

# Start-Up

## Le capital intellectuel et la propriété intellectuelle

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Le capital intellectuel

La propriété intellectuelle

Pourquoi la propriété intellectuelle?

Comment la bâtir?

**Baruch Lev**, a professor of accounting at New York University: “Intangible Assets ranging from a skilled workforce to patents to know-how account for more than half of the market capitalization of America’s public companies.”

**Accenture** calculates that “intangible assets have shot up from 20% of the value of companies in the S&P 500 in 1980 to around 70% today”.

# Start-Up | Le capital intellectuel

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- **Le capital humain**  
comprend les compétences et savoir-faire, les expériences, la culture et les valeurs (confiance, adhésion à un projet, appartenance à un groupe...) et la fidélisation des ses employés / cadres;
- **Le capital de la connaissance**  
inclut les savoirs et expériences capitalisées, les informations et documents ad-hoc et accessibles;
- **Le capital « process »**  
représente la capacité de l'entreprise à formaliser ses processus critiques, les activités, rôles et responsabilités de chaque acteur, et les flux d'information;
- **Le capital réseau**  
représente les relations avec d'autres acteurs (fournisseurs, co-traitants, franchisés, partenaires, institutions...);
- **Le capital client**  
représente le fichier des clients et références, la notoriété, la visibilité de la marque;
- **Le capital innovation**  
représente le portefeuille de technologies, procédés et méthodes innovantes;
- **Le capital marque**  
représente la valeur de la marque, elle même symbolisant la performance des produits ou le rêve induit chez les consommateurs.(...)

# Qu'est ce que la PI?

Un capital? Une rente? Un investissement?

- C'est une partie du capital intellectuel
- C'est un intangible (bien immatériel)

(The essential link between tangible assets and intangibles)



# Start-Up | Formes de Propriété Intellectuelle

- Savoir faire

1886: 'Coca-Cola' is made using a unique combination of natural flavorings. The formula for 'Coca-Cola' is a closely guarded secret and it is stored in a bank vault in Atlanta, Georgia, USA.

- Marque <sup>TM</sup> ®

1893:



- Design/conception

1937: Coca-Cola received a "design patent" for the contour bottle



- Brevet

June 5, 2002 - P&G Sues Coca-Cola Over Patent - Procter & Gamble Co. last week sued The Coca-Cola Co. alleging that its former joint venture partner is infringing on patented technology that adds calcium to fruit juices, ... seeking an injunction to stop the alleged violation of its patent, which has been in force since 1988.

- Droits d'auteur ©

Il constitue les connaissances techniques non brevetées.

Pas de droit de propriété sur le savoir faire.

Mais il bénéficie d'une certaine protection juridique (par le Code pénal, la loi sur la concurrence déloyale etc.).

Condition: le Know How doit rester secret.

## Conditions de dépôt:

- Nouvelle (pas identique ou similaire à une marque déjà enregistrée)
- Non descriptive
- Pas du domaine public

## Enregistrement d'une marque

1. Faire une recherche d'antériorités
2. Choisir une ou plusieurs classes de produits
3. Définir l'étendue territoriale
4. Déposer à l'office compétent

**France Telecom intends to retain its Orange brand in Russia**

[SKRIN Newswire](#) — December 21

France Telecom has announced arrival on the Russian market of the communication services via the Equant, Russian affiliated company, with the brand Orange Business Service back in autumn of 2005. However, the rights to Orange trademark in Russia already belong to two Russian companies: Jumax+ and since 1993 - to Lamport (affiliated company of eHouse). Lamport is assembling and selling computers and telephones for IP-telephony with the brand "Orange", also manufactures payment plastic cards and undertakes electronic trade with the help of them. Lamport intends to apply to court, if Equant does not stop using Orange trademark in Russia. In turn, Equant filed an application for registration of trademark Orange with the Russian PTO.

## Droits sur la conception

- Pas d'action formelle
- Concerne les aspects internes et externes d'un produit ou d'un dessin/plan
- Protection: 10 ans à partir de l'entrée sur le marché

## Droits déposés sur la conception

- Concerne spécifiquement l'apparence visuelle extérieure d'un produit
- Protection: 5 ans, renouvelables 4 fois par périodes de 5 ans

## Avantages :

gratuit,  
sans formalités.

## Inconvénient :

ne protège que l'architecture du logiciel et le code,  
mais pas les algorithmes ni les idées de base.

## L'ayant-droit a les droits exclusifs suivants :

Reproduction (production d'exemplaires du logiciel)

Modification : adaptation, évolution, traduction

Mise en circulation : distribution, octroi de licences ou vente

- 
- © Droit d'auteur, copyright, librement appliqué par l'auteur qui indique nom et année
  
  - TM L'auteur annonce et revendique les droits sur la marque, mais ne les a pas forcément enregistrés .
  
  - ® La marque a été enregistrée et autorisée.

# Start-Up | Un exemple (1/4)

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Start-Up Google™

-----Message d'origine-----

De : Google Print Permissions [<mailto:Brand-permissions@google.com>]

Envoyé : jeudi, 4. octobre 2007 01:52

À : Lebret Hervé

Objet : Re: [#193530961] New Permission Request

Hi Herve,

Thank you for your request. You may use the image you sent me in your book. I do not think it constitutes a copyright infringement.

Please respond to this message; any emails sent directly to brand-permissions@google.com will not be received.

Thanks,

Joscelin

# Start-Up | Un exemple (2/4)

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Start-Up Google™

-----Message d'origine-----

De : Google Print Permissions [<mailto:Brand-permissions@google.com>]

Envoyé : lundi, 12. novembre 2007 22:20

À : Lebret Hervé

Objet : Re: [#204684227] New Permission Request

Hi Herve,

Thanks for your request. The copyright over the Google logo includes the font and color scheme. The 'look' of the Google logo is copyrighted as well and it is forbidden for you to reproduce words, images or web pages imitating Google brand features for your own commercial or public use.

Please do not use the attached image for your book.

Please respond to this message; any emails sent directly to [brand-permissions@google.com](mailto:brand-permissions@google.com) will not be received.

Thanks,

Joscelin

Start-Up

Des experts (juriste, avocat affaires, avocat brevet) ont indiqué:

- Il n'est pas certain qu'il y ait infraction
- Google a de toute façon donné son OK
- Le deuxième email est problématique et il n'est pas aisé de conseiller de s'attaquer à Google...

Start-Up

Ce que nous pouvons encore apprendre de la Silicon Valley

Hervé Lebret

De: Google Print Permissions [Brand-permissions@google.com] Date: jeu. 29.11.2007  
 À: Lebret Hervé  
 Cc:  
 Objet: Re: [#204684227] New Permission Request

Hi Lebret,

Thanks for your response. Your request has been approved by my manager. I don't know whether she will be in touch or not but you may consider my first response to your request sufficient permission.

Please respond to this message; any emails sent directly to [brand-permissions@google.com](mailto:brand-permissions@google.com) will not be received.

Thanks,

Joscelin

Original Message Follows:

-----  
 From: Lebret Hervé<herve.lebret@epfl.ch>  
 Subject: RE: [#204684227] New Permission Request  
 Date: Wed, 21 Nov 2007 08:48:05 +0100

Joscelin

I doubt you will receive this email but I try. My apologies for the tension I probably created but I hope you understood my disappointment, I hope you will not suffer from all this as it is not a big thing. It is just a book. I have not heard or read from your manager yet, but will wait for his final answer.

regards

Herve

-----Message d'origine-----

De : Google Print Permissions [mailto:Brand-permissions@google.com]  
 Envoyé : mardi, 20. novembre 2007 21:12  
 À : Lebret Hervé  
 Objet : Re: [#204684227] New Permission Request

Hi Lebret,

I believe my manager has responded to you by now concerning your request. Apologies for the confusion. I received your duplicate requests a month apart and did not recall approving it before.

Best of luck with your book.

Please respond to this message; any emails sent directly to [brand-permissions@google.com](mailto:brand-permissions@google.com) will not be received.

Thanks,

Joscelin

# Start-Up

## Start-Up: the book

What we may still learn from Silicon Valley



This blog contains original articles as well as articles from the book "Start-Up", which exists both in English and French. To buy it, [click here](#).

### University licensing to start-ups

May 4th, 2010

There's been a long standing and passionate debate about what universities "deserve" when they license technologies to start-ups. There is the famous Google vs. Yahoo comparison where Google is an official Stanford spin-off which brought \$336M in revenue from the equity the university owned in the start-up whereas Yahoo was considered as a hobby of the founders and no intellectual property was owned by the university. However one [Yahoo founder gave some \\$75M to Stanford](#).

So what is a typical license between a university and start-up? Well there is no clear answer but the [attached pdf file](#) may be of help. I have done some search and found some info, mostly from US universities. I have also tried to find the rationals for or against such deals. The debate remains open and I do not expect a general agreement any time soon.

#### Links

» [Voir la version FRANCAISE](#)

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 » [Gazelles and Gorillas - high growth startups](#)  
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 » [Maxlinear IPO and shareholders](#)  
 » [A Swiss in Silicon Valley](#)  
 » [Tesla Motors and Paypal, a tale of two founders](#)  
 » [The crisis and the American model](#)  
 » [A123, Boston and Atlas](#)

Le brevet protège une invention qui se définit comme la solution technique apportée à un problème technique.

Pour être brevetable, une invention doit être nouvelle, ne pas découler de manière évidente de l'état de la technique et être susceptible d'application industrielle.

La protection est en général d'une durée de 20 ans sous réserve du paiement régulier des redevances annuelles *dans chaque pays*.

Un brevet a un propriétaire (qui n'est pas toujours l'inventeur), il peut être vendu, cédé, loué

# Start-Up | A quoi sert un brevet?

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- Interdire aux autres d'utiliser l'invention
- Octroyer des licences
- Monnaie d'échange avec ses concurrents
- Favorise le développement technique
- Moyen d'obtenir du financement (p.ex. start-up)

- L'invention est divulguée
- Il n'est pas une garantie du droit d'utiliser
- Il est parfois difficile à comprendre et à utiliser
- Il est cher!

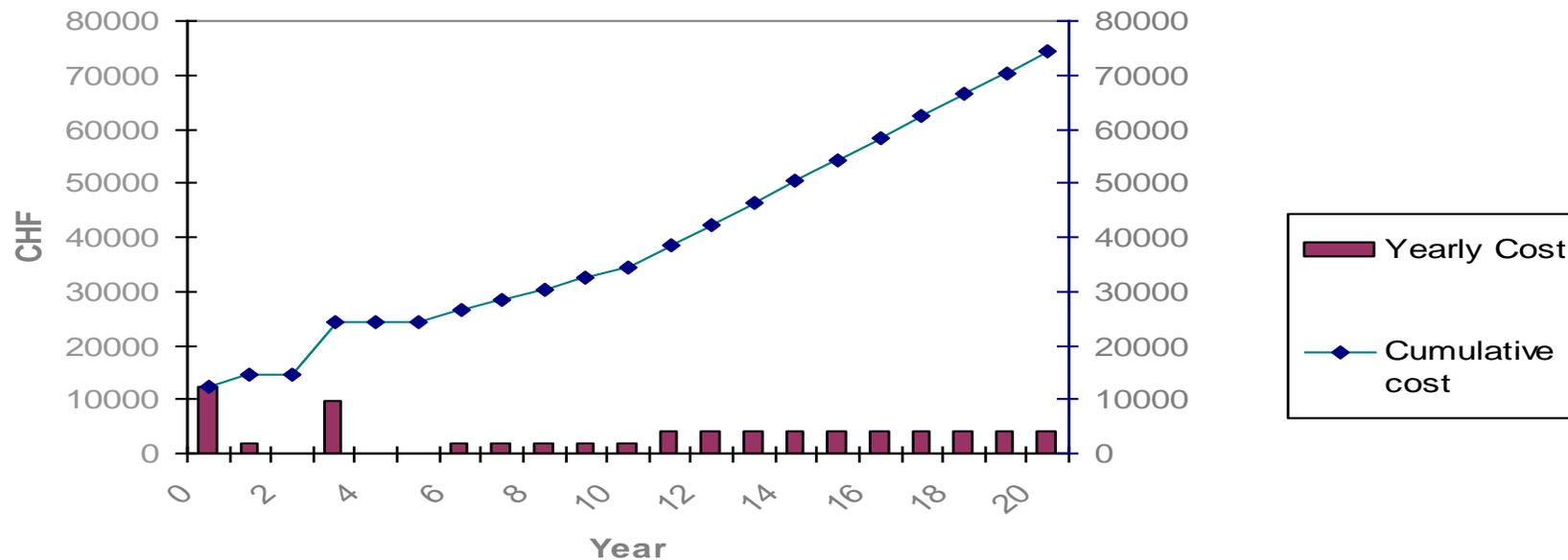
- Avoir un caractère technique
  
- Exceptions
  - Les découvertes
  - Les créations esthétiques
  - Jeux et logiciels
  - Méthodes de traitement et diagnostics
  - Inventions contraires aux bonnes mœurs
  - Variétés végétales ou races animales
  
- Avoir une application industrielle
- La nouveauté
- L'inventivité (« non obviousness »)

- **Produit**  
Objet ou chose matérielle nouvelle
- **Procédé**  
Moyen qui permet d'obtenir un produit ou un résultat  
(méthode, utilisation, indication thérapeutique)
- « **Produit par procédé** »

# Start-Up | La PI a un coût (...et une durée de vie)

- Marque : env. 10kCHF en Europe/USA, 10 ans, renouvelable
- Droits d'auteur: gratuits, 50 à 70 ans après mort de l'auteur
- Savoir faire: gratuit et sans limite; mais difficile à protéger.
- Brevet : plusieurs dizaine de milliers de CHF, 20 ans,

## Example: Cost of a European Patent (6 countries)



La propriété intellectuelle est:

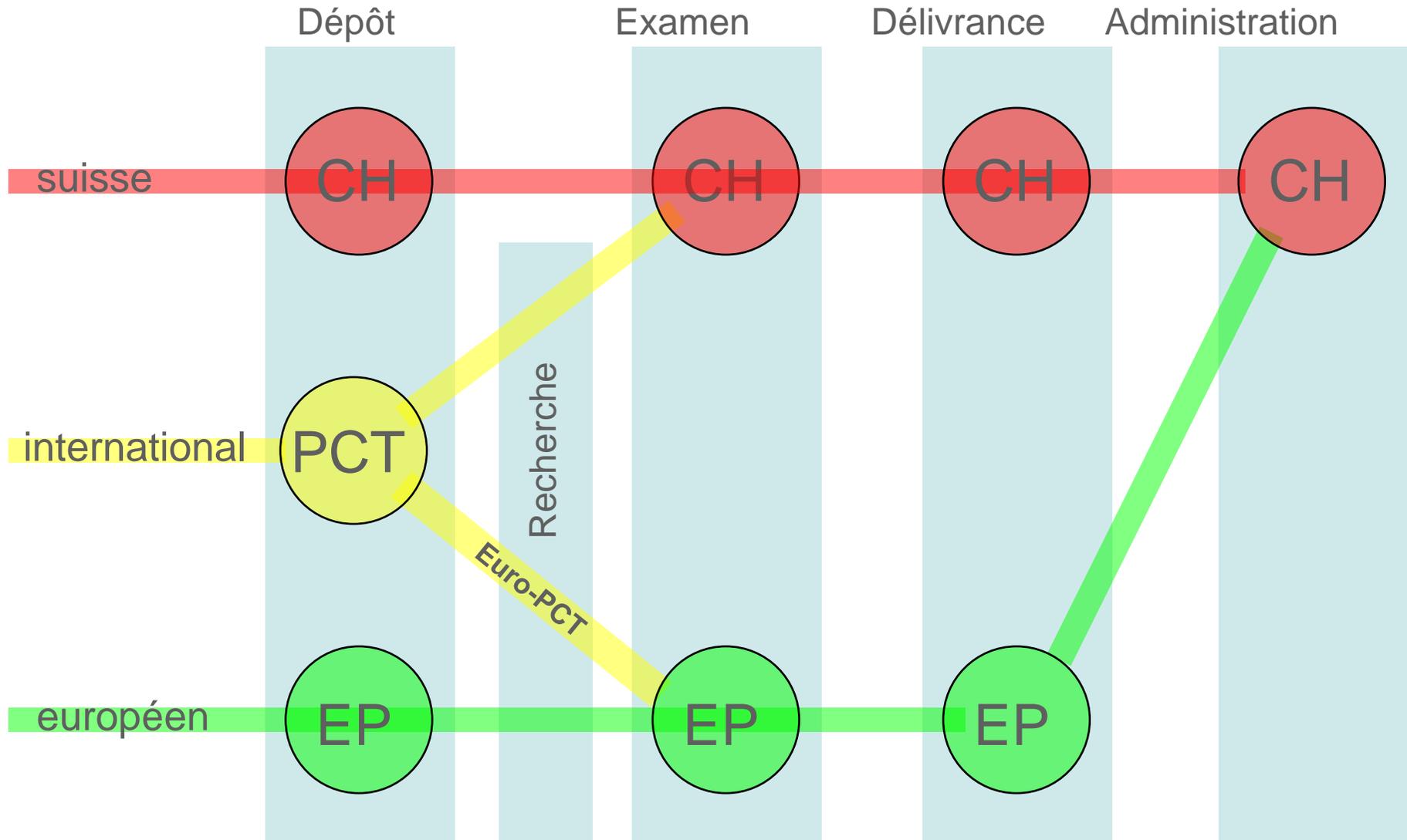
- variée
- dynamique
- complexe
- coûteuse

**En conséquence,  
il est important de savoir pourquoi on  
souhaite avoir une PI**

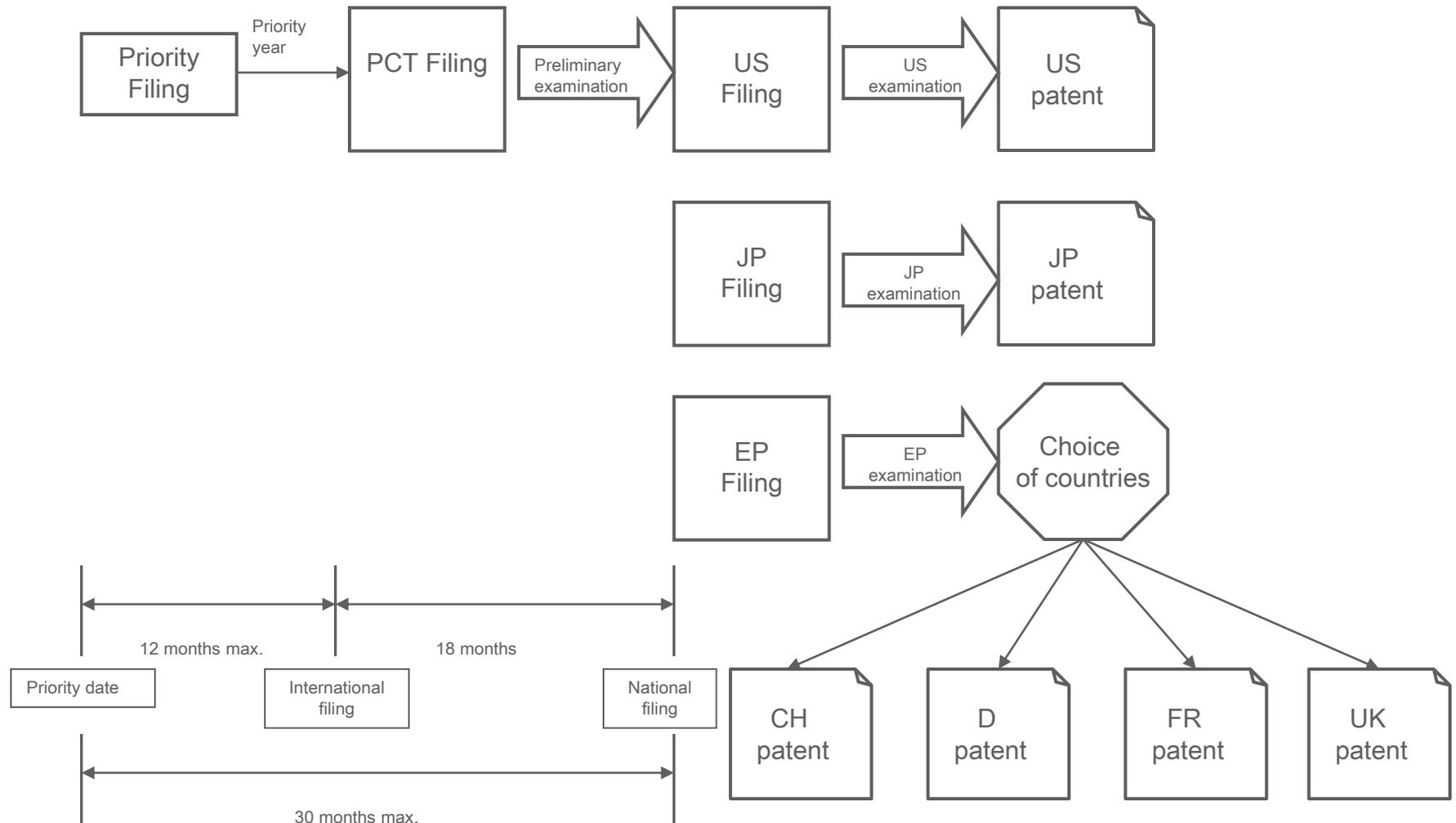
En présence d'une invention, il est important de comprendre:

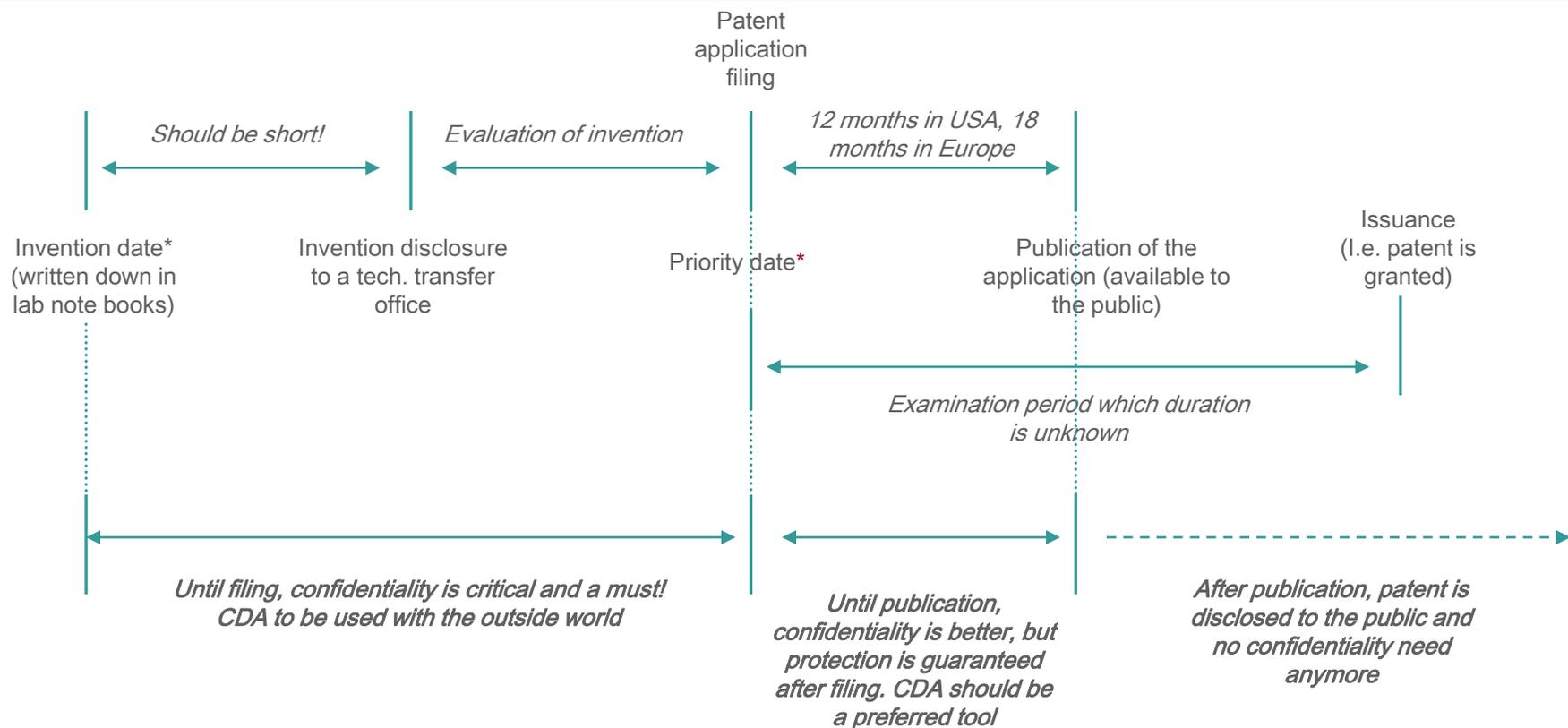
- sa brevetabilité: nouveauté, inventivité, applicabilité,
- l'intérêt d'obtenir un brevet: quelle stratégie?
- que la décision de breveter va créer un processus et des contraintes

# Dépôt: des voies variées



# Un processus de dépôt classique





**NB \*:** en Europe, la date de priorité donne antériorité; aux USA, la date d'invention (« disclosure ») fait foi en cas de situation compétitive.

**NB2:** les États Unis ont une règle de 12 mois de grâce: on peut protéger si la publication a moins de 12 mois.

Une stratégie PI se fait idéalement avec l'aide d'un et parfois en partenariat avec un "patent attorney"

- La rédaction d'un brevet est un exercice très technique
- L'obtention d'un brevet est aussi un processus et n'est jamais garantie
- La stratégie de protection est clé
  - géographie, portefeuille de brevets,
  - analyse permanente de la situation compétitive
- Une stratégie de défense des droits par celui qui commercialise (la PI ne donne pas de garantie absolue mais des droits de se défendre)
- La stratégie commerciale doit être intégrée

# Un exemple de brevet (1/7)

## Le dépôt initial



US 2002/0131464A1

(19) **United States**

(12) **Patent Application Publication**  
**Sirbu et al.**

(10) **Pub. No.: US 2002/0131464 A1**  
 (43) **Pub. Date: Sep. 19, 2002**

(54) **VERTICAL CAVITY SURFACE EMITTING LASER AND A METHOD OF FABRICATION THEREOF**

(75) **Inventors: Alexei Sirbu, Ecublens (CH); Vladimir Iakovlev, Ecublens (CH); Alok Rudra, Blonay (CH); Elyahou Kapon, Lausanne (CH)**

Correspondence Address:  
**John Moetteli**  
**MOETTELI & ASSOCIATES**  
**Case Postale 486**  
**CH-1211**  
**Geneva 12 (CH)**

(73) **Assignee: Ecole Polytechnique Federale De Lausanne**

(21) **Appl. No.: 09/809,239**

(22) **Filed: Mar. 15, 2001**

### Publication Classification

(51) **Int. Cl.<sup>7</sup> ..... H01S 5/00; H01S 3/08**  
 (52) **U.S. Cl. .... 372/45; 372/96**

### (57) **ABSTRACT**

An electrically pumped VCSEL and a method of its fabrication are presented. The VCSEL comprises an active cavity material sandwiched between top and bottom DBR stacks, the top DBR having at least one n-semiconductor layer. The device defines an aperture region between the structured surface of the active cavity material and the n-semiconductor layer of the top DBR stack. The structured surface is formed by a top surface of a mesa that includes at least the upper n<sup>++</sup> layer of a p<sup>++</sup>/n<sup>++</sup> tunnel junction and the surface of a p-type layer outside the mesa. The structured surface is fused to the surface of the n-semiconductor layer of the DBR stack due to the deformation of these surfaces, thereby creating an air gap in the vicinity of the mesa between the fused surfaces. The active region is defined by the current aperture which includes the mesa surrounded by the air gap, thereby allowing for restricting an electrical current flow to the active region, while the air gap provides for the lateral variation of the index of refraction in the VCSEL.

- un titre
- les inventeurs (individus)
- le propriétaire (individus ou institution)
- une géographie
- une date de priorité
- une date de dépôt
- une date de publication
- éventuellement une date de délivrance

# Un exemple de brevet (2/7)

## Le dépôt PCT

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
26 September 2002 (26.09.2002)

PCT

(10) International Publication Number  
**WO 02/075263 A1**

(51) International Patent Classification<sup>7</sup>: **G01J 3/26,**  
H01S 5/183, 5/187

(21) International Application Number: PCT/IB02/00682

(22) International Filing Date: 8 March 2002 (08.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
09/809,236 15 March 2001 (15.03.2001) US  
09/809,239 15 March 2001 (15.03.2001) US

(71) Applicant (for all designated States except US): **ECOLE  
POLYTECHNIQUE FEDERALE DE LAUSANNE**  
[CH/CH]; Ecublens, CH 1015 Lausanne (CH).

(72) Inventors: and

(75) Inventors/Applicants (for US only): **KAPON, Elya-  
hou** [US/CH]; Route du Signal 21, CH-1018 Lausanne  
(CH). **IAKOVLEV, Vladimir** [MD/CH]; Chemin de

la Brûlée, CH-1024 Ecublens (CH). **SIRBU, Alexei**  
[MD/CH]; Chemin de la Cocarde 11, CH-1024 Ecublens  
(CH). **RUDRA, Alok** [TR/CH]; Chemin du Péage  
53A, CH-18078 Blonay (CH). **SURUCEANU, Grigore**  
[MD/CH]; Chemin de la Cocarde 11, CH 1024 Ecublens  
(CH).

(74) Agent: **MOETTELI, John**; Moetтели & Associés, Case  
postale 486, CH-1211 Genève 12 (CH).

(81) Designated States (*national*): AI, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,  
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,

[Continued on next page]

(54) Title: A MICRO-ELECTROMECHANICALLY TUNABLE VERTICAL CAVITY PHOTONIC DEVICE AND A METHOD OF FABRICATION THEREOF

- un titre
- les inventeurs (individus)
- le propriétaire (individus ou institution)
- une géographie
- une date de priorité
- une date de dépôt
- une date de publication

# Un exemple de brevet (3/7)

## Le rapport de recherche -1

INTERNATIONAL SEARCH REPORT		Intern PCT/IB 02/00682
<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 601J3/26 H01S5/183 H01S5/187		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 601J H01S		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 34484 A (CORETEK INC) 8 July 1999 (1999-07-08) page 10, line 1 -page 17, paragraph 2 page 34, paragraph 1 -page 40, paragraph 1 figures 1,3F,4G,6-8 ---	1,8
A	US 5 739 945 A (TAYEBATI PARVIZ) 14 April 1998 (1998-04-14) cited in the application column 7, line 19 - line 32 figure 7 ---	1,8
A	US 5 142 414 A (KOEHLER DALE R) 25 August 1992 (1992-08-25) column 4, line 27 - line 50 figure 3 ---	1,8
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents: *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *S* document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report	
11 July 2002	22/07/2002	
Name and mailing address of the ISA European Patent Office, P.O. Box 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo sl, Fax: (+31-70) 340-3016	Authorized officer  Jacquin, J	

Form PCT/ISA/210 (second sheet) (July 1992)

# Un exemple de brevet (4/7)

## Le rapport de recherche -2

<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.	<input checked="" type="checkbox"/> Patent family members are listed in annex.
<p>° Special categories of cited documents :</p> <ul style="list-style-type: none"> <li>*A* document defining the general state of the art which is not considered to be of particular relevance</li> <li>*E* earlier document but published on or after the international filing date</li> <li>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</li> <li>*O* document referring to an oral disclosure, use, exhibition or other means</li> <li>*P* document published prior to the international filing date but later than the priority date claimed</li> <li>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</li> <li>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</li> <li>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>* &amp; * document member of the same patent family</li> </ul>	
<p>Date of the actual completion of the international search</p> <p style="text-align: center;"><b>11 July 2002</b></p>	<p>Date of mailing of the international search report</p> <p style="text-align: center;"><b>22/07/2002</b></p>
<p>Name and mailing address of the ISA</p> <p style="margin-left: 20px;">European Patent Office, P.B. 5818 Patentlaan 2          NL - 2280 HV Rijswijk          Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,          Fax: (+31-70) 340-3016</p>	<p>Authorized officer</p> <p style="text-align: center;"><b>Jacquin, J</b></p>

# Un exemple de brevet (5/7)

## Le brevet US délivré

(12) **United States Patent**  
Sirbu et al.

(10) **Patent No.:** US 6,542,531 B2  
(45) **Date of Patent:** Apr. 1, 2003

(54) **VERTICAL CAVITY SURFACE EMITTING LASER AND A METHOD OF FABRICATION THEREOF**

(75) Inventors: **Alexei Sirbu**, Ecublens (CH); **Vladimir Iakovlev**, Ecublens (CH); **Alok Rudra**, Blonay (CH); **Elyahou Kapon**, Lausanne (CH)

(73) Assignee: **Ecole Polytechnique Federale de Lausanne**, Lausanne (CH)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 40 days.

(21) Appl. No.: **09/809,239**

(22) Filed: **Mar. 15, 2001**

(65) **Prior Publication Data**

US 2002/0131464 A1 Sep. 19, 2002

(51) **Int. Cl.**<sup>7</sup> ..... **H01S 5/00**

(52) **U.S. Cl.** ..... **372/46; 372/96**

(58) **Field of Search** ..... **372/45, 46, 96**

(56) **References Cited**

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5,985,686 A 11/1999 Yayarman ..... 438/32  
5,991,326 A \* 11/1999 Yuen et al. .... 372/96  
6,341,137 B1 \* 1/2002 Jayaraman et al. .... 372/50  
6,366,597 B1 \* 4/2002 Yuen et al. .... 372/96

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WO WO 98/07218 \* 2/1998 ..... H01S5/00S

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N.M. Margalit et al., "Laterally Oxidized Long Wavelength CW Vertical-Cavity Lasers", *Appl.Phys.Lett.*, 69(4), Jul. 22, 1996, pp. 471-472.

Y. Ohiso et al., "1.55  $\mu$ m Vertical Cavity Surface Emitting Lasers with Wafer Fused InGaAsP/InP GaAs/AlAs DBRs", *Electronics Letters*, vol. 32, No. 16, Aug. 1st, 1996.

S. Rapp et al., "Near Room-temperature Continuous-wave Operation of Electrically Pumped 1.55  $\mu$ m Vertical Cavity Lasers with InGaAsP/InP Bottom Mirror", *Electronic Letters*, vol. 35, No. 1, Jan. 7th, 1999.

W. Yuen et al., "High-performance 1.6  $\mu$ m Single-epitaxy Top-emitting VCSEL", *Electronic Letters*, vol. 36, No. 13, Jun. 22nd, 2000

A.V. Sirbu et al., "30° CW operation of 1.52  $\mu$ m InGaAsP/AlGaAs Vertical Cavity Lasers With In Situ Built-in Lateral Current Confinement by Localised Fusion", *Electronic Letters*, vol. 34, No. 18, Sep. 3rd, 1998.

(List continued on next page.)

*Primary Examiner*—Quyen Leung

(74) *Attorney, Agent, or Firm*—Moetiteli & Assoc.; John Moetiteli

(57) **ABSTRACT**

An electrically pumped VCSEL and a method of its fabrication are presented. The VCSEL comprises an active cavity material sandwiched between top and bottom DBR stacks, the top DBR having at least one n-semiconductor layer. The device defines an aperture region between the structured surface of the active cavity material and the n-semiconductor layer of the top DBR stack. The structured surface is formed by a top surface of a mesa that includes at least the upper n<sup>++</sup> layer of a p<sup>++</sup>/n<sup>++</sup> tunnel junction and the surface of a p-type layer outside the mesa. The structured surface is fused to the surface of the n-semiconductor layer of the DBR stack due to the deformation of these surfaces, thereby creating an air gap in the vicinity of the mesa between the fused surfaces. The active region is defined by the current aperture which includes the mesa surrounded by the air gap, thereby allowing for restricting an electrical current flow to the active region, while the air gap provides for the lateral variation of the index of refraction in the VCSEL.

**10 Claims, 9 Drawing Sheets**

# Un exemple de brevet (6/7)

## Les dépôts régionaux

Patent Number	Publ. Date	Main IPC	Week	Page Count	Language
WO200275263-A					
WO200275868-A					
EP1368623-A					
US2002131464-A1	19 Sep 2002	H01S-005/00	200301	Pages: 17	
WO200275263-A1	26 Sep 2002	G01J-003/26	200301		English
WO200275868-A2	26 Sep 2002	H01S-003/00	200301		English
US6542531-B2	01 Apr 2003	H01S-005/00	200324		
EP1368623-A1	10 Dec 2003	G01J-003/26	200382		English
EP1378039-A2	07 Jan 2004	H01S-005/183	200404		English
KR2003083735-A	30 Oct 2003	H01S-005/183	200415		
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AU2002234837-A1	03 Oct 2002	G01J-003/26	200432		
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CN1524328-A	25 Aug 2004	H01S-005/183	200477		
JP2004538621-W	24 Dec 2004	H01S-005/183	200502	Pages: 56	
<b>Application Details and Date:</b>					
US2002131464-A1	US809239	15 Mar 2001			
AU2002234837-A1	AU234837	08 Mar 2002			
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CN1509406-A	CN810125	08 Mar 2002			
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EP1378039-A2	EP701506	08 Mar 2002			
JP2004534383-W	JP573630	08 Mar 2002			
JP2004538621-W	JP574179	08 Mar 2002			
WO200275263-A1	WOIB00682	08 Mar 2002			
WO200275868-A2	WOIB00683	08 Mar 2002			
KR2003083735-A	KR712016	15 Sep 2003			
KR2003084994-A	KR712015	15 Sep 2003			
<b>Further Application Details:</b>					
EP1368623-A1	Based on	Patent	WO200275263		
EP1368623-A1	PCT application	Application	WOIB00682		
EP1378039-A2	Based on	Patent	WO200275868		
EP1378039-A2	PCT application	Application	WOIB00683		
AU2002234837-A1	Based on	Patent	WO200275263		
AU2002234838-A1	Based on	Patent	WO200275868		
JP2004534383-W	Based on	Patent	WO200275263		
JP2004534383-W	PCT application	Application	WOIB00682		
JP2004538621-W	Based on	Patent	WO200275868		
JP2004538621-W	PCT application	Application	WOIB00683		
<b>Priority Application Information and Date:</b>					
US809236	15 Mar 2001				
US809239	15 Mar 2001				

# Un exemple de brevet (7/7)

## Le texte du brevet

(12) **United States Patent**

Sirbu et al.

(10) **Patent No.:** US 6,542,531 B2

(45) **Date of Patent:** Apr. 1, 2003

(54) **VERTICAL CAVITY SURFACE EMITTING LASER AND A METHOD OF FABRICATION THEREOF**

(75) Inventors: **Alexei Sirbu**, Ecublens (CH); **Vladimir Iakovlev**, Ecublens (CH); **Alok Rudra**, Blonay (CH); **Elyahou Kapon**, Lausanne (CH)

(73) Assignee: **Ecole Polytechnique Federale de Lausanne**, Lausanne (CH)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 40 days.

(21) Appl. No.: **09/809,239**

(22) Filed: **Mar. 15, 2001**

(65) **Prior Publication Data**

US 2002/0131464 A1 Sep. 19, 2002

(51) **Int. Cl.<sup>7</sup>** ..... **H01S 5/00**

(52) **U.S. CL** ..... 372/46; 372/96

(58) **Field of Search** ..... 372/45, 46, 96

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S. Rapp et al., "Near Room-temperature Continuous-wave Operation of Electrically Pumped 1.55  $\mu$ m Vertical Cavity Lasers with InGaAsP/InP Bottom Mirror", *Electronic Letters*, vol. 35, No. 1, Jan. 7th, 1999.

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**10 Claims, 9 Drawing Sheets**

En résumé un texte de brevet est constitué de:

- Claims
- Description
- Drawings
- Abstract
- Revendications
- Description
- Dessins
- Résumé

Les informations complémentaires essentielles:

- un titre
- les inventeurs (individus)
- le propriétaire (individus ou institution)
- une géographie
- une date de priorité
- une date de dépôt
- une date de publication
- éventuellement une date de délivrance

## - Le dépôt provisoire (« US provisional »)

Il est non publié

Limité à un an

Non examiné

Une description écrite

Pas de dessin, pas de claims nécessaires

Quand?

lorsque le temps est compté

lorsque l'on n'est pas sûr de la suite à donner

lorsque le budget à court terme est très limité

## - Le délai de grâce de 12 mois après publication



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**Inventor:** (e.g. SMITH A\* OR JONES D\*) ⓘ

**Patent Number:** (e.g. EP797246 OR US5723945-A) ⓘ

**International Patent Classification:** (e.g. G06F-001/16 OR B23k\*) ⓘ  
 ⓘ

**Derwent Class Code:** (e.g. T04 OR V05) ⓘ  
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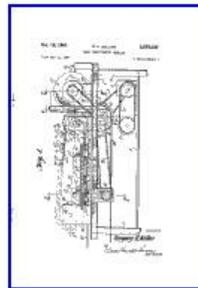
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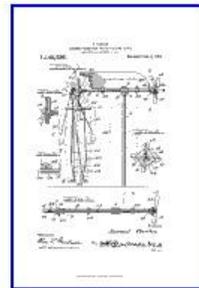
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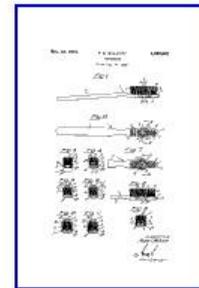
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# Obtenir une licence d'une université

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Il est très courant que l'invention et le brevet qui lui est lié appartienne à une université.

Une négociation pour obtenir une licence est donc à prévoir

La philosophie est généralement la suivante:

- L'université a droit à un retour financier pour l'utilisation de l'IP
- Ce retour financier est basé sur un paiement initial et de royalties calculées sur les ventes
- Dans le cas particulier des start-ups, le paiement initial peut être remplacé par une prise de participations (« equity »)
- Le preneur de licence prend en charge les coûts de protection de l'IP à partir de la date de signature du contrat de licence

# La négociation: quelques idées...

---

Ne jamais oublier qu'une négociation est un processus dynamique

La PI est un intangible, un bien immatériel; sa valeur difficile (impossible?) à estimer

En plus de sa valeur, ne jamais oublier d'autres termes

- durée
- paiements
- géographie, juridiction
- champ d'utilisation
- conditions intermédiaires (« milestones ») et finales (« termination »)
- confidentialité, responsabilité.....

- Confidentiality
- Duration
- Well-defined work schedule
- Reporting obligations
- Liability
- Payment schedule
- Nature of the intellectual property
- Option term on license
- Scope of license
- Lump sum/Royalties
- Patent costs
- Ownership of intellectual property
- Ownership of improvements
- Infringements (who takes action)
- Termination
- Laws of the country

La PI est un intangible; sa valeur difficile (impossible?) à estimer

Il existe des techniques de valorisation (comme il existe des techniques de valorisation de start-ups)

- 25% rule
- Past investment
- Industry standards

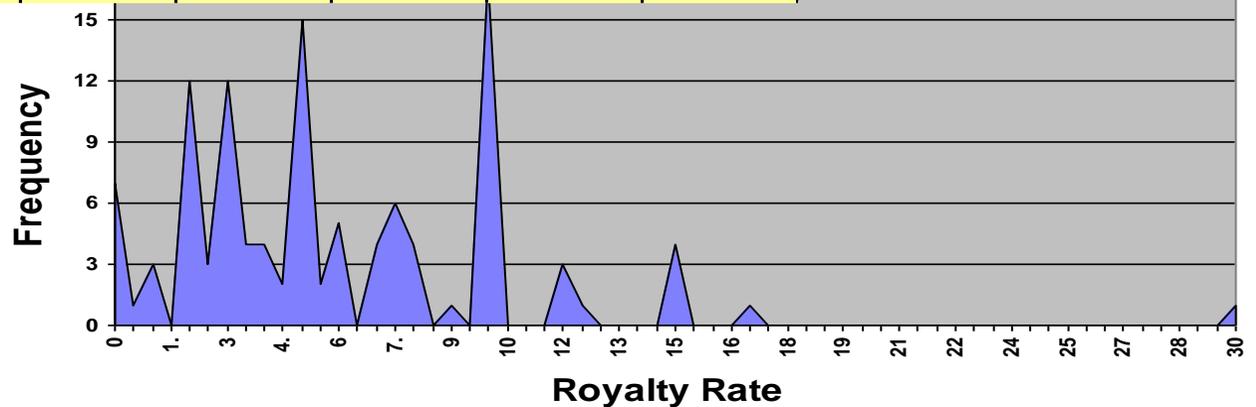
Mais la valeur est finalement fixée par un prix entre un acheteur et un vendeur. C'est une négociation!

# Exemple de taux de royalties

Royalty Rates for In-Licensing by Industry

Industry	0-2%	2-5%	5-10%	10-15%	15-20%	20-25%	>25%
Aerospace	50.0%	50.0%					
Automotive	52.5%	45.0%	2.5%				
Chemical	16.5%	58.1%	24.3%	0.8%	0.4%		
Computer	62.5%	31.3%	6.3%				
Electronics		50.0%	25.0%	25.0%			
Energy		66.7%					
Food/Consumer		100.0%					
General Mfg.	45.0%	28.6%	12.1%	14.3%			
Government/University	25.0%	25.0%	50.0%				
Health Care	3.3%	51.7%	45.0%				
Pharmaceuticals	23.6%	32.1%	29.3%	12.5%	1.1%	0.7%	0.7%
Telecommunications	40.0%	37.3%	23.6%				

tribution



# Exemple de taux de royalties

Technology / Industry	Earned Royalty	Up-Front Payments	Minimum Payments
Reagents/Process	1-3%	Patent Costs	\$2-10K
Reagents/Kit	2-10	Patent Costs	\$2-10K
Diagnostics In Vitro	2-6	\$5-20K	\$2-60K
Diagnostics In Vivo	3-8	\$5-20K	\$2-60K
Therapeutics	4-12	\$20-150K	\$20-150K
Medical Instrumentation	4-10	\$5-150K	\$5-20K (Yr 1)

Source : G.Gorey & E.Kahn, Genetic Engineering News, July-August 1991

Industry	Average	Median	Max	Min	Count	
Chemicals	4.7%	4.3%	25.0%	0.1%	78	
Internet (incl. software)	11.8%	8.8%	50.0%	0.3%	88	
Telecom (excl Media)	4.9%	4.5%	15.5%	0.4%	73	
Consumer Gds, Rtl & Leis		5.5%	5.0%	28.0%	0.1%	98
Media & Entertainment	9.1%	5.0%	50.0%	2.0%	25	
Food Processing	3.2%	2.8%	10.0%	0.3%	38	
Medical/Health Products	6.1%	5.0%	77.0%	0.1%	376	
Pharma. & Biotech	7.0%	5.0%	50.0%	0.0%	458	
Energy & Environment	5.0%	5.0%	20.0%	1.0%	107	
Machines/Tools	5.2%	4.5%	25.0%	0.5%	90	
Automotive	4.3%	3.5%	15.0%	0.5%	59	
Electrical & Electronics	4.2%	4.0%	15.0%	0.5%	139	
Semiconductors	4.3%	3.0%	30.0%	0.0%	75	
Computers & Office Equip		5.3%	4.0%	25.0%	0.2%	73
Software	11.5%	6.8%	70.0%	0.0%	147	
Industry Summary	6.40%	4.80%			1,924	

A raw idea is worth virtually nothing, due to an astronomical risk factor

A patent pending with a strong business plan may be worth 1 %

An issued patent may be worth 2 %

A patent with a prototype, such as a pharmaceutical with pre-clinical testing may be worth 2-3 %

A pharmaceutical with clinical trials may be worth 3-4 %

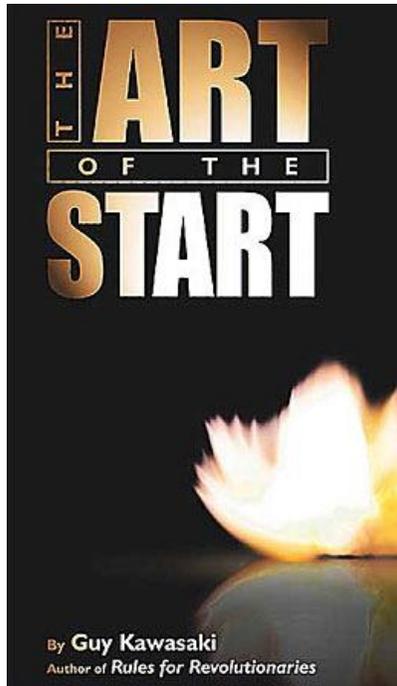
A proven drug with FDA approval may be worth 5-7 %

A drug with market share, such as one pharma distributing through another, may be worth 8-10%

- Montrer que vous avez réfléchi à votre PI
- Informez de votre analyse: forces et faiblesses, risques
- mais...

Ne dites jamais que votre PI est une grande force pour votre business: c'est une forme de protection, mais elle n'apporte que peu de garanties... mentionnez une fois que vous avez de la PI, cela doit suffire...

# La PI et les VCs (d'après Guy Kawasaki)



cause most deals don't pan out. Think of an investor's deal flow as a funnel. Two thousand business plans enter at the top of the funnel. Two hundred are moderately credible. One hundred are interesting enough to read. Forty undergo due diligence. Ten get funded. One makes a bundle of money.

Investors want to weed out the rejects as quickly as possible because they don't want to waste time, and obvious flaws make it easy to throw out a plan, so you must present a clean slate. Here are the areas in which flaws abound:

- **INTELLECTUAL PROPERTY:** Lawsuits, or the risk of lawsuits, by former employers claiming that your technology belongs to them; core technology belonging to a founder, not the company; infringement on someone else's patents.
- **CAPITAL STRUCTURE:** Ownership of the vast majority of the organization by a few founders who are not willing to spread it out; dominant control by an inflexible investor who doesn't want any dilution; substantially overpriced or underpriced previous rounds.
- **MANAGEMENT TEAM:** Married or related co-founders; unqualified friends or roommates in CXO-level positions; lack of relevant industry experience; criminal convictions.
- **STOCK OFFERINGS:** Grants of stock (as opposed to options) to consultants and vendors in lieu of payment; common stock sold to friends and relatives at high valuations; solicitation of investors who are not qualified according to securities laws.
- **REGULATORY COMPLIANCE:** Noncompliance with state or federal laws and regulations; nonpayment of payroll taxes.

### DISCLOSE EVERYTHING

If there's crud that hasn't been—or cannot be—cleaned up immediately, then disclose it to investors. And do it early in the process. The later you reveal it, the harder it will get to do so and the more it will harm your credibility.

For example, Garage once invested in a company that disclosed that a potential investor had a consulting agreement with the company. This deal came to light shortly before the financing was closing. This investor was buying stock, as well as receiving stock and cash for consulting services. No other investor had a similar deal.

When the other investors found out about this arrangement, the deal almost collapsed. Had the company made a full disclosure earlier and explained why it made sense for everyone (which, in fact, it did), things would have gone much more smoothly. Unfortunately, a high-value investor bailed out because of this last-minute issue.

What if you started, or worked for, an organization that failed? There's no use in trying to hide this fact, because investors will uncover it. It's also poor form to blame anyone or anything else: the market, other employees, customers, or, in particular, the investors (no matter what the truth is).

My recommendation is that you do a *mea culpa*. That is, you accept as much blame for the failure as is justified and "confess" your sins. Sophisticated investors find this admirable, and many an investor has made boatloads of money betting on entrepreneurs who failed in earlier efforts. What's important is not that you failed—it's that you learned from your failures and are eager to try again.

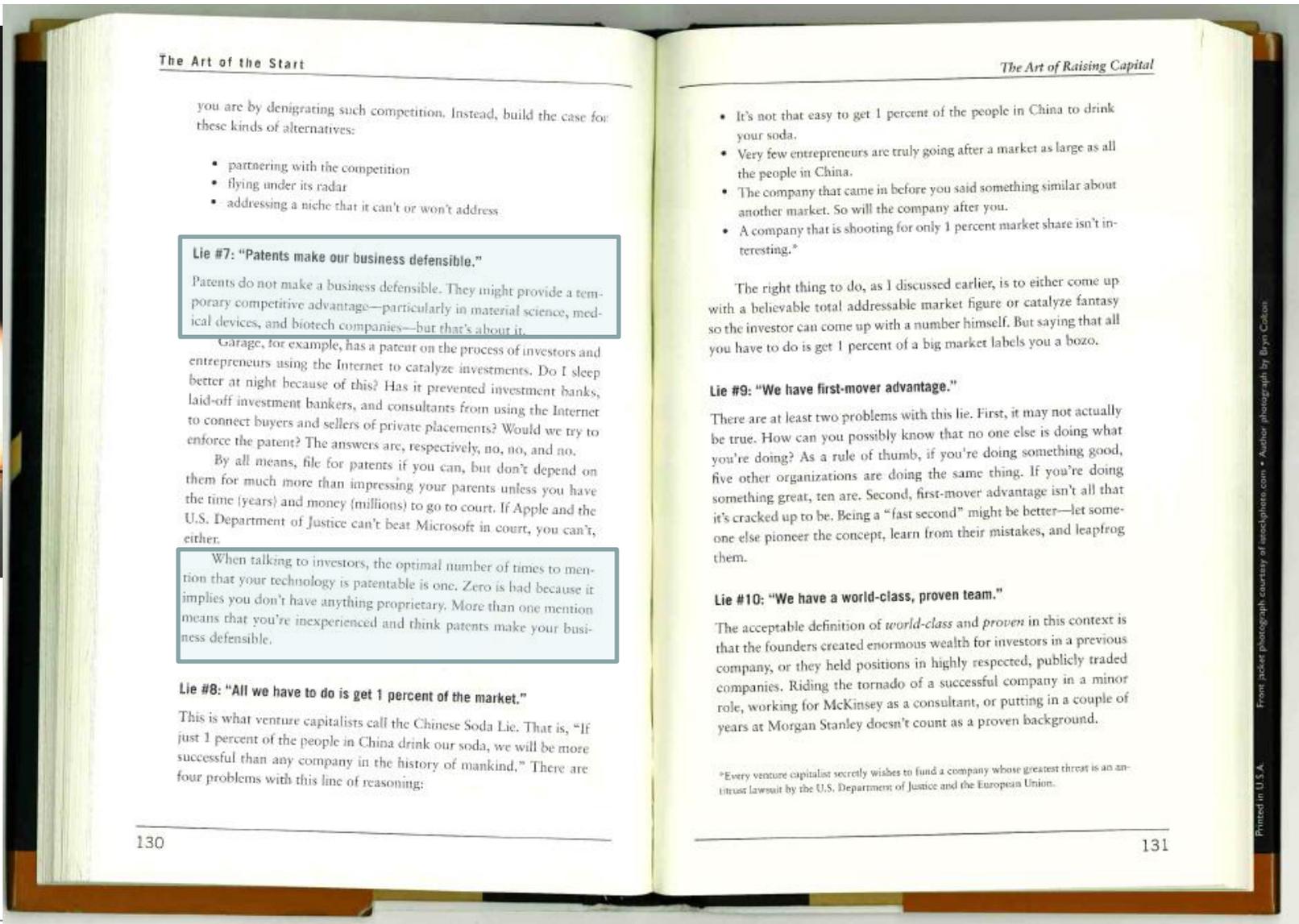
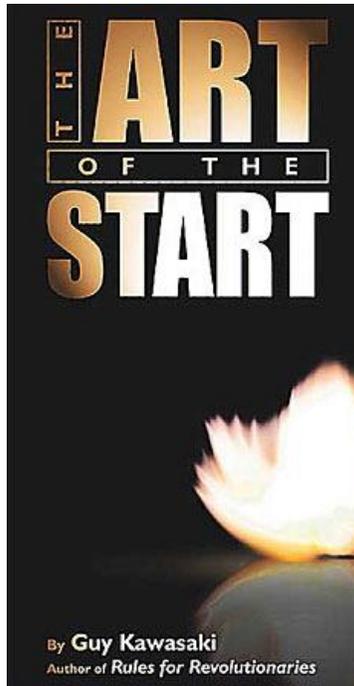
The lesson is this: Clean up your problems or disclose your problems, but never hide your problems.

### ACKNOWLEDGE, OR CREATE, AN ENEMY

Many entrepreneurs believe that investors want to hear that the organization has no competition. Unfortunately, sophisticated investors reach one or both of the following conclusions if entrepreneurs make such claims:

- There's no competition because there's no market. If there were a market, there would be others trying to win it.
- The founders are so clueless that they can't even use Google to figure out that ten other companies are doing the same thing.

# La PI et les VCs (d'après Guy Kawasaki)



*The Art of the Start*

you are by denigrating such competition. Instead, build the case for these kinds of alternatives:

- partnering with the competition
- flying under its radar
- addressing a niche that it can't or won't address

**Lie #7: "Patents make our business defensible."**

Patents do not make a business defensible. They might provide a temporary competitive advantage—particularly in material science, medical devices, and biotech companies—but that's about it.

Garage, for example, has a patent on the process of investors and entrepreneurs using the Internet to catalyze investments. Do I sleep better at night because of this? Has it prevented investment banks, laid-off investment bankers, and consultants from using the Internet to connect buyers and sellers of private placements? Would we try to enforce the patent? The answers are, respectively, no, no, and no.

By all means, file for patents if you can, but don't depend on them for much more than impressing your parents unless you have the time (years) and money (millions) to go to court. If Apple and the U.S. Department of Justice can't beat Microsoft in court, you can't, either.

When talking to investors, the optimal number of times to mention that your technology is patentable is one. Zero is bad because it implies you don't have anything proprietary. More than one mention means that you're inexperienced and think patents make your business defensible.

**Lie #8: "All we have to do is get 1 percent of the market."**

This is what venture capitalists call the Chinese Soda Lie. That is, "If just 1 percent of the people in China drink our soda, we will be more successful than any company in the history of mankind." There are four problems with this line of reasoning:

*The Art of Raising Capital*

- It's not that easy to get 1 percent of the people in China to drink your soda.
- Very few entrepreneurs are truly going after a market as large as all the people in China.
- The company that came in before you said something similar about another market. So will the company after you.
- A company that is shooting for only 1 percent market share isn't interesting.\*

The right thing to do, as I discussed earlier, is to either come up with a believable total addressable market figure or catalyze fantasy so the investor can come up with a number himself. But saying that all you have to do is get 1 percent of a big market labels you a bozo.

**Lie #9: "We have first-mover advantage."**

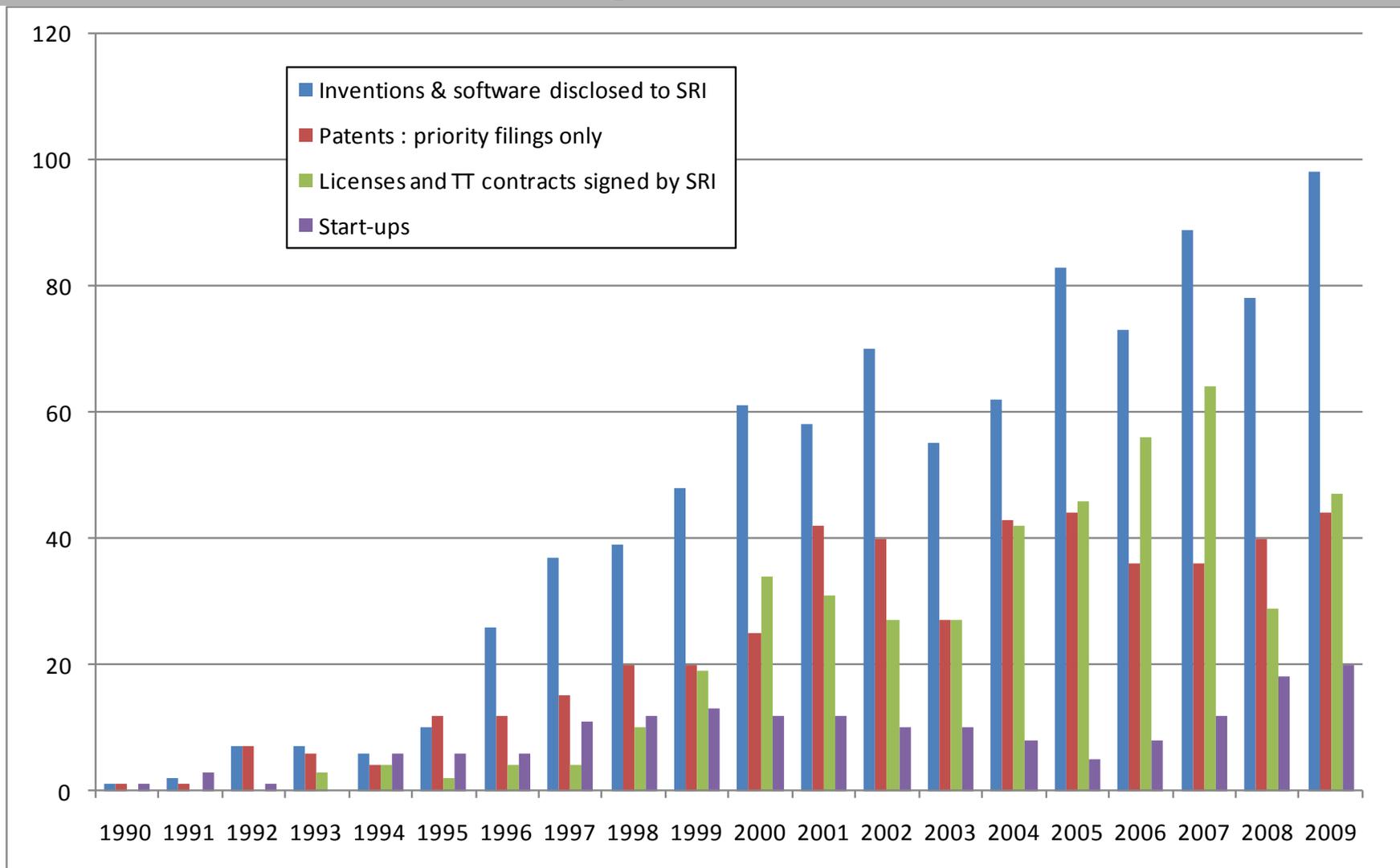
There are at least two problems with this lie. First, it may not actually be true. How can you possibly know that no one else is doing what you're doing? As a rule of thumb, if you're doing something good, five other organizations are doing the same thing. If you're doing something great, ten are. Second, first-mover advantage isn't all that it's cracked up to be. Being a "fast second" might be better—let someone else pioneer the concept, learn from their mistakes, and leapfrog them.

**Lie #10: "We have a world-class, proven team."**

The acceptable definition of *world-class* and *proven* in this context is that the founders created enormous wealth for investors in a previous company, or they held positions in highly respected, publicly traded companies. Riding the tornado of a successful company in a minor role, working for McKinsey as a consultant, or putting in a couple of years at Morgan Stanley doesn't count as a proven background.

\*Every venture capitalist secretly wishes to fund a company whose greatest threat is an antitrust lawsuit by the U.S. Department of Justice and the European Union.

# Le transfert de technologie à l'EPFL



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[www.epfl.ch/sri](http://www.epfl.ch/sri)



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**Rémi Walbaum,**  
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# En guise de conclusion...

*Un investissement! Pas une rente!*

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La propriété intellectuelle a pour objectif de créer de la valeur pour une société

A la société de définir une stratégie pour optimiser cette valeur en relation avec ses partenaires:

- patent attorney
- investisseurs
- clients
- compétiteurs
- licenciés

Start-Up | **Merci!**

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# Start-Up | Une citation...

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« Bien qu'il ait toujours été présent, le capital intellectuel n'était pas identifié comme un actif de l'entreprise jusqu'à ces dernières années. En 1994 Fortune magazine publia plusieurs articles sur le capital intellectuel ou le pouvoir de l'intelligence, basés sur des travaux menés USA et en scandinavie. Les résultats furent phénoménaux. Dans chaque étude de cas, Fortune était capable d'identifier que l'écart entre la valeur "de marché" d'une entreprise et la valeur de ses actifs financiers s'était considérablement élargi au cours des vingt dernières années. Fortune fit état de ce que le rapport entre la valeur de marché et la valeur comptable de la majeure partie des entreprises est maintenant d'environ 2 pour 1, soit en gros le double de la moyenne relevée entre 1945 et 1990. Le PER moyen actuel est aux environs de 25 comparé à la moyenne historique qui était jusqu'à lors de 17. Dans le même temps, les investissements dans les capitaux des entreprises sont en recul. Fortune conclut que le rapport entre les bénéfices et la somme des biens, moyens de production, équipement et stocks pour les compagnies américaines a augmenté de 20% au cours des 25 dernières années. Une recherche menée par Morgan Stanley's World Index indique que la valeur moyenne des compagnies américaines s'échelonne entre 2 et 9 fois leur valeur comptable. Ces résultats sont directement liés au capital intellectuel que les compagnies placent dans leurs employés. »

*Traduit de "The ABCs of the Knowledge Management » -*

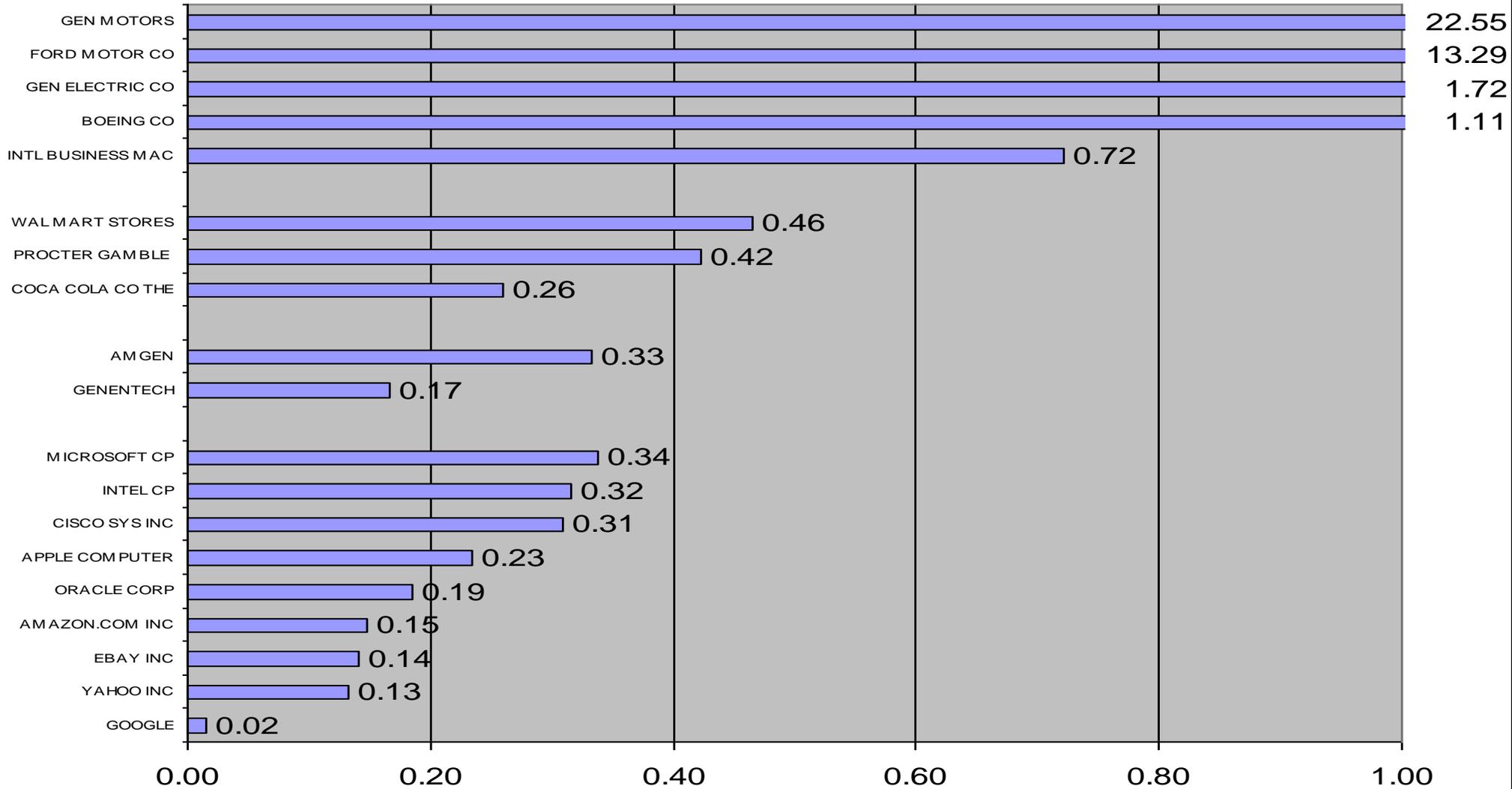
# ...qui mérite l'analyse

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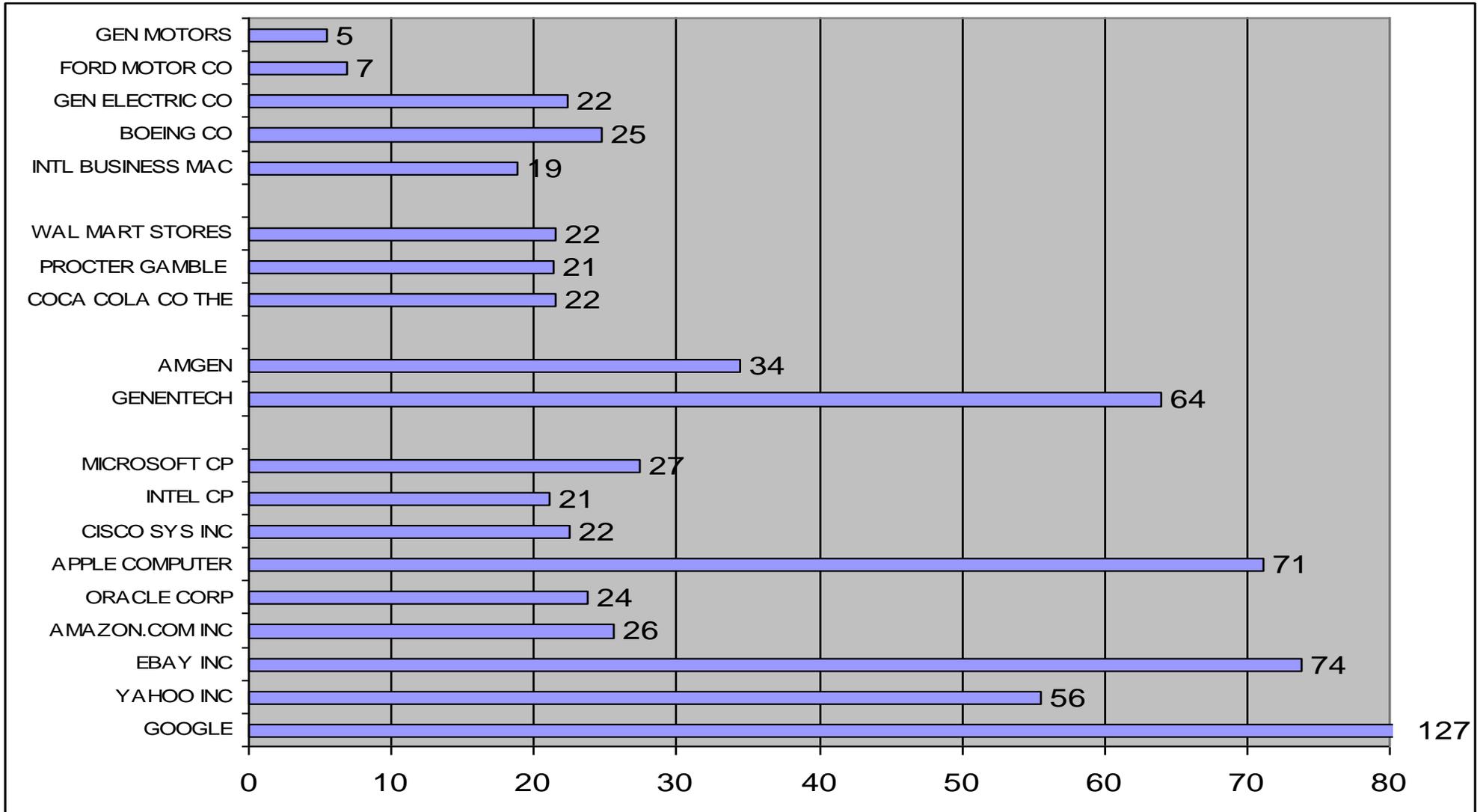
Name	Mkt Cap (\$B)	Assets (\$B)	Intangibles / goodwill (\$B)	P/E
GOOGLE	51	1	0.1	127
YAHOO INC	44	6	2.2	56
EBAY INC	56	8	2.7	74
AMAZON.COM INC	15	2	0.1	26
ORACLE CORP	68	13		24
APPLE COMPUTER	34	8	0.1	71
CISCO SYS INC	115	36	7.5	22
INTEL CP	153	48	4.3	21
MICROSOFT CP	274	92	3.7	27
GENENTECH	48	8	2.1	64
AMGEN	78	26	12.0	34
COCA COLA CO THE	104	27	3.0	22
PROCTER GAMBLE	135	57	24.0	21
WAL MART STORES	224	104	9.0	22
INTL BUSINESS MAC	151	109	10.1	19
BOEING CO	48	53	3.0	25
GEN ELECTRIC CO	377	647	92.0	22
FORD MOTOR CO	23	304	7.0	7
GEN MOTORS	20	448	4.6	5

Sources en date  
du 4 mars 2005

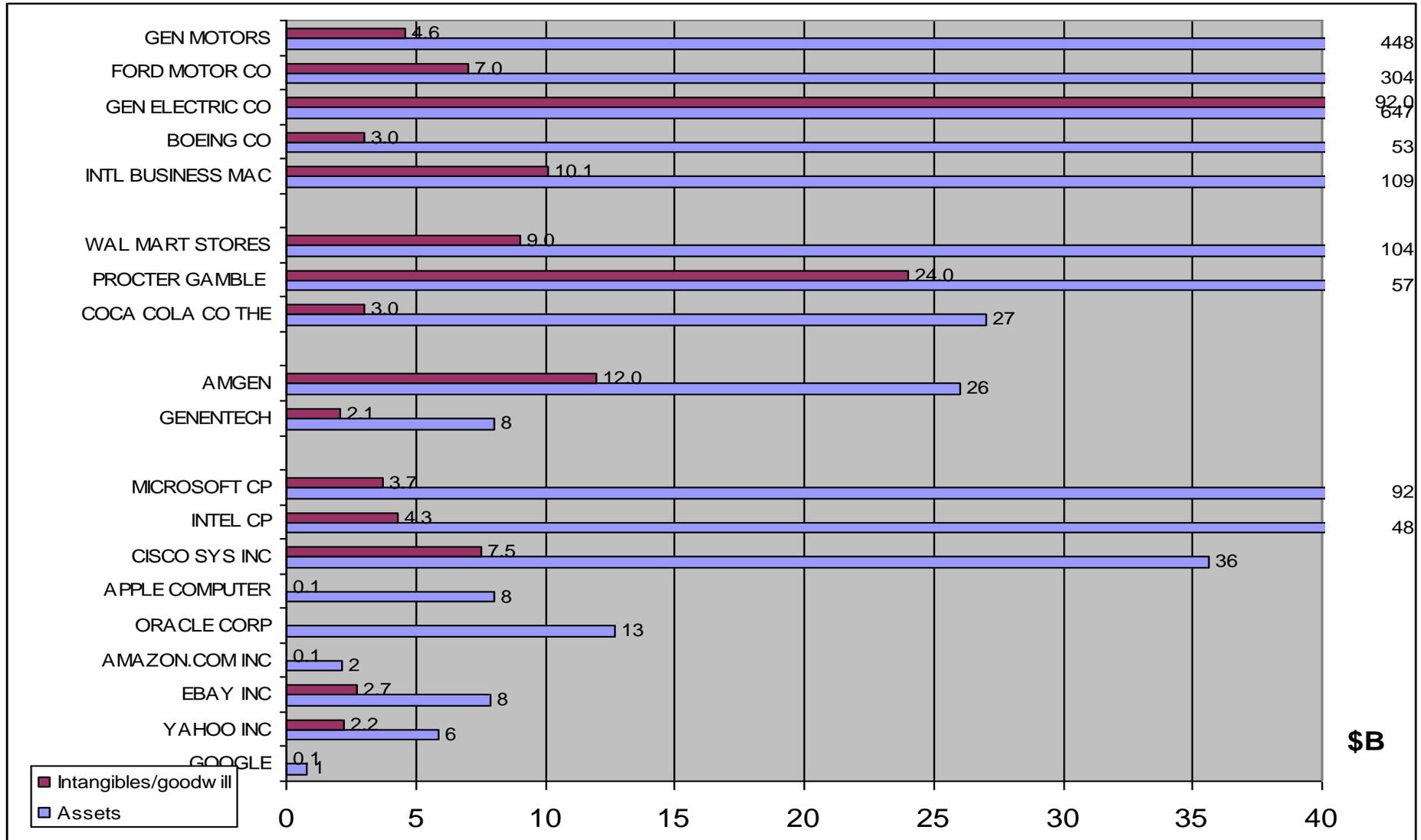
# Exemples de rapport entre assets et capitalisation



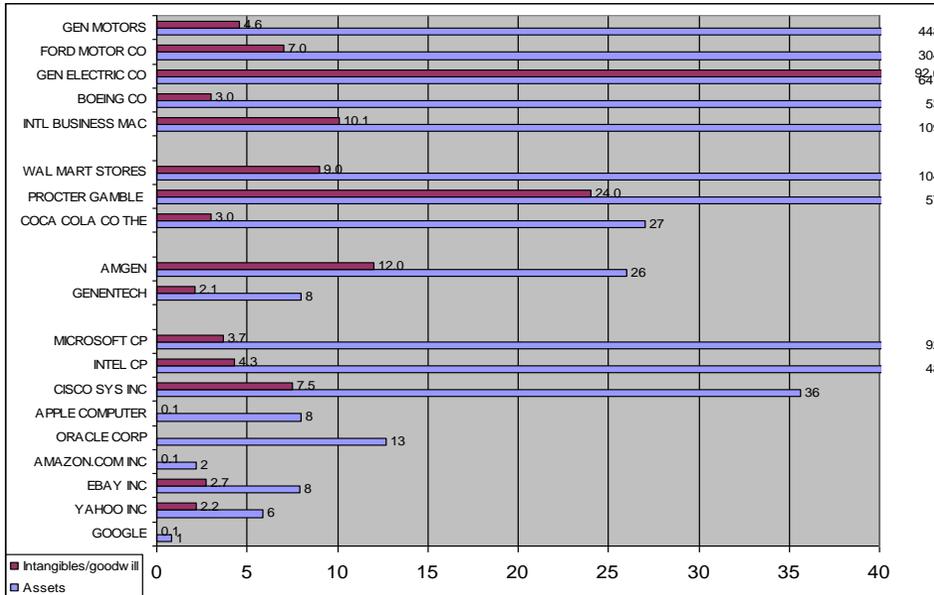
# Les PER des mêmes sociétés



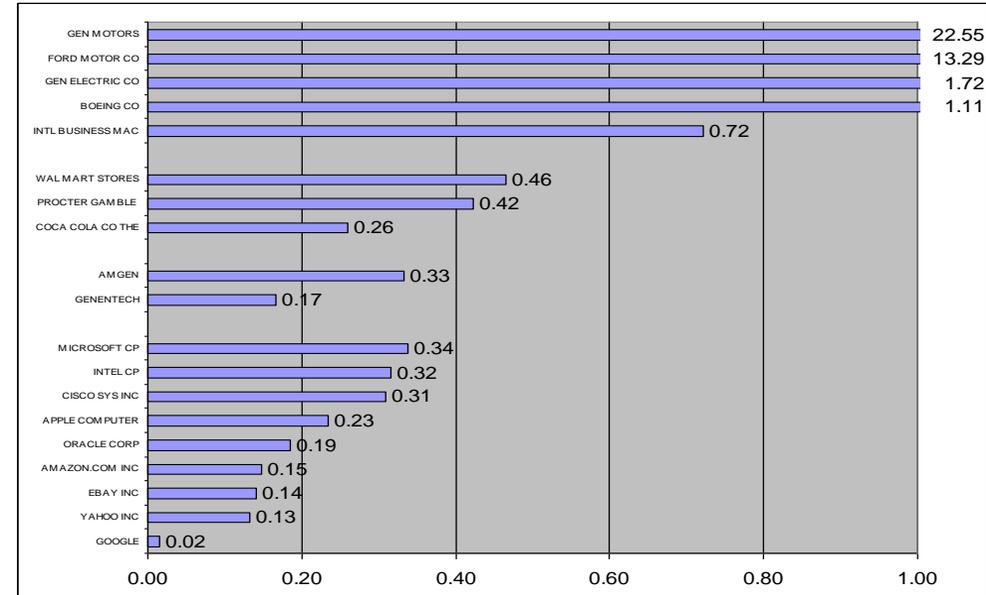
# Intangibles/goodwill in bal. sheets



# Le ratio « intangibles » à market cap. est minuscule....



Ratio intangibles /assets : 0.2



Ratio assets / market cap: 0.2-0.3

Ce n'est pas la mesure des choses qui compte, mais leur dynamique et leur perception

« Bien qu'il ait toujours été présent, le capital intellectuel n'était pas identifié comme un **actif** de l'entreprise jusqu'à ces dernières années. En 1994 Fortune magazine publia plusieurs articles sur le capital intellectuel ou le pouvoir de l'intelligence, basés sur des travaux menés USA et en scandinavie. Les résultats furent phénoménaux. Dans chaque étude de cas, Fortune était capable d'identifier que l'écart entre la **valeur "de marché"** d'une entreprise et la **valeur de ses actifs financiers** s'était considérablement élargi au cours des vingt dernières années. Fortune fit état de ce que le *rapport entre la valeur de marché et la valeur comptable de la majeure partie des entreprises est maintenant d'environ 2 pour 1*, soit en gros le double de la moyenne relevée entre 1945 et 1990. Le **PER moyen actuel est aux environs de 25 comparé à la moyenne historique qui était jusqu'à lors de 17**. *Dans le même temps, les investissements dans les capitaux des entreprises sont en recul*. Fortune conclut que le rapport entre les bénéfices et la somme des biens, moyens de production, équipement et stocks pour les compagnies américaines a augmenté de 20% au cours des 25 dernières années. Une recherche menée par Morgan Stanley's World Index indique que *la valeur moyenne des compagnies américaines s'échelonne entre 2 et 9 fois leur valeur comptable*. Ces résultats sont directement liés au capital intellectuel que les compagnies placent dans leurs employés. »