party will own the patent for use in its present market, and, consequently for its future and license markets. Having the patent issue in that party's name also provides the deterrent effect with respect to that party's competitors in that party's markets. The other party is exclusively licensed under that patent for the other party's present, future and license markets, i.e., that patent cannot be licensed by the owner to any third party in the other party's markets.

Since a particular patent may be important to both parties in their respective present or immediate

How To (And How No To) Deal With Inventorship In Joint Agreements

BY T. GENE DILLAHUNTY*

This paper was presented at the LES (USA & Canada) Summer Meeting 15 June 2001 held at Kananaskis, Alberta, Canada

An agreement for the joint development of new technology is probably the most difficult type of agreement for businesspeople and lawyers to negotiate, draft and administer. Joint development agreements for other business ventures are more straightforward. For example, for joint development of a shopping center, the parties have architectural plans and the parties know what steps are required to complete the project and know what the project will look like when it is finished. Joint projects for development of new technology require having a business plan and a legal agreement for future technology and property rights that do not exist at the time the agreement is signed. In addition, depending on the field of technology, it may be fairly unpredictable whether the proposed technology can be developed, and if it can, what the final technology will be. The business objective, of course, is to create new technology that will provide each party with a competitive advantage over its competitors. This competitive advantage can normally only be secured with patent rights that each party can use to preclude its competitors from copying the new technology in the marketplace.

In the December, 2000 issue of *les Nouvelles*, there is an excellent set of papers on "*Allocations of Ownership of Inventions in Joint Development Agreements.*" I recommend it for your review. The purpose of this presentation is to provide some additional practical suggestions for structuring and administering technology joint development agreements, specifically with respect to inventorship issues. As I am sure you have experienced, inventorship issues among business managers and inventors frequently involve confusion, at best, and egos, at worst. The inventorship issues resulting from confusion and egos are compounded exponentially in a joint development project when the business managers or inventors perceive that rights to use the technology and/or rights to own patents are at stake.

The Legal Basis of Inventorship and Patent Ownership

This paper is based on the United States patent law, because of the unique questions raised and problems caused by the specific requirements of the United States patent law for inventorship determination on patents. Inventorship is not the same, legally, as authorship on a paper or publication. The correct legal determination of inventorship on a patent is critical, because inventorship determines ownership of the patent.

United States patent law at 35 U.S.C. 111 states, "An application for patent shall be made by the inventor." Under 35 U.S.C. 115 it is further required that," The applicant shall make an oath that he believes himself to be the original and first inventor of the [invention] for which he solicits a patent." Under 35 U.S.C. 116 it is required that "When an invention is made by two or more persons jointly, they shall apply for patent jointly and each shall make the required oath." This is the basis in the U.S. law that requires every U.S. patent application to be filed in the name of the inventor(s) and to be signed by the inventor(s). Thus, the ownership of every U.S. patent application initially rests with the inventor(s). Ownership of the patent application is then normally transferred to the company by an assignment document signed by the inventor(s) pursuant to their employment agreement. The usual employment agreement says that inventions made by the inventor(s) are owned by the employer and the inventor(s) must assign the patents on those inventions to the employer.

When joint inventors are employed by separate employers, the inventors' respective assignments to their respective employers result in the employers being joint owners of the patent application and the resulting patent. The United States patent law at 35 U.S.C. 262 provides "In the absence of any agreement to the contrary, each of the joint owners of a patent may make, use, offer to sell, or sell the patented invention within the United States, or import the patented invention into the United States without the consent of and without accounting to the other owners."

This means that each joint owner, or co-owner, not only has the right to practice commercially under the patent without permission of the other co-owner, but also has the right to license whomever he desires under whatever terms he selects without permission of the other co-

T. Gene Dillahunty is a partner in the law firm of Burns, Doane, Swecker, and Mathis, LLP, Redwood Shores, Calif. 94065-1418

owner and without sharing any profits or royalties with the other co-owner. The end result of this situation is that neither co-owner alone can enforce the patent against a third party to stop infringement, because the accused infringer may be able to obtain a license from the other co-owner. Moreover, a court will not permit a lawsuit to proceed against an infringer unless the entire ownership of patent, i.e., all owners, join in the lawsuit. A co-owner who does not want to be a party to a lawsuit can license the infringer and keep all of the royalties or license fees, without any requirement to share with the other co-owner. To prevent this from happening, it is necessary to have an agreement between the co-owners, because of the statutory language "in the absence of an agreement to the contrary."

Inventions are sometimes jointly made by employees of different companies, when the companies do not have an agreement between them with respect to ownership of inventions or patents. One common way this can happen is when a supplier's employee is visiting a customer and works with the customer's employee to solve a particular technical problem. This can result in a joint invention which is jointly owned by the two companies. After the fact, the two companies may reach agreement with respect to ownership rights and licensing rights for that invention and the resulting patent. But, if they cannot reach agreement, the statutory provision controls.

Proposing a Joint Development Agreement

The purpose of a joint development project is for two parties to cooperate in development of new technology which neither party can develop alone. The objective of the joint development agreement is to set forth, in advance, the parties' agreement on the ownership and related rights with respect to the new inventions and the future patents on the new inventions. Typically, when executives of two companies are proposing a joint technology development project, the usual initial approach is: "We will work together, and what we invent is ours, what you invent is yours and what we jointly invent we will both own." This is usually followed by "Our patent lawyers will keep it sorted out for us." This approach has major problems. The first problem is that it leaves unresolved the co-ownership issues addressed above. The second problem is that patent property ownership will be determined by inventorship. Another problem, of course, is that lawyers can't agree on anything; it is the parties themselves who, as the principals, must agree on ownership issues.

Prescription for Disaster: "What's ours is ours, what's yours is yours and what's joint is both of ours."

A joint project based on the above approach is doomed from the start for at least three reasons. First, a joint invention will not be protected by a patent which either party can use to exclude competition and to provide a competitive advantage in any particular market. As explained above, without any agreement to the contrary, a jointly owned patent cannot be used exclusively by either party to stop third party infringement. Second, if ownership of the resulting new technology is to be determined by inventorship, it is in each party's interest to invent everything themselves, without input from or cooperation with the other party, thus defeating the intent and purpose of a joint development project. Third, the determination of inventorship for a particular invention is not exact; inventorship is subject to differing opinions on the underlying facts, is subject to legal interpretation and may legally change (due to claim amendments) during the prosecution of a patent application.

Taking these in reverse order, the third problem, determination of inventorship under U.S. patent law, has been the subject of much litigation and many different interpretations by the courts of the legal requirements for inventorship and co-inventorship on U.S. patents. In setting forth these legal requirements the courts have enumerated various criteria for trying to determine whether an individual has sufficiently contributed to an invention to qualify as the inventor or as a co-inventor under the law. Attached is a list of court decisions, which make interesting reading on the question of inventorship in various situations. In general the courts try to determine whether an individual qualifies as the inventor or a co-inventor under the patent law by having intellectually contributed to the inventive concept at the conception of invention and/or to the reduction to practice of the invention. One of the few consistent requirements in the various court decisions is that the determination of inventorship under the law must be based on the invention defined in the specific patent claims in question. However, since patent claims are usually amended and changed during prosecution of the application, it is not unusual that inventorship on a particular application must be changed because of a change in the claims in the patent application before the patent is granted.

What becomes clear from the above is that, from a practical standpoint, it is impossible to divide up and determine with any degree of certainty allocation of future property rights on new technology based on inventorship. The business people and the technical people of one party to the joint project will look to their own patent attorney to determine what technology and what patents that party will own exclusively, what technology and patents they must give up ownership of to the other party and which they must share ownership with the other party. This puts the patent attorney in the position of judge, jury and executioner with respect to establishing property rights based on legal evaluations of inventorship. Of course, whatever the patent attorney concludes for that party's

future markets for protection of a competitive position, the parties will have to decide on a case-by-case basis which party will own and maintain that patent. In each case, there will need to be a provision that the other party may participate in the filing and prosecution of the patent, and may require assignment to the other party to maintain the patent in the event the owner party elects not to prosecute or maintain the patent. More importantly, there will need to be a provision to require assignment of any necessary patent from the owner party to the other party for purposes of enabling the other party to sue an infringer in the other party's market area, then assignment of the patent back to the original owner party when the litigation is completed or settled. This enables each party who needs to take legal action to protect a competitive position in its market to have sole ownership and sole control of the patent for litigation, without joining the other party in the lawsuit.

For the unknown remainder markets, the parties will be required to agree with respect to commercial exploitation of the new technology inventions and related patents in the unknown markets on a case-by-case basis as the opportunities arise. This assures that the parties will share the benefits of future unknown markets, if any, and that neither party can operate or license in those markets without permission of and accounting to the other party.

The Real Advantage — re: Inventorship

In addition to the predictable control by the parties of patents on new technology for use as commercially needed in their respective markets, this market-defined, exclusive field of use approach removes inventorship as a factor in determining ownership or control of new technology patents. When the technical people of the two parties understand that patent ownership and exclusive rights are already determined and assured separate from inventorship determinations, they can work together to the best advantage of technology development, without concern that working with the other party may effect patent ownership rights. This also places the incentive for inventors back where it belongs: to invent as many new technology inventions as possible. This produces the most new technology inventions and patents from the joint development project. And the inventors can work in this fashion with the comfort of knowing that their company's rights are already fully protected regardless of inventorship determinations.

The business managers can have the confidence that the rights of their company are fully protected for their markets relative to new technology and patents from the joint development regardless of inventorship determinations. The managers can make sure the conception of invention records are properly kept by the technical personnel from the beginning date to the ending date of the joint project, because this is what will determine what is and is not new technology subject to the agreement.

The inventorship determinations on new technology inventions can be made without concern about affecting property rights or patent ownership rights of one company or the other. The patent attorney's job of legal determination of inventorship on patents can remain just the normal task of applying the law and dealing with inventors' egos.

Another benefit of this approach is that it conforms better to the unique U.S. Patent and Trademark Office rules and practice relative to "Terminal Disclaimers." The U.S. continuation application and improvement patent application practice, enables one to apply for and to obtain additional claims to subject matter that the Examiner may not consider to be separately patentable over the parent or first patent. However, one can often obtain approval of such additional claims by filing in the second patent application a Terminal Disclaimer, which requires the second patent to expire at the same time as the first patent and requires the second patent, at all times during its life, to be commonly owned with the first patent. Sometimes such improvements are made by different or additional inventors. Following the approach suggested in this paper assures that the ownership of the first patent and improvement patents subject to terminal disclaimers is always in the correct party, regardless of inventorship determinations.

Examples of Inventorship Cases

C. R Bard, Inc. v. M3 Systems, Inc., 48 USPQ2d 1225 (Fed. Cir. 1998) - conception is the key to inventorship.

Burroughs Wellcome Co. v. Barr Laboratories, Inc., 32 USPQ2d 1915 (Fed. Cir. 1994) - conception is the "touchstone" of inventorship.

University of Calif. v. Synbiotics Corp., 29 USPQ 2d 1463 (S. D. Cal. 1993) - suggesting an idea of a result without also suggesting means of accomplishing the result is not inventorship.

Fina Oil & Chemical Co. v. Ewen, 43 USPQ2d 1935 (Fed. Cir. 1997) - conception of a chemical must include operative method of making it to be inventor.

Ethicon, Inc. v United States Surgical Corp., 45 USPQ2d 1545 (Fed. Cir. 1998) - conception is the formation of a definite idea of a complete and operative invention as later applied in practice

Davis v Carrier, 28 USPQ 227 (CCPA 1936) and *Bac v. Loomis*, 117 USPQ 29 (CCPA 1958) - after conception, if failures along the way to reduction to practice required deviations, those responsible for the deviations may be inventors, alone or jointly with those responsible for the original conception.

Kimberly-Clark v. Procter & Gamble Co., Inc. 23 USPQ2d 1921 (Fed. Cir. 1992) - joint inventors must have some quantum of collaboration, if not by working together, then by one building on the relevant information of the other.

Sewall v. Walters, 30 USPQ2d 1356 (Fed. Cir. 1994) - the subject matter specified in a patentable claim is all that is used for determining inventorship.

In re Cooper, 230 USPQ 638 (Comm. Pat. T. M. 1985) - USPTO will not substitute un-named inventor in place of named inventor without consent of assignee of named inventor.

Bemis v. Chevron, 203 USPQ 123 (9th Cir. 1979) - court can substitute second inventor for first inventor, but only if in good faith and no deceptive intent to appropriate rights of another.

Trans-World Manufacturing Corp. v. Al Nyman & Sons, Inc., 219 USPQ 1059 (D. Del. 1983) - deliberate non-joinder of co-inventor to gain property right over omitted inventor is grounds for invalidating the patent.

University of Colorado Foundation Inc. v. American Cyanamid Co., 52 USPQ2d 1801 (Fed. Cir. 1999) - dispute regarding not naming consultant on vitamin formulation patent.

Pannu v. Iolab Corp., 47 USPQ2d 1657 (Fed. Cir. 1998) - inventors who collaborated to conceive the invention remain co-inventors even though one inventor publically discloses his portion of the invention more than a year before filing.

Hess v. Advanced Cardiovascular Sys., Inc., 41 USPQ2d 1782 (Fed. Cir. 1997) - not co-inventor if only assisting inventor who conceived the operable invention by providing publically available components for use in the invention.

Stark v Advanced Magnetics Inc., 43 USPQ2d 1321 (Fed. Cir 1997) - correction of inventorship on patent can be done when error was made without any deceptive intent.

Amgen, Inc. v. Chugai Pharmaceutical Co., 18 USPQ2d 1016 (Fed. Cir. 1991) - if invention not clearly conceived or understood, conception may not occur until reduction to practice occurs, resulting in simultaneous conception and reduction to practice.

Acromed Corp. v. Sofamor Danek Group, Inc., 59 USPQ2d 1130 (Fed Cir. 2001) - proof in form of corroboration witness required for person not named as co-inventor to prove contribution to conception of claimed invention.

Breed v. Hughes Aircraft Co., 59 USPQ2d 1146 (CA 9 2001) - consultant claims company omitted his name from patent.

Chou v. The University of Chicago, 59 USPQ2d 1257 (Fed. Cir. 2001) - Court of Appeals determines that grad student/research assistant has standing to sue if federal court to have name added to patent.

Kosower v. Gutowitz and Eatoni Ergonomics, 2001 U.S. Dist. Lexis 19111 (DC SDNY 2001) - court followed *Chou* case with respect to jurisdiction to determine inventorship on a patent application and direct a party to change it.

Patent And Technology Licensing In Latin America

BY CLARISSE ESCOREL & JOHN PAUL*

In 2004-2005, the LESI Committee of the Americas and the LES (USA & Canada) International Committee conducted a survey of licensing activity in Latin America. Committee members, with experience in Latin American countries, researched available information to respond to a series of questions. In some countries, not much information was available to answer the questions; in others, information was available. Whenever possible, the Committee members supplemented the research with their personal experience, providing insight into the licensing landscape in the particular country.

The Committee gathered information on Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, and Venezuela, by asking the following questions:

1. What public and private organizations are licensing technology?

2. For each organization involved in licensing, for the past five years:

a. how many patent licenses and how many technology licenses; and

b. what are the significant terms and characteristics of licensing.

3. What organizations may be in the position to conduct licensing but are not yet doing so?

4. What are the greatest challenges and barriers to licensing—legal, business, and practical issues?

5 What possibilities are there for providing education to the licensing, legal, university, government, and business communities?

This article gathers together the information gleaned from the survey and presents the highlights in the responses to the questions posed. As will be seen, licensing activity in Latin America ranges from significant licensing activity in Venezuela's oil industry and Mexico's manufacturing and franchising operations to scant activity in Argentina, Colombia, and Ecuador. Further, in some countries, much of the R&D and consequent licensing activity derive from government and university programs, with little licensing taking place strictly in the private sector. These government and university programs, however, seem to be bearing fruit, so licensing activity in these nations will perhaps increase during the next decade.

1. What public and private organizations are licensing technology?

In Latin America, the most active countries in licensing appear to be Venezuela and Mexico. Each of these countries has active private-sector licensing, though the public sector is engaged in much licensing activity as well.

In Venezuela, the oil industry dominates the licensing landscape. The leading organization in petroleum-related technology is the Instituto Técnico Venezolano del Petróleo (PDVSA-INTEVEP, S.A.). The most important research-and-development center of petroleum-related technology in Venezuela is INTEVEP, S.A., a company totally owned by Petróleos de Venezuela, S.A. (a state-owned company).

INTEVEP, S.A. has a patent portfolio of approximately 1,500 petroleum-related patents around the world and is certainly one of the most important research and development centers in South America. INTEVEP, S.A. has been producing and licensing technology since 1983. Other research and development efforts in Venezuela are dispersed and isolated.

In Mexico, the private sector leads the licensing of technology. The Mexican response to the survey classified corporations as (1) Mexican Corporations in general, (2) Mexican Corporations with technology departments, and (3) Multinational Corporations.

1. Mexican Corporations in general usually license and buy technology through an engineering firm for specific projects; most licenses relate to franchising.

2. Mexican Corporations with technology departments usually do not license, but keep their knowledge in-house; also, they seldom finance developments in universities or institutes.

3. Multinational companies license in-house to their subsidiaries what they need to operate in the Mexican

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*Clarisse Escorel is an associate attorney with the intellectual property law firm Momsen, Leonardos & Cia, in Rio de Janeiro, Brazil. John Paul is a partner with the intellectual property law firm of Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., in Washington, D.C.
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market, usually only as a formality, or register or make effective in Mexico international contracts with third parties.

Despite the prominence of Venezuela and Mexico in the field of licensing, developments in other Latin American countries are significant. In Chile, some government programs are encouraging the development of technology. In this country having a low rate of patenting—with more than 90% of Chilean patents being filed on behalf of foreign inventors—the situation is changing because of free-trade agreements. Chile is realizing that it must develop its science and technology infrastructure to become a developed country and has instituted aggressive programs geared toward developing technology and advancing science. In 2004 and 2005, the government, along with the World Bank, is sponsoring eight competitions. The first such competition, ChileInventa 2004 organized by GeneraUC Technology Commercialization, attracted 30 innovations representing diverse technologies from different parts of the country. Organizers of each competition are responsible for ensuring that the technology is patented and commercialized.

In Brazil, we find licensing in universities and government programs as well. These include:

1. University of Campinas – UNICAMP

2. University of São Paulo – USP

3. São Paulo State Research Foundation – FAPESP

4. Pharmaceutical Innovation Agency – AGIF

Licensing U.S. Technology

In many Latin American countries, much of the licensing involves U.S. technology. Frequently, U.S. companies license their own technology to their subsidiaries. In Colombia, for example, Colombian Patent Office statistics show that the vast majority of patent licensing (99%) is U.S. technology licensed to Colombian companies, often to branches or subsidiaries of the U.S. companies owning the technology. In the Patent Office, one finds registrations of 98 patent licenses. Others no doubt exist but have simply not been registered. The owners of this licensed technology include Kimberly Clark Worldwide, Inc., Eli Lilly & Company, Cabot Corporation, W.R. Grace & Co., and others.

U.S technology, of course, is not the only subject matter for Latin American licenses. In Brazil, for example, many licenses involve European and Japanese technology.

Universities and Government Programs

Universities and government programs figure prominently in the encouragement of research and development and the licensing of developed technology. In Argentina, the University of Buenos Aires—the biggest and most important public university in Argentina—has the Office of Transfer of Technology. This office assists the different faculties in negotiating licenses of university, or faculty-owned technology. But not all faculties obtain patents for their innovations and when they do, negotiating a license agreement can be a very lengthy process since the provisions in most agreements used in private industry are usually objected to by the University. The faculties at some universities may enter into joint research agreements with the private sector. Quite a number of these joint projects have been successful. They, too, involve the transfer of technology.

2. For each organization involved in licensing, for the past five years:

a. how many patent licenses and how many technology licenses; and

b. what are the significant terms and characteristics of licensing.

Throughout Latin America, precise data on the number and value of technology licenses are sparse at best. Most countries do not require the registration of patent licenses. And in those that allow registration, few organizations submit registrations, preferring instead to keep this information confidential.

Registration does take place in some countries, however. In Brazil, for example, royalty-bearing technology transfer agreements executed between a Brazilian licensee and a foreign licensor should be filed at the Brazilian Patent and Trademark Office (BPTO) for recordal (registration). In addition, as a general rule, the recordal of license agreements (trademark, patent, know-how and technical assistance agreements) at the BPTO produces the following effects: (i) the agreement becomes enforceable before third parties; (ii) the royalty payments become remissible abroad; and (iii) the Brazilian party becomes eligible to claim the royalty payments as tax deductible items.

Argentina also has registrations of agreements between foreign licensors and local licensees involving payments abroad, in which parties wish to benefit from certain tax incentives. Concerning typical terms and conditions, the survey could provide only the economic value of those agreements, since all the remaining information is kept confidential. From 1992 to 2003, the National Institute of Industrial Property registered 3,285 agreements. Of those:

- 1741 were technical assistance.
- 59 were franchising agreements.
- 24 related to training.
- 938 were trademark or patent licenses.
- The remaining ones covered various areas such as engineering.

The registration of these agreements revealed the U.S. dollar amounts involved. By year, from 1992 to 2003, these amounts were as follows (millions of U.S. dollars):

- 1992 - US$74.1
- 1993 - US$99.9
- 1994 - US$340.2
- 1995 - US$571.80
- 1996 - US$632.1
- 1997 - US$598.1
- 1998 - US$918.5
- 1999 - US$1455.40

- 2000 - US$1124.60
- 2001 - US$765.40
- 2002 - US$245.0
- 2003 - US$396.0

Patent and technologyy licence information in Colombia uncovered by the survey is shown in Table 1.

Registration Information Sparse

Though registration information is sparse in Latin America, it is possible to deduce the extent of licensing by referring to some information that is publicly available.

In Mexico, for example, one can deduce the extent of licensing from information available on the extent of franchising, since the typical franchising agreement is often accompanied by technology or know-how licenses. There are about 550 franchisers in more than 65 areas with 35,000 sale points all over the country.

The terms of franchise licenses in Mexico are typical of those found worldwide: strong provisions to the franchisee for maintaining a certain level of quality and for achieving commercial and performance milestones. In addition, Article 65 of the Regulations of the Mexican Industrial Property Law outlines certain information that the franchiser must deliver to the franchisee. The key people involved in franchise licensing belong to the Mexican Franchising Association.

One can also deduce the extent of licensing from information available on Mexican manufacturing. According to the National Council of Exporting Manufacturing Industry, there are about 2800 active manufacturing facilities in Mexico. It is fair to say that for each manufacturing facility or company there is at least one license agreement involved in the manufacturing agreement when the technology is provided to the manufacturer for producing a determined product.

Further, in Brazil, the survey revealed that the number of licenses granted by Brazilian organizations is not high. UNICAMP, for example, has 322 patents but only 8 are licensed. USP has about 90 patents on its records, but there are no data available on how many of these patents are licensed.

Table 1.

Patent Licenses	
Kimberly Clark Worldwide, Inc.:	53
Eli Llily & Co.:	30
Cabot Corp.:	7
W.R. Grace & Co.:	2
Other Companies	3
Cabot Colombiana S.A.:	2
Ecopetrol	1
Technology Licenses:	
Oil and gas exploration and exploitation:	318
Air transportation: spare parts:	136
Financial services:	108
Cement compounds exploration and exploitation:	32
Telecommunications:	29
Metallurgy:	14
Non-weaved products:	7

Aracruz Celulose S/A, a Brazilian corporation engaged in the manufacture of papermaking pulp fibers, currently licenses its know-how to Procter and Gamble Corporation in a joint research-and-development agreement. Aracruz is also negotiating a similar agreement with Kimberly-Clark Corporation.

Regarding the UNICAMP licenses in Brazil, they are mostly not exclusive and concern chemical products. There are no data concerning the licenses of the other organizations.

Terms of Agreement

The agreements in Mexico are usually signed as proposed by the technology owner and often include provisions more related to the features of the manufactured products such as quality or to the efficiency of the licensed technology such as process efficiency and the like. As for IP-related provisions, these contracts usually include direct assignment of improvements to the technology provider, a license to operate know-how and patents (even if they were not registered in Mexico), and other provisions usually more beneficial to the technology provider.

In Venezuela, information about licenses comes from INTEVEP, S.A. The agreement drafted depends directly on the type of business involved. Almost all licenses are nonexclusive, with a few on an exclusive basis. INTEVEP's policy on this matter is not to enter into exclusive licenses unless the specific circumstances of the business so require.

INTEVEP is very careful in precisely defining in the license agreement the technology that is being licensed. Intent is strong in not compromising future research and/or future improvements through the license agreement. If necessary, INTEVEP will require new negotiations on royalties for such research and/or improvements.

Clauses dealing with royalty payments are precisely and clearly drafted. They set forth a royalty base, royalty percentage, and a procedure on how to calculate royalties. Additionally, they establish a detailed time schedule for payments.

License agreements in Venezuela are generally entered into for five years with options for renewal if the parties agree. Termination clauses are very specific about when the license agreement begins and ends. This clause also provides specifics about payment of royalties accrued after termination, the need for reports, and so on.

Venezuelan confidentiality obligations are set forth for periods of 10 to 15 years as of disclosure. These confidentiality obligations survive the agreement as long as it takes to end the extension agreed for confidentiality. Confidential information is defined from the material approach rather than from the specific approach and includes all nondisclosed information marked as confidential and disclosed in written and/or oral form as long as it is expressed in written form within 15 days after oral disclosure.

INTEVEP agreements vary on choice-of-law provisions. Almost three quarters of them allow foreign law to rule the agreement, the other quarter requiring the application of Venezuelan law. Almost all INTEVEP license agreements include an arbitration clause, but they vary on which institution will rule the arbitration procedure. There is no uniformity on this matter. They vary among AAA, UNCITRAL, and the ICC.

In Colombia, official information about the exact terms in licenses is not available. It is important to note, however, that agreements for importing technology must contain at least the following information:

1. Parties, their nationality and residence;

2. Methods used to transfer the imported technology;

3. Contract prices of each of the elements involved in the transfer; and

4. Effective term of the agreement.

On the other hand, the agreements may not contain the following:

1. Clauses by virtue of which the supply of technology bears with it the obligation of the recipient country or enterprise to acquire, from a given source, capital equipment, intermediate products, raw materials, or other technologies, or to use, on a permanent basis, personnel indicated by the enterprise supplying the technology;

2. Clauses by virtue of which the enterprise selling the technology reserves the right to fix sale or resale prices for the products that are manufactured using that technology;

3. Clauses that contain restrictions on the volume and structure of production;

4. Clauses that prohibit use of competing technologies;

5. Clauses that establish a total or partial purchase option in favor of the technology supplier;

6. Clauses that compel the technology buyer to transfer to the supplier all such inventions or improvements as may be obtained through use of that technology;

7. Clauses that require the payment of royalties to the holders for patents or trademarks that are not used or have expired; and

8. Other clauses having an equivalent effect.

Likewise, as a general rule, clauses prohibiting or limiting in any way the export of the products manufactured using the respective technology are not accepted.

In Brazil, the agreements submitted to the BPTO for recordal purposes must comply with several written and nonwritten rules regarding: (i) confidentiality obligations, (ii) royalty rates, (iii) limited terms for know-how and service agreements, (iv) and impossibility of payment for trademarks and patents pending.

Finally, in Ecuador, the Ecuadorian Institute of Intellectual Property is charged with determining the number of licenses of patents granted—in the past five years, there have been approximately fifty. Significant terms and characteristics of licensing technology focus on the qualifications of the licensee.

3. What organizations may be in the position to conduct licensing but are not yet doing so?

In many countries, there seems to be licensing opportunity in the universities. In Chile, for example, at least 20 universities, represented in the Consejo de Rectores, could be in a position to license the results of their government-funded research projects.

In Venezuela, the Universidad Simón Bolívar (USB) was created in 1967. USB has been encouraging innovation, research, and development of technology. It is leading the "innovation network," consisting of a network of approximately six "Parques tecnológicos" with limited infrastructure and also limited budgets to work with. Two important institutions for technology licensing depend on the USB.

1. "Parque Tecnológico Sartenejas" (PTS): This institution was created in 1992 with the support of National Council of Scientific and Technological Research (CONICIT) and Foundation for Research and Development (FUNINDES-USB). PTS depends on the "Simón Bolivar University," and its objective is to develop technological resources of the country.

2. Fundación Instituto de Ingeniería: This institution was created in 1999 by the Venezuelan Government. Its objective is to manage research activities, technological development, technical consultancy, and services related to Engineering and other related disciplines and to support national and international industries.

Universities, however, often have large and cumbersome bureaucracies, which do not provide quick, flexible systems to obtain approval of licensing agreements.

Some organizations may be in the position to conduct licensing but are still not doing so. In Ecuador, for example, one finds ECUACIENCIAS and the Ecuadorian scientific community. These are small organizations, which are slowly growing according to their resources. They

are not yet licensing technology because they lack economic support. As explained by the general director of the technical and scientific department of FUNDACYT, this is a very important issue and explains their gradual and slow growth.

4. What are the greatest challenges and barriers to licensing—legal, business, and practical issues?

According to committee members conducting the survey, the chief barriers to licensing are cultural and political.

In the business culture of some countries, for example, the idea that technology may be valuable by itself is novel. In this sense, for a long time companies have used their technologies only to improve their own production process. But now the number of inventors that look for prospective licensees and companies that license their technology has been increasing significantly.

Political policies also hinder the licensing of technology. In Brazil, the BPTO has protectionist policies and a "philosophy" that Brazil should not import technology but produce it locally. Recently, however, the "Innovation Law," passed in 2004, has created important mechanisms to provide incentives for innovation and scientific and technological research with the objective of reaching a "technological independency" or autonomy in the development of Brazil as established in its Federal Constitution of 1988.

But other obstacles remain:

- The stage of development of innovations emerging from university research is not sufficiently advanced for near-term use by industry, in part due to a tendency to focus on basic rather than applied research.
- Universities lack—or are newly creating—the policies, researcher incentives, and organizational structures to support patenting and licensing.
- Countries lack and need to develop the strong links between universities and industry that would create demand for research and its commercialization.
- The business sector is slow to adopt innovative technologies and typically looks to more developed markets for sources of innovation.
- There is a lack of public or private financing for the stage of production ramp-up (i.e. demonstration plants, pilot lines) for technology-based products.
- There is a general lack of expertise and experience among government, universities, and industry with respect to the management of technology, technology-based businesses, patenting, and licensing.
- The most relevant business issue concerns the effect of taxation, which may make licensing a very costly endeavor.
- A clear public policy should be established to enable an effective transfer in which the State must not only look for development and an increase of the existing technology in the country, but also incentive domestic innovation demand.

In Mexico, there are practically no legal barriers to licensing. The country has a suitable IP system for protecting technology, and contract provisions are left to the will of the parties.

It must be stressed, however, that if the practicing of the technology in Mexico produces a monopolistic situation, then this monopolistic situation will be either controlled or avoided through the application of the antitrust provisions contained in the Federal Law on Economic Competition, which is quite similar to the antitrust laws of other industrialized countries.

Some hurdles in Mexico include:

1. Mexican technology developers are not interested in applied science, and if they are, they do not use the IP system to duly appropriate its knowledge.

2. Mexican business entities are not interested in licensing or in funding R&D for obtaining technology useful for its businesses and prefer buying technology from abroad through indirect "licensing in" (manufacturing contracts or engineering projects).

3. When drafting license agreements, licensors and licensees seldom take into account the antitrust provisions that might affect the practicing of the licensed technology when entering into the market in Mexico.

In Venezuela, the greatest challenges and barriers to licensing are:

1. To promote research & development activities different from the oil industry.

2. To coordinate government, universities, and companies efforts to innovate & commercialize new technologies.

3. The Andean Community has a very restrictive regulation about transference of technology.

4. Venezuela is not a technology-producer country. Venezuela is more a technology-consumer country.

5. The oil industry has been an isolated effort on licensing because the oil industry handles a very high amount of economic resources. Other sectors of Venezuelan economy do not have enough money to cover the costs involved in licensing.

5. What possibilities are there for providing education to the licensing, legal, university, government, and business communities?

Committee members from most countries indicated an overall receptiveness to training opportunities. Most report that LES-sponsored seminars should focus on a particular sector—governmental, industrial, or educational.

In some countries, seminars have already been planned. In Chile, for example, licensing is a central theme in the following seminars:

- International Seminar of Intellectual Property and Technology Transfer, an annual event organized by NEOS of law firm Hamecker.
- InnovationEngine, the first international seminar for intellectual property, technology licensing and commercialization organized by GeneraUC Technology Commercialization of Pontificia Universidad Católica de Chile.

Both events draw a diverse nation-

al audience, and these institutions have organized previous seminars featuring international experts, many of them with links to LES or AUTM. Such international expertise is very welcome in Chile.

In addition to these two seminars, it is likely that additional ones financed by CONICYT through its Bicentennial Program for Science and Technology will include the topics of patenting and licensing, providing additional opportunities for the participation of LES speakers.

The new Chilean Licensing Association, being formed under the guidance of LESI, will begin operation in 2005. Its plans include meetings for members and participation in key technology-transfer seminars.

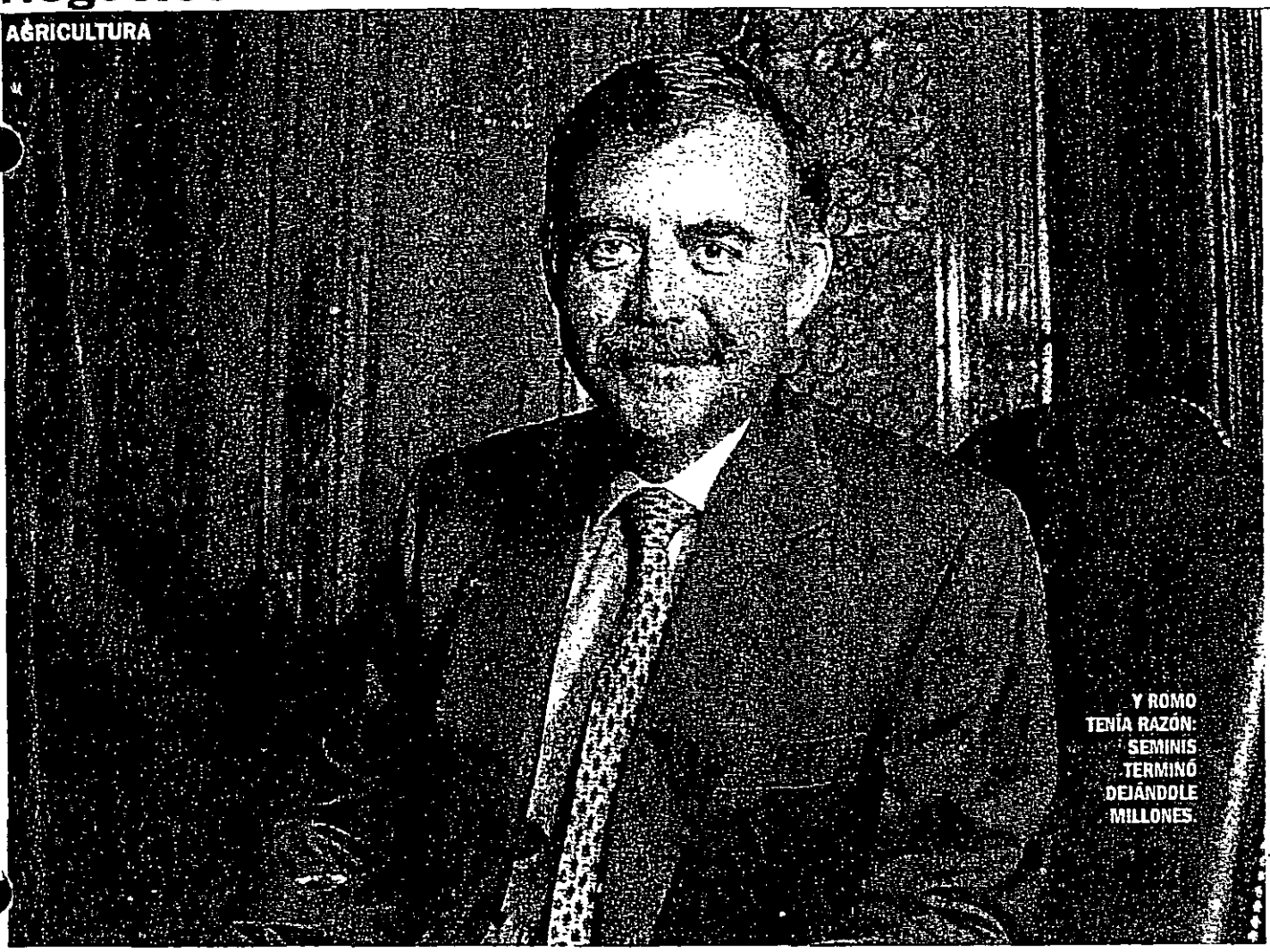
In Colombia, technology transfer has become a "hot" issue since the AFTA (Andean Free Trade Agreement) negotiations began. Therefore, most communities would welcome education from LES regarding licensing.

In Mexico, the facilities and educational structure are suitable to provide education in licensing to all the relevant sectors for licensing, even to the antitrust commission, which is the government organ in charge of the handling of the Federal Law on Economic Competition. There are enough materials and skilled persons in LES Mexico to provide suitable educational programs. In fact, however, several efforts in providing "technology management units" in chambers, universities, and institutes have consistently failed due to lack of interest.

In Venezuela, technology licensing is not a common practice. Therefore, the opportunities to provide education are endless. There are two programs on Intellectual Property, one in the "Universidad de los Andes" (ULA), and one in the "Universidad Metropolitana" (UNIMET). Neither covers the area of technology-licensing in depth. One good effort could be directed to improve these two Universities' IP programs to raise the level of education in this area.

Conclusion

As globalization continues unabated, licensing activity in Latin America will undoubtedly increase. Businesses and public research organizations will increasingly turn to patent protection for inventions. And once the culture of Latin America changes and becomes more aware of the fruits of intellectual property, companies, individual inventors, and public organizations will realize that licensing provides an additional stream of income that has gone unrecognized in the past. The culture will change as more and more educational opportunities are provided, and we expect the Licensing Executives Society and its members will continue to provide education and other opportunities to advance the licensing of intellectual property in Latin America.



Y ROMO TENÍA RAZÓN: SEMINIS TERMINÓ DEJÁNDOLE MILLONES.

Cosecharás tu (bio) siembra

La venta de Seminis a Monsanto es más que un premio a la visión de Alfonso Romo. Es un gran paso al lanzamiento de las semillas supernutritivas.

Diego Fonseca
Ciudad de México

En 1994, el mexicano Alfonso Romo creó Seminis, la mayor productora de semillas híbridas de frutas y verduras del mundo. Era el resultado de las compras de Asgrow, Petoseed y varias semilleras asiáticas y Romo estaba convencido de que sería buen negocio. Lo es, pero no será Romo quien vea sus mejores resultados. Seminis creció rápido con un portafolios de casi 6.000 variedades agrícolas que en 1998 reenfocó en *sólo* 3.500 para achicar el exceso de inventario. En 2003, sus finanzas colapsaron y Romo entendió de qué se trata ser pionero: en ocasiones los mercados no están listos para una empresa. Ese año, Romo vendió al fondo californiano Fox Paine & Co. el 58% de su empresa en US$ 163 millones. En febrero pasado, finalmente, Fox traspasó Seminis a Monsanto, el mayor productor global de organismos genéticamente modificados (OGM, o transgénicos), que pagará US$ 1.400 millones por el 100% de Seminis y asumirá una deuda de US$ 400 millones y un pago basado en dividendos de hasta US$ 125 millones a abonar en 2007.

La historia dejó a Fox con los bolsillos llenos, a Romo, como *chairman* de la nueva Seminis y a Monsanto, ingresando al mercado de frutas y vegetales, donde no tenía presencia. Eso disparó la pregunta del millón: ¿acaso Hugh Grant, el CEO de Monsanto, pensaba convertir a la *free-GMO* Seminis en otro tentáculo de su pulpo transgénico? Grant no jugará con fuego. El mundo no digiere completamente los transgénicos y él tiene bastante por hacer con Seminis antes de entrar a la próxima década, cuando podrá pensar en vender semillas con componentes nutritivos repotenciados y plantas-farmacia.

Seminis, que controla el 23% del mercado global de semillas de tomates y más de un tercio del de pimientos y pepinos, proveerá a Monsanto una red de distribución de frutas y verduras en Europa, Medio Oriente, África y

Norteamérica y ventas por US$ 525 millones anuales. Monsanto también se hizo de los programas de control de virus de plantas GM de Seminis, que ella no poseía, y de 600 técnicos, 80 expertos y centros de operaciones en China e India que permitirán recortar el tiempo que toma a un producto ir del laboratorio al mercado. Finalmente, la transacción, que se aprobaría en septiembre, aumentaría el flujo de caja y beneficios por acción de Monsanto en 2006.

SER O NO SER. ¿Qué papel tendrá América Latina para la nueva Seminis? La compañía era de propiedad mexicana, pero estaba basada en California, orientada al mundo y poco inserta en la región. Eso seguirá igual. Brasil y Argentina en particular, los mayores exportadores agrícolas de la región, ofrecen pocas oportunidades para sus semillas vegetales. Son más aptos para cultivos de bajo valor y alto volumen, como maíz, soja o algodón, propios de Monsanto.

Argentina ya es el segundo productor mundial de transgénicos de primera generación, plantas con genes resistentes a herbicidas e insectos. Brasil concita la atención de las semilleras desde que liberó en 2004, y hasta 2006, sus primeros eventos transgenicos. Este año, Nidera, de EE.UU., compró la división local de cultivos de Bayer para incursionar allí. Monsanto esperaba la ley desde 2000 reproduciendo semillas GM en el norte argentino y ya consiguió que Brasil y Paraguay, tercer exportador sojero regional, acepten pagar regalías por ellas, asegurándose ingresos que no obtiene en Argentina, donde sus patentes siguen sin reconocimiento.

Fuera de eso, Grant, el CEO de Monsanto, no ha hecho saber aún si Seminis tendrá una política específica para la región. Sus ojos están en Asia, donde el consumo de vegetales y frutas es mayor, precisamente lo que necesita para asegurar el futuro inmediato de Monsanto. La patente de su nave insignia, el herbicida Round Up, caducará en breve, poniendo en riesgo ingresos por US$ 3.000 millones anuales y la hará más dependiente del negocio de simientes, su segunda fuente de recursos y primera en crecimiento. En el último año, la venta de semillas convencionales y transgénicas de Monsanto subió un 24%, hasta US$ 2.350 millones. Seminis puede complementar ese negocio, puesto que es un productor de semillas híbridas, una técnica de polinización cruzada que no modifica genes y que Monsanto no practica. La imagen no-transgénica de Seminis servirá también de maquillaje para las cuestionadas semillas transgénicas de Monsanto.

Pero ¿se lavará la cara Monsanto? Por su agresividad con los transgénicos, tras la compra muchos se preguntaron cuándo Grant lanzará semillas de Seminis modificadas genéticamente. Grant sabe que la resistencia anti-OGM se debilita con cada habilitación de eventos transgénicos. Tras la liberación en Brasil, ahora sólo resta que China e India lo hagan. Cuando ocurra, la resistencia de la Unión Europea, el mayor opositor a los OGM, perderá sentido frente al volumen de los tres mercados emergentes. Todo eso abona la posibilidad de que Seminis acabe hibridada por Monsanto.

Los ojos de Monsanto están en mercados grandes como Asia, antes que América Latina

Pero ésas son especulaciones. Según Gillian Turco, analista del banco holandés Rabobank, una compañía biotecnológica pero no transgénica como Seminis puede ser lo que Monsanto necesita para mejorar su imagen pública. Mantener a Romo como su *chairman* funcionaría como una señal de que las aguas no se mezclarán. El propio Grant se ha esforzado por tranquilizar a los productores orgánicos y supermercados que compran híbridos a la ex compañía de Romo. Ha dicho que aprovechará su *know-how* para atacar el mercado de vegetales y frutas y que se enfocará en áreas de crecimiento de corto plazo. Y si bien aplicará las tecnología de ambas compañías en investigaciones combinadas, una Seminis-transgénica está en su agenda recién "a largo plazo". Lori Fisher, directora de asuntos públicos de Monsanto, en St. Louis, no pudo responder a tiempo consultas adicionales de **AméricaEconomía**.

La expectativa es que Grant use a Seminis para vender más agroquímicos cuidando mucho su estrategia de comunicación para que los agricultores no crean que tras ellos vienen las frutas y vegetales GM. "Yo no esperaría ningún *input* como tolerancia a herbicidas y resistencia a insectos por largo tiempo ni ninguna variedad GM de Seminis entrando al mercado antes de 2010 o 2012", dice Anatole Krattiger, director de la consultora BioDevelopments, en Nueva York. "El potencial real de crecimiento y agregación de valor tecnológico [de Monsanto y su nueva empresa] viene de soluciones que atiendan las necesidades de los consumidores y su voluntad de pagar un premio, y esas soluciones están basadas en la salud".

Romo pensaba algo parecido. Para él, las semillas eran "un software" para generar desarrollos de mayor valor. No estaba equivocado: el futuro del negocio agrícola de avanzada está en los OGM de segunda y tercera generación, semillas con mayor poder nutricional y productoras de biofármacos. Las compañías globales han aprendido que el modo de menguar la resistencia a los OGM de primera generación, como las simientes que resisten enfermedades e insectos, está en enfocar su estrategia en el valor de esos nutrientes repotenciados.

Ambas tienen como preparar ese camino. Monsanto ya ha ensayado productos enriquecidos como la soja reductora de grasas y también Seminis está involucrada en desarrollos moleculares y enriquecimiento y modificación de vegetales. Muchos de sus productos ya tienen distintos colores, tamaños y sabores. Variedades como la lechuga Jammers –diseñada para fanáticos de las dietas bajas en carbohidratos, ya que por su forma y resistencia puede sustituir el pan en sándwiches y wraps– y la sandía Bambino, de un kilo, ideal para un consumidor, son preferidas por las familias de EE.UU. Al final del día, la fusión de esas capacidades ser ganadora si Monsanto lee bien los hábitos de consumo de la gente. Grant sabe que le va la cosecha en eso. ■

Agreements On Research Cooperation Between Industry And University – Suggestions For Solutions

BY HEINZ GODDAR AND HERMANN MOHNKOPF*

1. Introduction

The amendment to section 42 of the German law on employees' inventions, which has applied to "new contracts" since 7 February, 2002, and which, since 7 February, 2003, has in some cases also made it necessary to adapt "old contracts" concluded before 18 July, 2001, has led to an intensive search on the part of universities, and also on the part of industry, for model contractual solutions for standard situations.

It is desirable to find model solutions that will be regarded both by the universities and by industry as a positive basis on which to transpose the new legal standards into a form of practical co-operation which all concerned will consider tolerable and positive. In the search for these solutions, a working party of experts from the university and industrial sectors has been set up, at the suggestion and with the active participation of the IPAL Gesellschaft für Patentverwertung Berlin mbH, the Society for Patent Exploitation in Berlin, which is the central technology transfer institution for the majority of the Berlin universities, namely Charité, the Free University of Berlin, Humboldt University Berlin and Berlin Technical University. Intensive efforts, involving lengthy discussions, have been made to put together some components for a model contract, under the general heading "Berlin Contract," which is intended to make it easier in practice for academics, universities and industrial companies to handle the new legal situation that has arisen as a result of the abolition of the university lecturers' privilege.

The members of the above-mentioned working group, as well as the "Berlin Contract Components," can be seen from the web site of IPAL, namely *http://www.ipal.de*, which is continuously up-dated and will make also adapted, future versions of the Berlin Contract Components, as well as other news with regard to university-industry inventions, available in future. The essential parts of the "Berlin Contract" are attached to this paper.

2. Contract components "Berlin Contract"

2.1. Structure and organisation

A preface dealing with the genesis and the proposed practical application of the "Berlin Contract" is followed by a brief introduction, which is intended to explain how the Contract components are to be handled. This is then followed by differentiation indicia for the Contract components in the "Berlin Contract," which, it is hoped, will facilitate assigning a specific joint research project between a university and industry to one of the categories of a contract for work and services, research commission or co-operation on research. These differentiation indicia should not be understood here as alternatives, nor should they apply cumulatively, but, as the very name suggests, they are merely intended to provide the practitioner with pointers to help him make the appropriate assignment.

After the above-mentioned list of "differentiation indicia" come Contract components for research commissions between universities and industry, followed by appropriate Contract components for co-operation on research and development, which is referred to in the following as "research co-operation."

2.2. Pointers helping to differentiate between contracts for work and services, research commissions, research co-operation

2.2.1. Contracts for work and services

If an industrial partner commissions a university to carry out certain research work, with an unambiguous, known objective and laying down a defined way of performing that work, the university will generally demand that the entire costs be assumed. The university, in the person of the research worker (here and in the following usually understood to mean the "project director" responsible), is not required to interpret data or results in any way; neither the university nor the industrial partner has any interest whatsoever in publication. The result of a contract for work and services of this kind is an obligation owed by the university to the industrial partner. In this case, according to the "Berlin Contract" (and one is tempted to say that this ought to be self-evident!) all the results of the research, including any inventions that might be made by the university, i.e. by the research worker or by any other member of the university, belong to the industrial partner without any additional remuneration, and it is the latter which decides at its own discretion whether to file applications for any industrial property rights, to engage in exploitation actions, etc. It goes without saying that any applica-

Heinz Goddar is a partner in the law firm of Boehmert & Boehmert, Muenchen, Germany, and a Past President of LESI. Hermann Mohnkopf is IP Counsel for Rolls-Royce Deutschland Ltd. & Co. KG in Dahlewitz, Germany.

tions for industrial property rights are filed by the industrial partner exclusively in its own name, without any right whatsoever on the part of the university to participate.

2.2.2. Research commissions

In the context of research commissions, the industrial partner places a targeted commission with the university to carry out certain research work, the result of which is nevertheless open, but the way of performing that work and the purpose of the study are defined. In this case too, the university will expect the entire costs to be assumed. The data or results have to be interpreted by the research worker. The industrial partner, having placed the commission, will as a rule be interested in receiving the results at short notice or at least on schedule. The university, or the research worker, for their part have an interest in seeing the results published. In this case, no successful result is owed by the university.

The parties involved in drawing up the "Berlin Contract" are unanimous in their opinion that, when research commissions are organised in this way, the university has a fundamental right to remuneration for any invention. The rights in the inventions concerned, including the right to file the first application and to carry out subsequent applications in other countries, also need to be settled in detail.

2.2.3. Research co-operation

In the case of research co-operation, the industrial partner places a research commission with the university, the objectives and results being open; the implementation is not defined in detail, and the intended practical application is neither known in detail nor definitively laid down. Both partners, i.e. the university and the industrial partner, contribute to carrying out the research project on which they are co-operating by providing personnel and/or assuming a share of the costs. The industrial partner, having placed the commission, has a medium to long-term interest in the outcome, both partners have a pronounced—and possibly a joint —interest in publishing the results. In this case, the university has no obligation vis-à-vis the industrial partner regarding the success of the research co-operation agreement.

The parties involved in drawing up the "Berlin Contract" are unanimous in their opinion that, in the case of research co-operation, the industrial partner has a separate obligation to remunerate the university for any invention, the details of which need to be settled depending on the situation, as do the filing rights with regard to patents, etc.

2.3. Features common to research commissions and research co-operation

A common feature of the contractual arrangements both in the case of research commissions and with regard to research co-operation is that, for the reasons which have in the meantime already been discussed in detail in the literature, a "trilateral" contract between the university, the industrial partner and the research worker is necessary.

Briefly, this necessity is based on the fact that, because of the peremptory provisions of the law on employees' inventions, it is only possible for the contractual agreement between the university and the industrial partner to regulate the situation concerning rights, and obligations to acquire the rights etc., in inventions which can be covered by patents or utility models. Any additional know-how and advisory services which the industrial partner wishes to receive "in person" from a specific research worker who is particularly important to him as a co-operation partner (e.g. a professor) can only be reliably obtained by the industrial partner on the basis of an appropriate contractual agreement with the research worker himself, since any "indirect route" via the university might in this case affect the research worker's personal rights with regard to research and teaching, which are guaranteed by the constitution.

A direct agreement between the research worker and the industrial partner is also needed if the research worker is to waive his negative publication rights. The same applies to any advance waiver of the research worker's right to take over any applications for industrial property rights or the industrial property rights themselves and to file applications in other countries.

For the reasons explained above, the members of the working party consider it appropriate, both in the case of research commissions and with regard to research co-operation, to conclude a "tripartite agreement" between the university, the industrial partner and the research worker. "Research worker" here is understood to mean the project director responsible who has been appointed by the university and the industrial partner. If—and this is likely to apply in most cases—other members of the university, whether students or university staff (employees), are involved in carrying out the work on the research project concerned, it needs to be ensured in advance, by means of an appropriate declaration of association, that the obligations of the project director also apply, mutatis mutandis, to that group of individuals.

2.4. Contract components for research commissions

According to the model contract, research results arising from a research commission belong exclusively to the industrial partner, irrespective of the extent to which the research worker or other "associated" members of the university is/are involved in the production of the corresponding research results, especially inventions.

Regarding the filing of any applications for industrial property rights, referred to in the following as "patent applications" for short, it is envisioned that the first application is filed either by the university or alternatively by the industrial partner, though of course in a manner to be settled in advance, but always as joint applications on behalf of the university and the industrial partner. This arrangement is intended to satisfy the universities' interests in appearing in the relevant "ranking"

lists with a corresponding number of first applications. The industrial members of the working party accept the fact that "ranking" positions of this kind are becoming more and more important in assessing the performance and the general reputation of universities for the sake of international comparisons.

It is the industrial partner alone which decides on whether to file foreign applications in the case of research results based on research commissions, and any foreign applications are also filed solely by the industrial partner in its own name.

The arrangement regarding remuneration in the case of research commissions has the following structure, according to the "Berlin Contract":

After the first application has been filed, the industrial partner pays the university a first remuneration amounting to € 2,500.00. This is then followed by remuneration payments according to the following alternatives:

a) € 2,500.00 at the beginning of exploitation, this remuneration rising to € 10,000.00 if exploitation begins more than 7 years after the first application, the industrial partner may, however, redeem the obligation to pay the increased lump sum by paying a further remuneration of € 2,500.00 before the expiry of the above-mentioned 7-year period.

b) When certain turnover thresholds are reached, further lump-sum payments are made, though it is necessary to lay down the details on this in the contract.

c) After exploitation has begun, an appropriate remuneration is paid, depending on the degree of exploitation, which is subject to later negotiation.

2.5. Research co-operation

The research results arising from research co-operation are in principle broken down into results achieved by the industrial partner, joint results and university results.

Results achieved by the industrial partner are research results attributable solely to the industrial partner's staff. Joint results mean research results in which the university's, or the university staff's, share of the invention is no more than 50 per cent. University results are research results, in which the university's share of the invention is more than 50 per cent.

2.5.1. Industrial partner's results

Research results which fall into the category of "industrial partner's results" belong exclusively to the industrial partner. The latter has the sole right to file applications for industrial property rights, exclusively in its own name where appropriate; the industrial partner has no obligations vis-à-vis the university whatsoever to pay any remuneration.

2.5.2. Joint results

In the case of joint results where the university's share of the invention is no more than 25 per cent, the industrial partner has the right to file the first application exclusively in its own name.

If the university's share of the invention is more than 25 per cent, the arrangement corresponds to the one for research results based on research commissions, i.e. the first application is filed as a joint application either by the industrial partner or alternatively by the university, in the names of the university and the industrial partner.

On the whole, in the case of joint results, foreign applications are filed in accordance with the arrangements regarding research commissions (see 2.4.), i.e. by the industrial partner and exclusively in its own name.

The remuneration for an invention which the industrial partner has to pay the university is settled as follows in the case of joint results: if the university's share of the invention is less than 50 per cent, the remuneration for the invention is paid in the same way as with research commissions. If the university's share of the invention is 50 per cent, the industrial partner pays the university remuneration for the invention as in the case of the university results, which will be discussed below (see 2.5.3), but deducting 10 per cent from the remuneration agreed for university results of that kind.

2.5.3. University results

University results, i.e. research results emanating from research co-operation, in which the university's share of the invention is more than 50 per cent, belong exclusively to the university. The industrial partner does, however, have an option on taking out an exclusive licence on reasonable terms. The corresponding remuneration for the invention may comprise one or more lump-sum payments or a reasonable licence fee. The members of the working party regarded the sample calculations annexed to the "Berlin Contract" as being appropriate for the standard situation.

In the case of university results, the university has the right to file the first application in its own, exclusive name. After the option is exercised (and only in this case does remuneration for the invention have to be paid to the university by the industrial partner, of course!) the corresponding application rights revert to the industrial partner in a manner to be agreed.

3. Concluding Remark

The members of the working party mentioned at the beginning hope that, by presenting the contract components of the "Berlin Contract," they have made a constructive contribution to the discussion of solutions which appear reasonable both to the universities and to the industrial partners for the future conduct of research projects in the university/industrial sectors. Making the discussion more objective, on a reasonable basis of this kind, is probably also likely to reduce the attractiveness of industry's thoughts about at least partially transferring research commissions into regions outside the purview of the law on employees' inventions.

Text Modules for the "Berlin Contract" – For Mission-Oriented Research Between University and Industry

1. Note: Contractual Parties

- University,
- Industrial enterprise (hereinafter: Industrial Partner),
- Project Manager.

All other university employees participating in the research project who perform educational and research work in the research project within the meaning of sec. 42 of the German Employee Invention Act (ArbnEG), as well as freelance inventors, must also be incorporated into the contract (see Clause 3.2.4)

2. Subject Matter of the Contract

2.1. The subject matter of the contract is the realization of the following research project as described in detail in the research plan *(Appendix 1)* (hereinafter: Research Project):

[...] [To be completed in accordance with the specific research project involved.]

Note: To the extent that the primary subject matter of the research plan is the commercial exploitation of copyright protected works and related intellectual property rights, such exploitation will not be covered by the following contractual modules.

2.2. Performance of the contract

[...] [Depending on the specific research project involved, add any further individual provisions regarding the performance of the contract, including the Project Manager's obligation to assume the tasks in the research project according to the research plan.]

3. General Regulations on Inventions, Intellectual Property Rights and Know-how

3.1. Old Intellectual Property Rights

3.1.1. Each contractual party remains the owner of the inventions it creates prior to the commencement of the Research Project, as well as the intellectual property rights applied for or granted for such inventions (hereinafter: Old Intellectual Property Rights).

3.1.2. The Project Manager shall inform the Industrial Partner according to his best knowledge prior to the commencement of the Research Project and then on an ongoing basis regarding the existence of Old Intellectual Property Rights belonging to him or the university, where it is anticipated that they will be necessary in order to utilize the work results engendered in the course of realizing the Research Project and pertain to the task as formulated in the research plan (hereinafter: Research Results). He shall further inform the Industrial Partner according to his best knowledge of the extent to which third parties are entitled to use such Old Intellectual Property Rights and to what extent the respective owner of the right is restricted in the use of such rights.

Should such a restriction prevent the Industrial Partner from using the Research Results and if the right to such use cannot be achieved by modifying the research plan, the Industrial Partner shall be entitled to terminate the contract for cause. Such a termination must be declared in writing within two weeks of learning of the restriction. The Industrial Partner shall assume all costs incurred by the University up to the date of the termination, as well as any costs resulting from obligations entered into at the time of the termination.

3.1.3. Where Old Intellectual Property Rights—whether or not notified pursuant to Clause 3.1.2.—are necessary for the realization of the Research Project and there are no conflicting third party rights, the respective contractual party shall grant the other party free of charge a non-exclusive license limited to the duration and purpose of the Research Project.

3.1.4. To the extent that and as soon as the Old Intellectual Property Rights notified pursuant to Clause 3.1.2 are necessary for the exploitation of the Research Results and no conflicting third party rights exist, the University or the Project Manager shall grant the Industrial Partner a non-exclusive license to these rights at terms and conditions customary in the market. If the University's collecting society is entitled to such Old Intellectual Property Rights, the University shall ensure that the Industrial Partner is granted a license to use these rights.

3.1.5. Clause 3.1.4. shall apply analogously to Old Intellectual Property Rights which were not notified pursuant to Clause 3.1.2., unless at the time of the Industrial Partner's inquiry about a license for such Old Intellectual Property Rights the University is already engaged in negotiations regarding the exploitation of such rights with good prospects for success.

3.1.6. Clauses 3.1.1 to 3.1.5 shall apply *mutatis mutandis* with respect to the know-how obtained by each Party prior to the commencement of the Research Project, as well as for existing copyrights or copyright licenses.

3.2. Research Results

3.2.1. Notwithstanding the provisions in Clause 6 regulating applications for intellectual property rights, the Industrial Partner shall be exclusively entitled to all substantive rights to the Research Results.

Upon conclusion of this Agreement, the University and the Project Manager shall transfer to the Industrial Partner in advance all rights to any Research Results created in the future; such transfer applies to the Project Manager with respect to Research Results which are not eligible for protection, independent inventions which are not job-related *(freie Erfindungen)* and, with reference to the time at which they become independent, for any inventions that become independent. This transfer is subject to the condition precedent that the Industrial Partner meets its financial obligations pursuant to Clause 9.

3.2.2. In order to secure this comprehensive transfer of rights pursuant to Clause 3.2.1, the Project Manager undertakes not to bring University employees falling within the scope of sec. 42 no. 2 Employee Invention Act into the Research Project until they likewise assume his duties under this Agreement by

way of a declaration corresponding to the example attached as *Appendix 2*. The names of the University employees envisioned for the performance of the Research Project who carry out educational and research work within the meaning of sec. 42 Employee Invention Act are listed in *Appendix 3*. The Project Manager affirms that such University employees have rendered a declaration corresponding to the sample attached as *Appendix 2*.

The Project Manager shall further ensure that other persons participating in the Research Project who are not employed by the University (e.g. graduates, doctoral candidates, students) are not brought into the Research Project until they assume the Project Manager's obligations under this Agreement *mutatis mutandis* and have ensured the direct transfer of all rights to the results of their research to the Industrial Partner

The University shall assume responsibility for these obligations of the Project Manager.

3.2.3. The University and the Project Manager shall be entitled to a non-exclusive, non-transferable right to use the Research Results for their research and educational work. This shall not affect the contractual provisions regarding the secrecy of the Research Results. Moreover, the Research Results may be used within the scope of research for or with third parties only upon the Industrial Partner's prior written consent, which, however, may not be unreasonably withheld. Excepted from this provision shall be Old Intellectual Property Rights, know-how which existed prior to the conclusion of this Agreement and non-confidential information.

3.3. Copyrights

With respect to copyrights pertaining to the Research Results, the Industrial Partner shall be granted, free of charge, an exclusive, transferable license for all types of use which is unlimited in time, territory and subject matter. Clause 3.2.3. applies *mutatis mutandis*. Where the Industrial Partner uses copyright protected works or objects protected by related intellectual property rights for commercial purposes, it shall remunerate the author appropriately within the meaning of sec. 32 UrhG.

3.4. Results Outside of the Research Plan

Results arising in the course of carrying out the research plan, which, however, are not related to the task assigned in the research plan, shall accrue to the Party who has achieved them.

4. Negative and Positive Publication Rights

4.1. The Project Manager undertakes vis-à-vis the Industrial Partner to report all the Unversity's service inventions pursuant to sec. 5 Employee Invention Act and identify to the University the respective share each inventor had in the invention. With rspect to all Research Results, the Project Manager undertakes vis-à-vis the Industrial Partner to waive the assertion of his right to refrain from publishing them pursuant to sec. 42 no. 2 Employee Invention Act.

4.2 The Industrial Partner acknowledges that the University must publish research results and shall take this interest into account. However, the Project Manager and University undertake vis-à-vis the Industrial Partner to refrain from publishing Research Results or disclosing them to other third parties—even during the preliminary publication procedure—without the Industrial Partner's written consent as long as the Research Results are subject to a duty of confidentiality pursuant to Clause [...]. They shall present the Industrial Partner with the manuscript intended for print or oral announcement (hereinafter: the Publication) for its review at least sixty (60) days before submitting the manuscript to third parties or making the announcement.

If the Industrial Partner communicates within forty-five (45) days after receiving the manuscript that the Publication conflicts with secrecy requirements, the University and the Project Manager shall ensure that Publication does not occur or that the information requiring secrecy from the Industrial Partner's point of view is deleted. If the Industrial Partner does not respond within forty-five (45) days, it shall be deemed to have consented to the Publication. In the case of a planned Publication of Research Results which are eligible for protection as intellectual property from the Industrial Partner's point of view, the Industrial Partner shall no longer withhold its consent once twelve (12) months have elapsed since the filing of the application.

5. Provisions on the Technical Processing of Applications for Registration

In the course of performing this Agreement, the Parties shall use their best efforts to secure the Research Results through intellectual property rights (hereinafter: New Intellectual Property Rights). The application for such New Intellectual Property Rights shall be subject to the following regulations:

5.1. Upon receipt of an invention report which is complete from the University's point of view, the University shall inform the Industrial Partner of the content of the invention report without delay.

5.2. Within forty-five (45) days after the Industrial Partner's receipt of the invention report, it shall inform the University in writing whether and to what extent it wishes to file an original application giving rise to a right of priority *(prioritätsbegründende Erstanmeldung)*. If the Industrial Partner does not respond within this period, or its response is negative, the substantive rights to the respective invention shall accrue to the University and shall be transferred to it by the Industrial Partner. In such a case, if the University claims the invention, it shall grant the Industrial Partner a non-exclusive, worldwide, irrevocable and non-transferable license to the invention involved and the intellectual property rights resulting therefrom. Otherwise, the Project Manager shall grant such license to the Industrial Partner.

5.3. [Note: *With respect to the processing of the application, the Parties may choose from the following alterna-*

tives upon concluding the Agreement:]

Alternative 1: If the Industrial Partner desires an original application giving rise to a right of priority, the University shall claim the invention accordingly and without restriction. The University shall then file such an application without delay in the name of both the University and the Industrial Partner (Clause 6). The University undertakes to engage a lawyer or patent attorney, to be designated by the Industrial Partner in its communication pursuant to Clause 5.2 sent. 1, to draft such an application. If the Industrial Partner has not designated a lawyer or patent attorney in its communication pursuant to Clause 5.2 sent 1, the University shall select a lawyer or patent attorney. The content of the filing shall be determined by the Industrial Partner.

Alternative 2: If the Industrial Partner desires an original application giving rise to a right of priority, the University shall claim the invention accordingly and without restriction. The Industrial Partner shall then file such an application itself without delay or have it filed by a lawyer or patent attorney it has engaged in the name of both itself and the University. The Industrial Partner shall be entitled to direct the procedure and have the right to formulate all texts and rights, as well as to carry out review procedures.

5.4. The Parties undertake to support the entitled Party in its efforts to obtain the New Intellectual Property Rights, in particular to submit all requisite declarations in a timely and factually accurate manner. The Parties shall further refrain from any and all actions which could be detrimental to the granting and maintenance of New Intellectual Property Rights.

5.5. The University shall have the right to entrust an exploiting company (hereinafter: Exploiting Company) to process the application in its stead and consequently to disclose information it obtains within the scope of this Agreement to the Exploiting Company as necessary, provided that the Exploiting Company has previously obligated itself to maintain secrecy in accordance with the provisions in this Agreement.

6. Status of Applicant; Trusteeship

6.1. The original application giving rise to a right of priority shall be filed by the University and the Industrial Partner jointly, unless the University waives submission in its name in writing to the Industrial Partner until the latter has issued its communication pursuant to Clause 5.2. The original application giving rise to a right of priority shall, as a rule, be an application for a German or European registration.

6.2. The University shall hold the status of applicant merely in trust for the Industrial Partner. Internally, the right to the New Intellectual Property Right shall accrue exclusively to the Industrial Partner. The University shall therefore comply with the Industrial Partner's instructions with respect to the exercising of the rights under the application and under the New Intellectual Property Right granted.

6.3. After eighteen (18) months have elapsed since the date of the filing, the University shall transfer its share in the application to the Industrial Partner without delay, or its share in the respective New Intellectual Property Right if it has already been granted, and render all declarations necessary for that purpose.

7. Foreign Filings, Abandonment of Intellectual Property Rights in Individual Countries

7.1. The Industrial Partner shall prepare and file the foreign applications in its own name. It shall select the countries for which it will file applications at its own discretion.

7.2. The Industrial Partner shall be free to abandon New Intellectual Property Rights in whole or in part at any time, or to refrain from further pursuing filings in foreign countries.

8. Cost of the Intellectual Property Rights

The costs involved in the filing, maintenance, defense and enforcement of the New Intellectual Property Rights shall be borne by the Industrial Partner, unless it has transferred its substantive rights to such rights to the University pursuant to Clause 5.2.

9. Note: Remuneration for the Work

9.1. For carrying out the Research Project, including the materials and use of all facilities necessary for the performance of this Agreement, the University shall receive a remuneration in the amount of € [...] (hereinafter: "Contractual Sum").

9.2. This sum shall be due and payable as follows:

[...] [additional individual regulations for each specific research project]

9.3. A prerequisite for each payment is the proper issuance of an invoice by the University. If the realization of the Research Project is subject to turnover tax for the University, it shall receive the turnover tax at the statutory rate in addition to the Contractual Sum pursuant to Clause 9.1, provided that the net amount, the tax amount with the tax rate and the gross amount are stated on the invoice.

10. Remuneration for Inventions

10.1. The Industrial Partner shall pay the University the sum of € 2,500 forty-five (45) days after the original application for New Intellectual Property Rights, but no later than six (6) months after the Industrial Partner has issued its communication pursuant to Clause 5.2 sent. 1.

10.2. In the event that the invention underlying the original application is used for commercial purposes, the Industrial Partner shall further remunerate the University as follows:

[Note: *For the remuneration the parties can choose from among the following alternatives upon concluding the contract:*]

10.2.1. [*Alternative 1*] The Industrial Partner shall pay the University a sum of € 2,500 for each patent family if the invention is used for commercial purposes. This sum shall increase to € 10,000 if the Industrial Partner begins to use the invention

more than seven (7) years after the original application. The latter debt can be discharged by the Industrial Partner with a payment of the € 2,500 to the University before the seven (7) years have elapsed.

[*Alternative 2*] The Industrial Partner undertakes to pay additional remuneration for each patent family if the following thresholds are achieved:

up to € [...] invention-related proceeds € [...]

from € [...] to € [...] invention-related proceeds € [...]

from € [...] to € [...] invention-related proceeds € [...]

[*Alternative 3*] If the Industrial Partner uses the New Intellectual Property Rights commercially, the University shall have a claim to reasonable remuneration for each patent family, the type, amount, duration of which the Parties shall define at the proper time by mutual agreement.

10.2.2. Use within the meaning of Clause 10.2.1. shall be understood to mean the actual deployment of the inventive activity behind the invention, in particular in the forms of use set forth in sec. 9 of the German Patent Act (PatG). If the use consists of the fact that the patent/patent family is merely licensed by the Industrial Partner within the framework of a patent license exchange contract in a broad technical area in which the respective licensed intellectual property rights are not explicitly listed, the remuneration pursuant to Clause 10.2.1. shall be reduced by half.

10.3. For the simple rights pursuant to Clause 5.2. the Industrial Partner shall pay the University a remuneration of [...].

10.4. The University shall be responsible for remunerating all inventors involved in the Research Results who are its employees or with whom it has another form of contractual relationship, in accordance with the statutory provisions.

Appendix – Letter from the university employee to the Industrial Partner

(Address of Industrial Partner)

Letter of Accession to the Obligations of the Project Manager in the Agreement between the [name of university] ("University") and [name of industrial partner] ("Industrial Partner") on the Research Project in the Area of [description of research area]

Dear Sir or Madam,

Within the framework of the aforementioned contract (the "Contract"), I as an employee of the University within the meaning of sec. 42 of the German Employee Invention Act ("ArbnEG") am involved in the execution of the work according to the Contract ("Research Project"). The Contract contains a number of provisions which also affect my involvement in the Research Project and require a separate agreement with you. Accordingly, we hereby agree as follows:

1 My rights to inventions and the intellectual property rights applied for or granted prior to the commencement of the Research Project ("Old Intellectual Property Rights") remain unaffected by this Agreement. Where any of my Old Intellectual Property Rights are necessary for the execution of the Research Project, I hereby grant the University and the Industrial Partner a non-exclusive use right free of charge which is limited to the duration of the Research Project. To the extent that and as soon as such Old Intellectual Property Rights become necessary for the use of the results of the Research Project ("Research Results") and no conflicting third party rights exist, I shall grant the Industrial Partner a non-exclusive license to these rights at the terms and conditions customary in the market. The same shall apply to the know-how I acquired prior to the commencement of the Research Project and for any existing copyrights.

2. I hereby undertake vis-à-vis the Industrial Partner to report to the University all service inventions made in the course of the Research Project pursuant to sec. 5 ArbnEG and quantify my share in the invention to the University. In this connection, I hereby undertake vis-à-vis the Industrial Partner to waive the assertion of my right to refrain from publishing pursuant to sec. 42 no 2 ArbnEG.

3. I hereby transfer to the Industrial Partner in advance all my rights to Research Results arising in the future, provided they are not eligible for protection, independent inventions which are not job-related (freie Erfindungen) or inventions which become independent.

4. I shall assist the respective contractual party which is entitled under the Contract in its efforts to obtain new intellectual property rights; in particular I shall submit any necessary declarations accurately and in a timely manner. I shall further refrain from any activity that could be detrimental to the granting and maintenance of new intellectual property rights.

5. With respect to copyrights pertaining to the Research Results, I hereby grant the Industrial Partner an exclusive, transferable license for all types of use, which is unlimited in time, territory and subject matter.

6. I shall retain a non-exclusive, non-transferable right to use the Research Results for my research and teaching activities. This shall not affect the contractual provisions on the obligation to maintain secrecy with respect to the Research Results. I further undertake to use the Research Results while carrying out research for or with third parties only with the written consent of the Industrial Partner. This restriction shall not apply to my Old Intellectual Property Rights, to know-how I acquired prior to the commencement of the Research Project, to copyrights which have arisen and to subject matter which is not confidential.

7. The Contract also contains provisions on the confidentiality of the Research Results and tech-

nical knowledge and information which the Industrial Partner makes directly or indirectly accessible to the participating scientists within the framework of the Research Project. I therefore undertake, [...] [confidentiality clauses specific to the industry]

8. I hereby undertake vis-à-vis the Industrial Partner to refrain from publishing Research Results or otherwise disclosing them to third parties—even during the preliminary publication procedure—without the Industrial Partner's written consent, as long as the Research Results are subject to the duty of confidentiality. I shall present the Industrial Partner with the manuscript intended for print or oral announcement (the "Publication") for its review at least sixty (60) days before submitting the manuscript to third parties or making the announcement.

If the Industrial Partner communicates within forty-five (45) days after receiving the manuscript that the Publication conflicts with secrecy requirements, I shall ensure that Publication does not occur or that the information requiring secrecy from the Industrial Partner's point of view is deleted. If the Industrial Partner does not respond within forty-five (45) days, it shall be deemed to have consented to the Publication. In the case of a planned publication of Research Results which are eligible for protection as intellectual property from the Industrial Partner's point of view, the Industrial Partner shall no longer withhold its consent once twelve (12) months have elapsed since the filing of the application.

9. This Agreement is concluded for the duration of my participation in the Research Project. The duty to maintain secrecy and the obligation to present manuscripts shall end [...] years (e.g. five years) after the completion of my participation in the Research Project. The provisions pertaining to inventions within the scope of this Agreement shall end with the expiration of the longest-lived intellectual property right resulting from the Research Project

10. Should any of the provisions of this Agreement be or become wholly or partially invalid or void, this shall not affect the validity of the remaining provisions. We shall replace such provisions with new, valid provisions which correspond most closely to the purpose of the contract.

To indicate your consent to this Agreement, please sign the attached copy of this letter and return it to me.

(Complimentary close)

manufacturing. The world market share in cars and other sectors was decreasing for U.S companies and the battle for innovation was about to be lost [13] In order to win the war of global competition several steps were taken. Among many interventions, universities offered enormous potential in terms of outsourcing innovation. Leading American universities such as the University of California, Massachusetts Institute of Technology and Stanford University already had patents and connections with industry.

At the same time during the 1970s, the genetic revolution was happening, both for fundamental discoveries in the biotech sector and for a more permissible approach to patenting adopted by U.S. courts. In 1976-1978, Stanford and UC filed for the Cohen-Boyer patent. In the same years, Boyer co-founded Genentech. A boom in information technology and telecom followed the one in genetic engineering and biotech.

As American companies were discovering universities as sources of innovations, patents, and increased profitability, American universities were discovering the value of research turned into patents and technology transfer Between 1981 and 2000, the number of inventions generated by the University of California's nine campuses and three national labs increased four times, while UC's patent licensing income increased forty times, from around two million dollars to about eighty million dollars.

After the U.S. Congress passed the Bayh-Dole Act in 1980, many other universities began setting up internal offices for the management of patent portfolios and other intellectual property rights on faculty-generated inventions. Quite importantly, universities were not the main intended addressees of the Bayh-Dole Act.[14] The Congress was indeed favoring the creativity of small and medium enterprises and supporting not-for-profit corporations. Here came into play U.S. universities. They showed the greatest ability in creating a strategic and enduring alliance with industry, thus boosting technology transfer activities

The growth of technology transfer activities of faculty-generated inventions since the passing of the Bayh-Dole Act can be conventionally defined as a second generation of technology transfer (2GTT). We can also assume the first generation being that when commercialization of scientific results was done in a more passive, sporadic, unstructured way

What we referred to as 2GTT is mainly grounded on a linear, unidirectional process of innovation, where research is done remotely within labs and campuses; it happens to generate invention disclosures, hopefully turned into patents, which are eventually commercialized (See Table 1). If no technologies and no patents are obtained from the research, investments in R&D remain as sunk costs. Basically, under this setting, technology transfer is still conceived as a by-product of research conducted within universities and other public institutions. Accordingly, there is no direct connection between research and the intended outlet of its results—that is, the market—via technology transfer. In this way, professors and research personnel undertake R&D programs and, from time to time, they realize some of their technologies are worth protecting and patenting. As in the majority of cases, universities' employees are bound to disclose their inventions to the university, which usually elects to retain legal title to them or is given title to them by statute.[15] When this occurs, professors report their discoveries and inventions to TTOs' officers that take care of evaluating the invention, of assisting the inventors in specifying their creations and in writing appropriate claims for patents. Eventually a patent application is filed. Interestingly, as some studies have demonstrated, even if the law binds professors to disclose inventions, technology transfer personnel have to invest heavily in encouraging faculty members to disclose their inventions.[16] The reason for such inertia (and the need for encouragement) may depend on the unawareness of professors about the invention and its patentability, on their adversity to patenting and intellectual property protection for the results of science, or simply on their laziness.[17]

Institutional ownership of faculty-generated inventions means the university is supposed to go about identifying potential licensors for the inventions and to ensure patents find their way to the market. When an industry is found which is willing to develop the technology, a licensing agreement is negotiated and executed and usually royalties earned by universities are shared on a variable basis with the inventor.[18] Alternatively, the same inventors might have an interest in starting

13. J.B Baker, *Fringe Firms and Incentives to Innovate*, 63 ANTITRUST L.J 621 (1995)

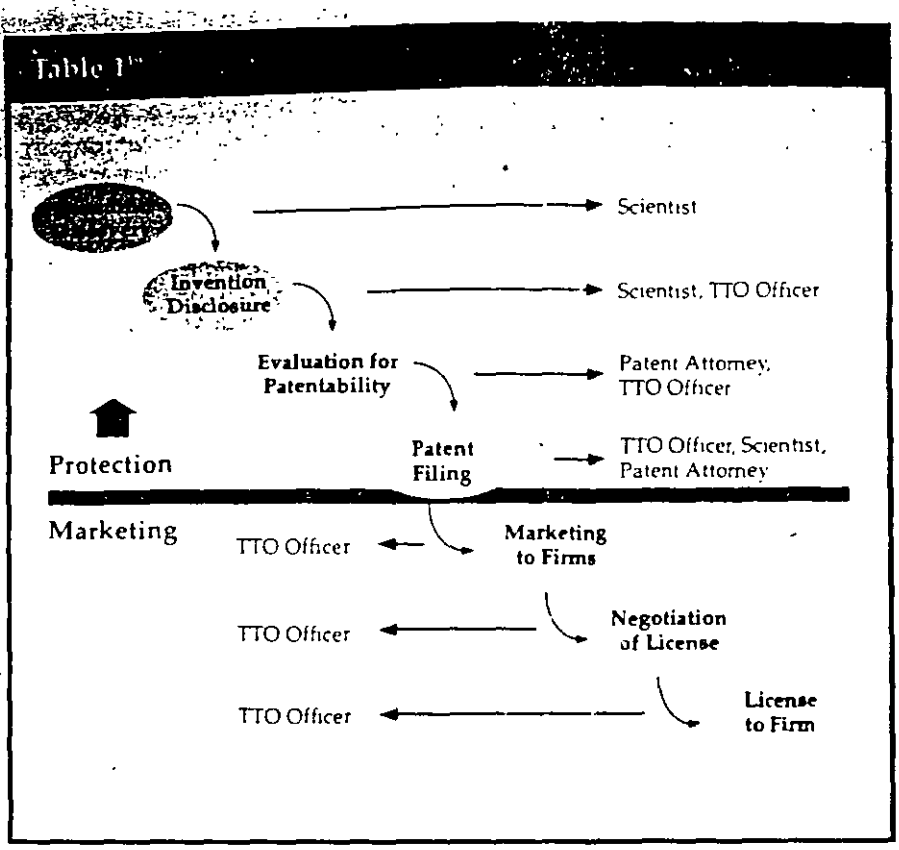
14 W.M Sage, *Funding Fairness Public Investment Proprietary Rights and Access to Health Care Technology*, 82 VA. L. REV. 1737, 1748 (1996).

15 See G K. Smith, *Faculty and Graduate Students Generated Inventions Is University Ownership A Legal Certainty*, 1 VA J.L. & TECH 4 (1997)

16. Cf. Siegel et al., 1999 [*supra* note 5], at 6.

17. Indeed, some scientists have complained (Siegel et al., 1999, [supra note 5], at 34) about the fact they do not receive in the course of their studies an appropriate or even rudimentary education on patents and intellectual property. If this holds in the U.S., where the patent culture is generally stronger, a more encouraging situation is unlikely in Europe. Usually professors learn about intellectual property at their own expenses, after going alone through the all procedure of patent protection and licensing to the industry.

18. It seems that payments made back by universities to professors are based on equitable reasons, as the inventor thus enjoys the fruits of his work, despite the fact that ownership is in the first place institutional. However, this is quite a sensitive issue, strongly influenced by the assumption that public-funded research has internalized all risks of failure and no *ex post* incentives whatsoever should be awarded in terms of intellectual property protection. On this ground, it can be argued, as many do, that intellectual property rights are superfluous in the field of public research, because there is no need for *ex post* incentives. For more discussion on this point, see *infra*, par. 6.



their own company to exploit the technology. In such a case, universities still play an important role, as licensing is done in favor of the spin off company and usually equities are accepted as consideration.[20] Moreover, sometimes universities have incubators, which provide assistance in the start up stage of the company's life.

It is not useless, incidentally, to emphasize that institutional ownership (as opposed to individual ownership) of professors' inventions is economically efficient as universities can appropriate all positive externalities created by research and re-distribute them internally.[21] Of course, universities encounter limits in their efforts to market their patent portfolios, as an aggressive policy towards industry would clash with the main educational mission and with the not-for-profit nature of the institution itself. Nonetheless, title to the inventions is a nonreplaceable ingredient for command and control in technology transfer activities.

4. LESSONS FROM THE PAST, LEADS FOR THE FUTURE. TOWARDS A NEW GENERATION OF TECHNOLOGY TRANSFER

In terms of results, traditional technology transfer based on strict licensing is not optimal. The occasional character of innovation production under the above-sketched scheme determined over the years a significant amount of patents, but a relatively modest number of licenses, which less-than-compensates all investments done in R&D.[22] In other words, universities have continued to produce technologies, some of them extremely good, and, on the other end of the market, industries and venture capital have persistently sought technologies. Nonetheless, only occasionally under such approach does the demand for innovation meet the supply and as a consequence we observe universities' patent portfolios increase and many financial resources go underutilized. As a matter of fact, TTOs are not always able to license a patented invention. Actually, the ratio between patents issued and licenses granted is far from being one to one. Of course, few licensed inventions can generate significant amounts of money for universities and more-than-compensate technology transfer undertakings.[23] As an example, the University of Florida is very well known for the trivial royalties earned by licensing the patent for the famous energetic drink "Gatorade." Nonetheless, in general the great bulk of patents tend to remain uncommitted.[24] Since patent filing and administration are expensive, large patent portfolios remaining unexploited represent a sunk cost for universities and, eventually, a loss of social welfare. Moreover, all R&D investments do not have the appropriate impact on the economy, either locally or globally.

The overproduction of patents can have also side effects, when the intellectual property protection in fact "locks" a given technology.[25] While this is the natural consequence of all patents, because of their very nature of legal monopolies, keeping the

19 The model is a modified version of Siegel et al., 1999, [*supra* note 5], at 3

20 For Italy, see P. Zanelli, *Nuovi percorsi dalla ricerca all'impresa. L'esperienza di Spin-off in trapresa dall'Università di Bologna*, in *Contratto e impresa*, 2000, 1461

21 This is also the reason for universities to set their own technology transfer program, see Siegel et al., 1999, [*supra* note 5], at 3

22 According to Thursby et Al., 2000, [*supra* note 6] at 6, the propensity to patent is an index for the commercial aggressiveness of universities' administrations

23 The relationship between patented inventions, executed licenses, and revenues per contract is largely uneven, as it is shown, as far as the University of California system is concerned, in greater detail in UC Technology Transfer Annual Report 2001, for the previous fiscal year, available on the Internet at the following location: *http:www.ucop.edu/ott/ars/ann01/ar01.pdf*. In general, see also Thursby et Al., 2000, [*supra* note 6] at 7.

24. Thursby et Al., 2000, [*supra* note 6] at 11, report that the number of licenses executed is decreasing against the number of those offered to the industry and this is probably due to the decreasing quality of university patents.

25 See C. Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, in *Innovation Policy and the Economy*, A. Jaffe, J. Lerner, S. Stern, eds., Volume I, MIT Press, 2001.

Beyond Traditional Technology Transfer Of Faculty-Generated Inventions: Building A Bridge Towards R&D*

BY MASSIMILIANO GRANIERI*

ABSTRACT

Despite original differences between U.S and European universities in technology transfer activities of faculty-generated inventions, European universities are becoming more and more aware of the importance of intellectual property rights and their importance to turn research into direct economic impact Traditional technology transfer is mainly based on licensing of inventions randomly generated. Such models produce a great deal of patents and immense patent portfolios, but a comparatively small number of licenses. This paper suggests a more cost-effective approach to technology transfer based on the idea of backward integration with R&D. Definition of market's needs in planning future research should be the key to have a more efficient ratio between patents issued and licenses executed. Cooperation, at regional and international level, is a main factor of success for such a new methodology, but some difficulties, biases and wrong beliefs can be encountered. They are also dealt with in the paper.

1. INTRODUCTION, SOME DIFFERENCES IN EU AND U.S. ACADEMIA

There still exist remarkable differences between Europe and the United States in terms of university/industry relationships and technology transfer of university-based technologies. The reasons for such differences lie mainly in cultural and historical factors

It is well-known that a decisive, robust contribution to technology transfer in the U.S came through the enactment of the Patent and Trademark Law Amendments Act (most commonly referred to as the Bayh-Dole Act) in the '80s.[1] That the Bayh-Dole Act played an important role for the growth of innovation, there is general consensus; its effects will be shown later in this article.[2] On its quantitative impact, though, the debate is not yet settled.[3] Important studies have demonstrated that the Bayh-Dole Act was not the only factor of development;[4] available data and evidence are controversial and what each university achieved depended largely also upon local organizational reasons.[5] Furthermore, some argue that the Bayh-Dole Act had a side effect in which it diverted the research agenda of academic institutions, making professors excessively keen on financial return and, because of this, more devoted to applied research.[6]

Transfer of technology hinges on strong intellectual property protection. The European academia on its part has been traditionally skeptical, when not suspicious, towards patenting, and more generally, towards a private-like form of appropriation of publicly funded scientific results. Despite the fact that intellectual property protection is not at odds with scientific divulgence, the wrong perception of the contrary has historically caused suspicion about intellectual property rights within public research institutions.[7] Discussing the implication of different possible legal regimes for science is beyond the scope of this article; however, it needs to be highlighted that any technology transfer policy is inevitably influenced by biases and beliefs about the degree scientific advancements should be subject to a regime of property rights.

This article aims at comprehensively reviewing some features of traditional technology transfer of faculty-generated inventions drawing on the results of empirical studies done on this topic. Those results are then used to outline an alternative scheme of technology transfer, markedly market-oriented, with the purpose of providing European universities in the process of defining

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*An earlier version of this paper was prepared for USA-Canada meeting of the Licensing Executive Society, Salt Lake City, February 14, 15, 2003.

1. Public Law No 96-517 of December 12, 1980 (now codified under 35 U S C. 200-212)

2. For empirical support see R. Jensen, M Thursby, *Proofs and Prototypes for Sale The Licensing of University Inventions*, in 91 AM. ECON. REV 240 (2001).

3 See T Valour, *Government Funded Inventions: The Bayh-Dole Act and the Hopkins v CellPro March-In Rights Controversy*, in 8 TEX INTELL. PROP. LJ 211, 234 (2000).

4 D C. Mowery, R.R. Nelson, B N Sampat, A A Ziedonis, *The Growth of Patenting and Licensing by US Universities: An Assessment of the Effects of the Bayh-Dole Act of 1980*, in 30 RESEARCH POLICY 99, 100 (2001), hereinafter, Mowery et al., 2001.

5 D Siegel, D. Waldman, A.N. Link, *Assessing the Impact of Organizational Practices on the Productivity of University Technology Transfer Offices: An Exploratory Study*, NBER Working Paper No 7256, 1999, hereinafter, Siegel et al., 1999.

6 See authors quoted in J J THURSBY, M.C. THURSBY, *Who Is Selling the Ivory Tower? Sources of Growth in University Licensing*, NBER Working Paper No. 7718, 2000, 3, hereinafter Thursby et Al., 2000

7 See, in general, R.M. Sherwood, *Global Prospects for the Role of Intellectual Property in Technology Transfer*, in 42 IDEA 27 (2002) (asserting the essential role of intellectual property right for full-fledged technology transfer).

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*By Massimiliano Granieri, Department of Legal Studies, Libera Università degli Studi Sociali "Guido Carli, Rome (Italy)

their internal innovation management strategies with suggestions and guidelines. These new schemes for transfer of technology can be considered as belonging to the new generation of technology transfer.

2. RECENT DEVELOPMENTS IN EU ACADEMIA ABOUT TECHNOLOGY TRANSFER

Despite original differences between the two continents, technology transfer and related activities for faculty-generated inventions have gained momentum recently all over Europe. Universities and research centers currently show a deeper awareness about the importance of turning the results of their research into more direct economic impact. Further reasons exist for such accrued interest. First and foremost, public funding for R&D is dramatically decreasing almost everywhere, because of financial difficulties experienced by local governments and because of the general shortfall of the E-economy.[8] In this vein, technology transfer is regarded as an additional source of financing for universities.

Second, as a consequence of the above-mentioned impoverishment of universities, the distance between applied science and basic science is doomed to increase and to conceal a more alarming dichotomy between rich sciences and poor sciences.[9] Revenues earned out of technology transfer activities can thus be used internally to cross-subsidize those disciplines that, by their very nature, do not spawn marketable results, although they may represent building blocks for future inventive activities.

Third, as a consequence of the creation of one, integrated market and an internal area of research, universities in Europe seem much more in competition today than they used to be in the past. They compete not only to attract prospective students, but also to lure the best faculties. In such a marketplace for human capital, ability shown by professors to engage in applied research activities, their enhanced attitude to intellectual property protection of their efforts, and their increasing propensity to get involved into commercial activities begin to be considered important features for faculty's profiles and to come alongside the traditional credentials (overwhelmingly, publications) evaluated in the selection and hiring processes.

The institution of internal technology transfer offices (TTOs) and incubators by many European universities witnesses the current change. Of course, the pace towards a more pro-active approach in Europe is not homogeneous, as some campuses seem lagging behind; nonetheless, the trend appears continuous and steady.

Mapping out an innovation management policy within universities requires the solution to the usual alternative between "make or buy," referred to technology management.[10] In other words, it has to be decided from the very beginning whether an internal office for the protection and valorization of intellectual property is preferable or whether the same results can be accomplished with lower transaction, coordination, and monitoring costs by externalizing the function. The schemes dealt with in this paper are compatible with any model adopted, although in principle outsourcing the technology transfer function might result in higher coordination costs.[11]

3. TRADITIONAL TECHNOLOGY TRANSFER AS A STARTING POINT FOR EUROPEAN UNIVERSITIES

That a change in culture is taking off does not necessarily mean that European universities are uniformly equipped to undertake efficient technology transfer activities. Many of them are now starting from the point where leading U.S. universities were during the '70s and '80s, in terms of experience and relationships with industry.

To be sure, technology transfer programs in the U.S. started long before the enactment of the Bayh-Dole Act.[12] For instance, the University of California (UC) technology transfer program—by far one of the most successful worldwide—had an important role for the Manhattan Project. For a long period of time, licensing of faculty-generated intellectual property rights was done in a reactive (not pro-active) fashion, responding to the increasing requests of companies, which knew a certain technology had been developed within a campus or a lab. Well before the Bayh-Dole Act, there was an underground change occurring however. The U.S. continued losing industry after industry to Asian and European competition (especially German), in industries such as consumer electronics, shipbuilding and hardware

8 For the United States see T A MASSARO, *Innovation, Technology Transfer, and Patent Policy The University Contribution*, 82 VA. L REV 1729, 1734 (1996)

9 The danger is noticed also by those authors claiming that a stronger involvement of universities into technology transfer could harm their mission P.K. Chew, *Faculty-Generated Inventions: Who Owns the Golden Egg?* 1992 WIS. L REV. 259, 307 (1992): «[b]asic research is directed at answering an intellectual inquiry rather than achieving results with a practical application. It has produced revolutionary breakthroughs that have yielded highly significant societal benefits. Because basic research often lays the foundation for applied research, a decrease in the former could jeopardize the success of the latter» (hereinafter Chew, 1992)

10 See, O. Williamson, *The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting*, New York: The Free Press, 1985. It is still a form of make when the university chooses to perform technology transfer through a controlled company, rather than through an internal administrative office. A very well known example is Isis Innovation Ltd , a wholly owned subsidiary of the University of Oxford

11. It might be still convenient the resort to market when the cost of organizing internal offices is prohibitively high compared to the expected production of intellectual property rights and commercialization potentials. A case-by-case strategy is recommended. One not overlookable reason to spin out the technology management function is the need to escape the many legal constraints surrounding administrative activities within universities.

12. Mowery et al., 2001 [*supra* note 4], at 102.

Rembrandts in the attic may become the equivalent of passive strategies adopted by private companies to raise patent walls and prevent competitors from entering the market by means of intellectual property rights, or to enhance their power in cross-licensing deals.[26] Apart from all antitrust concerns, which can arise, defensive strategies in patent management might be compatible under certain conditions with the purposes of the private company; they are certainly incompatible with the mission of disseminating knowledge endorsed by universities.

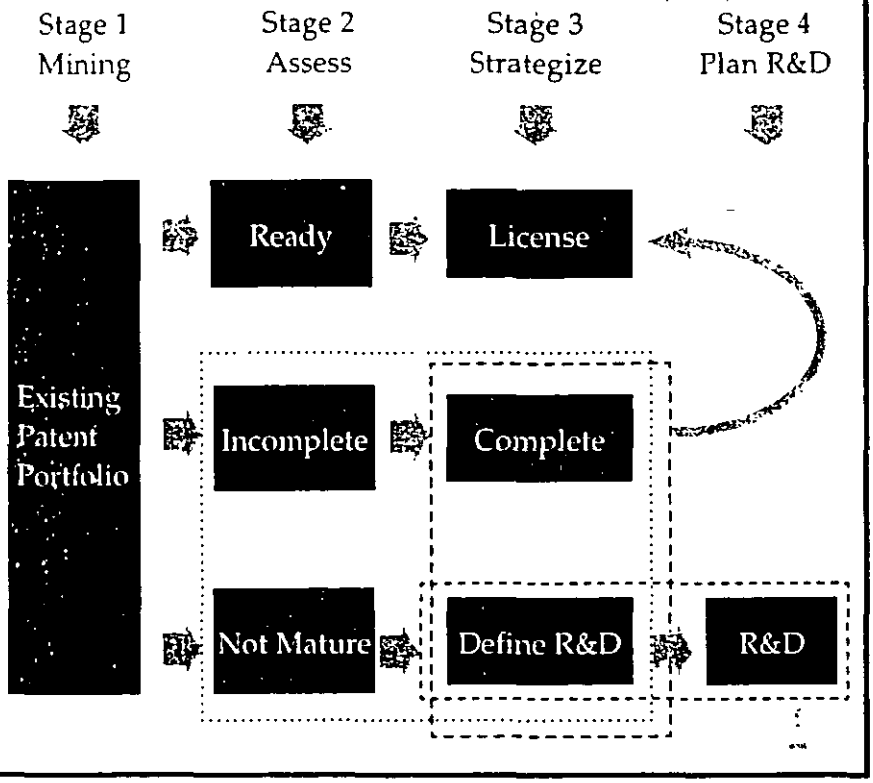
There are other minor, though serious, drawbacks shown by 2GTT. One rather severe problem is related to the involvement of professors/inventors in the commercial deployment of their inventions, either by licensing or by spin-off companies. In such scenarios, compelling marketing reasons and trade secrecy can take over the more collaborative and internationally oriented dimension of science. It has already happened that former colleagues working on the same research project became competitors in the marketplace on a later stage once involved in the marketing of the technology. Even worse, sometimes patents are litigated and, of course, in the event of litigation relations go definitely awry. Under an all-or-nothing approach, some may argue that this is a valid argument to stop all technology transfer activities and opt for a regime of free appropriation of scientific results. Modern economies could not afford such a conclusion. A more serene way to look at the problem calls for caution and a deeper understanding of it recommends other possible solutions. Indeed, a good technology transfer practice is helped by professors in marketing their technologies: "faculty members are frequently involved in the marketing phase because they are often in a good position to identify potential licensees and because their technical expertise often makes them a natural partner for companies that wish to commercialize the technology."[27] There is, however, a problem of keeping control of such an involvement and to define the right trade off between unchecked, unrestrained participation and total abstention.

Lastly, after some twenty years of constant growth since the passing of the Bayh-Dole Act, the income from technology transfer based on traditional licensing has become flat and such a trend is a another reason to revise the traditional technology transfer techniques as a distinctive form of organization for university/industry relations.

These being the main deficiencies of 2GTT, it is now to be asked about the causes. The short answer is "discreteness." Technology transfer has been functional to the licensing of few, sometime sporadic inventions in response to random inventive activities of faculties. It is still rather detached from R&D and, at the same time, too far apart from market needs. In other words, 2GTT does not allow filling in efficiently and exhaustively the gap between research and the market. Its remoteness from the needs of the industry does not provide directions back to the research, so that the production of innovation continues to be partially untargeted. Since market's needs are not identified, doing transfer of technology in an unoriented way may cause a double risk: *a*) on the one side, some specific needs for innovation can remain unaddressed; *b*) on the other, some areas may present an undue concentration and a wasteful duplication of R&D activities which can consequently result with obvious overproduction of patents.

Technology transfer needs not to be the end of the chain, it should rather be seen as one of the elements of a unified virtual strategy, where all steps are actually intertwined and coordinated and each one provides the other with useful inputs and feedbacks. The model of innovation

Table 2



26 See K.G. Rivette, D. Kline, *Rembrandts in the Attic*, Cambridge: Harvard University Press, 2000.

27 Siegel et al., 1999 [*supra* note 5], at 7.

to look at is not a linear one, but rather a circular one, in which not only positive externalities created by R&D programs are more efficiently appropriated, but also a mechanism to transmit signals back to research is worked out. This, of course, implies a more creative approach in dealing with industry, as opposed to the conservative approach so far shown by technology transfer offices.[28]

The way to realize a more effective technology transfer is to shorten the distance between applied research and the market, and this can only be done by welding technology transfer to R&D planning. In other words, when defining and implementing strategies of research and development of new technologies, decision makers should already have a clear understanding of the future needs of the market. Because technology transfer people are in touch with the industry, they are well positioned, together with professors, to provide R&D planning with a market's present and expected requirements.

If it were only a matter of providing inputs to those in charge of defining investments in R&D, it would not be appropriate to speak in terms of a new generation of technology transfer. It would not be technology transfer at stake at all. Scientists, professors, and researchers are in principle always free to define their own objectives and to shape them after a markets needs (real or foreseen). They do not need technology transfer offices to accomplish that. What is suggested here is a bottom-up approach to a more effective and market-oriented R&D by means of more a proactive technology transfer strategy, (see Table 2).

The basic idea is that, first of all, TTOs have to start assessing the existing intellectual property right portfolios and undertake an explorative due diligence.[29] Usually, even small universities have patents and patent families, which can be used as a starting point. In other words, the scheme proposed here is workable even if universities have not yet entered the 2GTT.

Once the portfolio has been screened, three situations can occur: 1) some technologies are ready to be marketed and licensed. [It is very likely that patent portfolios contain untapped patents, due to the unchecked quantity and the variety grown over the years]; 2) some patents refer to a technology which appears to be incomplete. [It might well be that they are small pieces of a broader technology, which needs to be combined with others to form a more comprehensive licensable patent portfolio. In such a case, the further step is the research for complementary technologies in other's patent portfolios. This strategy implies cooperation with research institutions or industries, which actually hold part of the complementary technology]; 3) some patents refer to a technology that appears to be not yet mature enough for commercialization. This is exactly the stage where the existing technologies can provide inputs for research in at least two different ways. First, research can be mapped out and designed to complete the available technologies up to the point when they become ready to be licensed. Second, the TTO officer should now be able to say why the patents found are not good for the market, what portion is missing if any, and what future research efforts should be redirected to alternative technologies. Quite importantly, the TTO officer plays in both cases an important role in defining the time-to-market; that is, in determining how long it would take to bring a brand new technology or an improved pre-existing one to the market.

It should be clear that although stages 2) and 3) are the distinctive features of any new generation of technology transfer, they are almost never parallel. Technologies can be immature and incomplete in many respects and on different scales at the same time. In such conditions, they can be held by different research institutions and appear in a quite disintegrated fashion. In fact, this can translate in to call for a cooperative and integrated strategy of complementing scattered technologies and defining joint research projects with all those somehow interested. A closer, cut-across interaction among a plurality of actors comes into play as the newest characteristic of the new generation of technology transfer.

It is self-evident that as long as technology transfer is an occasional activity, passively functional to research and not determinant of R&D planning, inter-institutional cooperation has scarce or no value. Everything is conducted internally and there is no need to interface with other campuses, regionally or internationally. Because science and research are international almost by definition and faculties cooperate in the framework of broader R&D projects, backward integration of technology transfer with R&D planning causes the former to became as international as research. Thus, when adopting a new generation setting for technology transfer, universities must be aware that additional problems may arise and a more careful approach is in order. Some of these difficulties are expressly addressed in par. 6.

5. SOME PRECAUTIONS

There are few things that should be really avoided in pursuing a more innovative technology transfer policy, either within a starting or within a continuing operation.

First of all, the management of technologies, from the very moment of an invention's disclosure to the licensing of the resulting patent is such a complex and demanding activity that none can afford doing it in an unprofessional manner. This should read more as a warning for universities willing to start

28 Siegel et al., 1999 [*supra* note 5], at 11, note that the conservative attitude of licensing officers in structuring deals stems from their commitment to the role as guardian of the university's intellectual property. Such inflexibility is consistent with the bureaucratic organizational culture of the university.

29 If the portfolio is particularly large and multi-technology it can be worth referring to specialized software for patent mapping.

their (effective) technology transfer programs from scratch; sometimes, especially in smaller campuses, a too naive approach has been followed, with few, not specialized resources actually committed.[30] In a way, universities cannot be blamed for such a strategy, as they might find themselves between a rock and a hard place: having a technology transfer office is a must to assist professors in their inventive activities. At the same time, there is an objective need to limit expenditures for an operation that is not expected to produce significant revenues due to the dimension of the campus and the scarcity of invention disclosures.[31]

Much of the core of all commercial relationships between universities and industries and between faculties and technology transfer offices is built upon responsive and proficient structures and procedures. What an efficient structure is expected to do in a timely fashion is to gather as many patent disclosures as possible, to assess them, to decide for protection (or not), and to bring them to commercialization as soon as possible.[32] Some studies have reinforced the idea that "time-to-market" is a crucial factor for entrepreneurs that need technologies, since securing them, once promptly and opportunely protected, translates into a terrific competitive advantage.[33] Unfortunately, time-to-market is a concept absolutely obscure to many universities and their bureaucratic organizations. Managing professionally intellectual property rights means to act at least as fast as the market for the technologies handled moves. It is common to hear R&D and technology transfer labeled as "pre-competitive" activities, especially by politicians. Whether the formula is appropriate or not is neutral in terms of an efficient practice; it would be harmful, though, if it would be used as an excuse to justify delay. There cannot be any acceleration in the market, if "pre-competitive" activities move slowly.[34]

At the same time, a quick response is also essential to attract professors. Because faculties are always keen on publishing, when faced with the need to wait too long for their inventions to be protected, they would likely turn towards the alternative of publishing.[35] Hence bureaucracy also generates under-reporting.

If there is a mistake that can be done in building a technology transfer practice, not taking things seriously is probably the worst. Unfortunately, the market rewards efficiency over the most genuine, though naive effort to do things.[36] The likelihood of success for non professional-like initiatives is poor, the risk to spoil irreversibly the always-fragile relationships with the faculty is high,[37] and the university itself could be exposed to disastrous consequences.[38] If a university administration cannot provide a satisfactory budget for its technology transfer program, then it is probably worth opting for the buy, rather than sticking to an unsuccessful make.

Secondly, when adopting a pure 2GTT scheme as described above (see par. 3) to accomplish a technology transfer program, satisfactory results should not be expected in the short-run.[39] Indeed, because a critical mass of intellectual property rights is always required before an adequate number of licenses is executed and starts bringing in money, the break even could probably be met in the mid to long term, depending also on luck and on the intensity of learning by doing. Accordingly, because revenues only come at a later stage, a technology transfer action in general is inevitably a losing business at the beginning. It goes without saying: as a consequence, waiting too long is the second worst decision that could be taken.

Of course, everything would turn out differently by adopting a more integrated approach to technology transfer, having R&D programs immediately conceived as potential sources of intellectual property and even undertaking scouting activities internally before defining R&D strategies.

6. DIFFERENCES AND BIASES (NOT ONLY) IN INTERNATIONAL COOPERATION

There are quite a few difficulties in general that any technology transfer undertaking is likely to encounter; likelihood blurs into inevitability whenever technology transfer is truly integrated with research and development in a market-oriented bundle. First and foremost, differences in culture among co-operators, although hardly measurable and foreseeable in advance, do matter and can give rise to clamorous failures.[40] Apart from that, more serious unevenness paves the way towards integration and cooperation in R&D and technology transfer.

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30. This trend is also witnessed by fancy names adopted for the offices. It should be kept in mind that managing intellectual property implies a host of complementary skills and expertise.

31. In the aftermath of the new Italian law (which gave title on the invention to professors, instead of to universities) the Italian Ministry of University and Research has proposed a bill proposing the opposite solution. Interestingly, under the bill universities are mandated to set up efficient technology transfer operations to valorize their technologies portfolios.

32. Thursby et Al., 2000 [*supra* note 6], at 13, 14, provides data according to which success in licensing activities positively influences propensity to disclose inventions by professors.

33. Siegel et al., 1999 [*supra* note 5], at 12.

34. This can be seen also as an explanation why the bubble of the E-economy at some point deflated. There were no sound technologies and full R&D pipelines supporting the enormous and unconstrained financial flows keen on market's outlets.

35. As pointed out by Thursby et Al., 2000 [supra note 6], at 4, «[i]n some cases faculty may not realize the commercial potential of their ideas, but often they do not disclose inventions because they are unwilling to risk delaying publication in the patent and license process». This explains why industries often resort to delay of publication clause in their university contracts.

36. On such meaning of efficiency see Siegel et al., 1999 [*supra* note 5], at 30.

37. For more discussion see, *infra*, § 6.

38. Just to name a couple of risks: liability for defects due to the technology and for patent infringement.

39. For figures on expenses and resources see Siegel et al., 1999 [*supra* note 5], at 17.

Probably the most problematic issue is the one concerning the compatibility among the aims of public funded research and the idea of private appropriation underlying intellectual property regimes; such an issue prompted a debate not yet settled.[41] In other words, the question turns out to be: are patents and science at odds? Is there an intimate conflict between the purposes of free divulgence of the latter with the legal monopoly granted with the former? The issue is too complex, multi-faceted and much more worth discussion to be dealt with here in few, scant words. Nonetheless, it is important to remember that a more collaborative approach to disclosing inventions and obtaining patent protection strongly depends on inventors' beliefs about the relation between patent and science.[42] Of course, in the process of setting up a new generation in R&D and technology transfer, the presence of groups of researchers with different views on this very issue can result in the impossibility to even start any cooperation.

Incidentally, it is safe to say that probably the debate is biased in two senses. First, there is not an ontological difference between public and private research and, as a consequence, there cannot be differences in terms of appropriation of their results. The only diversity is in the subjects: universities are supposed to disseminate science, which means that reasons of free availability need to prevail over reasons of private appropriation whenever a conflict arises.[43] The same logic does not apply within industry, where there is a more conservative approach and usually managers and entrepreneurs do not look favorably on publication even when a patent application is already on file.[44] Secondly, there is not a real clash between the divulgence purposes of science and the nature of patents. Intellectual property is usually depicted as a legal monopoly awarded to the inventor or the author to give them *ex post* incentives for their inventive or otherwise creative activities. Notably, the monopoly is not given for free, nor the fees for patent filing can be assumed as the price of the monopoly. Instead, what the legal system demands of the inventor as a consideration for the grant is exactly that the invention or the creation is made available to the public. Indeed, patented technologies are nowadays accessible to anyone.

It is probably true that too strong an involvement of universities into applied research and commercialization can result, under unrestrained conditions, in bringing about side effects: the research agenda can be diverted.[45] Whereas this is a possible danger—much more material whenever professors are left alone by institutions in their contacts with industry—there is actually evidence that many professors are normally positively influenced by interactions with industry; their basic research gets improved quantitatively and qualitatively.[46]

Another set of differences capable of influencing integrated R&D/technology transfer cooperation is the current fragmented scenario of intellectual property regimes, especially within European Community. Oftentimes, complementary technologies are not similarly homogeneous in terms of width of patent protection, so that it is hard to assemble them into an appealing patent portfolio, according to the scheme proposed above (see Table 2). This translates easily into a financial problem, as extending protection abroad is usually a matter of money.[47] Of course, if no serious possibilities of licensing exist, which can justify the temporary, additional expenditures for patent filing in other countries, it is not worth extending the protection. At the same time, rather paradoxically, if patents available are complementary but not homogeneous to others in order to form a patent portfolio, it is almost impossible to start a co-operation. It sounds pretty much like the story of the chicken and the egg, until it is recognized that the only way to increase licensing possibilities and, at the same time, to save money is to integrate technology transfer purposes into R&D planning and devote resources only towards productive uses. Planning R&D through definition of market needs purports at understanding which level of protection is required for a technology to be marketed.

Strictly related to the previous aspect is the one concerning the alternative between individual and institutional ownership of faculty-generated inventions. On the merits, there is not much to say; it is not even a serious alternative. Good sense, before and better than any other legal and economic explanation, tells us that the best situation holds when the university retains title over the inventions done by its professors.[48] It is fair, efficient (universities appro-

40. This is not a technical legal problem, although it is commonly overlooked and it is one of the major failures

41. For more details on the debate see A.K. Rai, *Regulating Scientific Research: Intellectual Property Rights and the Norms of Science*, 94 NW U. L. REV 77 (1999)

42. Thursby et Al., 2000 [*supra* note 6], at 5, report that one cause for a professor not reporting inventions is the "philosophical" belief about the mission of academic scientists and professors. This is consistent with the interviews done by Siegel et al., 1999 [*supra* note 5], at 29.

43. To be sure, dissemination is not at odds with patent protection

44. See Siegel et al., 1999 [*supra* note 5], at 32. The reason for such cautious approach is comprehensible in light of the very nature of scientific knowledge. There is always the risk that divulging information about the invention might determine a 'lost of a portion of knowledge not perfectly wrapped by the intellectual property right

45. Thursby et Al., [*supra* note 6], 18, say no. The danger is deemed true by Chew, *Faculty-Generated Inventions*, cit., 285

46. Siegel et al., 1999 [*supra* note 5], at 31.

47. Of course, especially in Europe the adoption of a Community patent would solve a lot of problems, among which the economic one.

48. For more discussion on this point in a comparative perspective see, in Italian, M. Granieri, *Circolazione (mancata) dei modelli e ricerca delle soluzioni migliori. Il trasferimento tecnologico dal mondo universitario all'industria e la nuova disciplina delle invenzioni d'azienda*, in *Riv. dir. ind.*, 2002, 63, and, in English, ID., *Patent and Technology Transfer Law, Economics, and Policy*, paper presented at the Haas School of Business, University of California at Berkeley, 2002.

priate positive externalities created by a research), and it short-circuits many of the problems highlighted above. In most, if not all, western civilized countries the rule is one of institutional ownership, even though, from time-to-time, odd movements tend to reconsider the suitability of the norm [49]

Technically, it can be indeed difficult to start assembling patents into marketable portfolios or to coordinate groups of researchers when different rules exist on the ownership and parties cannot opt for an alternative legal regime, due to the mandatory nature of the rules. The problem becomes particularly tricky whenever in the funding agreements there are conflicting rules governing the ownership of intellectual property. In this case, additional administrative and transaction costs are to be incurred to contract around the existing rules or to work out compatible solutions. Especially within the European Community, there is room for harmonization, since differences in regime can jeopardize the purpose of structuring the European Research Area.[50] In the Proposal for a Directive of the European Parliament and the Council on the patentability of computer-implemented inventions there is a shy acknowledgment of the importance of having a harmonized system of ownership.[51]

Although this is a first, important step, it is not yet sufficient and the EC should consider more seriously the adoption of a directive addressing this specific issue.

7. CONCLUSION

This paper has dealt with virtues and vices of traditional technology transfer. Such schemes first developed in the U.S. when universities were given the right to retain title to faculty-generated inventions. Unfortunately, that generation of technology transfer is too remote from the market. As a consequence, universities continue to produce intellectual property rights, but few licenses are executed. Even if royalties are earned, the system is not producing optimal outcome. A more effective technology transfer program has to be integrated in R&D and provide inputs on a market's needs when R&D plans are mapped out. The new generation of technology transfer is supposed to weld the research to the market and make sure the innovation produced within universities has eventually an impact on the economy and on society as a whole. When adopting such a new approach, cooperation, both at regional and international level, becomes a key factor. Accordingly, complexities usually grow and a certain number of biases and wrong beliefs are usually met, which can jeopardize the success of the operations. This paper also provides for some advice on how to deal with them.

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49 Recently in Europe there have been interesting changes Italy has opted for a criticized regime of individual ownership, whose only result was the increase of administrative costs for universities and worries on the part of professors. See Art 7 of the Italian Law No 383 of October 18, 2001 (in OJ No 284 of October 24, 2001) Germany, instead, repealed the so-called professors' privilege (*Hochschullehrerprivileg*), implementing an institutional ownership solution See *Gesetz zur Anderung des Gesetzes über Arbeitnehmererfindgungen* on January 18, 2002 (Bundesgesetzblatt Jahrgang 2002 Teil I No. 4) Quite interestingly, the reason for Germany changed the law was its modest results in term of innovation.

50 See Decision No. 1513/2002/EC of the European Parliament and of the Council of 27 June 2002 concerning the sixth framework programme of the European Community for research, technical development and demonstration activities, contributing to the creation of the European Research Area and to innovation (in OJ L 232/1 of August 29, 2002).

51. COM (2002) 92 final.

Allocations of Ownership of Inventions in Joint Development Agreements

At the Licensing Executives Society International Conference 2000 in Amsterdam, a workshop was presented in which the allocation of ownership to inventions made in performance of joint development agreements was addressed. The format comprised a brief background statement regarding the nature of joint development agreements, the establishment of a hypothetical situation and the presentation of papers by several members from Canada, the Czech Republic, Japan, Malaysia, the United Kingdom and the United States. What follows is the background statement, the hypothetical statement and the individual papers from the LESI Conference 2000.

BACKGROUND STATEMENT

Under a joint development agreement, two or more parties agree to cooperate in research and development leading to a technology or product goal of common interest. A joint development agreement is not contract research where one party is in the business of doing research for a fee. In a joint development agreement, each party expects to get something of value (other than money) out of the results of the R&D effort.

By means of a hypothetical situation, the following articles address common ways for allocating ownership and rights in joint development agreements. The allocation of ownership itself is not complicated; it is the practical and legal consequences of such allocation that introduce complications. The joint development agreement must anticipate and address the consequences of a particular allocation of ownership and rights.

Allocation of ownership to inventions made in performance of an international joint development agreement requires consideration of the differing laws that affect the ownership rights in different countries. To provide a basis for comparing the principles of joint ownership in different countries and their impact on joint development agreements, each of the following articles will provides responses to the common hypothetical case from the author's own national perspective.

HYPOTHETICAL CASE

Big Automobile Company ("BAC") wishes to develop a new system for painting vehicles that is more energy efficient and environmentally sensitive than the existing systems. While BAC has considerable experience in the area and owns a portfolio of patents, trade secrets and know-how related to such paint systems and methods, BAC recognizes that a critical aspect of any such system or method is the paint formulation.

Since BAC already buys a large portion of its paint from LCC, BAC asked LCC if it would jointly develop with BAC a better painting system and method. After BAC disclosed to LCC, under a confidential disclosure agreement, BAC's desired specification for the new painting system, the parties negotiated a joint development agreement. Under the agreement, each party, at its own expense, will do part of the R&D work. Each party will send some of its technical employees to facilities of the other to assist in the R&D program

Large Chemical Company ("LCC") has been in the business of making paint for over 100 years. It has considerable experience in developing and manufacturing paints of different formulations for all major applications. Over the years, LCC has worked with many customers to develop painting systems. LCC owns a large portfolio of patents, trade secrets and know-how directed to paint formulations, paint manufacture and painting systems.

BAC and LCC have agreed that each will retain ownership of inventions and patent rights that they owned prior to the agreement. The parties believe that many inventions will be made during the course of their joint R&D. Some of these inventions will be made solely by employees of one party or the other, and some of the inventions will be made jointly by employees of both parties. Each party wants rights to inventions made during performance under the joint development agreement; BAC wants the right to use the system, method and paint invented in manufacture of automobiles, and LCC wants to sell the paint formulated during the R&D and to license the system and method developed to customers who will buy the paint from LCC.

Allocations of Ownership of Inventions in Joint Development Agreements — The United States Perspective

by D. Patrick O'Reilley

If the agreement between LCC and BAC does not allocate ownership of inventions made by their employees during the course of the R&D program, who would own the inventions and patents?

In the United States, inventions are owned by the inventors unless they are under some express or implied obligation to another. If several inventors jointly make an invention, the invention is owned jointly by each of them.

Where the inventors are hired to invent and inventions are made as part of their employment, those inventions are the property of the employer. If an invention is jointly made by employees of different employers, the invention is jointly owned by the employers. Assuming all inventors are employees of LCC or BAC and there is no contractual allocation of ownership, inventions made solely by LCC employees would be owned by LCC, inventions made solely by employees of BAC would be owned by BAC, and inventions made by employees of both parties would be jointly owned by BAC and LCC.

Should LCC and BAC have agreements with their employees regarding inventions made during the course of the R&D program?

As noted above, in the United States an employer is entitled to own any invention made by an employee who was hired to invent. Without a contract with the employee, the employer will not have complete title until either the employee executes an assignment or a court orders transfer of title. If such an employee has left the company after making the invention or otherwise refuses to cooperate in transferring title to the employer, confirming title to an invention and related patents can be very difficult, expensive and time-consuming.

If an invention is made by an employee who was not hired to invent or to work in areas where invention is expected, normally the employee would own the invention. The employer would only receive a nonexclusive, non-transferable, royalty-free license to use the invention and any patent on the invention (a "shop right"), but only if the employee used the employer's time or facilities to make the invention. Since a shop right is not transferable, a party to the joint development agreement who acquired only a shop right could not give rights to the other party.

To avoid such problems, most employers require employed inventors, and sometimes all employees, to sign an employment contract that automatically assigns the employee's inventions and patent rights to their employer. In terms of employment contracts, it is important to note the difference between a promise to assign an invention in the future and a present assignment of a future invention. Under U.S. law, an employment contract can provide for the present assignment by an employee of all future inventions. Such a provision results in immediate and automatic assignment to the employer of any invention. This avoids any dispute over who owns legal title to the invention.

Under U.S. law, inventions and patents on the inventions are different rights. An employer's ownership of an invention made by an employee does not automatically result in the employer's ownership of any patent on the invention. Thus, in addition to a contract provision that automatically transfers legal title to an invention, the contract provision also should provide for the present assignment of all future patents on such inventions.

Since employees normally are not parties to a joint development agreement between their employers, the joint development agreement cannot impose obligations on the employees. It is good practice, therefore, to require each party to the joint development agreement to place each employee who is likely to work on the R&D project under a contract to presently assign to his employer all future inventions and patents thereon.

If BAC wants the exclusive right to exploit the results of R&D in the automobile industry and LCC wants to exploit the R&D results elsewhere, how can rights be allocated in the joint development agreement?

In the United States, inventions and patents may be assigned in whole or in part and may be licensed exclusively, non-exclusively and in fields of use. Ownership of and rights to inventions made under the joint development agreement and patents on such inventions may be allocated in any way the parties agree.

OWNERSHIP ALLOCATED TO ONE PARTY

The joint development agreement can provide that all inventions and

D. Patrick O'Reilley is a partner at Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., USA

patents made during the R&D project will be solely owned by LCC, for example. While this appears to be inconsistent with BAC's desire to have exclusive rights in the automobile industry, this approach has certain benefits under U.S. patent laws.

Where inventions are made by different inventors who are obligated to assign to different employers, a patent application on one invention may be used as prior art against a patent application on the other invention. This can be a real problem where the two employers are involved in joint R&D since it is likely that all inventions made in the course of such effort will be related and therefore likely to be available as prior art. The problem can be alleviated by providing in the joint development agreement that each party's employees will assign inventions made during the R&D to a single entity. The single entity can be one of the parties or a separate joint venture company set up solely for that purpose.

The parties' respective benefit from the R&D can be provided by exclusive field of use licenses. Thus, for example, BAC and LCC can agree that their employees will assign all inventions made during the R&D to LCC. LCC will grant to BAC an exclusive, royalty-free, irrevocable license under all such inventions and patents in the automobile or vehicle manufacturing field. This provides BAC what it wants from the joint development and leaves LCC with rights outside of BAC's field.

One disadvantage of this approach, particularly for smaller companies, is one party gets no asset for the expenditure under the joint development agreement. Investors may not consider an exclusive field of use license to be the same thing as ownership of patents.

Other problems, discussed more fully below, concern the cost and control of prosecution of patents on the inventions and enforcement of the patents. If LCC owns all inventions, logically LCC should control obtaining and enforcing patents. BAC may wish to share such control; any rights to do so must be provided in the joint development agreement.

ALLOCATION OF OWNERSHIP BY EMPLOYMENT

A typical approach in joint development agreements is to allocate ownership in the same way as would happen without contract provisions. Such an agreement would specify that inventions made solely by employees of BAC would be solely owned by BAC, inventions made solely by employees of LCC would be solely owned by LCC, and inventions made by employees of both BAC and LCC would be jointly owned by BAC and LCC.

Such an allocation of rights introduces two problems that should be addressed in the joint development agreement. First, how do the parties cooperate with respect to the jointly-owned inventions. This will be discussed in detail below.

Second, what happens if employees of BAC are the sole inventors of some process or formulation that is critical to exploitation by LCC of the R&D results. Without rights under patents solely owned by BAC, LCC could be left at BAC's mercy. Thus, the parties should negotiate some cross license arrangement to insure each party has the rights necessary to exploit the results of the R&D in its respective field.

ALLOCATION OF OWNERSHIP BY SUBJECT MATTER

Another approach is to allocate ownership based on the relation between the invention and the party's field of interest. For example, the agreement could provide that all inventions and patents solely related to paint formulation will be owned by LCC and all inventions and patents solely related to paint systems and methods will be owned by BAC. The agreement would require BAC to assign to LCC all paint formulation inventions made solely or jointly by BAC employees and would require LCC to assign to BAC all other inventions made solely or jointly by employees of LCC. To the extent this approach avoids joint ownership of patents, many complications are avoided.

Although inventions may be allocated by subject, patents often claim both compositions and related methods of use. A patent directed to a paint formulation may include claims to use of the formulation. The joint development agreement, therefore, should include either an obligation on both parties to limit patents to a single invention, or means for allocating rights where the field of the invention or patent is not clearly on one side or the other. An obvious solution to the latter is joint ownership of such inventions and patents, but, as discussed more fully below, each joint owner of a patent can exploit the entire patent without accounting to the other joint owner. To completely allocate based on subject matter, other restrictions would be necessary to prevent one party from exploiting a patent in the other party's field. And, because there would be some jointly owned patents, the complications discussed below would have to be addressed in the agreement.

CROSS LICENSES MAY BE NECESSARY

In most joint development agreements the parties must consider how each will exploit the results after the R&D is complete. If each party expects to have some exclusive rights under inventions made during the R&D, regardless of how ownership is allocated, some form of exclusive cross licenses will be necessary. Certainly, this is true where one party will solely own an invention that may have application in the other party's area of interest. In the United States, it is also true where both parties are joint owners of an invention and patent, since, unless contractually restricted, each joint owner can exploit the patent without account-

ing to the other joint owner.

To provide each party with exclusive rights in its respective field, each party could grant to the other an exclusive field of use license. Thus, LCC could grant BAC an exclusive license under patents solely and jointly owned by LCC but only for the automobile or vehicle manufacturing industry, and BAC could grant LCC an exclusive license under patents solely and jointly owned by BAC for all fields except the automobile or vehicle manufacturing industry.

LICENSES MAY BE NECESSARY UNDER BACKGROUND TECHNOLOGY

Before entering into the joint development agreement, LCC and BAC each owned patents and technology that may have application to the results of the R&D. Such background technology, and particularly the pre-existing patents, owned by one party may be an obstacle to the other party's enjoyment of the results of the joint R&D. The parties, therefore, should anticipate this problem.

Since BAC and LCC are not competitors, each could grant to the other party a nonexclusive license under background patents (and perhaps technology) to the extent necessary for the other party to fully exploit the results of the joint R&D. The license to BAC could be limited to the automobile manufacturing field and the license to LCC could exclude use within the automobile manufacturing field.

The licenses under background technology do not have to be royalty-free; as with any other license, the parties could negotiate a reasonable consideration.

If the parties are competitors or the background technology and patents are particularly valuable to one party or the other, a simple cross license may not be possible. In such an event, an agreement by each party to give the other an opportunity to negotiate a license for background rights may be all that can be agreed to.

The parties should address rights under background technology and patents. Failure to do so may result in unintended implied licenses to the other party. For example, if LCC and BAC agree that BAC will have the exclusive right to exploit the R&D results in the automobile manufacturing field, a U.S. court later may prevent LCC from enforcing an LCC background patent against BAC because LCC cannot take from BAC what LCC granted in the joint development agreement. To avoid such implied rights, the parties need to expressly address in the joint development agreement each party's rights in the other's background technology and patents.

If the joint development agreement provides for joint ownership by BAC and LCC of some inventions and patents, what contract terms are needed to protect each party's exclusive markets?

In the United States, joint owners of patents have no obligation to account to the other joint owners. Thus, a joint owner, unless there is a contract restriction, can fully exploit the patent, including granting licenses to others, without notice to or revenue sharing with the other joint owners.

If, for example, LCC and BAC jointly own a patent on a paint formulation, BAC could license LCC's competitor under the patent and could keep all royalties received. Since LCC wants to have exclusive rights to paint formulations made during the R&D, the joint development agreement must provide protection.

One form of protection, as discussed above, is cross exclusive field of use licenses. If BAC grants to LCC under BAC's interest in the patents an exclusive license for all fields outside of automobile manufacture, then BAC will have no right to license a third party to compete with LCC.

Another form of protection is to require each party to obtain prior approval of the other party before granting any license to a third party under a jointly owned patent. Parties dislike such restrictions as they give the other party the ability to frustrate negotiations and business plans. The obligation can be more narrowly defined, such as by requiring prior approval only where the third party is a competitor of the other party. This, of course, requires some definition of a competitor and, given the possibility of mergers and acquisitions, may be a variable restriction.

If the parties to the joint development agreement are competitors in any market, any agreement for cooperation regarding licenses to third parties under jointly owned patents may raise antitrust issues. Where a contract requires two competitors to agree before granting rights to a potential third competitor, the required agreement could appear to be a conspiracy to restrain competition, particularly if the parties decide not to grant the license. Thus, if the parties to the joint development agreement are competitors in the area in which the R&D will have impact, cross exclusive field of use licenses are preferred over prior approval provisions.

Instead of preserving exclusive markets, each party could be allowed to grant licenses under jointly owned patents for some consideration. The joint development agreement then could require each party to share with the other any revenue obtained from exploiting the jointly owned patents.

If BAC and LCC jointly own a patent on a painting system that uses a unique paint formulation, will sale of the paint by LCC give the purchaser rights under the patent? If so, how can the agreement restrict that effect?

Exhaustion of a patent right arises from the unrestricted, authorized sale of a patented product or of a product having no use except in a patented process or with another patented product. Thus, if the paint has no substantial use except in the patented painting system, sale of the paint by LCC will convey to the purchaser the right to use the patented system. As a joint owner of the patent, LCC

can grant a license, including an license implied from the sale of the unique paint. Without contract restrictions, BAC would have no way to prevent such a sale and no way to prevent the paint purchaser from using the patented system.

Several solutions exist. First, as mentioned above, LCC could grant BAC an exclusive license under the jointly-owned patent in the automobile field. With such a license in place, LCC would have no right to grant licenses, express or implied, to its customers in the automobile field.

Relying on such legalities is not always wise. A purchaser of the unique paint could assert an implied license because he received no notice of the restriction. A U.S. court may allow for such a license in order to be fair to the otherwise innocent purchaser.

In addition to the exclusive license or in lieu of such a license, the joint development agreement could contractually require LCC to notify each of its customers for the unique paint that purchase of the paint does not convey a license under the jointly-owned system patent, or does not convey a license to use the paint or the system in the automobile field. The notice also could offer a license from BAC. Assuming the paint and system are within the scope of the patent claims, such a written restriction, if imposed at the time of sale, is enforceable. Using this approach, the purchaser receives actual notice of a restriction which precludes any implied license.

What provisions should be included regarding obtaining patent protection on inventions made during the course of the R&D?

If a party is the sole owner of an invention made during the R&D, that party can have full control of all decisions regarding obtaining patent protection and have full responsibility for all associated costs.

Where an invention and any resulting patent are exclusively licensed to the other party in a field of use, the other party may have an interest in what countries patents are obtained and in the scope of such patents. Where the invention and patent are jointly owned, each party has an interest in the scope of patent protection.

While parties can jointly control decisions regarding patent protection, it is preferable to have one party in control and give the other party the opportunity for input. For example, if LCC is required to obtain patent protection for all jointly-owned inventions, the joint development agreement should provide for BAC input into which countries patents will be sought, the scope of patents to be obtained, and any decision to abandon a patent application or patent.

Employing a common practice, LCC would have the first right to select countries for patent filing and then BAC would have the right to add to the list. Some agreements provide that the parties will share all costs while others will provide for sharing only as to countries in which both parties elect to obtain patent protection.

Because BAC is interested in exclusive rights in the automobile field, BAC will want patent claims that specifically address applications in that field. LCC does not have that same interest. The agreement, therefore, has to provide BAC with the opportunity to review all patent application decisions and to cause changes. The changes would be limited to aspects that will have an impact on BAC's exclusive field.

If LCC has control over the process, LCC should have the right to decide to abandon an application. Indeed, to protect LCC from unreasonable obligations, the agreement could provide a limit on how much effort it must expend to obtain a patent. For example, the agreement could provide that LCC does not have to appeal an adverse decision of the Patent Office. With such freedom, the agreement must provide BAC with the option to take over a patent application or patent that LCC elects to abandon.

What provisions, if any, are necessary to permit one or both parties to enforce jointly-owned or exclusively licensed patents?

United States courts will not permit a patent infringement suit to be brought unless all parties having an ownership interest in the patent are named in the suit. The courts take this position in order to preclude the possibility of multiple suits for the same infringement.

If a patent is jointly owned by LCC and BAC, both of them must be named as parties in a suit for infringement or a U.S. court will dismiss the action. Under U.S. law, a joint owner cannot be compelled to join in an infringement action brought by the other joint owner. Thus, if BAC refused to cooperate, LCC could not enforce a jointly-owned patent. The joint development agreement, therefore, should include a provision that requires each joint owner to cooperate with the other joint owner in any infringement suit. Such cooperation may be limited to permitting use of the joint owner's name so that all joint owners are named parties to the suit. The provision should also provide that all costs associated with such cooperation will be borne by the joint owner who brought the suit.

Such an agreement to cooperate in an infringement suit does not prevent the joint owner from granting a license to the infringer. Since the license would result in dismissal of the suit, except for past damages, the joint development agreement could restrict a joint owner's ability to grant licenses to a third party. To the extent the parties to the agreement are or could become competitors, a provision that requires agreement between them before granting further license may present antitrust problems. It is probably safe to include a provision that restricts a joint owner's ability to grant license to a third party who was sued for infringement by the other joint owner.

Under U.S. law, an exclusive licensee is treated differently. Thus, if BAC is granted an exclusive field of use license under LCC's interest in jointly owned patents, BAC as the exclusive licensee may compel LCC to join in an action for infringement in the field of use.

Thus, if the joint development agreement provides for exclusive field of use cross licenses, each party could compel cooperation in enforcement.

Even where a party can compel cooperation in enforcement, it is good practice to include provisions in the agreement that address each party's rights and responsibilities. For example, if LCC instituted suit for infringement of a jointly-owned patent and included BAC as a party, who bears the cost of the suit? If LCC recovers damages from the infringer, will LCC have the share with BAC? Can LCC settle the infringement action by granting a license to the infringer? Can LCC concede in court that the patent is invalid or agree to a construction of patent claims that significantly changes the scope of the patent? All of these questions should be answered in the agreement with respect to jointly-owned patents.

Allocations of Ownership of Inventions in Joint Development Agreements — The United Kingdom Perspective by Jeremy Brown

If the agreement between LCC an BAC does not allocate ownership of inventions made by their employees during the course of the R&D program, who would own the inventions and patents?

The position in the UK is broadly similar to that discussed for the US In the UK however ownership of employee inventions is regulated by the Patents Act 1977 References to section numbers are to sections of this Act.

A patent may be granted primarily to the inventor or joint inventors. However it will be granted in preference over these to any other person entitled to the whole of the property in it at the time the invention was made - for example by any enactment or rule of law, or any foreign law or treaty or international convention, or by any enforceable agreement with the inventor (s7)

By s39 an invention made by an employee belongs to the employer where

(a) it is made in the course of the employee's normal duties or duties specifically assigned to him, in circumstances where an invention might reasonably be expected to result from such duties; or

(b) it was made in the course of his duties and because of the nature of those duties and the particular responsibilities arising from them he had a special obligation to further the employer's interests

Any other invention made by an employee belongs to him.

However s39 only operates to bestow ownership on the employer if the employee when he made the invention was mainly employed in the UK or, if his main place of employment is international, his employer had a place of business in the UK to which the employee was attached (whether or not also attached elsewhere (s43(2)). If there is no agreement allocating ownership, the respective rights of employees and employers with no UK attachment will be determined by the relevant local laws.

Note also that the provisions of s39 apply not only to UK patents but to "patents and other protection" generally, irrespective of where or how granted (s43(4)).

Should LCC and BAC have agreements with their employees regarding inventions made during the course of the R&D program?

S39 operates to give the employer ownership of the UK based or "attached" employee's invention. The employer has the right to apply for a UK or European patent under s7 and to be granted it in preference to the inventor.

Even in such circumstances however a contract confirming and regulating the relationship between employer and employee will generally be desirable. The impact of laws of other jurisdictions to which an employee may be "attached" must be considered. It should include provisions relating to execution of further documents and provision of such further assurances and assistance as may be required to apply for and prosecute applications internationally e.g. in the US where the application will be in name of inventor(s), or where assignments of the invention or right to apply or priority rights may be required by local law.

Clearly more comprehensive agreements may be required where all the employees are not UK based or attached.

In all cases local employment laws must be considered For example, the imposition without the employee's prior consent of new terms for the joint research which affect or modify the employee's existing terms of employment could constitute constructive dismissal. Ideally provisions specifying duties and responsibilities, ownership of inventions, and related obligations in the case of collaborations will, for research workers at least, be contemplated in their regular employment contracts.

What if an invention is made by an employee outside his duties?

Any contract with the employer which diminishes the employee's rights to an invention or patent or application is unenforceable to the extent it diminishes his rights (s42(2)).

This applies not only to obligations to assign or license. It will extend for example to clauses requiring employees to give their employers a first refusal or option.

An employee may of course agree to assign or license his invention to his employer. Even here he has a right of recourse should it later turn out that the benefit to him is inadequate compared with that enjoyed by his employer. He may seek additional compensation. This may not be excluded by contract.

If BAC wants the exclusive right to exploit the results of R&D in the automobile industry and LCC wants to exploit the R&D results elsewhere, how can rights be allocated in the joint development agreement?

In Europe contractual terms regulating ownership and allocation of rights to inventions resulting from join R&D will be subject to the provisions of Article 81 EC Treaty, and

Jeremy Brown is a partner at Linklaters Alliance in London.

certain restrictions or obligations may be unenforceable. It is beyond the scope of our discussions today to discuss anti-trust issues in detail but in this area they should be borne in mind.

OWNERSHIP ALLOCATION TO ONE PARTY

Provision for all inventions and patents to be owned by LCC whoever invents with obligation by BAC to assign all rights to inventions made by its employees may have anti-trust implications, even whether the parties are not competitors.

In the context of a technology licence, an obligation on a licensee to assign (as opposed to license non-exclusively) rights to improvements to a licensor is considered potentially anti-competitive and unenforceable under EC competition law (see guidance of Technology Transfer Block Exemption Regulation 240/96 . Such an obligation is "black listed" under Art 3(6)).

In the context of joint R&D there is nothing specific on this point in the existing R&D Block Exemption Regulation No. 418/85, nor in the recently published proposals for a new R&D regulation and accompanying guidelines on horizontal agreements.

The existing regulation simply requires in Art 2(b)) that all the parties to an R&D collaboration must have access to the results of the joint R&D; and that where the collaboration is limited to R&D which stops short of joint exploitation of the results each party must be free to exploit the results and any necessary pre-existing technical knowledge independently (Art 2(c)) if the collaboration is to benefit from an automatic exemption.

The new proposals (aimed to take effect from 1 January 2001) contain similar requirements.

Provided these "access" conditions are met by appropriate licences there seems no reason in principle why ownership could not be centralised, while still retaining the benefits of an automatic exemption.

Note however that the Regulation does not aim to exempt restrictions that are not "indispensable". Art 6 of the existing Regulation (and Art 5 of the proposed new one) detail "black listed" restrictions or prohibitions which will deprive an R&D agreement of an automatic exemption.

These include (new Art 5(a)) where the parties are restricted in their freedom to carry out research and development independently or in co-operation with third parties in a field unconnected with that to which the R&D relates or, after its completion, in the field to which it relates or in a connected field.

Centralised ownership of patent rights must clearly therefore not have this consequence, or indeed any of the other consequences listed in Art 5.

As for obliging employees to assign their rights to other parties, the discussions above on ownership, unenforceability of agreements which diminish rights, and the need to beware changing terms of employment without consent, are relevant.

Note also:

- to be enforceable the terms of licences should similarly either not contain any provisions contrary to Art 85(1) or should be exempted by specific notification or block exemption
- whether or not the existing or proposed new R&D block exemption regulation will apply will depend on whether or not the parties are competitors, their respective shares of the relevant market etc
- a field of use restriction in a conventional technology licence is not restrictive of competition (the licensee is simply given a limited licence). The existing R&D regulation stipulates that field of use restrictions are acceptable. Query however whether obliging one party to give up its general rights to another by assignment in return for a limited licence is an "indispensable" restraint when retention of its rights and a suitable licence to the other party would suffice
- joint R&D or exploitation of the results includes allocation of work between the parties by way of specialisation in research, development or exploitation. This could include allocation to BAC during the term of the co-operation of the right to exploit the results in the automobile industry
- the exemption is limited in terms. The term differs depending on whether or not the parties are competitors, and on levels of market shares enjoyed or achieved.
- if different or more restrictive terms that those contemplated by the Regulation are desired, these will need to be the subject of a specific exemption.

ALLOCATION OF OWNERSHIP BY EMPLOYMENT

The considerations in the UK will be similar to those mentioned for the US. For practical and competition law purposes, the terms of the collaboration should by suitable licences give all parties such access to the results of the R&D and freedom to exploit the results as they reasonably require.

ALLOCATION OF OWNERSHIP BY SUBJECT-MATTER

Again, simular considerations will arise in the UK, and any restrictions on access to results or exploitation will need assessment for competition law purposes.

CROSS LICENCES MAY BE NECESSARY

Again, similar considerations apply in the UK. As to rights of joint owners of UK patents however, there is an important difference. While co-owners may themselves exploit their rights independently, a co-owner may not license, assign or mortgage a share in the patent without the consent of the other(s) (s36).

Field of use restrictions in patent licences are in principle no problem. But bear in mind the general rules

about access to the rights of joint R&D and rights to exploit them. Tighter restrictions will need specific justification and exemption

BACKGROUND TECHNOLOGY

Similar considerations apply in the UK. The existing and proposed new R&D block exemption regulation specifically mention the need for each party post-R&D to be free to exploit not only the results but also any necessary pre-existing technical knowledge.

If the joint development agreement provides for joint ownership by BAC and LCC of some inventions and patents, what contract terms are needed to protect each party's exclusive markets?

There is a big difference in the rights of co-owners of UK compared with US patents. While co-owners are free themselves to make, use or sell under a joint patent they may not license, assign or mortgage without the consent of the other(s).

Otherwise similar considerations arise to those described, and as always, competition issues need to be addressed.

As the following discussions will show it is always good practice for co-owners of a patent carefully to regulate their respective rights and obligations in a suitable co-ownership agreement.

If BAC and LCC jointly own a patent on a painting system that uses a unique paint formulation, will sale of the paint by LCC give the purchaser rights under the patent? If so, how can the agreement restrict that effect?

Under UK patent law co-owners have equal undivided shares in the patent (s36(1)). Each may do "in respect of the invention concerned, for his own benefit and without the consent of .. the [others] ... any act which would (otherwise) amount to an infringement of the patent concerned" (s36(2)).

So each co-owner may himself (or through his agent) for example make, use, sell or import a patented product, or use a patented process without infringing the patent.

Each co-owner may also as a proprietor supply another with the essential means for putting the invention into effect without infringing. To be an infringement under s60(2) the supply must be made by someone other than the proprietor (or a co-proprietor - see s60(2) read with s36 and s66).

This does not protect his customer. A person who does one of the acts specified in s60 "without the consent of the proprietor of the patent" infringes. By s66(1)(b) the term "proprietor" in the context of co-ownership refers to the person or persons required by s36 to give the requisite consent.

As we have seen above one co-owner may not license without the consent of the other(s). This presumably includes authorising another (including a customer for the essential ingredient) to use a patented system. The customer remains at the mercy of another non-consenting co-owner.

So while LCC may supply a customer with the unique paint, the customer may not use it in the patented painting system without getting BAC's consent too.

What provisions should be included regarding obtaining patent protection on inventions made during the course of the R&D?

Similar considerations to these discussed for the US will apply in the UK. Clearly the parties need to agree, and co-operate closely regarding a patent strategy.

What provisions, if any, are necessary to permit one or both parties to enforce jointly-owned or exclusively licensed patents?

Here we see a very significant difference between the positions in the US and the UK.

In the UK each co-owner has the rights of the proprietor as regards infringement. One co-owner may sue for infringement without joining the other as co-plaintiff. In such a case the other co-owner(s) must at least be made party to the proceedings as nominal defendant(s). But, in stark contrast with the US, there is no need to secure the co-operation of a co-owner to sue.

In practice however co-operation in the further conduct of the litigation will be required. For unless this is secured, the complainant will be severely restricted in his ability to negotiate a settlement. He needs the consent of his co-owner to any licence.

As in the US it will always be good practice to include provisions governing the handling of infringements (and litigation generally) in the agreement.

Allocations of Ownership of Inventions in Joint Development Agreements — The Malaysian Perspective by Timothy Siaw

Since the paper by Mr. O'Reilly appearing earlier in this issue of les Nouvelles very thoroughly sets out the US position on the hypothetical case, I will only highlight where there are differences in Malaysia.

INVENTIONS MADE BY EMPLOYEES

Unlike in the US, an invention made by an employee who had used data or means placed at his disposal by the employer accrues to the employer even if his contract of employment does not require him to engage in any inventive activity. The employee will be entitled to equitable remuneration that may be fixed by the Court.

An inventor's right to further remuneration in the event that the invention acquires an economic value much greater than the parties could have reasonably foreseen at the time of concluding of the contract of employment or the execution of the work cannot be restricted by contract.

ASSIGNMENT OF INVENTIONS FROM EMPLOYEES TO EMPLOYERS

The Patents Act provides that the rights to a patent for an employee's invention "accrues to" as compared to "deemed to be transferred" the employer. For the avoidance of doubt, employers should include a clause in the employment contract for an automatic assignment of legal title to itself of all rights and patents to the inventions that are made by its employees.

ALLOCATIONS OF RIGHTS TO THE RESULTS OF R&D

The various permutations set out in Mr. O'Reilley's paper are also possible in Malaysia:

- Allocation of all ownership rights to one party who will license the other.
- Creation of a separate entity to own all the rights

An entity resident in Malaysia must not file an application outside Malaysia within 2 months of filing in Malaysia without the permission from the Registrar. Malaysia is not yet a PCT member

- Allocation of ownership by employment/subject matter.

Separate the individual contributions made by employees of the parties into separate patent applications.

EXPLOITATION OF THE RESULTS OF R&D

Under the Patents Act, in the absence of any agreement to the contrary, joint owners of a patent application or patent may, separately,

- assign or transmit their rights or
- exploit the patented invention or
- take action against an infringer

but may only jointly

- withdraw the patent application,
- surrender the patent or
- conclude a licence contract

INFRINGEMENT PROCEEDINGS

Any licensee, may, if he proves that the owner of the patent refuses or fails to institute legal proceedings against an infringer within three months of receipt of the licensee's request, may institute proceeding in his own name. Notwithstanding the 3-month notice period, the Court may grant an appropriate injunction to avoid substantial damage upon application by the licensee.

PATENTED PROCESS AND THE PRODUCTS OF THE PROCESS

The exclusive rights in relation to a patent in respect of a process includes the exploitation i.e. making, importing, offering for sale, selling or using the product obtained directly by means of the process.

IMPLIED TERMS AND CONDITIONS

Under the Sale of Goods Act and common law, unless expressly excluded, it could be implied that the purchaser of a patented product has also been granted the licence to use any patented system necessary for the use or enjoyment of the product.

Timothy Siaw is a partner at Tay & Partners, Kuala Lumpur, Malaysia

of payment made by the industrial company is decisive. Sometimes a compromise can be found in right of first refusal or exclusive option to royalty bearing exclusive license to the future patents owned by the research organisation, arising from the research, granted to the industrial company. The royalty rate to be paid by the industrial company to the scientific organisation in case of executing an option is usually also agreed in the R&D Agreement. If the industrial company elects not to execute its right of first refusal or option right, the scientific institution will be free to negotiate licenses with third parties.

If the joint development agreement provides for joint ownership of some inventions and patents' what contract terms are needed to protect each party's exclusive markets?

The Czech Patent Law states that each of the joint owners shall have the right to work the invention. It means that the joint owner can fully exploit the patent but granting a license shall require, in order to be valid, the consent of all joint owners.

Concerning the exclusive exploitation of the patent by the parties it is necessary to define in the agreement the rights of both parties e.g. exclusivity for a special product, for group of product, field of use, for certain patent claim, or exclusivity for certain territories to each party.

How to address various situations, arising as a consequence of one jointly owned patent and an arrangement whereby one of joint owners exploits exclusively certain field of use and owns additional patents?

Such situations have to be adequately addressed in the in the R&D Agreement or in the Co-operation Agreement. The tools to resolve variety of possible situations and business interests available to Licensors and Licensees in the Czech Republic are as follows:

- exclusive right to use the joint patent in one field of use (one product, one claim, etc.) for one party and for another field of use (product, claim, etc) for the other party
- right of the joint owners to use the joint patent in different territories
- clear restrictions for a purchaser

What provisions should be included regarding obtaining patent protection on inventions made during the course of R&D?

The Czech Patent Law gives the ownership of rights to patents protecting inventions made in the course of working duties to inventors or their employers.

When one contracting party acts together with another party under the scope of the agreement on joint research and development, the following principles apply:

- Inventions made solely by employees of one party would belong solely to this party and inventions made solely by employees of the other party would be solely owned by the other party
- All rights and title to inventions made jointly by personnel of both parties shall vest as to an undivided interest of both parties It is recommended to conclude a Joint Patent Agreement, as described under point 3 above, with following basic principles:
- the parties obligate themselves to assist in preparation of documents required for filing of patent application
- the patent application shall be filled in the name of both parties, each of the parties having the appropriate share
- the parties will make an agreement who of them will file and prosecute the patent application, conduct the patent procedure and be responsible to pay all connected fees (costs are usually shared between the parties)
- the patent application shall include names of the employees of both parties as co-inventors in case they took part on the creation of the invention
- parties will agree the extent of foreign patent protection and will share the costs according to their share on the invention, or parties make an agreement on dividing the territories of their interest which they will pay
- If a party does not wish to participate on patent protection of the joint invention in certain territory, the other party may file the joint invention in such territory on its own cost

It is also necessary to set clear rules on publications, e.g.:

- publication or whatever disclosure concerning research results requires written agreement of both parties
- In the event a patent application is to be filed under the scope of the R&D agreement the publication of related results may be delayed until this application is extended in other countries during the priority period

When appropriate and necessary, licenses under background technology and pre-existing patents owned by one party, are granted to the other party for research purposes only, nonexclusively and royalty free.

What provisions, if any, are necessary to permit one or both parties to enforce jointly-owned or exclusively licensed patents?

Where the rights derived from one patent belong to more than one party, the relationship between joint owners shall be governed by general rules of law on shares in joint ownership governed in the Czech Republic Code of Civil Law.

Unless otherwise agreed by the joint owners:

- each of them shall have the right to work the invention (to exploit the patent without accounting to the joint owner)
- sealing of a license agreement shall require, in order to be valid, the consent of all joint owners
- each of the joint owners may independently take action against infringement of the rights derived from the patent
- Assignment of the patent shall require the consent of all joint owners. Failing the consent of other joint owners, each joint owner may only assign his share to another joint owner; assignment to a third party may only be effected if none of the joint owners has accepted a written

offer of assignment within a period of one month

- An exclusive licensee cannot take an independent action against infringers.

In the R&D Agreement, (or in the Joint Patent Agreement) it is also necessary to set who will take the action against infringement, who will pay expenses and how the costs will be borne by the parties. The provision on co-operation in providing documents and witnesses is also necessary.

REFERENCES

Civil code No. 40/1964

Commercial code No. 513/1991

Law No. 527/1990 on inventions, industrial designs and rationalisation proposals

Law No 478/1992 on utility models

Law 137/1995 on trade marks

Allocations of Ownership of Inventions in Joint Development Agreements — The Czech Republic Perspective

by Jana Kühnlová and Vladimira Husáková

INTRODUCTION — CURRENT STATE OF IP PROTECTION IN THE CZECH REPUBLIC

To understand the current situation of the IP protection and joint patent ownership matters in the Czech Republic, it is necessary to look briefly into the history.

In the second half of the last century the protection of industrial property in Austro-Hungarian Empire and consequently in Bohemia and Moravia was established by Austrian Decree of 11th January 1897.

After Czechoslovakia was founded in 1918, new state has adopted the former Austrian legal regulations on industrial property Czechoslovakia after the 1st World War belonged among the European states, which immediately after their creation consolidated also their relationships in the area of industrial property rights. In Prague there was established a Patent Office and a Patent Law Court. As regards the international relations, as early as 1919 Czechoslovakia acceded to the Paris Convention for Protection of Industrial Property, and Madrid Agreement Concerning the International Registration of Marks.

Successful development in Czechoslovakia of that time was disrupted by the 2nd World War and then terminated after 1948 by the change of political system, which lasted 40 years. The existing patent system, compatible to that of developed industrial countries, was almost liquidated. From 1972 in Czechoslovakia the legal protection of inventions and industrial designs in the form of Authorship Certificates was introduced. This form did not acknowledge market economy and industrial competition. The owner did not have an exclusive right to the filed invention, but any organisation in Czechoslovakia was entitled to use such invention, under an automatic, non-exclusive, unpaid license. Only because of membership in the Paris Convention the patent protection was retained together with the Authorship Certificate. However, only patent owners from foreign countries could use proper patent protection. Though Czech companies and research institutions cooperated a great deal, their joint results belonged not only to them, but also to any other company from Czechoslovakia, who would wish to use or exploit them in any manner. Questions of ownership were disregarded. Co-operation with foreign companies was almost non-existent, for political reasons.

After 1989, following the change of political system, the economic and societal attitudes have assumed a new direction. Market mechanism was applied to the economy. The entire legal system was rebuilt and new legal regulations on Industrial Property formed a part of this change. Now, the IP legal regulations are harmonised with EU, which the Czech Republic is expected to access within 3 - 6 years. However, it is to be understood, that in the Czech business environment, which has begun to develop freely as a market economy only 10 years ago, there still is not a great awareness of IP matters, and insufficient experience with effective use of IP. The legal system does not address certain finer points (including details of consequences of joint patent ownership), and no court trials on these issues have been held yet. Accumulated practical experience in joint patent ownership matters is rather limited.

If the Ownership of Inventions made by collaborating parties were not allocated during the course of the R&D program, who would own the inventions and patent?

In the Czech Republic, when the rights derived from one patent belong to more than one party, the relationship between joint owners shall be governed by general rules of law on shares in joint ownership as stated in Code of Civil Law No. 40/1964.

Citation from 40/1964, §137: "Non-existence of an agreement results in equal shares of joint owners."

It is therefore advisable to agree the proportion of the contribution of inventors to the joint patent in order to avoid future problems. If there is a legal dispute, parties have to prove the inventor's share and the material support they gave to the joint project.

Should contracting parties have aggreements with their employees regarding inventions made during the course of the R&D program?

The Czech law states that the right to the patent on an invention made by an inventor as part of his task derived from an employment relationship shall pass to the employer, unless otherwise laid down by contract. The Czech law determines the duty of the inventor who has made an invention within the framework of an employment relationship to

Jana Kühnlová and Vladimira Husáková are affiliated with INVENTIA s.r.o.

report the fact without delay, in writing, to his employer and to make available to him the documents required for assessing the invention.

Where the employer does not claim the right to the patent within a period of three months as from receipt of the communication, the right shall revert to the inventor. Both the employer and the employee are required to maintain secrecy of the invention with respect to third parties.

Any inventor who has made an invention under an employment relationship shall be entitled, where the employer claims the right to the patent, to appropriate remuneration from the employer.

Termination of the employment relationship shall not prejudice the rights and obligations deriving from the above mentioned provisions.

Some employers (especially the organisations or companies where many inventions are created) find it useful to have an agreement for each inventor and each patent, and an internal regulations on inventor's remuneration.

Citation from the Law No. 527/1990:§9 "Inventions belonging to an Enterprise

(1) Where an inventor has made an invention as part of his tasks deriving from an employment relationship, by reason of the fact that he is a member of an organisation or of any other similar employment relationship, by reason of the fact that he is a member of an organisation or of any other similar employment relationship (hereinafter referred to as "the employment relationship"), the right to the patent shall pass to the employer, unless otherwise laid down by contract. The right of inventorship as such shall remain unaffected.

(2) An inventor who has made an invention within the framework of an employment relationship shall be required to report the fact without delay, in writing, to his employer and to communicate to him the documents required for assessing the invention

(3) Where the employer does not claim the right to the patent within a period of three months as from receipt of the communication referred to in subsection (2), the right shall revert to the inventor. Both the employer and the employee shall be required to maintain the secrecy of the invention with respect to third parties.

(4) Any inventor who has made an invention under an employment relationship shall be entitled, where the employer claims the right to the patent, to appropriate remuneration, the technical and economic importance of the invention and the benefit obtained from possible working or other use, together with the material contribution by the employer to the making of the invention and the extend of the inventor's service obligations shall be taken into consideration. Where remuneration that has already been paid is obviously no longer proportionate to the benefit obtained from working or other subsequent use of the invention, the inventor shall be entitled to additional remuneration

§10 Termination of the employment relationship between the inventor and the employer shall not prejudice the rights and obligation deriving from the provisions of Section 9 "

How can rights to exploit the results of R&D be allocated in the joint development agreement?

- **Co-operation between scientific institutions**

Agreement on co-operation between scientific institutions has usually conditions stipulating how a commercialisation of patents and/or know-how acquired under the framework of the Agreement will be managed. We recommend to our clients to conclude a separate Agreement on Commercialisation of Joint Patent (Patents), where all aspects of filing, issuance, maintenance and enforcement of Contract Patent (Patents) and its future commercialisation are set. It appears useful to appoint an Explcitation Manager who will have the responsibility for exploitation and use of contract patents.

As regards licensing, each of the co-owners may seek and propose potential licensees or assignees, but only Exploitation Manager can negotiate, conclude or modify the license agreements or assignments. Exploitation Manager shall inform the other party or parties of the progress in negotiation and after approval of the intended license agreement or assignment by other contracting party shall sign the agreement. The Exploitation Manager shall than provide a copy of any licenses or assignments to the other party.

Exploitation revenue shall be paid directly to Exploitation Manager who agrees to distribute (after deduction of patent prosecution expenses and other costs) the agreed proportionate share to the other party or parties

- **Co-operation between a scientific institution and an industrial company.**

When a scientific organisation and an industrial company co-operate, the later is obviously interested in obtaining exclusive rights on results acquired under R&D Agreement. The ownership of rights depends on financial and/or material support of the scientific organisation by the industrial company. The industrial companies usually see as most significant their financial support to the research and tend to underestimate the investment, made by the scientific organisations over the years, resulting in acquired knowledge and accumulated experience. Industrial companies quite often state it as their imperative condition that they will be the sole owners of all intellectual property, arising from the research project they finance. In is often the policy of industrial companies to avoid having any joint patents, as joint patents can be complicated and troublesome. Their point of view and their policy is understandable. On the other hand, some research organisations have equally determined policy to keep ownership of all intellectual property, including joint patents, and license their IP to industry. In such cases compromises are looked for and the size

Allocations of Ownership of Inventions in Joint Development Agreements — The Japanese Perspective

by Kenichi Nakano

If the agreement between LCC and BAC does not allocate ownership of inventions made by their employees during the course of the R&D program, who would own the inventions and patents?

In Japan, if inventions are made by employees, the inventions are owned by the inventors unless an agreement exists between an employer and employees concerning ownership of the inventions.

The Japanese Patent Law Section 35 stipulated as follows regarding inventions invented by an employee.

Case 1: If an invention does not fall into the business scope of an employer, the inventor owns the invention.

Case 2: If an invention falls into the business scope of an employer, but an act or acts resulting in the invention were not part of the present or past duties of the employee, the inventor owns the invention.

Case 3: If an invention falls into the business scope of the employer, and an act or acts resulting in the invention were part of the present or past duties of the employee, the inventor owns the invention and the employer has a nonexclusive license on the patent right concerning the invention.

Japan differs from the U.S where an employer may be entitled to own a "shop right" or ownership of inventions in Case 2 or 3 regardless of the existence of an assignment agreement with an employee In Japan, an employer is not entitled to license or assign an employee's inventions or patents to third parties unless an assignment agreement has been completed with an employee

If an employer in Japan concludes an assignment agreement with employees concerning the inventions in Case 3, the ownership of inventions made in the course of R&D is the same as in the U.S.

Should LCC and BAC have agreements with their employees regarding inventions made during course of the R&D program?

Yes, LCC and BAC should have agreements with their employees to avoid the problems mentioned in relation to Question 1. Most employers in Japan require all employees to sign an employment contract that automatically assigns the employee's inventions and patent rights to the employer in above Case 3.

However, the Japanese Patent Law Section 35 states that in the case of an invention falling into the above Cases 1 or 2, any contract provision, or other stipulation providing in advance that the right to obtain a patent, or the patent right, shall pass to the employer, etc., or that the employee shall have an exclusive license on such invention, shall be null and void.

Before launching the joint R&D, both parties should provide assurance that any employment contract between an employer and an employee shall include the provision that all inventions falling in above Case 3 shall be assigned to the employer.

If BAC wants the exclusive rights to exploit the results of R&D in the automobile industry and LCC wants to exploit the R&D results elsewhere, how can rights be allocated in the joint development agreement?

There are various approaches that LCC and BAC can take to allocate exclusive rights in order to exploit the results of R&D, as outlined below.

OWNERSHIP ALLOCATED TO ONE PARTY

Approach 1: In the same way in the U.S., joint R&D in Japan entitles the risk of a prior art collision between LCC's patent applications and BAC's patent applications.

To avoid this problem, in this approach BAC assigns all inventions made during the joint R&D program to LCC under the joint R&D agreement. The joint R&D agreement may then include the provision that LCC grant to BAC an exclusive, royalty free, irrevocable license to such inventions and patents in the automobile or vehicle manufacturing field.

However, this Approach 1 may not generally be considered acceptable to Japanese companies compared with following Approach 2, because an exclusive licensee needs the consent of a patent owner to grant a license for the subject patent to a third party.

Approach 2: Step 1: LCC and BAC agree that all applications for inventions made during the Joint R&D program shall be filed at the Japanese PTO by one applicant, for example LCC. This means LCC would temporarily own the all inventions made during the joint R&D.

Step 2: When the patents have been registered, the applicant, LCC, will be changed to BAC in the automobile or vehicle manufacturing field. This means BAC would then have ownership of the patents related to the automobile or vehicle manufacturing field.

Step 3: Concerning registered patents which both LCC and BAC

Kenichi Nakano is a partener at A. Aoki, Ishida & Associates, Tokyo, Japan.

want to own, the applicant LCC is changed to LCC and BAC. This means LCC and BAC jointly own the patents concerned.

Step 4. Concerning jointly owned patents, BAC and LCC would agree in the joint R&D agreement that BAC owns the exclusive right to exploit the patents in the automobile or vehicle manufacturing field and LCC owns the exclusive right to exploit the patents in fields other than automobile or vehicle manufacturing.

The above approach may be easier to obtain approval for by the top management of LCC and BAC because the process is simple and both parties can share in the ownership of the patents.

Approach 3: Step 1: LCC and BCC jointly file all applications at the Japanese PTO for inventions made in the joint R&D program.

Step 2: After the concerned patents are registered, the name of the applicant will be changed from LCC and BAC to LCC or BAC according to the practical necessities of the parties.

__ In this way, BAC can basically own the patents related to the automobile or vehicle manufacturing field and LCC can own patents related to other fields.

Step 3: Concerning patents which both LCC and BAC want to own, the names of applicants LCC and BAC can be maintained as joint applicants

Step 4: Concerning such jointly owned patents, BAC and LCC would agree in the joint R&D agreement that BAC owns the exclusive right to exploit patents in the automobile or vehicle manufacturing fields and LCC owns the exclusive right to exploit patents in fields other than automobile or vehicle manufacturing.

ALLOCATION OF OWNERSHIP BY EMPLOYMENT

In Japan this is handled the same as in the U.S.

ALLOCATION OF OWNERSHIP BY SUBJECT MATTER

In Japan this is handled the same as in the U.S.

CROSS LICENSE MAY BE NECESSARY

In Japan this is handled the same as in the U.S.

LICENSES MAY BE NECESSARY UNDER BACKGROUND TECHNOLOGY

In Japan this is handled the same as in the U.S.

If the joint development agreement provides for joint ownership by BAC and LCC of some inventions and patents, what contract terms are needed to protect each party's exclusive market?

Again as in the U.S., LCC would grant an exclusive license to BAC to exploit patents in the automobile and vehicle manufacturing field, and BAC would grant an exclusive license to LCC to exploit patents other than the automobile and vehicle manufacturing field.

In the U.S., Joint R&D agreement must provide protection against either party's free licensing to third parties because a joint owner can grant a license for use of a patent to any third parties without the consent of the other joint owner.

However, Japanese Patent Law Section 73 states that a joint owner of a patent right may not transfer his share and may grant neither an exclusive license nor a nonexclusive license without the consent of the other joint owners. Because of this article, a specific protection clause in a joint R&D to prevent unlimited assignment and/or licensing to third parties is not necessary

If BAC and LCC jointly own a patent on a painting system that uses a unique paint formulation, will sale of the paint by LCC give the purchaser rights under the patent? If so, how can the agreement restrict that effect?

In Japan this is handled the same as in the U.S.

What provision should be included regarding obtaining patent protection on inventions made during the course of the R&D?

In Japan this is handled the same as in the U.S.

What provisions, if any, are necessary to permit one or both parties to enforce jointly owned or exclusively licensed patents?

There is a considerable difference in this regard between Japan and the U.S., as described below.

1) Exclusive license

An exclusive licensee in Japan can enforce his exclusive right without the consent of the patent owner. Furthermore, an exclusive licensee need not ask the patent owner to participate in any infringement action.

2) Jointly owned patent

There is no rule in the Japanese Patent Law covering a joint owner's position. According to Japanese Civil Law 252, a joint owner can individually sue an infringer. If the joint owner wins a case demanding an injunction, there would be no problems resulting for the other joint owners of the patent right. However, if the joint owner was defeated in such a case, there is some question as to whether the other joint owners could sue the same infringer again. It is believed that the other joint owners could sue the infringer again because they have the right to protect their own profits.

Concerning a request for payment of damages from an infringer, each joint owner can individually take action for only because the damages would be different for each joint owner.

These concepts have already been clearly adopted in Japanese Copyright Law Section 117.

Because of Japanese Patent Law Section 73 as explained in relation to Question 4, in Japan, there is no risk that any joint owner may license a jointly owned patent to an infringer without the consent of the other joint owners who sued the infringer.

Allocations of Ownership of Inventions in Joint Development Agreements — The Canadian Perspective

by John H. Woodley

If the agreement between LCC and BAC does not allocate ownership of inventions made by their employees during the course of the R&D program, who would own the inventions and patents?

Under the Canadian Patent Act, a person who believes he is the first inventor of an invention is entitled to apply for a patent on the invention.[1] If the inventor assigns his rights in the invention to another person, then the proper applicant will be the person to whom the invention was assigned.[2]

Where two or more persons by their joint efforts make an invention, then the joint inventors become joint applicants. It is the person who conceived the idea, not the one who commercializes it who is the inventor, having regard to the invention as claimed.[3] A person seeking to displace the presumption of joint inventorship made by the fact that more than one inventor signed the petition, bears a heavy onus of proof to displace such a presumption.[4] On discovering that one or more further applicants should have been joined in applying for a patent, such further applicant or applicants may be joined by a request accompanied by a new petition naming all of the original inventors together with the added inventors.[5] Similarly, where it appears that one or more of the joint inventors had no part in the invention, the application may be revised.[6]

The Patent Act does not provide guidance as to the ownership of patents and patent applications and thus it is the common law that governs the issue of ownership.

Unlike the case in the United States, or the more recent trend in England, the general rule in Canada is that an employee producing an invention, even on the employer's time and using the employer's equipment, can patent it in the absence of a contrary agreement,[7] unless the employer can establish at least a partial beneficial interest.[8] The exception is when a person is hired to develop an invention or is duty bound to do so, in which case equitable principles may be invoked to enforce trust obligations to the employer.[9] When a person is hired for the express purpose of developing an invention, whatever new material, method or process the inventor discovers belongs to the inventor's employer.[10] It is an implied term in a contract of employment that an employee is trustee for the employer in any invention made in the course of research as an employee, unless such implied term is displaced by a contrary agreement having legal effect.[11] However, the invention belongs to the employee, in the absence of agreement, if the invention does not directly arise out of the work assigned to the employee; each case must be examined on its own facts.[12] The court should consider the nature and context of the employer relationship. Exceptions to the presumptions which favour the inventive employee include:

(1) an express contract to the contrary, or

(2) where the person was employed for the purpose of inventing or innovating which requires considering nature and context of the employer/employee relationship which include:

(a) the express purpose of employment;

(b) whether the employee at the time he was hired had previously made inventions;

(c) whether an employer had incentive plans encouraging product development;

(d) whether conduct of the employer once the invention had been created suggested ownership was held by the employer;

(e) whether the invention is the product of a problem the employee was instructed to solve, (i.e., whether it was his duty to make inventions);

(f) whether the employee's inventions arose following his consultation through normal company channels (i.e., was help sought);

(g) whether the employee was dealing with highly confidential information or confidential work;

(h) whether it was a term of the servant's employment that he could not use the idea which he developed to his own advantage.[13]

Considering the hypothetical posed above if these employees are employed for the purpose of inventing or innovating and if the

1 Patent Act, RSC 1985, c P-4, s 2

2 Id

3 *Comstock Canada v Electec Ltd*, 38 CPR (3d) 29 at 51 (Ont H C.)

4 *Windsurfing International Inc v Bic Sports Inc*, (1985) 8 CPR (3d) 241 (FCA)

5 Patent Act, RSC 1985, c P-4, s 31(4)

6 Id s 31(3)

7 *Piper v Piper* (1904) 3 OWR 451 at 455 (Ont CA)

8 Spearman v Renfrew Molybdenum Mines Ltd (1919) 15 OWN 343 at 344-45 (Ont HC); affd (1920) 17 OWN 406 (OntCA)

9 *Spirrol Corp v Putti* (1976) 25 CPR (2d) 260 at 262-63 (BCCA)

10 Devoe-Holbein Inc v Yam (1984), 2 CIPR 229 (Que S C.)

11 *WJ Gage Ltd v Sugdent* [1967] 2 O R 151 at 165-166 (HC)

12 *Comstock Canada v Electec Ltd*, 38 CPR (3d) 29 at 86 (Ont H C.)

13 Id

John H. Woodley is a partner at Sim & McBurney.

inventions are made in the course of their employment, it is likely those inventions will be the property of their respective employers. If an invention is jointly made by employees of different employers, the invention will be jointly owned by their respective employers Assuming all inventors are employees of LCC or BAC and there is no contractual allocation of ownership, inventions made solely by LCC employees would be owned by LCC, inventions made solely by employees of BAC would be owned by BAC, and inventions made by employees of both parties would be jointly owned by BAC and LCC.

Should LCC and BAC have agreements with their employees regarding inventions made during the course of the R&D program?

As noted above the Canadian Patent act does not address issues of ownership of inventions and the patents maturing therefrom. Where the invention arises in the context of employment the question of ownership becomes a contractual issue. Where the employee is retained for the express purpose of making inventions, or of directing his activities toward research or scientific pursuits in the course of which inventions will probably be made, there is little doubt that the invention will belong to the employer. However, in the absence of an agreement there will be uncertainty. General rules for such cases are not readily established and the nature of the employer-employee relationship must be examined. Was the employee hired for the express purpose of inventing? Was the idea underlying the invention, or method of accomplishing it, communicated by him to his employer? Does the invention reside in the underlying idea, or in the method of accomplishing it? Was the relationship between the employer and employee of a confidential character? In some instances it may be that an invention is not solely that of either the employer or the employee but is a joint invention.[14] Each case will of necessity be decided on its own facts. The Courts will consider what the employee was employed to do. If the invention falls within the scope of the employee's duties (particularly if the employee has been hired to solve problems) then the invention will belong to the employer. On the other hand, even if an employee is working on the inventions at the premises of the employer, if the invention is outside the scope of his employment, the invention will belong to the employee.[15] The American concept of a "shop right" has not been well received in Canadian law.[16]

In a dispute between two parties as to the true inventor of the invention disclosed in an issued patent, the Federal Court may grant any appropriate remedy. The scope of remedies includes a declaration of invalidity, a declaration of inventorship and ownership or any appropriate remedy known to the common law or equity. The court may order any entry in the records of the patent office relating to the title to a patent to be varied as to name the proper invention or owner.[17]

Clearly the way to avoid difficulties is to address these issues contractually at the outset of the employment relationship. There are many reasons for doing so, not the least of which is avoiding the cost and uncertainties of litigation at a later date. Moreover, there are a number of other issues that may be addressed contractually at the same time. The cooperation of a former employee may be needed after he has left the employer. The input of the inventor in analyzing the prior art or assisting in revising the patent claims may be needed, or the later cooperation of the inventor may be necessary in legal proceedings to enforce the patent. The former employee-inventor may develop improvements following his employment with the employer which the employer would like to acquire or license. These issues and others can be addressed at the outset by agreement with the employee.

Particularly where corporate entities are contemplating a joint development agreement it is important, to require each party to the joint development agreement to place each employee who is likely to work on the research and development project under an employment agreement which addresses these issues to allow the parties to fulfill their joint development agreement obligations.

If BAC wants the exclusive right to exploit the results of R&D in the automobile industry and LCC wants to exploit the R&D results elsewhere, how can rights be allocated in the joint development agreement?

In Canada, a patent may be assigned either as to the whole interest, or as to any part thereof, and may be licensed on an exclusive or non-exclusive basis, subject to whatever terms and conditions which parties may agree upon. However, absent agreement, the consequences of joint inventorship resulting in parties becoming co-owners of a Canadian patent may be quite different from the rules in other countries.

As noted earlier the Canadian Patent Act while providing for multiple inventors in the application process does not otherwise address issues of ownership and the exploitation and disposition of the respective rights of patent co-owners. Regard must therefore be had to the limited jurisprudence pertaining to the independent rights of a patent co-owner in connection with a jointly owned patent. The recent decision of the British Columbia Court of Appeal in *Forget v. Specialty Tools of Canada Inc.*[18] confirmed a number of principles found in earlier cases. First, Forget confirmed that a patent is a chose in action and as such is a per-

14 Russell's Patent (1857 2 DeG & J 130; Healey's Application (1859), Johnson 165

15 *Comstock Canada et al v Electec Ltd* (1991) 38 C.P.R. (3d) 29; *Vokes v Heather* (1945) 62 R.P.C. 135

16 *W.J. Gage Ltd v. Sugden* [1967] 2 O.R. 151 (H.C.)

17 *Comstock Canada et al v Electec Ltd* (1991) 38 C.P.R. (3d) 29

18 (1995) 62 C.P.R. (3d) 537

sonal right of property which can only be enforced by action, and not by taking physical possession. The effect of a patent is to exclude others from the exploitation of an invention rather than to confer rights with respect to that invention on the patent holder. Second, the Court held that the exclusive right to manufacture is an essential characteristic of the patent and any interpretation of the Patent Act which would have the effect of depriving a patent of this essential characteristic would defeat the purpose underlying this statute. The Court in Forget stated that in the case where more than one individual holds a patent as co-owner, anything which has the effect of diluting the exclusive right to manufacture which they collectively enjoy would likewise defeat the legislative purpose underlying the statute. As such the Court held that a co-owner could not dispose of anything less than his entire interest in a patent without first obtaining the consent of the other co-owners. By disposing of only a portion of his interest, one co-owner dilutes the interest which each of the other co-owners have in the patent. The Court noted that if the partial disposition of an interest in a patent is not subject to the consent of the other co-owners there would be no effective monopoly of manufacture and the essential characteristic of a patent would be destroyed. Thus, the consent of the other co-owners is required to preserve the essential nature of the patent.

The consent of patent co-owners is also required in connection with a license of the patent technology. The Court in Forget held that the grant of a license by a co-owner, no matter what its terms, disposes of something less than the entirety of that co-owner's interest in the patent and as such it must be subject to the control of the other co-owners, which is exercised by means of their right to withhold or grant consent.

No consent however is required of the other co-owners where one seeks to dispose of the entirety of one's interest in a patent. Applying the foregoing principles, the Court noted, that it is the dilution of the effective monopoly of the patent collectively enjoyed by all co-owners, which makes the valid disposition by one of only a portion of his interest subject to the consent of the others. The potential for such dilution does not exist where one co-owner disposes of his entire interest in a patent. As may be readily appreciated, the Canadian rules with regard to jointly owned patents are quite different from those in the United States where each co-owner is entitled to license others without the consent of the other co-owners or any obligation to account.[19] This right of a U.S. patent co-owner to grant non-exclusive licenses has been described as putting each co-owner "at the mercy" of any other co-owner.[20]

As regards exploitation of patented technology in Canada, it is open to a co-owner of a patent to do so oneself for ones own profit without accounting to the other patent co-owners, provided that such exploitation is by the patentee itself and not by an independent contractor. Thus, with regard to exploitation of a patent by the patentees themselves, they are not in regard to the profits therefrom trustees for one another.

Clearly in light of the foregoing in order to facilitate their commercial objectives and to avoid problems arising from the consequences of joint inventorship of the technologies resulting from the parties' joint research and development project, the parties should address in a joint development agreement their chief concerns.

Typically, in the absence of an agreement between the parties, and presuming that the usual employment agreements are in place assigning all project confidential information, trade-secrets, know how, inventions and patent rights in connection therewith to the employer, the rights of the parties to the inventions will follow the employers. That is BAC will be the owner of inventions made solely by its employees and LCC will be the owner of inventions made solely by its employees: BAC and LCC will be joint owners of inventions made by the joint efforts of their respective employees. A common approach would be to expressly confirm this allocation of ownership rights by agreement. One problem with allocating ownership in this fashion is that the parties may not end up owning rights which are critical to their commercial objectives as it may be the other party's employees who are solely responsible for the particular invention of interest and from which technology they are now excluded. To address this issue the parties may provide by suitable cross license provisions exclusive field rights for their respective areas of commercial endeavour. For example, LCC would grant an exclusive license under patents solely and jointly owned by LCC to BAC, but only for the automobile manufacturing industry and BAC would grant a similar license under patents solely and jointly owned by it, for all fields except for the automobile manufacturing industry.

There are alternatives to the foregoing approach which may allow the parties to better achieve their commercial objectives. One approach is to allocate ownership by subject matter of interest to a party. For example, since LCC is in the paint manufacturing business and is primarily interested in paint products, the joint development agreement could provide that all inventions and patents related to paint formulations will be owned by LCC. On the other hand since BAC's business is automobile manufacturing and its primary interests in this regard are paint systems and methods, the joint development agreement could provide that all inventions and patents relating to paint systems and methods will be owned by BAC. To ensure that notwithstanding the source of the invention each party obtains the rights to the technology that falls within its area of interest, the parties would agree to assign to the

19 *Schering Corp v Roussel-UCLAF SA*, 104 F. 3d 341 at 343 (Fed Cir 1997)

20 *Ethicon Inc v U S Surgical Corp*, 135 F. 3d 1456 at 1468 (Fed Cir 1998)

other rights in such inventions or patents that fall within subject matter identified as relevant to its business.

Another alternative to facilitate the parties' commercial objectives is to provide that all inventions and patents made during the research and development project will be owned by one entity to which all parties will assign their interests The parties' joint development agreement would then provide for the applicable exclusive field of use licenses necessary to allow the parties to exploit the technology for their commercial objectives. The parties may set up a separate joint venture entity for this purpose or may choose one of the parties for example, LCC to be the owner of all inventions and patents. BAC's objectives would be met in this latter instance by obtaining an exclusive field of use licence permitting it to use the inventions and patents in the automobile industry and excluding LCC from this field of use.

Lastly, it is important for the parties to address in their joint development agreement any pre-existing inventions, patents or trade secrets which may be relevant or necessary for the other party to exploit the technology arising from the joint research and development project. It will assist BAC little if a key patent owned by LCC prior to their joint project effectively blocks BAC's use of the jointly developed technology. Therefore, the joint development agreement must provide for the applicable licenses to preexisting inventions and patents that are relevant and necessary to the commercial exploitation of the results of the joint research and development project by the parties

If the joint development agreement provides for joint ownership by BAC and LCC of some inventions and patents, what contract terms are needed to protect each party's exclusive markets?

As noted above joint ownership of inventions and patents in Canada may have consequences which may differ from the rules applicable in other countries. While a patent co-owner may itself part with the whole of its interest in the patent or exploit the patent for its sole purposes any other activity in the nature of exploiting a patent will require the consent of the other co-owners.

If, for example, LCC and BAC jointly own a patent on a paint formulation, BAC may not license LCD's competitor under the patent without LCD's consent. Since LCC wants to have exclusive rights to paint formulations made during their joint research and development, if it wants to commercialize the same beyond using the same for its own purposes then the rights which it seeks must be addressed in the joint development agreement.

One approach, as discussed above, is cross exclusive field of use licenses. If BAC grants to LCC under BAC's interest in the patents an exclusive license for all fields outside of automobile manufacture, then BAC will have no right to license a third party to compete with LCC.

Parties to a joint development agreement which are competitors in any market must always be mindful of competition law issues. In Canada, competition law matters may arise under the criminal remedies sections of the Competition Act or under the reviewable matters part of the Act which falls under the jurisdiction of the Competition Tribunal. Parties should be particularly sensitive to these concerns when they are the dominant market participants as s. 79 of the Competition Act, which makes reviewable conduct an abuse of dominant position may have the widest scope of all of the Act's provisions. Moreover, though little used, Section 32 of the Competition Act provides various remedies in the event a license contains terms which might constitute an abuse of the patent.

Another approach which the parties may consider is an agreement that the parties are permitted to license other parties subject the agreed upon license terms which would include the requirement for the licensing party to account for royalties to the other party for its interest in the jointly owned patents.

If BAC and LCC jointly own a patent on a painting system that uses a unique paint formulation, will sale of the paint by LCC give the purchaser rights under the patent? If so, how can the agreement restrict that effect?

Where a patentee has sold an article covered by his or her patent without imposing any condition at the time of sale, the purchaser is impliedly licensed to deal with the article free of any objection by the patentee. The patentee's rights are said to be exhausted with respect to that particular article. If, however, the patentee made it known to the initial purchaser, at the time of sale, that the patentee was imposing a condition restricting the manufacture, sale or use of the article, it would be an infringement of the Canadian patent for the initial purchaser to do in Canada anything in contravention of such condition. With regard to the patentee's exclusive right to sell, knowledge of a restriction on further resale at the time of subpurchase, has been held to be binding on the subpurchaser, as a matter of patent law, where the subpurchaser took with knowledge of the condition.[21] While it is clear that one co-owner may without consent of the other, exploit the patent for his own purposes without accounting to the other co-owners, on principle it is less clear that any sale of the patented product by such co-owner may carry with it an implied license to deal with the article free of any claim by all co-owners of the patent. While logic compels that the sale of a patented product without restrictions by the co-owner of a patent should exhaust patentee's rights in the sold article. It must be kept in mind that in Canada the law is clear that a patent co-owner may not exploit a patent by granting a license or sub-licenses, without the concurrence of the other co-owner or co-owners of the patent.[22] The underlying ration-

21 *National Phonograph Co of Australia Ltd. v. Menck*, [1911] A.C. 336 (P.C.)

22 *Forget v. Special Tools of Canada Inc.*, (1993) 48 C.P.R. (3d) 323

ale is that to permit a co-owner to license without the consent of the other co-owners would undermine their rights by destroying the value f the patent. While there is no case directly on point it may be useful to distinguish the implied license that accompanies the sale of an patented product, which does not impinge on this principle, from typical licensing transactions which have the effect of undermining the rights of the patent co-owners, such as a license to manufacture the patented products.

It is not a given in Canada that the sale of the paint by LCC will convey to the purchaser the right to use the patented system. As a joint owner of the patent, LCC cannot grant a license to the jointly owned patent pertaining tp the system and method. LCC would not be restricted from selling the patented paint product, and presumably this would include the implied license to any such purchaser to resell the product Though there is no clear law in connection with the exhaustion of rights pertaining to the sale of products which are the subject of jointly-owned patents

Clearly there are advantages to providing certainty through the parties agreement. Several options exist LCC could grant BAC an exclusive license under the jointly-owned patent to the automobile field. Moreover, such license should impose an obligation upon LCC to restrict all of purchasers of patented products from reselling such products into the automobile field Moreover, LCC should be obliged to notify all of its customers of this resale condition at the time of sale. This would meet BAC's objectives with respect to its field of endeavor, the automobile manufacturing industry and would clearly preclude LCC from selling to BAC's customers or competitors in the automobile field.

Again to avoid any confusion in this regard the joint development agreement should require LCC to notify each of its paint customers that purchase of the paint which is the subject of this jointly-owned patent does not convey a license to use the system, method or paint in the automobile field. As noted earlier a condition imposed at the time of sale by the patentee restricting the manufacture, sale or use of the article, would make it an infringement of the Canadian patent for the initial purchaser to do in Canada anything in contravention of such condition.

What provisions should be included regarding obtaining patent protection on inventions made during the course of the R&D?

There are advantages to having one party responsible for the global patent strategy, including prosecution and maintenance. Where the parties agree to making one party responsible in this regard it will still be necessary to provide for the other parties input Even where the invention and any resulting patents are exclusively licensed to the other party in a field of use, the other party may have an interest in what countries patents are obtained and the scope of such patents For example, if one party is responsible for obtaining patent protection for all joint inventions, a joint development agreement should provide for the other party's input into which countries patents will be sought, the scope of patents to be obtained, and any decisions to abandon a patent application or patent

A common practice, is to have one party select countries for patent filing and then allow the other party to add to the list There are a variety of ways to address patent filing and maintenance costs. Parties may agree to share all costs. Alternatively, parties may share costs pertaining to those countries in which both parties elect to obtain patent protection.

Because BAC is interested in the automobile field, BAC will want to ensure that the global patent strategy, and the scope of the patent claims specifically address its interests in that field. The joint development agreement must provide BAC with an appropriate level of input and control pertaining to the patents which affect its field of interest. On the other hand if LCC, subject to BAC's input, is to be given control over the global patent strategy, LCC will seek to avoid having imposed upon it unreasonable obligations. In this regard, the joint development agreement must address issues, such as the extent of responsibility in the patent prosecution process; for example, under what circumstances may a patent application be abandoned; must LCC appeal refusals by the Patent Office examiners; on the other hand the agreement must also address the point in time when BAC will have the option to take over prosecution and maintenance of the patents.

What provisions, if any, are necessary to permit one or both parties to enforce jointly-owned or exclusively licensed patents?

In Canada the patentee and all person claiming under the patentee may bring an action for infringement.[23] Persons "claiming under" the patentee include both exclusive and non-exclusive licensees, who may bring action for damages they have sustained.[24] If the action is brought by a party claiming under the patentee such as a licensee, the patentee must be a party either as co-plaintiff or, if the patentee refuses to join as a co-plaintiff, then as a defendant. If the joint development agreement provides for exclusive field of use cross licenses, any action brought by one party will require that the other party be made a party to the action, either as co-plaintiff or as defendant. An action for infringement of a patent may be commenced in the appropriate court of the province where the infringement occurred,[25] or in the Trial Division of the Federal Court of Canada.[26] Only the Federal Court may declare the patent invalid as against everyone by way of an action for impeachment.[27]

The provincial courts can only declare a patent invalid as between

23 Patent Act, RSC 1985, C. P-4, ss. 55(1) and (3)
24 *Armstrong Cork Canada Ltd. v. Comco Industries Ltd*, [1982] 1 SCR 907 at 917-920
25 Patent Act, RSC 1985, C. P-4, s. 54(1)
26 Patent Act, RSC 1985, C. P-4, s. 54(2)
27 Patent Act, RSC 1985, C. P-4, s. 60(1)

the parties to an action for infringement.[28] Where an action for infringement has been commenced in a provincial court and another action for impeachment in the Federal Court, the Courts are reluctant to stay an action in favour of the other particularly at the interlocutory stages.[29] Thus, in Canada multiple actions concerning the same issues may arise.

Unlike the requirements in other jurisdictions if a patent is jointly owned by LCC and BAC, it is not necessary to name both parties in a suit for infringement to maintain the action. Nonetheless, there may be advantages to having both parties before the Court, or at least participating in a cooperative manner in support of the action. A joint development agreement, therefore, should include a provision that requires each joint owner to cooperate with the other joint owner in any infringement suit The joint development agreement may place limitations on the cooperation which a joint owner must provide. Moreover, the agreement should also allocate costs of the litigation and the proceeds therefrom amongst the joint owners. Additionally, other issues may arise in connection with the litigation which may impact on the parties' rights in the patents. For example, should there be any constraints on the parameters of trial strategy pertaining to admissions affecting patent validity or claim construction. An attempt to address these issues or a mechanism for responding to them should be provided for in the joint development agreement

Since a joint owner's consent will be required to any license of the patent, there is little concern for the issues raised by recent U.S decisions.[30] However, the ability to grant a license may be required as part of a settlement of an infringement suit and the joint development agreement may subject to appropriate terms, require the parties' cooperation in this regard.

SUMMARY

In Canada the general approach to the allocation of ownership and rights in situations where two or more parties cooperate in the development of a technology or a product of common interest is not dissimilar from that applicable in other major countries, in particular the United States. However, as seen above there are some nuances unique to Canadian patent law which should not be overlooked in a joint development agreement involving a Canadian party or otherwise subject to Canadian law. In particular, first, as noted above, unlike the case in the United States, or the more recent trend in England, the general rule in Canada is that an employee producing an invention, even on the employer's time and using the employer's equipment, will be the party entitled to patent the invention in the absence of an agreement to the contrary; the exception being where an employee is specifically hired for the purpose of engaging in such development activities. Second, the consent of all patent co-owners is required in order for a co-owner to dispose of less than its entire interest; a license is considered to be a disposition requiring the consent of the other co-owners. Lastly, in Canada, multiple actions in connection with the same patent are not unknown and non-exclusive licensees may bring an action for infringement. These unique aspects of the law applicable to inventions in Canada should be kept in mind when negotiating a joint development agreement that may be subject to Canadian law.

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28 *Dominion Mail Order Products v. Weider* [1977] 1 FC 141 at 143-144 (FCTD)

29 Eli Lilly & Co v Novopharm Ltd (1995), 60 CPR (3d) 417 at 432 (FCTD), *Maple Creek Manufacturing & Marketing Inc v Hanson Marketing Inc* (1997), 72 CPR (3d) 417 (Ont Gen Div)

30 *Schering Corp v Roussel-UCLAF SA*, 104 F. 3d 341 at 343 (Fed. Cir. 1997), *Ethicon, Inc. v. U.S Surgical Corp*, 135 F. 3d 1456 at 1468 (Fed. Cir. 1998)

Why Trade Secrets Can Be So Valuable

BY JAMES POOLEY*
and WALTER BRATIC**

The humble trade secret created on common law is viewed with greater reverence today. Why?

The lawyers for the U.S. high-tech company DSC Communications understandably cheered when they received a jury verdict for $369 million. But their client wasn't as happy. The case alleged theft of trade secrets against former employees who started their own company. The verdict (reduced by the judge to a mere $137 million) certainly was big. But the judge ultimately ruled that the verdict amounted to an election of remedies. DSC had in effect tendered a license to its new competitor, and could not obtain the injunction it wanted. *DSC Communications v. Next Level Communications*, 107 F.3d 322 (5th Cir. 1997).

We cite this case not for civil procedure, or for client relations (although it teaches lessons on both.) Rather, it stands as one recent example of how valuable trade secrets can be. Another is the judgment rendered in California in 1994 in the *Stac v. Microsoft* case, which is largely famous for awarding $120 million for patent infringement against Microsoft. Much less well known — but arguably more important — was the $13 million verdict in Microsoft's favor on its counterclaim for misappropriation of trade secrets, which contributed mightily to the evenutal settlement allowing Microsoft to acquire a portion of the much smaller company.

Through much of the 1990s the international business community was treated to extensive news coverage of corporate warfare in the General Motors lawsuit and criminal investigation launched against Volkswagen, over the departure of GM's famed executive Ignacio Lopez de Arriortua. Whatever might be said about the underlying motivations for this fistfight, obviously GM valued very highly Mr. Lopez' knowledge of its methods for achieving cost savings and economies of scale. Settled for $100 million after years of acrimony and expensive, diversionary litigation, the case exemplifies the emotional commitment behind trade secret disputes.

Put aside litigation. Business examples of trade secret focus are similarly common. G.D. Searle, owner of the Nutrasweet® brand of aspartame, has secured dominance in the artificial sweetener market, extending the effect of its now-expired patents, by keeping its manufacturing know-how a secret. In effect, no one can make the stuff, whatever name it's given, as cheaply as Searle. Many years ago, DuPont discovered a method of manufacturing a whitening agent now used in products from paper to foods. Opting for trade secret protection, the company still enjoys the commercial advantage of this invention, more than 40 years after a patent would have expired.

Why is it that the humble trade secret — this creature of the common law that seems frequently overlooked as the "fourth leg" (along with patent, copyright and trademark) of intellectual property law — has come to such prominence in the modern corporation's quest for intellectual capital? One answer is that all patents begin their life as trade secrets, while the application remains hidden from competitors and the public. Not that trade secrets depend for their value on eventual transformation into patents. Many companies employ a combination of trade secret and patent strategies to provide substantive protection to their innovations, in combination with a skilled work force and financial resources, to develop and maintain a competitive edge in product and services markets.

But a number of advantages appear when one considers the trade secret form of protection in the context of the modern information economy. Most importantly, it is the sheer breadth of subject matter coverage that distinguishes trade secrets. Consider the diagram showing the comparison of forms of IP.

We see that trade secret coverage extends far beyond that which applies to patents. Patents apply onlyto a subset of "technical" trade secrets — truly novel and useful inventions advancing the art of manufacture (or, of more recent vintage, methods of doing business on the Internet). As to technical information, trade secret law stretches much farther, for example, to cover all of the "negative data (inventions or processes that don't work, or work less well) that reflect the vast bulk of a company's research efforts. Technical secrets also include computer source code, mechanical drawings and the details of manufacturing processes. Frequently, trade secrets are referred to as "know-how" (although that term is not consistently used either in court decisions or in business transactions). Without legal protection for this information, competitors would be able to sprint almost abreast of any heavily-invested technology company simply by hiring away one or two knowledgeable employees.

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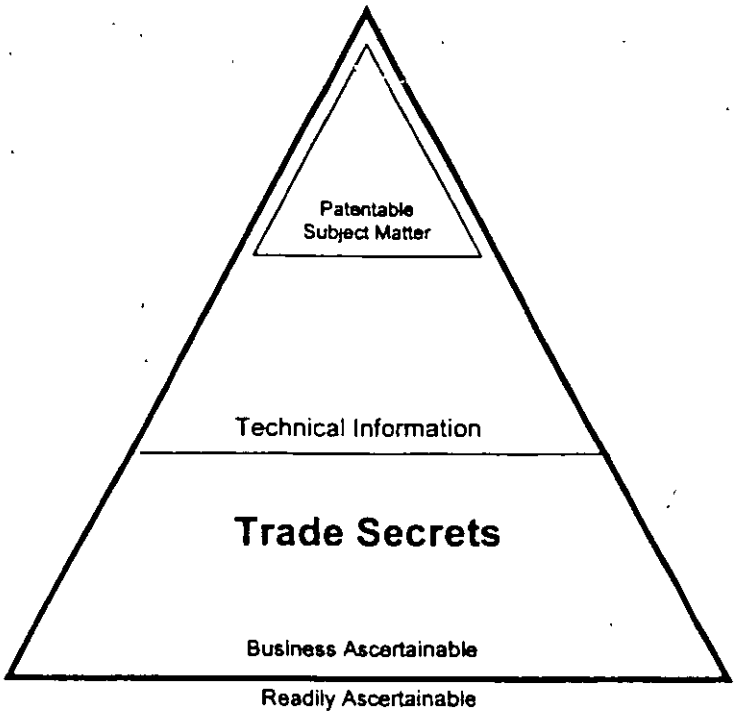
*Senior Partner, Gray, Cary Ware & Freidenrich, Palo Alto, California.
**Vice-Chairman, Technology & Dispute Resolution Consulting, Inc., Houston, Texas.

COMPARISION OF FORMS OF IP



◄ Beyond Technical Data ►

But trade secret protection goes well beyond technical data, to cover the (presumably) much larger universe of "business information," such as marketing plans, business strategies, and information about customers, employees and special sources of supply. Consider the modest example of a construction company using proprietary software to estimate labor costs against job requirements in formulating a bid. The raw data on cost and productivity, derived from years of experience, can be just as important in the finished bid as the technical software tool. If the success (or even survival) of the modern corporation depends on harnessing competitive advantage from information, then trade secret law supplies the necessary platform.

Excluded from coverage are areas that should be obvious: information that is generally known, for example, because it is found in a common reference work. Recognizing the importance of free mobility of labor, the law also refuses to support a property interest in the skills of an employee, even if developed on the job at the employer's expense. Finally, the definition of a trade secret will not extend to information that, although nominally secret, is so easy and quick to reproduce from known data that it is considered "readily ascertainable." But apart from these three exceptions, virtually all useful business information qualifies. Unlike patents, novelty is not a requirement. In fact, protectable trade secrets can exist in combinations of data, each bit of which is well known to the relevant industry.

Trade secrets differ from patents in other ways that affect their value. Notably, they can be relatively free and easy to obtain. Establishing a protectable secret requires no application or negotiation with a bureaucrat. It is evidenced not by a certificate, but by the records of the business that demonstrate the investment that produced it and the continuing efforts to protect its confidentiality. The front-end investments typical of a patent application — attorneys' fees and filing fees — are avoided. The flip side of this attribute, of course, if that the corporation's ability to protect the information in court is somewhat more in doubt.

Only in the context of litigation are trade secrets meaningfully defined and their ownership ascertained. Thus, while the investment in their creation may be nominal, their value is generally considered to be more difficult to determine and therefore more of a challenge to license for consideration, than is true of patents. This is one reason why obtaining patents as a defensive strategy will almost always be important, regardless of the relative merits of protecting some of a company's data as trade secrets. If a competitor asserts patent infringement, normally you cannot counter with your trade secrets. You must have relevant, valuable patents to "trade" for freedom to operate.

Enforcement is another mark of difference. Patents can be enforced against "innocent" infringers, while a misappropriation claim typically rests on demonstrating a confidential relationship with the owner somewhere in the chain of custody. But to make out a patent infringement claim, one must first discover the infringing act. This is why some technologies are more likely to be protected by trade secret law than by patent.

Processes defined in a patent, for example, are published for the world to see, but their unlicensed employment in a foreign facility is exceedingly hard to detect. A good example is the manufacture of semiconductor devices. The entire process of producing a chip — from growing the crystalline cylinder through masking and etching the wafer to final testing of the finished die — can encompass over a thousand separate procedures or processes. While some of these processes may produce a unique, identifiable "marker" in the end product, most are just variations on a standard "cookbook," and it is impossible to devine what recipe was used merely by examining the finished product. Accordingly, semiconductor process technology typically will be protected by a combination of some patents and a great deal of trade secrets.

◄ Obvious Difference ►

Perhaps the most obvious dif-

ference between a patent and a trade secret is that the former is public and the latter not. Indeed, one might wonder why the law would recognize such apparently opposing methods of protecting information. The patent grants a right to exclude others from making or selling an invention. This exception to the general prohibition on monopolies results from a specific bargain; the perceived benefit to the public — in inspiration for further technical advancements — from disclosure of the invention, in return for a time-limited right to exclude others from using it. In the U.S., it was argued for years that the patent system, enshrined in the Constitution, should preempt the "weaker" form of protection offered for secrets under the common law. This debate was settled in 1974 by the U.S. Supreme Court in *Kewanee Oil Co. v. Bicron Corp*, 416 U.S 470, the court explaining that the common law of trade secrecy served the valid social aims of respecting confidential relationships and promoting ethical business bevior, and as a practical matter complemented rather than interfered with the statutory patent right.

Since that time the acceptance of trade secret law has been even more firmly established by adoption in more than 40 states of the Uniform Trade Secrets Act, and by issuance in 1995 of the authoritative Restatement (Third) of Unfair Competition (covering trade secret law in sections 39 through 45).

For commercial purposes, the single most significant distinction between patents and trade secrets is exclusivity. A patent provides exclusionary rights against all others. But it lasts only 20 years, while a secret lives forever, at least potentially. And here is the major risk factor affecting the value of most trade secrets. Trade secret law provides no guaranteed exclusivity. Even assuming that the information continues to provide a competitive advantage,it must remain a *secret*. If it becomes known through carelessness, or if someone else discovers it, either independently or by "reverse engineering" a marketed product, the information is no longer exclusive. Of course, value may remain if an independent discoverer also treats the discovery as a secret. Indeed, it is common for the same secret to be in use by several competitors within an industry, who guard it (and the fact of its use) from all others. Only when the information becomes generally known does it lose its protectable status

But there can be no guarantee that another holder of secret information will keep it that way. In fact, under current U.S. law the inventor who elects trade secret protection accepts the risk that another inventor will seek and obtain patent protection, thereby excluding the original inventor from using his own creation. The U.S. patent system, unique in the world in this respect, awards priority of right to the first inventor, rather than to the first to file for a patent. However, in judging the novelty of an invention no consideration is given to any "prior art" that has been "suppressed or concealed." Legislation is currently under consideration in the Congress that would provide limited protection to "prior users" of business systems that otherwise would be the subject of patent infringement claims. But the subject remains highly controversial, and this risk is likely to remain with trade secret holders for the indefinite future.

◄ Important Factor ►

The inherent risk of independent development is therefore an important factor in valuation of a trade secret. In general terms, this is measured by the time, effort and expense that would be required for a competitor to duplicate the information. We call this the "head start," a measure frequently employed by courts who are asked to issue a perpetual injunction. While one response may be to invite the defendant to return to court if the secret becomes known without his fault, some judges attempt to predict the likely life of the claimed secret. That is of course an essentially speculative endeavor.

While many of the more mundane process secrets eventually either lose their value or become known, others, like Coca-Cola's famous formula, show no signs of deterioration. In this way, we might consider one aspect of a trade secret's value in reference to its relative ease of duplication. At one end of the scale is information that is so easy to discover that it cannot qualify for protection at all. At the other end are placed presumably impenetrable formulae like Coca-Cola's.

It is in the field of licensing that this essentially unpredictable life of trade secrets can be most useful. A pair of cases makes the point. In *Aronson v. Quick Point Pencil Co*, 440 U.S. 257 (1979), the Supreme Court upheld enforcement of a contract for royalties on a key chain covered by a pending patent application. The inventor was to be paid a 5% royalty if the patent issued, half that amount if it did not. After the device was on the market, where it could easily be reverse engineered, the patent application was rejected. But the licensee had to pay, even if it was the only entity in the world burdened by a royalty. And in *Warner-Lambert Pharmaceutical Company, Inc., v. John J. Reynolds, Inc.*, 178 F. Supp. 655 (S.D.N.Y. 1959), the court considered the 1880s-era license to the formula for Listerine®, still producing royalties to the licensor's heirs 25 years after the formula had become public. Again, the licensee was held permanently bound by the bargain it struck in return for early disclosure of the secret.

Most often this notion finds application in what are called "hybrid" licenses, consisting of grants under both patents and related trade secrets. While patent terms and their royalties expire in a matter of years, the indefinite life of trade secrets will normally support a virtually perpetual royalty obligation. There are two distinct risks faced by the hybrid licensor, however. The first is that the trade secret (or "know-how") must be sufficiently related to the patented technology to provide a meaningful combination, but still not violate the patent law's requirement that the "best mode" of employing the patented invention be disclosed in the original application.

The second risk is that the license

TM PROTECTION IN THE U.S.				
	Patent	Copyright	Trademark	Trade Secret
Law	Federal Statute	Federal Statute	Federal and State statute	Statecommon law, some statute
Protects	Inventions	Form of expression	Source/confusion	Information
Scope	Narrow	Narrow	Narrow	Narrow Broad
Lasts	20 years from filing	Author's life + term of years	Potentially Indefinite	Potentially Indefinite
Exclusivity	Yes	Yes (Subject to independent creation)	Yes	No
Registration	Yes	Yes	Yes	Yes

will be deemed an unlawful extension of the patent grant by unreasonably intertwining it with trade secret rights, even where the combination was not apparently designed to avoid the antitrust laws, as in *St. Regis Paper Co. v. Royal Industries*, 552 F.2d 309 (9th Cir. 1979). Therefore, licensors are well advised to carefully separate the consideration applicable to the patent and trade secret portions of a technology license.

The core aspect of trade secret value lies in the competitive advantage it confers on the business that owns the information. Successfully maintaining information as a secret counts for nothing if the information does not continue to provide an edge in comparison with the product or service output of one's competitors. Defining the scope and significance of that advantage is not always easy, in part because it requires differentiation from other factors that can affect a company's market position, revenues or profits. How does the information improve economies of scale, lower the cost of manufacture or distribution, or reduce failure rates or inventory obsolescence? There are no precise, one-size-fits-all formulae that calculate the value added to a business by a bit of trade secret information. But in making decisions about prospective investments in research, in production facilities and in other hard assets, business owners constantly make judgments based on the perception that the investment ultimately will provide a "leg up" on the competition. In the increasingly information-based economy, those judgments are made faster and with more consequence every day. It is trade secret law that provides primary protection to those investments. Without a thoughtful plan to identify and protect trade secrets, any business leaves a gaping hole in its intellectual property strategy.

LETTER TO EDITOR

The September *les Nouvelles* (page 9 of the blue section contained a review ("New Guide for Establishing Damage") of my new book *Intellectual Property Infringement Damages*. Brian G. Brunsvold wrote a very nice review for which I am grateful, but a misunderstanding was contained in his review. In his review he states that "The author unequivocally describes the 25% rule as applied to gross profits This is contrary to the reviewer's understanding and case law recognition that the 25% rule is applied to net profits before tax.")

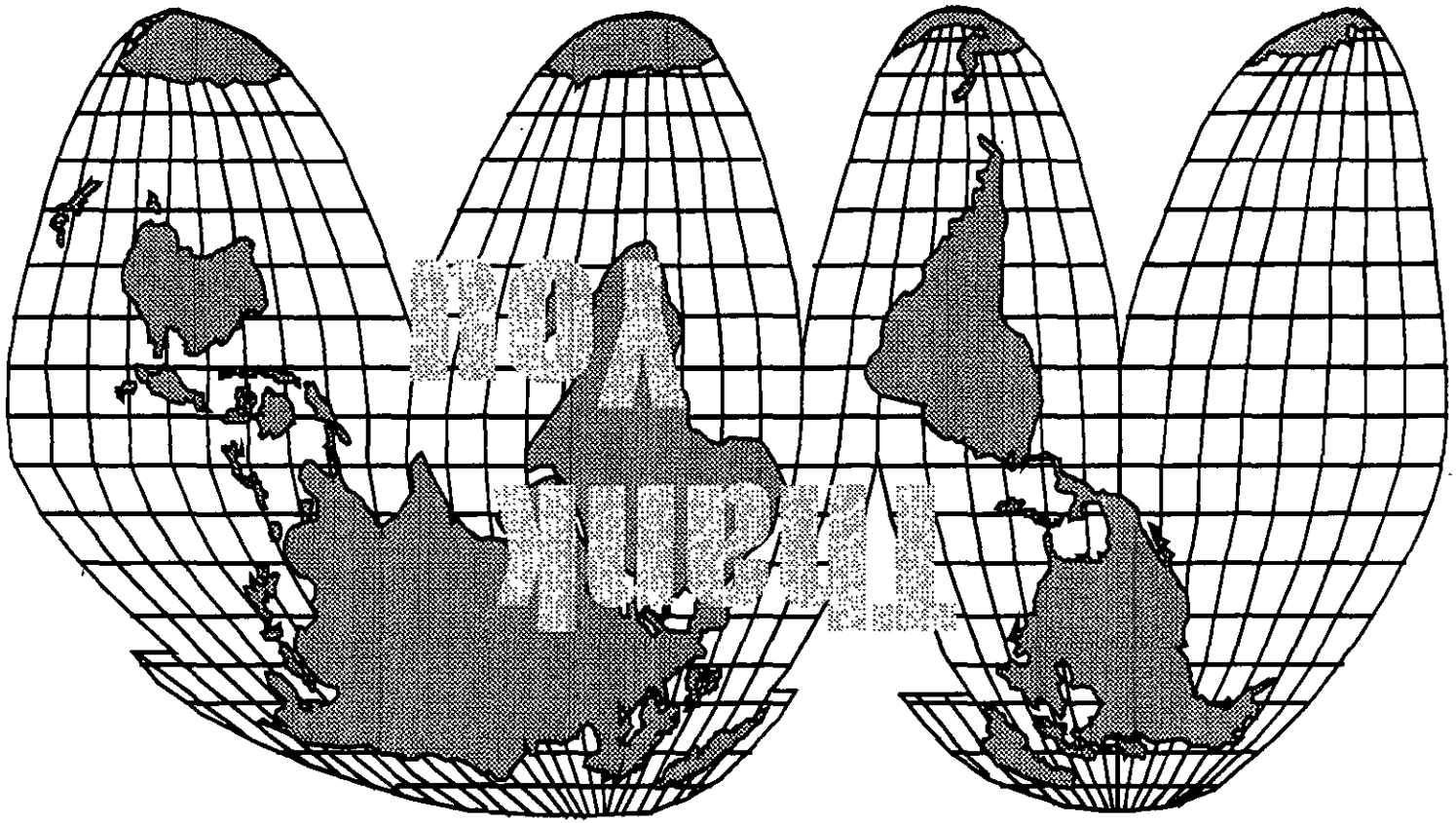
On pages 171 through 174, I talk about the 25% rule. I specifically talk about the way it must be applied for it to be useful and explain that it should be applied to operating income (in generally accepted accounting principle definitions operating profit is typically equivalent to net income before tax) and *not gross profits.*

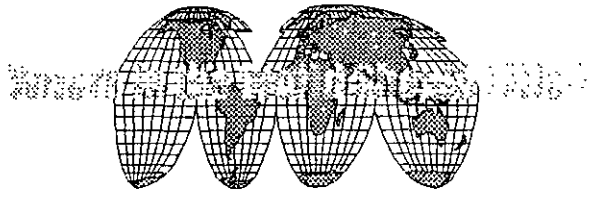
Mr. Brunsvold and I completely agree that the 25% rule should not be applied to gross profits. The only problem is that he has misstated my position.

Thank you for reviewing my book.

Sincerely,

Russell L. Parr

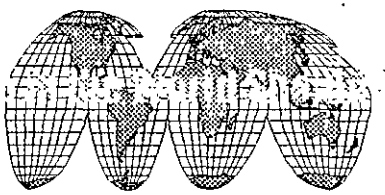




Concluding Thought

Filing a patent application is a business decision, and, like any major business decision, it should be carefully considered in light of applicable factors. The key factors discussed include *Cost, Ability to Obtain and Enforce, Need for Exclusivity, and Return on Investment.*

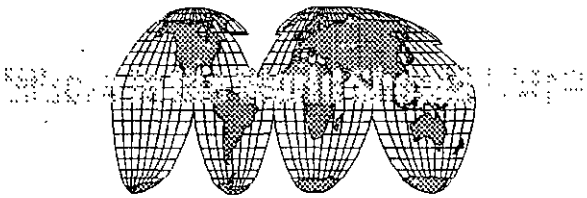
To maximize the chance for an adequate return on investment, the decision process cannot stop with the filing decision. The filing decision is just the first in a series of portfolio management decisions needed. At every logical decision point (PCT national phase entry, EPO validation, etc.) and also on a periodic basis (yearly, bi-yearly) each application/patent should be reviewed. Applications/patents no longer meeting your criterian should be abandoned.



Return on Investment

For applicants who license or sell their patents, an actual ROI can be determined from the investment and the revenue from the patent sale or license.

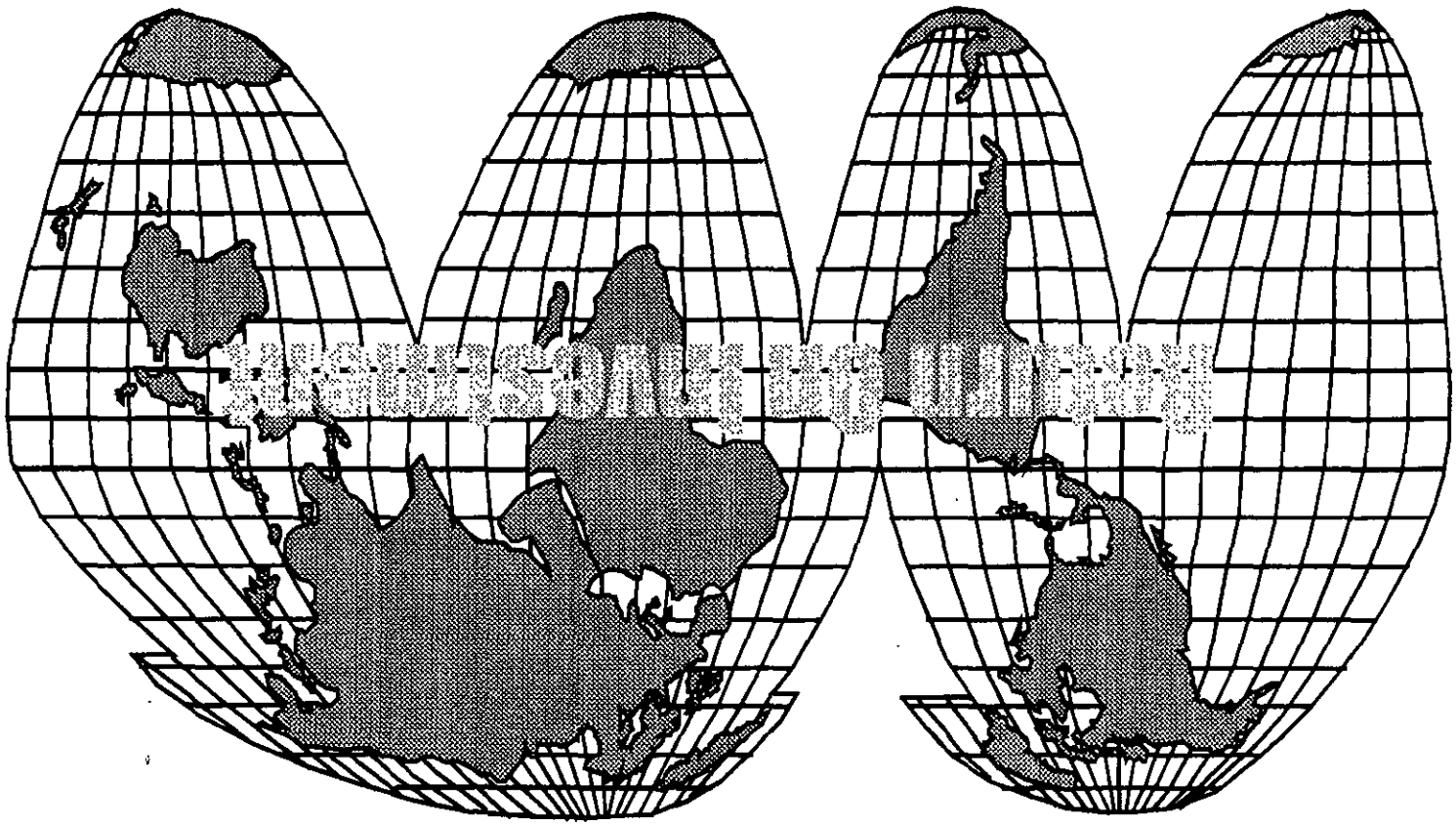
A patent is a business tool. In all cases, an applicant must expect an adequate *return on the investment* on money needed to obtain and maintain each patent application. A patent must "pay its own way," and provide adequate revenue (in one form or another) for the patent holder. If it does not, then the patent is a drain on the business and (most likely) should not have been filed.

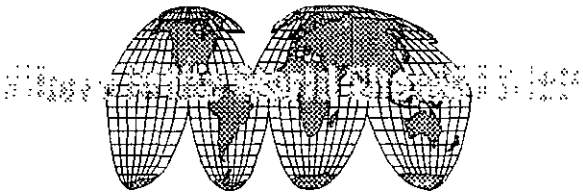


Return on Investment

Obtaining an adequate return on the investment (ROI) made in filing, obtaining and maintaining patent applications is a critical factor in the filing decision. Unfortunately neither the existence nor magnitude of the ROI is known at the time the applications are filed. One can only rely on past experience and future projections to try and "guesstimate" the expected ROI.

For applicants manufacturing and/or selling a product, learning the actual ROI may be impossible – you will never really know if the absence of a filed patent would have affected your commercial success, or *vice versa*.





The Business/Commercial Need for Exclusivity

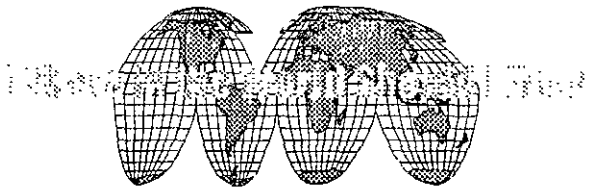
For what period of time and where is exclusivity commercially important? How long does it take to get a patent in these countries? What is the local law regarding provisional protection?

What is your patenting budget? What other developments are competing for this budget money?

And, as we have discussed...

What is the current state of the patent and enforcement system? Is it changing for the better? Worse?

What does it cost?

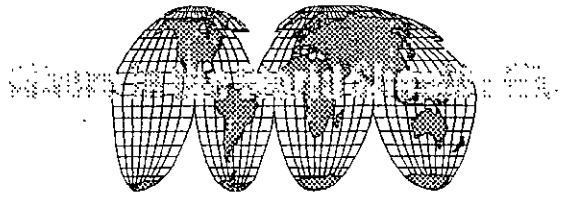


The Business/Commercial Need for Exclusivity

Is the invention on-point with your marketing strategy or is it defensive?

What are the consequences to your business if the invention is copied in some/all countries?

By geographic area, what is more important, exclusivity, freedom-to-practice or both?

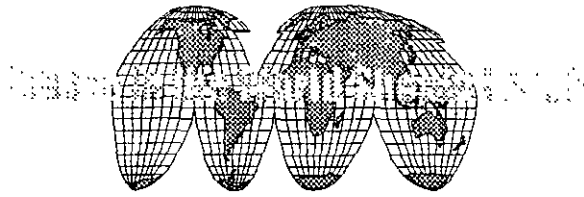


The Business/Commercial Need for Exclusivity

How easy (or difficult) would it be for a third party to copy the invention? Is there an incentive to copy your invention in "unprotected" countries?

How costly would it be for a third party to copy and market the invention?

What is the smallest market size that would economically justify a third party copying the invention?

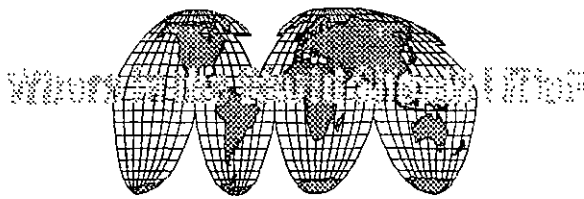


The Business/Commercial Need for Exclusivity

Where is the market for the invention – local, regional, global? Who is the customer for the invention? Who is the competition?

Where will the claimed product be manufactured or the claimed process used? Where does the competition manufacture its products?

How easy (or difficult) would it be for competition to design around the claimed invention? How long and what resources would it take?



The Business/Commercial Need for Exclusivity

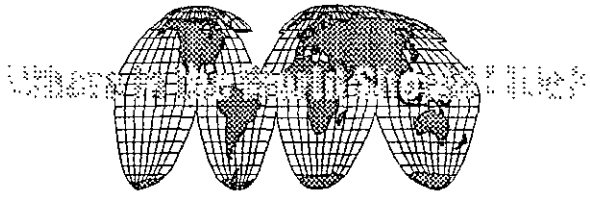
It is not possible to answer this question generically. The business needs of each individual applicant vary too greatly to give a stock formula or universal plan.

Each applicant must look at their individual business plans, past experience in similar considerations, future expectations – theirs and those of any expected licensees, to decide where to enter the national phase.

After considering their plans and past experiences, I suggest answering some basic questions to aid in making the final national phase entry decisions:

Remember:

ANY PLACE YOU DO FILE SHOULD PROVIDE AN ADEQUATE RETURN ON YOUR FILING INVESTMENT.



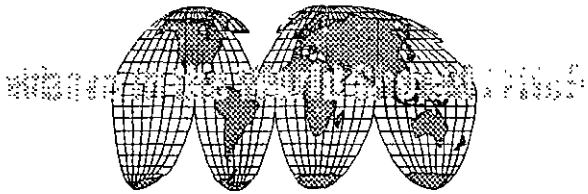
The Business/Commercial Need for Exclusivity

There are no formulas or schemes to make the filing decisions. Each filing decision will depend on a number of factors that vary dramatically across the business community; every business, every product category, has individual and diverse goals and needs.

To aid in making the business decision regarding where to file, I suggest each applicant consider a series of questions.

Remember:

ANY PLACE YOU DO FILE SHOULD PROVIDE AN ADEQUATE RETURN ON YOUR FILING INVESTMENT.



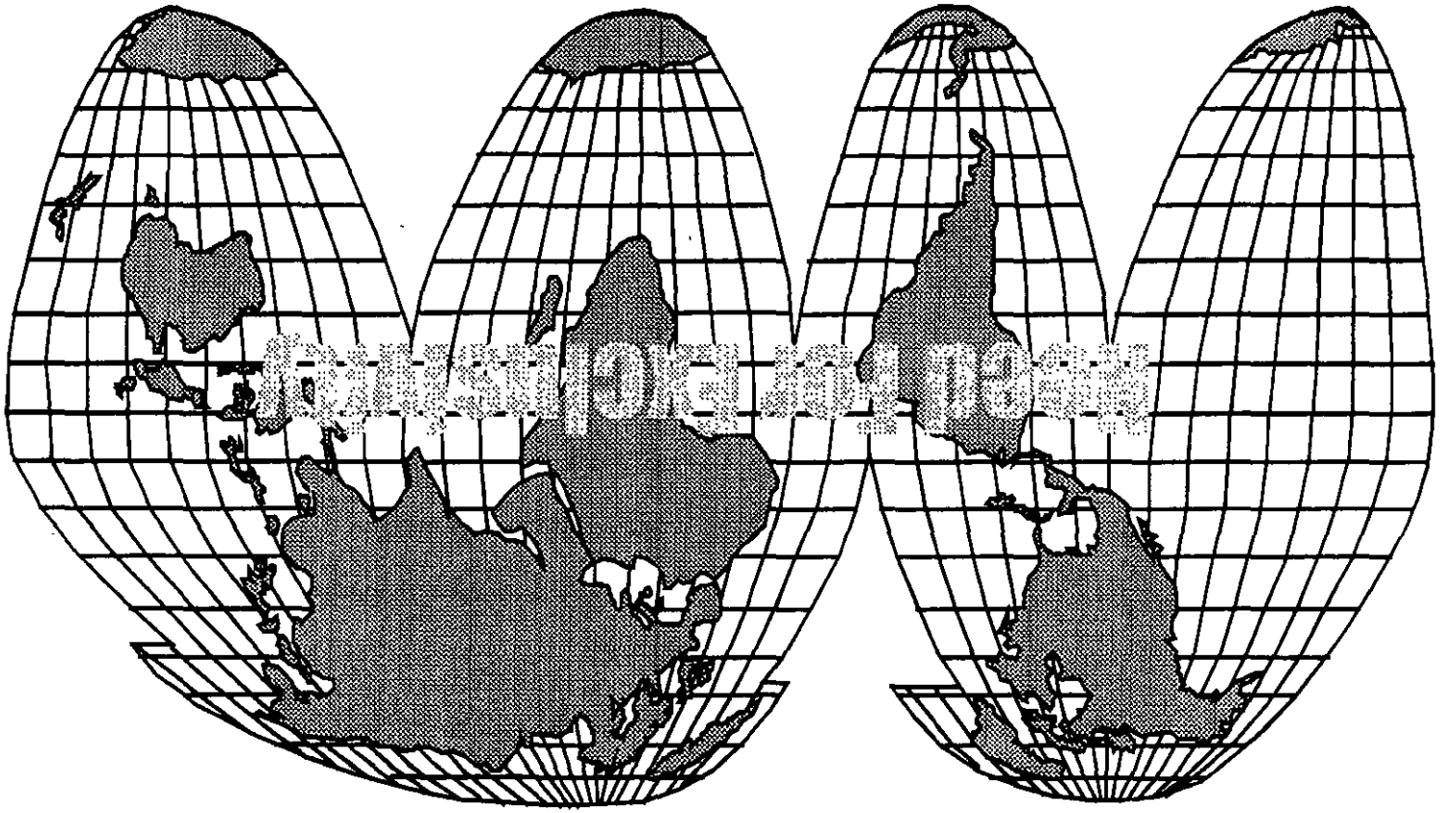
The Business/Commercial Need for Exclusivity

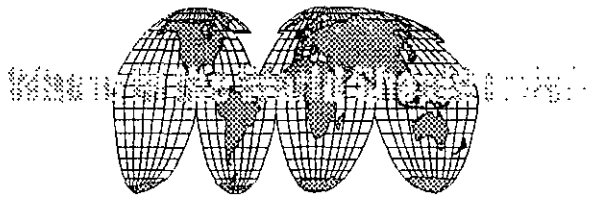
The single most important consideration in deciding where to file is the business need for exclusivity in the country under consideration.

A strong business need should outweigh every criterion we have previously discussed. If exclusivity is required for a successful business venture, then filing in a high cost country with a low rated patent and enforcement system may be justified.

Remember:

ANY PLACE YOU DON'T FILE YOU HAVE NO CLAIM TO EXCLUSIVITY.

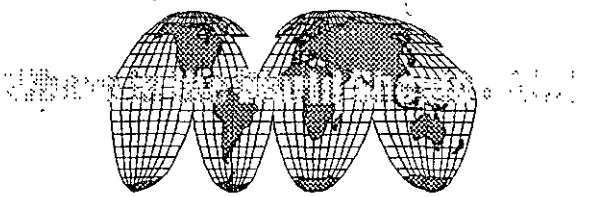




Final Thoughts Regarding Patent and Enforcement Systems

The "art" in factoring patent and enforcement system evaluation data into the consideration of where to file lies in the ability to "see the future" and judge where the system will be at the time you will be prosecuting and later enforcing your patent.

It is not easy, but for proper filing decisions, for proper patent portfolio management, and to help insure the maximum return on your IP protection expenditures, each applicant, each practitioner must keep up-to-date on the patent and enforcement systems of interest and continually update the relative position of each country in relation to their particular vision of the "ideal" system.



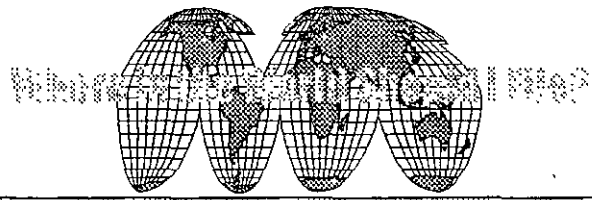
Final Thoughts Regarding Patent and Enforcement Systems

The life of a granted patent is 20 years from the date of filing.

The evaluation of the patent and enforcement systems that will impact your filing decision is made before this 20-year period begins.

Patent (and other) laws, patent offices and court systems can and do change with time. A poor enforcement system today may improve and be a good system some years in the future.

Your patent application will probably take from 3 to 5 years to grant. Enforcement will be sometime after that.



Caveats Regarding System Comparison Charts

- *Data used for comparisons are based on experience and opinions regarding the various systems from several sources.*
- *The data from the various sources plus any input from the USTR website for each listed country was compared to a set of criterion defining the features of a good, workable and realistic patent system as designed/envisioned by the evaluators. In other words, what attributes would a really good patent and enforcement system exhibit to completely meet the needs of one U.S. based multinational corporation.*
- *Evaluators having different desires and/or expectations from their vision of a good, workable and realistic patent system could arrive at a considerably different relative comparison between the various systems.*
- *This relative rating is not to be viewed as endorsing or detracting from any given country's patent and enforcement system.*
- *This relative comparison was made in 2002/2003.*

An Assessment of Various Patent Systems Against One User's Expectations

Country	PCT	EPO	WTO	Closer to Desired System ----------? ? ----------Farther from Desired System
NZ	P		W	
PE			W	
PK			W	
PH	P		W	
PO	P	E	W	
PT	P	E	W	
RU	P			
SA				
SE	P	E	W	
SG	P		W	
SK	P	E	W	
TW			W	
TH			W	
TR	P	E	W	
US	P		W	
VE			W	
VN	P			
ZA	P		W	

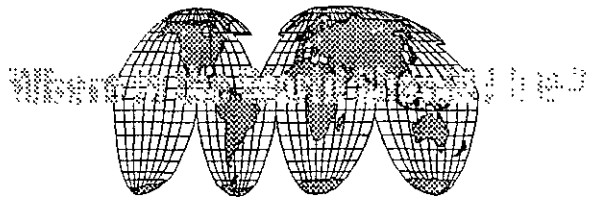
Patents in the World Today

An Assessment of Various Patent Systems Against One User's Expectations

Country	PCT	EPO	WTO	Closer to Desired System ----------? / ? ----------Farther from Desired System
FI	P	E	W	
FR	P	E	W	
GB	P	E	W	
GR	P	E	W	
HK			W	
HU	P	E	W	
IE	P	E	W	
ID			W	
IN	P		W	
IL	P		W	
IT	P	E	W	
JP	P		W	
KR	P		W	
LU	P	E	W	
MX	P		W	
MY			W	
NL	P	E	W	
NO	P		W	

An Assessment of Various Patent Systems Against One User's Expectations

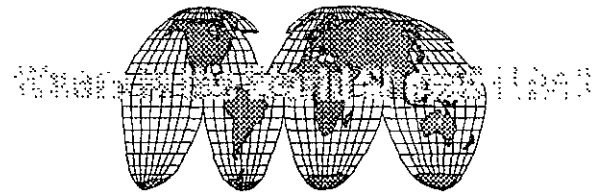
Country	PCT	EPO	WTO	? ..... Farther from Desired System ..... Closer to Desired System ..... ?
AR			W	
AT	P	E	W	
AU	P		W	
BD			W	
BE	P	E	W	
BR	P		W	
CH/LI	P	E	W	
CA	P		W	
CL			W	
CN	P		W	
CO	P		W	
CZ	P	E	W	
DE	P	E	W	
DK	P	E	W	
EG	P		W	
EP	P	-	-	
ES	P	E	W	



An Evaluation

The charts are not to be viewed as promoting or denigrating any countries patent or enforcement system. It simply provides a single opinion of how the various systems compare to one another using the standard of a "mythical" good, workable and realistic patent and enforcement system as envisioned by one group of people.

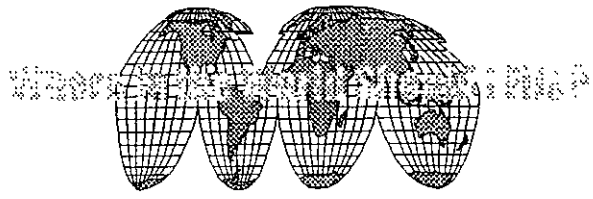
Different evaluators using a different set of criterion for their "standard patent and enforcement system" could easily come to very different conclusions regarding the relative position of the various systems.



An Evaluation

This data was compared to our own vision of a workable, competent, fair and realistic patent and enforcement system.

Our comparison between the experiential data from these multiple sources and our vision of a good, workable system resulted in a chart detailing our conclusions regarding the relative positions of various patent and enforcement systems to one another.



An Evaluation

Over the past several years we gathered input in an attempt to fully understand and evaluate a number of patent and legal systems. In our efforts, we gathered information, opinions and impressions from a wide variety of sources:

- Our own experience with filing, prosecution and enforcement
- The experience and conclusions of several global law firms
- The input and experience of our local agents in the specific countries
- Reports from the Office of the U.S. Trade Representative
- Any other experienced and trusted input on the subject

Key Considerations Relating to Enforcing the Patent Right

- **Political/judicial climate:**

  neutral or pro- or anti- patent

  neutral or pro- or anti- foreign patentee

- **Announced/Expected/Contemplated changes in enforcement procedures/systems/timing/costs**

- **Changes in political/judicial attitudes towards patents**

Key Considerations Relating to Enforcing the Patent Right

- **Available remedies for infringement under local law**

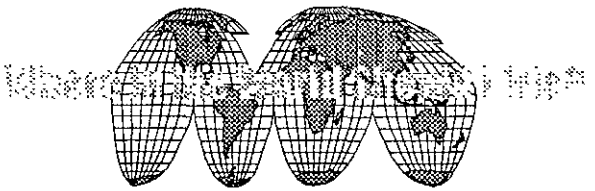
  Preliminary/permanent injunctions, Seizure actions, Border actions, Availability of and amounts of/limits on damage awards, Criminal/civil penalties, etc.

- **System(s) for dispute resolution**

  Civil courts, Patent courts, Patent Office proceedings, Separate validity and infringement proceedings, Mediation, Arbitration, etc.

- **How long for resolution? How expensive?**
- **Availability of and rules of discovery**
- **Technical competence of courts**
- **Historical level and direction of any court bias**

The Current and Expected Future State of the Patent Law



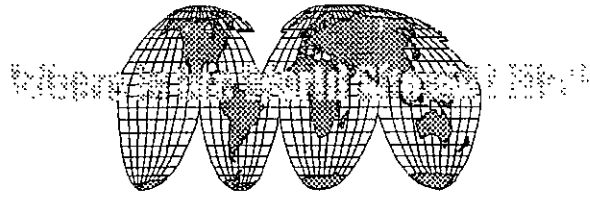
Considerations relating to obtaining an enforceable patent

Considerations relating to enforcing the patent right

Key Considerations Relating to the State of the Patent (and Other) Law(s)

- Working requirements/Consequences of non-working
- Parallel imports
- Prior user rights
- Border Protection
- Technology transfer requirements/restrictions
- Other legal and regulatory requirements/laws
- Announced/Expected/Contemplated changes in the Law

The Current and Expected Future State of the Patent Law



Considerations relating to obtaining an enforceable patent

Considerations relating to enforcing the patent right

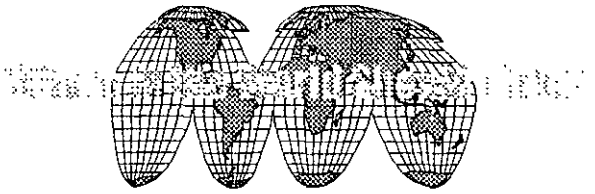
Key Considerations Relating to the State of the Patent (and Other) Law(s)

- **Patentable and unpatentable subject matter**

  Pharmaceuticals, Secondary Uses, Business Methods, Software, Methods of Medical Treatment, Chemical Compounds, etc.

- **Novelty standards** (for both publication and use)
- **"Grace" periods following public exposure**
- **GATT/TRIPS compliance; Paris Conv./WTO membership**
- **PCT and/or regional office membership**
- **Provisional protection following publication/laying open**

Considerations relating to obtaining an enforceable patent



The Current and Expected Future State of the Patent Law

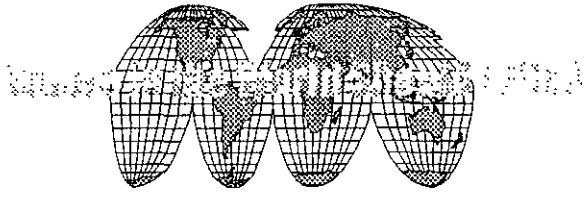
Considerations relating to enforcing the patent right

Key Considerations Relating to Obtaining a Patent

Of the key areas to consider when determining where to file, this is the least important because:

An applicant has some degree of control over the outcome of the filing and prosecution process. An applicant can prevent a case from issuing with a claim scope that is beyond which the applicant is entitled through amendment in light of all prior art known to the applicant. This is true regardless of the competency of the examination or any of the other factors imposed on the application by the particular patent system.

Considerations relating to obtaining an enforceable patent



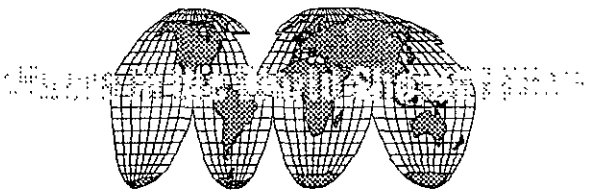
The Current and Expected Future State of the Patent Law

Considerations relating to enforcing the patent right

Key Considerations Relating to Obtaining a Patent

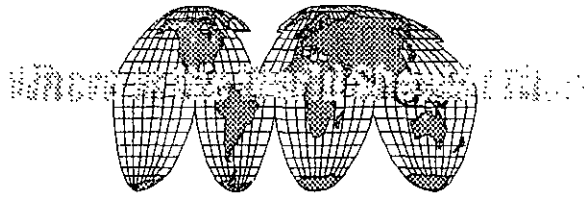
In short:

What are the chances of obtaining a valid and enforceable patent in a reasonable length of time and at a reasonable cost?



Key Considerations Relating to Obtaining a Patent

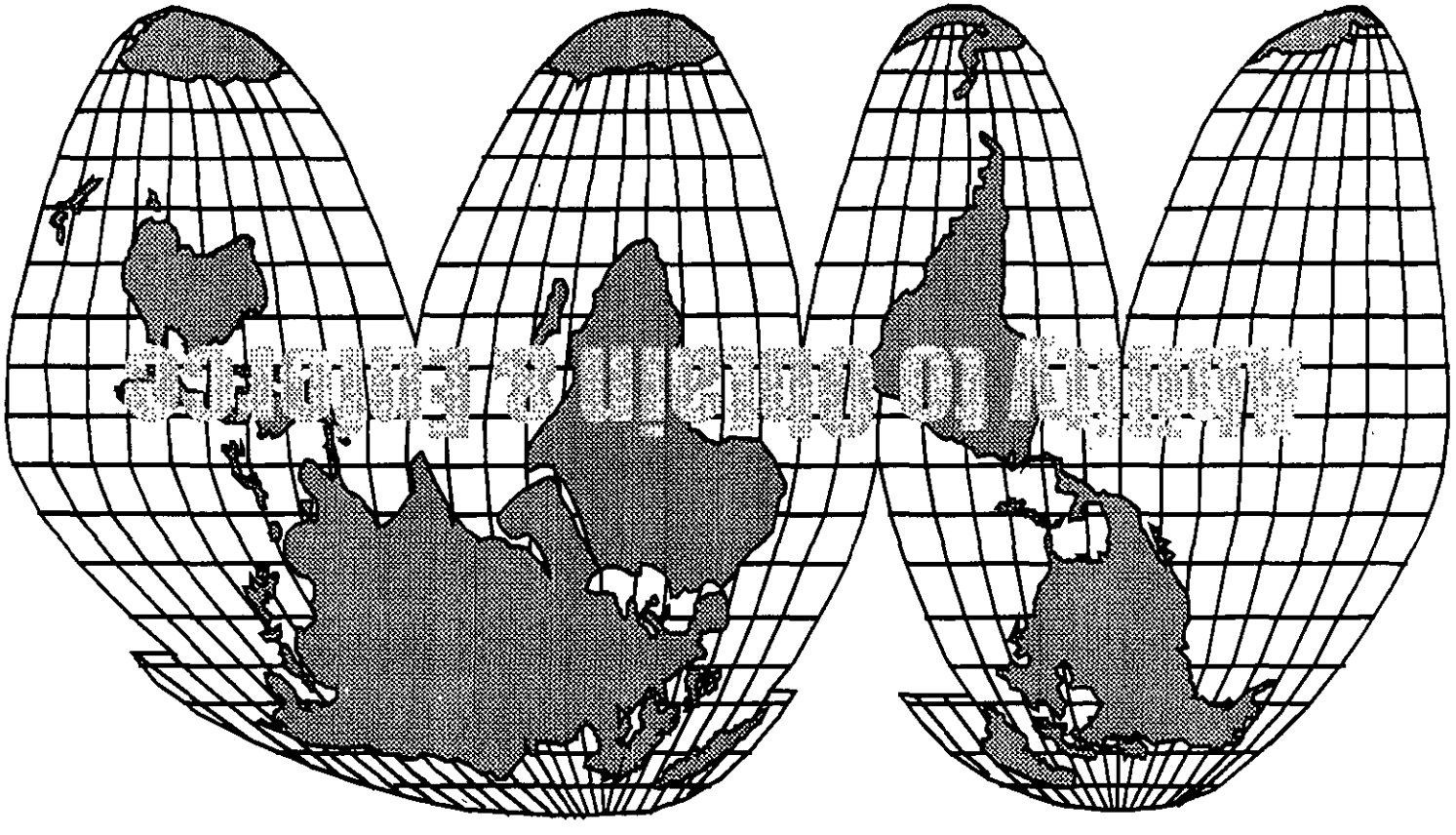
- Cost and ease of filing and prosecution
- Competence and reasonableness of examiners
- Duration of examination
- Quality of examination
- Type, duration, cost and reasonableness of appeals
- Type, duration and cost of oppositions
- Announced/Expected/Contemplated changes in patent office operations

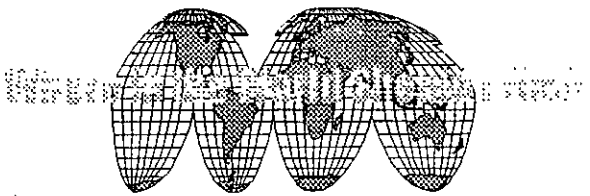


Ability to Obtain and Enforce

Including:

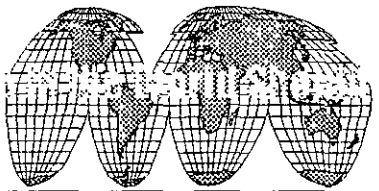
- **Considerations relating to obtaining an enforceable patent including timing, quality of examination, etc.**
- **The Current and Expected Future State of the Patent Law**
- **Considerations relating to enforcing the patent right, including costs, timing, immediate remedies, long-term remedies, availability/size of damage awards, etc.**





For any application, the cost to file, obtain and maintain a patent in any given country at any given time is fixed and generally known. This cost defines the extent of the monetary investment being made to obtain exclusivity.

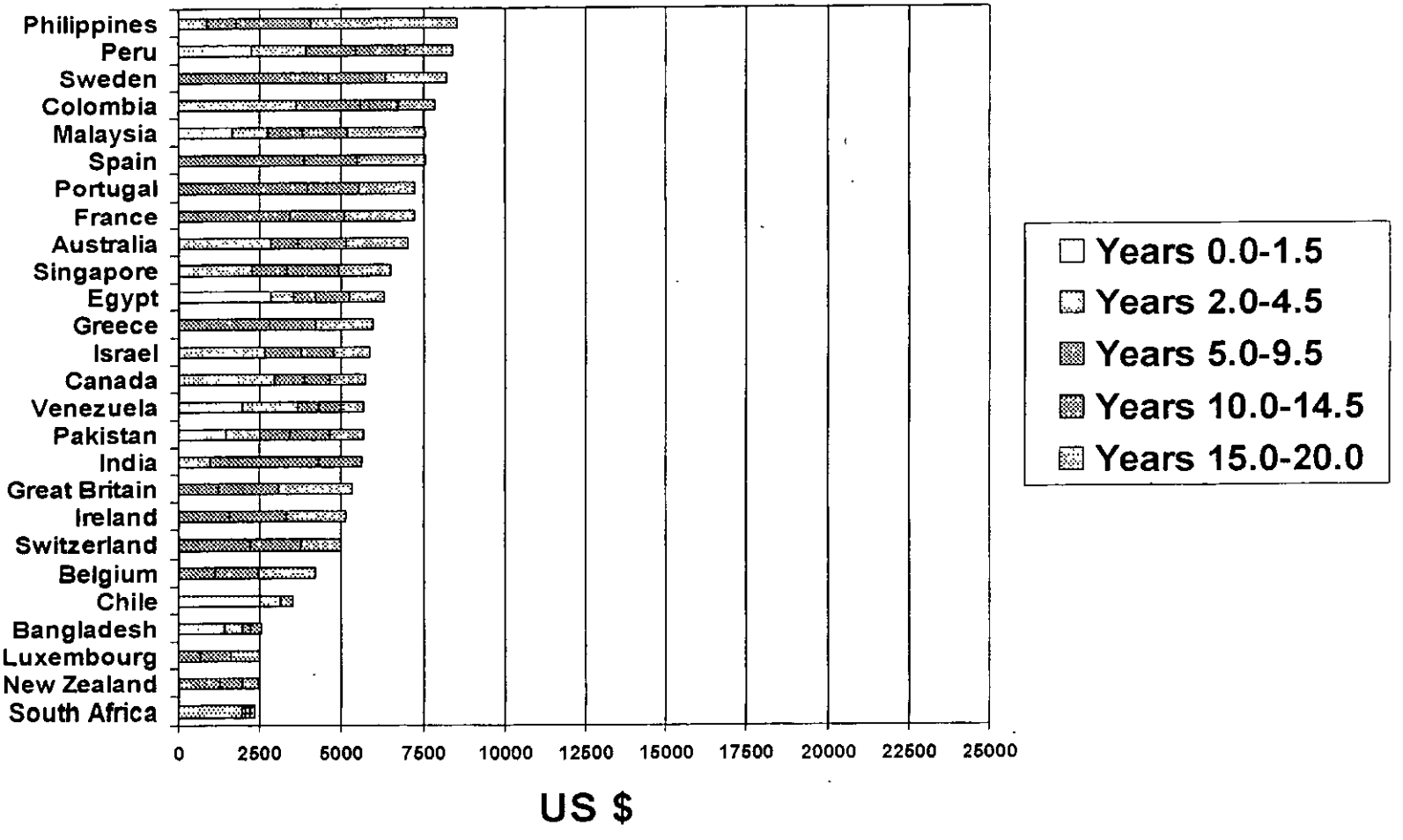
The remaining factors introduce intangibles -- business and legal judgment, business goals, evolving laws and rules, politics, etc. into the equation.



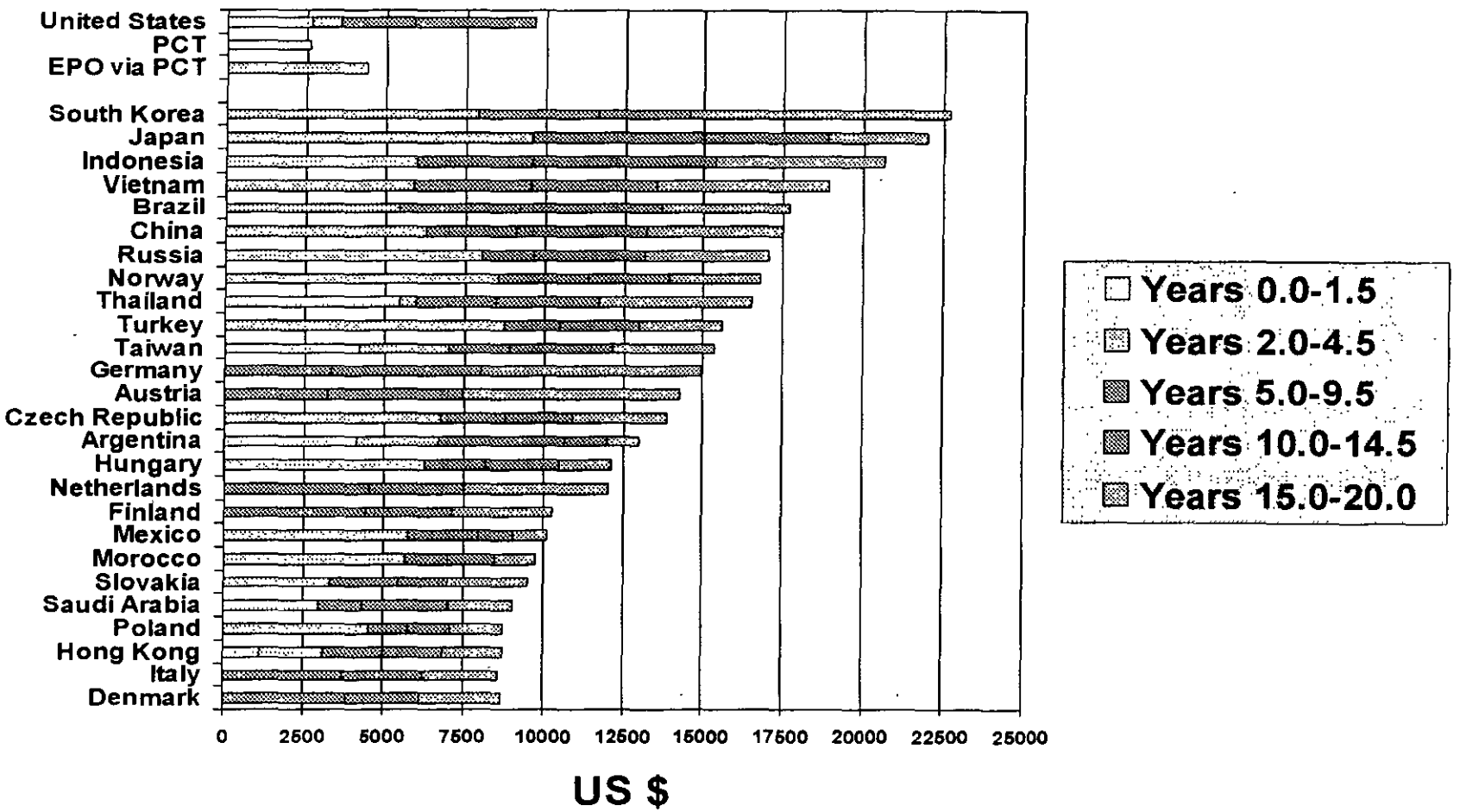
Caveats Regarding Cost Data Charts

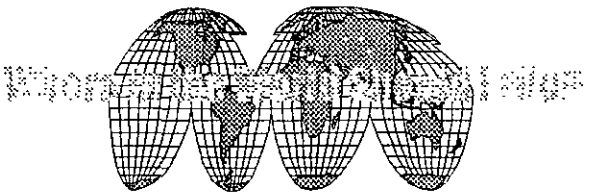
- ***Cost data is a compilation of actual charges billed to the Company over a period of two to three years.***
- ***The cost of Company attorneys and agents is NOT included in the cost figures. (EP, US and PCT costs are separated from the other data as we act as our own agents for those proceedings).***
- ***Data is current as of 2002/2003. Remember, official fees and professional costs change over time.***
- ***Data is based on applications filed in English. Translation costs included in the data are for required translations into non-English languages.***
- ***Costs are in US$ using conversions applicable at the time the charges were received.***
- ***Data should be used for "order of magnitude," cross-country cost comparisons ONLY. Figures are historic and are not sufficiently accurate to project actual cost of a new filing.***

Relative Cost to Obtain and Maintain A Patent



Relative Cost to Obtain and Maintain A Patent

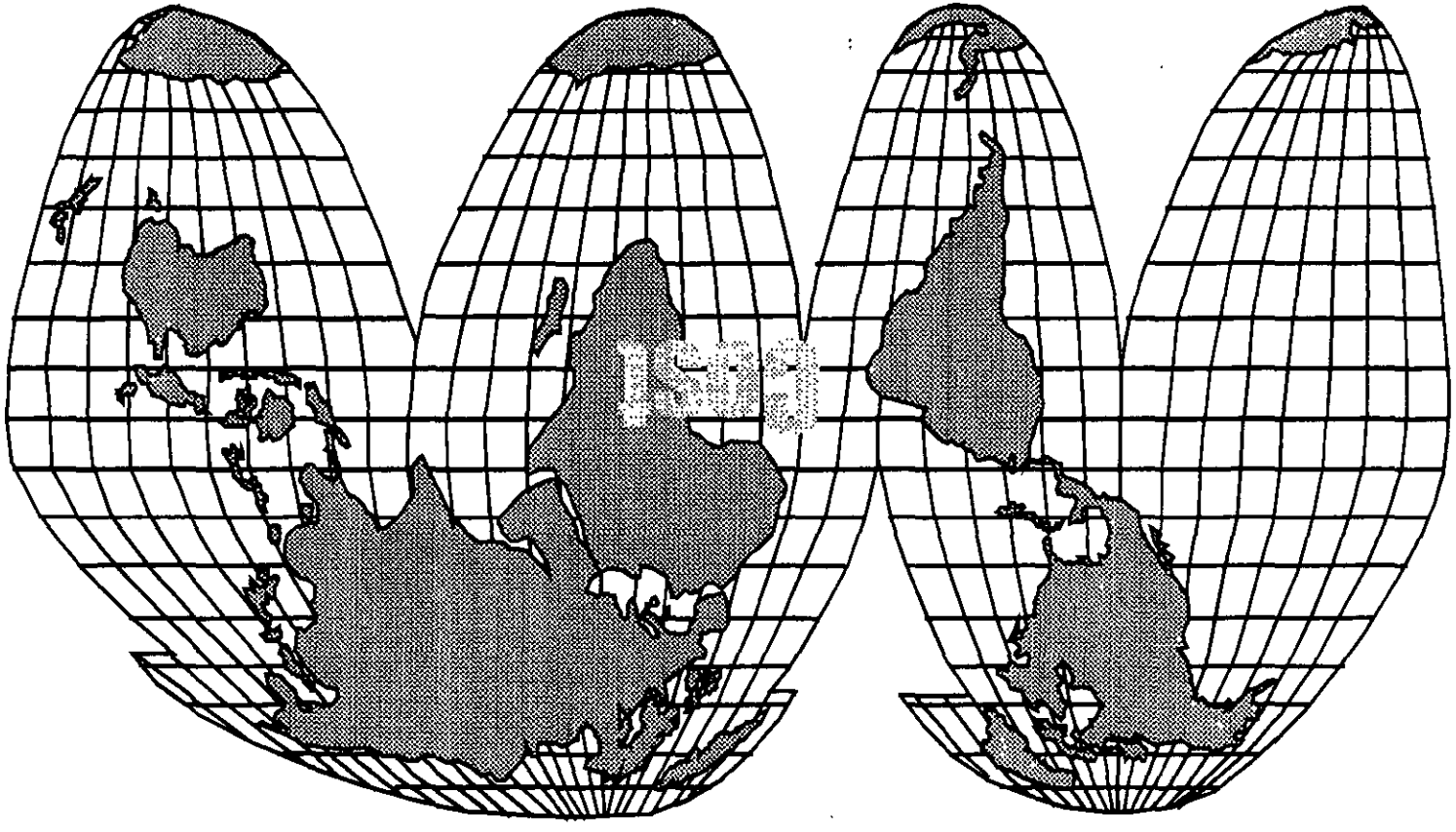


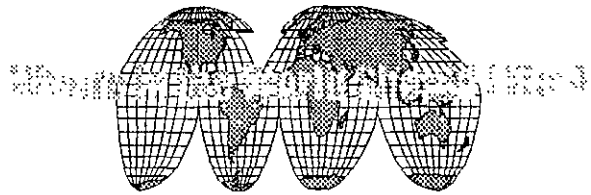


Cost

The cost to file, prosecute, grant and maintain a patent varies widely by country.

Comparing the costs across different countries during various periods of time in a patent's life show the breadth of this variation.





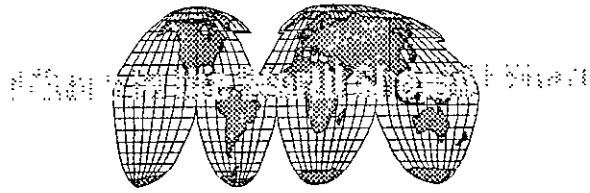
With this potential level of investment in every invention, each individual filing must be carefully considered relative to several factors:

Cost

Ability to Obtain and Enforce

Need for Exclusivity

Return on Investment



Global Patenting is Costly

Obtaining & Maintaining Patents on a *Single* Invention in the 50+ Major Countries of the World Costs More Than ...

US $ 500,000

over the 20-year life of the patent.