

Strategic IP management

Inhoud

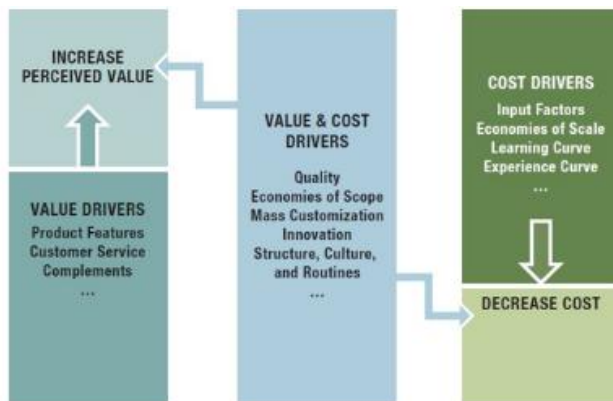
Lecture 1 Introduction to Intellectual Property.....	4
Why protect IP?	6
1) Social welfare	6
2) Fairness.....	6
3) Personal and cultural.....	6
What is IP?	6
Patent	7
Patent – Requirements.....	8
1- Novelty (35 U.S.C § 102)	8
2- Utility (35 U.S.C § 101).....	8
3- Non-obviousness (35 U.S.C § 103)	8
4- Disclosure (35 U.S.C § 112).....	8
Patent – Where to register?	9
Patent – Application procedure.....	10
Patent – Filing and maintenance costs	10
Patent – Enforceability and infringement.....	10
Trademark.....	11
Trademark – Why important?	11
Trademark – Where to register?.....	12
Copyrights.....	12
Copyright – Requirements.....	12
Copyright – Ownership.....	13
Trade secrets.....	13
Trade secrets – Requirements	13
Lecture 2	15
IP strategy	15
IP holder	15
IP strategy – Protect	15
Choosing form of IP protection: Patents or trade secrets?	17
1. Exercise power.....	18
2. Sell	20
3. Out-license.....	21
4. Collaborate	22

Complementors	22
5. Donate	22
IP-strategy - Publish	23
IP strategy - Do nothing	23
Case LEGO - background.....	23
Lecture 3	24
IP strategy	24
IP challengers.....	24
Wait	24
Resist.....	25
Challenge validity of held IP	25
Claim non- infringement.....	27
Invent around	29
Avoid territory	29
Avoid technology	29
In-license	30
Deter	30
Own power	30
Partner's power	31
Disseminate	31
Case	31
Lecture 4	32
Generic IP strategies.....	32
Why do interfirm collaborations fail?	33
1. Uncertainty of outcomes (incomplete contracting)	33
2. Difference among partners along a number of dimensions:.....	33
3. Incompatible institutional logics	36
How to collaborate	36
IP control: Equity or contractual measures?	38
IP arrangements in R&D collaborations.....	39
IP governance: Ownership options.....	40
Multilateral collaborations	41
Case HP – CNSI Columbia University Partnership.....	44
Lecture 5	46
Licensing IP	47
Why license?.....	47

1) Increase demand (Rapid adoption of products).....	47
2) Limit alternative solutions (i.e. inventing around)	47
3) Generate profit.....	47
4) Learn from licensees	48
Disadvantages.....	48
Licensing terms.....	48
Exclusivity	48
Sub-licensing.....	48
Future developments	48
Licensing terms - obligations	49
Licensing terms – Duration/termination	49
Licensing terms – payment.....	49
IP valuation: Three main methods	50
Cost-based valuation	50
Market-based valuation.....	50
Income-based valuation	51
Lecture 6	52
Why go international?	53
Why strategic IP management?.....	53
Intellectual Property Rights	53
IP Holder	53
Structural options (for protected IP):	54
1) Out-licensing.....	54
2) Partnerships.....	55
3) Establishing wholly-owned subsidiaries	56
IP challenger	57
Establish R&D subsidiary aboard	58
R&D aboard: The problem.....	59
Possible solutions	59
What variables determine optimal strategy?	60

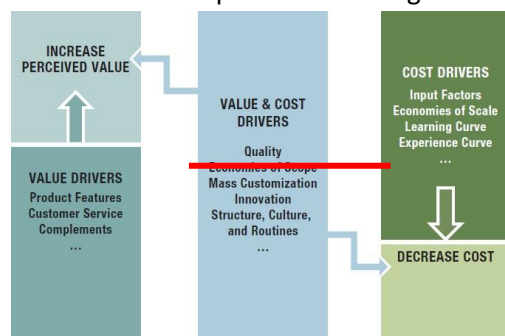
Lecture 1 Introduction to Intellectual Property

- IP= intellectual property. Sorts of IP: patents, copyrights etc
- It comes at cross section of 3 fields: strategy, innovation and law
 - Strategy: has to do with business making decisions with goal of profit maximising
 - Innovation
 - Law: reason we focus on this: typically, regulators define what can be or not be protected
- Intellectual property can be discussed on different levels: national, regional etc
- Focus in this class on business level



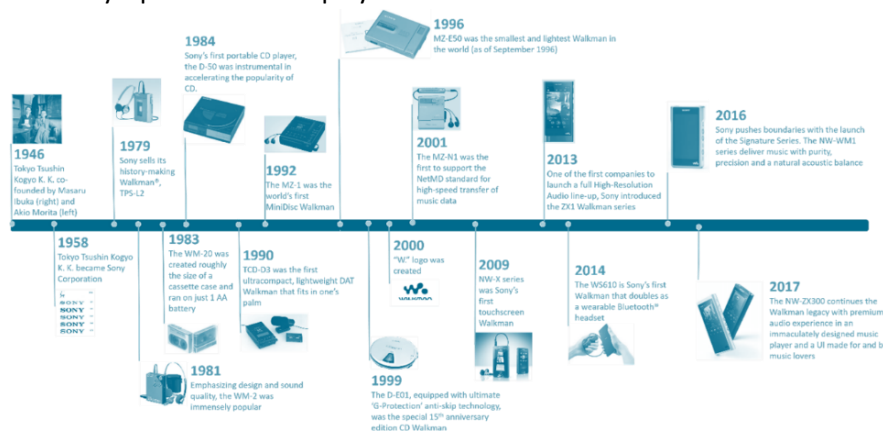
Which title fits here? The 2 columns on the sides are 2 generic categories of Porter. Cost leadership and product differentiation: ways for competitive advantage in market
Cost leader: same value of product but lowest cost
Differentiation: p.e Apple
If you focus on cost leadership: focus on economies of scale, decreasing costs via experience and learning (right)

- If you want to offer differentiated product: more applications on iPhone, greater the value of it
- “Designing beautiful-but-expensive products is easy. Designing beautiful products that are inexpensive and functional is a huge challenge.”
 - Josephine Rydberg-Dumont IKEA Sweden, President
- To illustrate trade-off between reducing costs and increasing value see previous slide
- Innovate for competitive advantage



Few activities that can help reconcile trade-offs, it's where innovation comes in the picture

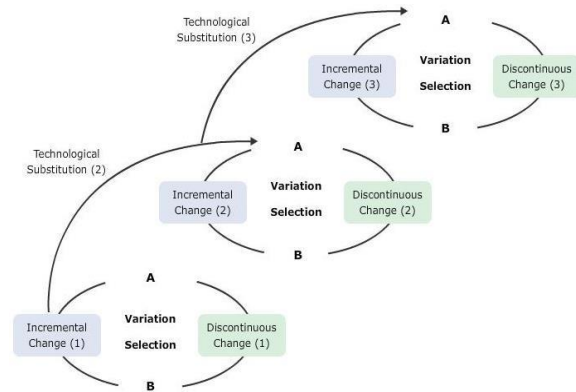
- Sony's portable audio players



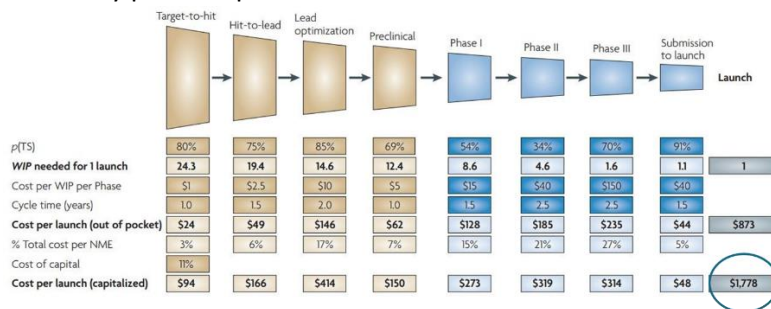
value

Importance of innovation while saving costs or improving products
Innovation helps companies achieve competitive advantage
Companies need to innovate continuously.
With technological development technologies lose their

- Innovate for competitive advantage



- Costly process: pharma



- Strategy

- What is the key strategic challenge for a firm that achieves competitive advantage?
- To keep competitive advantage, very difficult because there is natural tendency in market that other companies will try to copy success.
- Key word: imitation: key strategic challenge

- Apple and Samsung tablets

- Tablets changed over the years. After Apple, Samsung changed their tablet
- This photo was admitted in court after Apple started a lawsuit against Samsung for copying their product

- Strategic risks

- Imitation
 - ...of innovation facilitated by knowledge spillovers.
- How can you imitate? Via reverse engineering, knowledge has its own natural way of spilling over. Engineers who develop product talk to other people etc so word moves. = knowledge spill overs
- Engineers can also change employers and move knowledge to competitors

- How rapidly does new knowledge leaks out?

Percentage distribution of firms, by average number of months, before the nature and operation of a new product or process are known to the firms' rivals

industry	products (av. number of months)				processes (av. number of months)			
	<6	6-12	12-18	>18	<6	6-12	12-18	>18
chemicals	18	36	9	36	0	0	10	90
pharmaceuticals	57	14	29	0	0	33	0	67
petroleum	22	33	22	22	10	50	10	30
primary metals	40	20	0	40	40	40	0	20
electrical equipment	38	50	12	0	14	14	57	14
machinery	31	31	31	8	10	20	30	40
transportation equipment	25	50	0	25	0	67	0	33
instruments	50	38	12	0	33	33	33	0
stone, clay and glass	40	60	0	0	0	20	20	60
other	31	15	15	38	27	0	36	36
average	35	35	13	17	13	28	20	39

On average 35% of the firms' survey within 6 months the nature of product is in hands of competitors. Within 1 year another 1/3 of information is out. In processes it takes a little longer.

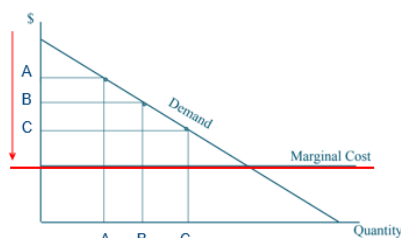
In chemicals industry: are able to keep knowledge secret for a long time

- IP protection improves appropriability conditions
 - If knowledge has its own way of leaking, to protect what you have is essential: strategic relevance for companies
 - What is IP: all about exclusivity: giving person or company that has done activity exclusive right to benefit from it; granting them temporary monopoly rights

Why protect IP?

1) Social welfare

- Incentive (prevents perfect competition)
 - First theoretical ground of IP is welfare: wants what best is for society. Idea is giving the person who has done the intellectual activity giving exclusive rights can be good to society
 - Otherwise, why would they invest in innovation if it will be copied immediately
 - Tragedy of the commons: story where if you have a village with one open ground for grazing for sheep, then farmers each is incentivised to maximise their sheep, but the more sheep, the faster the ground can no longer support the sheep -> common ground will be destroyed and everybody loses



Sometimes opening up a thing for society can have a negative effect. If other people come to market, prices lower. Greater competition, lower demand. Up until a point where companies start selling near marginal costs (markets too crowded)
How is IP relevant; if you give patent to company A, you prevent firms B, C and.. To entering the market. Give company A more market power.

- Promotes investment
 - Research has found that entrepreneurs who own patent will more likely get investors. For investors it's safer to risk money for startup with patented technology

2) Fairness

- Unfair competition (the free-riding problem)
- Deceit
- Wrong to free ride on work of others

3) Personal and cultural

- Personal and cultural are 2 different categories
- IP is expression of personality
- Protecting IP is step towards creating more utopian society
- Not all good news!
 - Granting too much protecting can backfire
 - Lifesaving medicine went way up in price. Because companies bought rights of IP

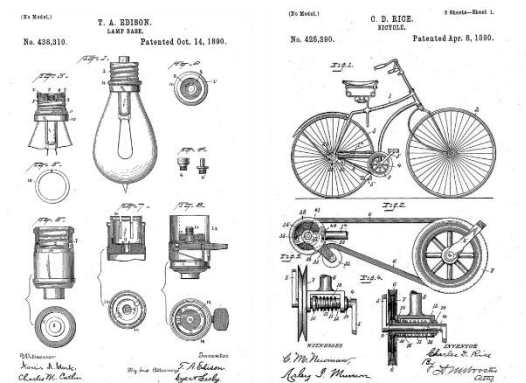
What is IP?

- A formal definition
 - "Intellectual property refers to the creative activities of literary, artistic, and scientific works, performances of performing artist, and broadcasts; inventions in all fields of human endeavour; scientific discoveries; industrial design; trademarks, service marks, and commercial names, designations, protection against unfair competition, and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields."
(World Intellectual Property Organization (WIPO), 1967, Article 2)
 - Performing artist: p.e dancing
 - IP: typically think of inventions, technologies, but is broader. Very broad definition

- Different types of intellectual property

	Patent	Trademark	Copyright	Trade secret
What for?	New technical inventions	Distinctive identification of products or services	Original and creative works	Undisclosed information
How?	Registration	Registration	Automatic right	Automatic right if requirements apply
Protection	20 years	10 years, infinite renewal	Life of the author + 70 years	Potentially infinite
Example	Google		Copyrights on cd's	

Patent



Patents are perhaps most familiar forms of IP
Edison's lamp base and a bicycle patent

- History: First patent law
 - **Senate of Venice (1474)**
 - "Any person in this city who makes any new and ingenious contrivance, not made heretofore (=previously) in our dominion, shall, as soon as it is perfected so that it can be used and exercised, give notice of the same to our State Judicial Office, it being forbidden up to 10 years for any other person in any territory of ours to make a contrivance in the form and resemblance thereof".
 - Still the same concept that it is now. Then it was 10 years, now 20. Has territorial nature
- Patent = Exclusion right
 - A patent grants a right to **prevent others** from making, using, selling or importing infringing products in the country where the patent was granted
 - For up to **20 years** from date of filing patent application
 - You can sell these rights or enter into licensing deals. If you own a patent, it's an asset. You can sell it
 - Patents are territorial.

Patent – Requirements

1- Novelty (35 U.S.C § 102)

- *A person shall be entitled to a patent unless – (a) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.*
- First requirement is novelty. Big one where most get rejected
- US has very simple law. Person who files first is one who gets to claim the patent
- Must keep information secret until you file. If information about patent is disclosed to public, (p.e newspaper etc), you can no longer patent it
- Grace period: 6 months – 1 year
- Title of patent: method for exercising a cat. What it is, is a laser pointer. Was not righteously granted, fails novelty requirement because laser pointer was already on the market
- Patent – What is considered “new”?
 - New if it does not form part of the “state-of-the-art”
 - “State-of-the-art” means everything made available to the public before the filing date of the patent application
 - There must have been no public disclosure of an invention before the filing date of the patent application
 - Keep your inventions confidential!
 - You have to disclose previous inventions
 - Novelty: has someone else come up with it previously, whether it works or not is another thing

2- Utility (35 U.S.C § 101)

- Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
- It’s an emphasis on the word useful
- Classic example: patent for a hypothetical machine that can keep going forever = perpetual motion machine. It’s impossible to make because it defines laws of physics

3- Non-obviousness (35 U.S.C § 103)

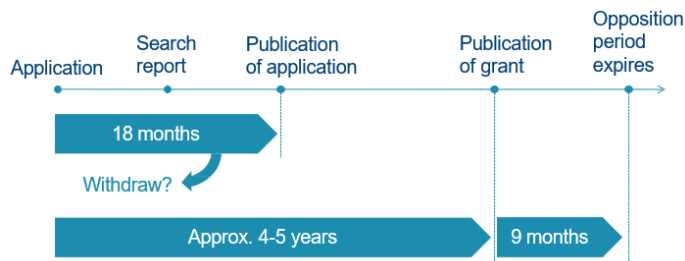
- A patent for a claimed invention may not be obtained [...] if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious [...] to a person having ordinary skill in the art to which the claimed invention pertains.
- If you patent something very simple, can be refused on this base
- P.e. reclosable packing container: too obvious to patent

4- Disclosure (35 U.S.C § 112)

- The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains [...] to make and use the same.
- Patent is deal between society and vendor. What is return for society? Disclosure (can build on technology later on)
- Patent anatomy: USPTO realisable: US patent

Patent – Application procedure

• Patent Procedure at the European Patent Office



Search process where they look if it's patentable (18 months)

Applicant is free to withdraw patent

After a few years: patent granted

A period of 9 months after publication to go to court

Patent – Filing and maintenance costs

	EPO-3 ¹	EPO-13 ²	USPTO	JPO
Procedural fees				
Filing	160	160	225	16000
Search	690	690	375	
Design. states (75 per country, up to 7)	225	525		
3 rd year of application	380	380		
4 th year of application	405	405		
Examination	1,430	1,430	150	168,600
Granting	715	715	1,300	
Claim tax ⁴	320	320	54	28,000
Administrative cost	250	250	300	
Translation cost ⁵	3,400	13,600		
Validation cost	95	1,700		
TOTAL Procedural cost	8,070	20,175	2,404	212,600
	EURO	EURO	EURO	EURO
Procedural costs without translation	4,670	6,575	1,856	1,541
Procedural costs with translation	8,070	20,175	1,856	1,541
External services cost⁷				
After grant				
Maintaining costs 10 years (fees)	2,975	16,597	2,269	2,193
Maintaining costs 20 years (fees)	22,658	89,508	4,701	11,800
TOTAL filing process⁶				
TOTAL 10 years	20,570	39,675	9,856	5,541
TOTAL 20 years	23,545	56,272	12,125	7,734
	43,228	129,183	14,556	17,341

- Compares costs between different patent offices. It's expensive to own a patent

Patent – Enforceability and infringement

• Infringement

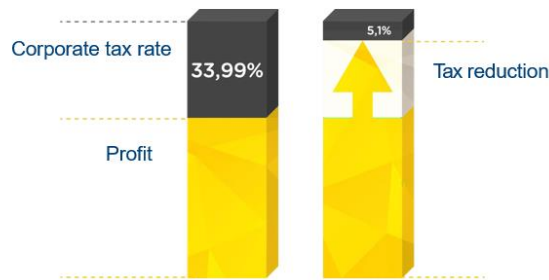
- Making, using, selling or offering that which falls within the claims of the patent of someone else

• Infringement can lead to:

- Shutdown of operations – e.g. via injunction
- Dawn raids
- Payment of damages
- Criminal sanctions in some countries

• Fiscal incentives for patenting

- Several countries (including Belgium) provide special tax regimes to incentive R&D by taxing patent (IP) revenues differently from other commercial revenues
























- Government gives incentives for patents -> tax rates for patented inventions is 5.1% instead of 33.99%

Trademark

- Any word, name, symbol, or device, or any combination thereof, currently used by a person or a person has a bona fide intention to use it in commerce and applies for registration, used to identify and distinguish his or her goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods, even if that source is unknown.
- Some forms: words, smells, symbols, colours, slogans, tastes, names, buildings, sounds, likeness
- Purpose: distinguish products between one firm and another
- P.e. Madonna's name is a trademark; you cannot use the name if it causes confusion whether it has to do with the singer or not
- Sound of the lion before movies start is trademarked
- Elvis Presley is trademarked. Person who imitated him got a lawsuit
- Key criteria= confusion in mind of readers
- Grounds for exclusion:
 1. Conflict with existing trademarks
 2. False suggestion of a connection
 3. Deception
 4. Disparaging
- General principle: rights are nation-specific.
- Term up to 10 years, ∞ renewable for life of trademark. Trademark can be infinite in theory
- Trademark – Classification
 - Trademarks must indicate the class of goods or services they are used for – trademark classification system
 - This allows for the same trademark to be used by different companies for different, unrelated goods (e.g., Apple)
 - Because of classification thing no confusion between an apple and apple corporate

Trademark – Why important?

- Trademarks strengthen brand recognition
- Trademarks prevent others from;
 - Copying
 - Imitating
 - Misappropriating
 - Misrepresenting
 - Free-riding on brand loyalty of a product or company
- Trademarks can also generate revenue by licensing (e.g. Disney and merchandising)
- Trademark: Interbrand ranking (2022)
 - Most valuable trademark is Apple. Trademark is asset so can be sold or licensed

01 Apple +18% 482,215 \$m 	02 Microsoft +32% 278,288 \$m 	03 Amazon +10% 274,819 \$m 	04 Google +28% 251,751 \$m 	05 Samsung +17% 87,689 \$m 
06 Toyota +10% 59,757 \$m 	07 Coca-Cola 0% 57,335 \$m 	08 Mercedes-Benz +10% 56,103 \$m 	09 Disney +14% 50,325 \$m 	10 Nike +19% 50,289 \$m 
11 McDonald's +6% 48,647 \$m 	12 Tesla +32% 48,002 \$m 	13 BMW +11% 46,331 \$m 	14 Louis Vuitton +21% 44,508 \$m 	15 Cisco +14% 41,298 \$m 
16 Instagram +14% 36,516 \$m 	17 Facebook -5% 34,538 \$m 	18 IBM +3% 34,242 \$m 	19 Intel -8% 32,916 \$m 	20 SAP +5% 31,497 \$m 
21 Adobe +23% 30,660 \$m 	22 Chanel +32% 29,259 \$m 	23 Hermès +27% 27,398 \$m 	24 J.P. Morgan +14% 24,335 \$m 	25 YouTube +16% 24,268 \$m 

- Trademark licensing @ Philips
 - Philips had been licences by a Chinese company and gets money for it
- Trademark licensing @ Electrolux
 - If you produce a washing machine: contact companies and asks if you could put their name on it

Trademark – Where to register?

1. National system

- National office provides national protection
- Benelux Office for IP (BOIP) is official body for registration of trademarks and designs in Benelux

2. EU system

- Office for harmonization of internal markets (OHIM)
- Provides protection within 27 EU member states

3. International system

- Madrid protocol (WIPO): provides protection to member
- states that have signed up to the protocol

Copyrights

- Initially introduced to regulate printing after the introduction of the printing press in Europe in the 15th and 16th centuries.
- WIPO Copyright treaty 1996 (93 member countries): “Authors of literary and artistic works shall enjoy the exclusive right of authorizing the making available to the public of the original and copies of their works through sale or other transfer of ownership.”
- Literary work, theatrical work, choreography, music, sculpture, architecture, databases, software, DNA sequences, film, photography, gardens, tattoos
- Software is a challenging case (can also be patented)

Copyright – Requirements

1. Originality:
 - Independent creation
 - Creativity
2. Fixation (US)

- Automatic right on creation, life of author + 70 years
- You can register copyrights, but you don't have to, formed automatically. What is independent creation?

Copyright – Ownership

- You own it
 - If you have created it
 - If you are a freelancer working on commission
- You don't own it
 - If it was created in the course of employment (in most EU countries), unless contract stipulates otherwise
- Joint-ownership?
 - Requires active participation in writing or creation
 - Requires a significant creative contribution
- Da Vinci code and other book: books were similar with the same fundamental idea. -> copyrights don't protect ideas
- Monkey who grabbed camera and took a picture of himself: photo became popular and photographer sued for ownership -> court did not rule in favour because it was his camera but not his photo.
- Copyright – Stop the thief!
 - Sign-post your work with copyright notice
 - In case of dispute, businesses need to show evidence they were the original creators of the work
 - Contact infringer and ask them to stop or pay for a license
 - Court action is possible!
 - Damages are generally based on compensation (i.e. fee that infringer would have to pay for a license on copyright)

Trade secrets

- Some forms of IP cannot be protected with any of the types seen so far:
 - Contents of a product
 - Information on business operations
 - Customer lists
 - Computer programs
 - Negative know-how
 - Source code
- Trade secrets are secrets. There is no registration. People can be sued for infringing on these rights.
- P.e. recipes, routines of firms (we do things this way), negative knowhow: what you tried before you made working products -> know what doesn't work
- Trade secrets – History
 - Historically protected indirectly under (unfair) competition laws.
 - 1985: Uniform Trade Secrets Act (UTSA) - US
 - 2016: Defend Trade Secrets Act (DTSA) – US
 - 2016: Directive 2016/943 – EU

Trade secrets – Requirements

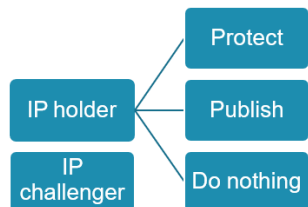
- UTSA defines a trade secret as information, including a formula, pattern, compilation, program, device, method, technique, or process that:

- Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and
- Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.
- Trade secrets must have some kind of commercial value. Have to proof you have taken measures to keep it a secret
- P.e. coca cola recipe, KFC recipe, ...
- Trade secrets law makes it illegal to:
 - Breach confidentiality agreements (NDA)
 - Change employers (US; non-compete and IDD)
 - Exploit business information obtained via improper means (e.g. phone taps)
- Permissible activities:
 - Independent research
 - Reverse engineering
- Non-disclosure agreements (NDA)
- IDD: inevitable disclosure
- Makes phone taps illegal
- Non-compete: may not work with the competition
- If you protect recipe with copyrights: limited to the text
- Reverse engineering does not fall under trade secrets
- “Anyone can read the ingredients on a Hershey bar But to actually make a Hershey bar, you have to know a lot more than that,” like how to process milk, which types of cocoa beans to use, and how long to mix the chocolate, information which is not publicly disclosed. Not a single Hershey employee knows the exact proportions of ingredients to mix to create the different chocolate bars. Instead, that information is locked away in a computer. Company information—even about sales and profits—has been so hard to come by to employees, making it extraordinarily hard to do internal marketing. And as with Mars, very few outsiders can come into the factory’s main areas.” (Fromer, 2009: 7)

Lecture 2

IP strategy

- We consider strategy from two perspectives:
 1. IP right holder
 2. IP challenger
 - Right holder: What should they do with IP
 - IP challenger: wants to do business, but sees that other company had IP right on it. What strategic options are available to this challenger option



Company that has IP has 3 key options: seek protection for IP (apply for right to exclude others to use IP), publish IP, don't do anything (standard one, don't take action)

When and how should a company seek protection for its IP (see next slide)

IP holder

IP strategy – Protect

Which form? Optimal form of protection is function of:

1. Applicability: if you don't meet requirements; cannot be applicable
 - Choosing form of IP protection
 - Sometimes, it is not a matter of choice:
 - a novel, a new medicine, a company slogan.
 - There is, however, room for choice, like between:
 - Patents or copyrights (case of software)
 - Patents and trade secrets
 - Company slogan: trademark
 - Other times there is a choice: p.e. patents and copyrights in software: have an option
2. Strategic considerations and contextual factors
 - Depends on company strategy and contextual factors
 - Choosing form of IP protection
 - Choice between patents and copyrights:
 - Case of software
 - What kind of imitation is expected?
 - Verbatim replication of code -> Copyright
 - Perform the same function -> Patent
 - But patenting requires revealing the source code.
 - Dependant of the goal, patent or copyright
 - Source code is protected automatically by copyright
 - Choosing between patents and trade secrets is more challenging!
 - Situation many companies find themselves in

- Patent?

Patent	
Pros	Cons
Temporary monopoly	Costs of filing and maintaining
Protection leverage	Disclosure (inventing around)
Return on invested R&D via licensing	Litigation (esp. challenging in processes)
	International competition (IPR regimes)
	May restrict freedom to operate

- Patent secures temporary monopoly: great deal of leverage in market: ensures company can get some compensation for R&D expenses
- Patents can be used as a bargaining ship. P.e. cross licensing: you can use other people's patents and they can use yours
- Inventing around: people solve same problem via different means
- Litigation: suing companies from infringement on their patent: see case Samsung and apple.

- Trade secret?

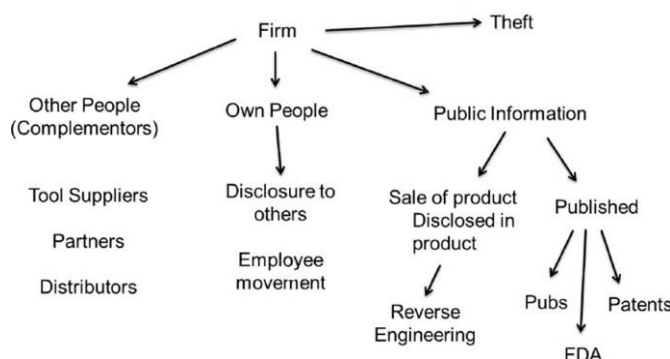
- Confidential information that carries commercial value to a company such as formulas for products, know-how, technical recipes for processes, customer and employee lists, and marketing strategies.**

Trade secret	
Pros	Cons
No disclosure	Spillovers via employee job hopping
Can be cheaper than patenting	Spillovers via suppliers
	Reverse engineering
	Risk of patenting by others (lock-out)

Can be cheaper: no filing costs, but depend on systems a company need to put in place: can be expensive sometimes
Spillover: knowledge leaks out of a

company

- You work with suppliers and customers and they sometimes have insight in trade secrets. Knowledge and secrets can run from one company to the other via suppliers
- Reverse engineering: if someone can break it up and build again: not protected
- Risk of patenting by others: if someone else files a patent: you're locked out.
- In US: some states respect non-compete agreements, others don't
- Trade secret requirement: need to take measures to protect secret etc
- Difference patent and trade secret: disclosure is necessary in trade secrets



○

How important are the following means for preventing others from finding out about your trade secrets?	Score (0-4)
1) Control of publishing by researchers and employees	2.88
2) Controlled access to facilities	2.70
3) Monitoring of visitors and temporary employees	2.13
4) Avoidance of patenting	1.58
5) Implementation of an internal secrecy policy	3.04
6) Efforts to increase employee loyalty to the company	2.33
7) Efforts to prevent competitors from hiring over key personnel	1.88
8) Fragmentation of technological information among managers and other employees	1.42

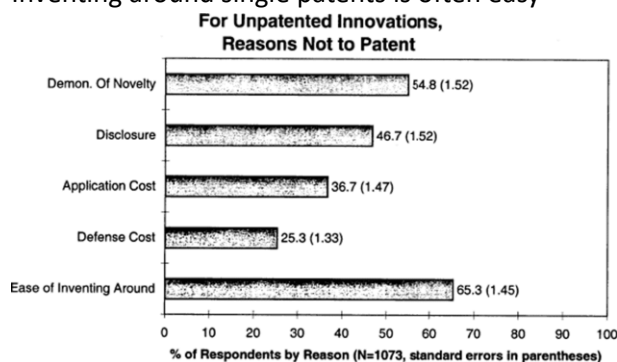
Publications are very important:
try to control what researchers publish
Employee loyalty very important

Choosing form of IP protection: Patents or trade secrets?

- Two considerations:

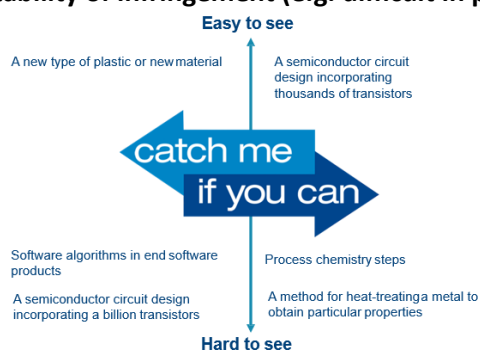
1. Number of alternative solutions

- IP holder: choosing between patents and trade secrets
- Number of alternative solutions: very important: how easy it is to invent around it. Some technologies easy to invent around.
- Inventing around single patents is often easy

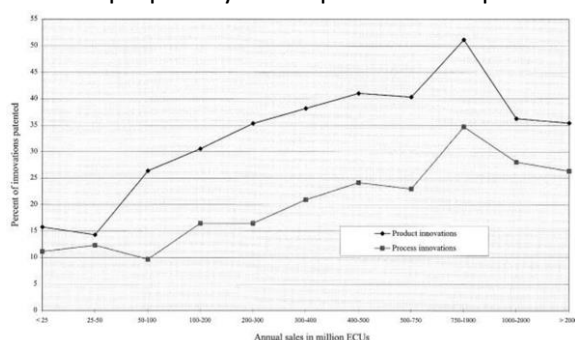


Most popular answer why they choose not to patent: if it's easy to invent around it. If you file a patent then: you tell competitors what they should be doing

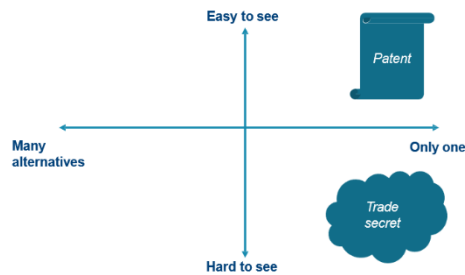
2. Detectability of infringement (e.g. difficult in processes)



- Patent propensity: more product than process or business model innovations



Easier to protect products using patents

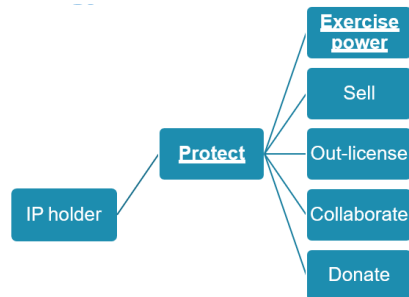


Pharmaceutical companies usually patents: only one alternative and easy to see infringement

When infringement is hard to see and there is only one alternative: trade secrets

○ Choice criteria between patents and trade secrets:

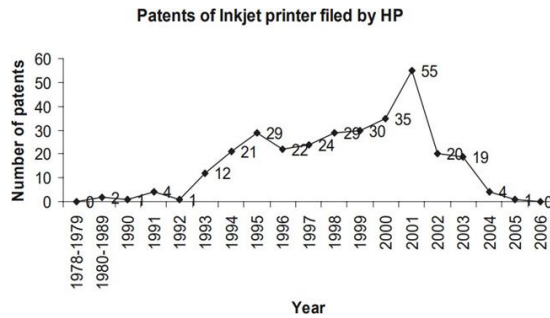
- Duration
- Cost
- Licensing and leverage for cross-licensing
- Signalling quality
- Strength of IP protection regime
- Ease to reverse engineer
- Detectability of infringement
- Ease to invent around
- Duration: patents are temporary
- Patenting increases flow of investment in start-up companies



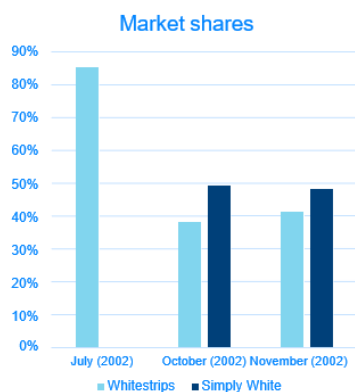
-
- Strategy: IP right holder

1. *Exercise power*

- How do they extract value from IP?
 1. Exploit legal exclusivity rights to secure monopoly profits by suppressing competition (preventing imitation).
 - Exclude others from doing business
 - During time: no competitors: higher prices. After patent other firms can enter and price will go down
 - Portfolio of similar patents (offensive blocking)
 - **Patent Fence**
 - You file for several patents that protect not only this solution, but also alternative solutions, in order that people cannot invent around product
 - Big example is ink jet technology of HP
 - **The Inkjet market**
 - Was revolutionary at the time; increased accuracy of printing



-
- Hp made billions in revenue by patent fencing strategy
- Very successful here, but can be a bad idea
- When is this a **bad idea**?
 - When it's an emerging market
 - **Emerging market**
 - If you're too powerful in an emerging market, you'll have to do the heavy-lifting all by yourself.
 - Nobody else will do work by educating people with benefits. If you open up a little bit: at least you have other players on the market who can help switch customers to electric cars
 - Why Tesla gave up on patents
 - He says patents are for the weak. Wanted market of electric cars to grow
 - Emerging market
 - If you are the dominant firm (largest market share), exercising too much power can harm (reduce the size of) the whole market
 - -> A less aggressive strategy might generate better results.
 - When rivals will retaliate
- P&G
 - Whitening strips
 - Game changer: was nothing like this on the market: started selling very well and got competition from Colgate
 - P&G vs Colgate 40\$ vs.15\$
 - Does it even work?
 - Invented around technology P&G
 - It's a gel instead of a strip
 - Where is problem? 1) original product of P&G was on the market for 40 dollars and this was sold for 15. 2) this product was ineffective, where P&G product actually works



Moment simply white was released: already captured greater market share than the good product

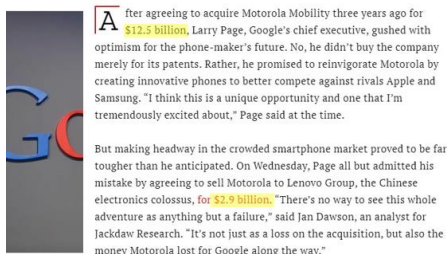
What would P&G do? Lower price. Result was a price war. At end of the day P&G lost so much in revenue

- When rivals will retaliate
 - Increasing rivals' incentives to innovate
 - Invent around the IP
 - -> Licensing the IP to make the market more competitive can be better strategy in the long-run than making competitors more innovative.
- **When complements are strongly present**
- Apple
 - It wasn't until mid-90's that this Microsoft Intel standard took over and took the market and reduces apples market share to a very small amount. Just because apple employed heavily exclusivity standard and patented a lot. Result was that intel and Microsoft were able to release new computer with a much lower price.
 - Have network effect: more people with windows systems: can share between each other: important to enlarge market share as fast as possible

2. Sell

- Problems:
 - Information paradox: "In trading ideas, the willingness-to-pay of potential buyers depends on their knowledge of the idea, yet the knowledge of the idea implies that potential buyers need not pay in order to exploit it." (Gans and Stern, 2003: 338).
 - Value is context specific
 - Value of patent depends on having other patents (portfolio)
- Solutions:
 - Patent fencing
 - Partial disclosure
 - Keeping "Skin-in-the-game"
- Selling IP is tricky. When selling IP, you sell an idea. The willingness to pay depends on idea, but if you tell them idea, they already know this and can steal this. Particularly the case with trade secrets
- Value is context specific: maybe IP is valuable in your company because you have right staff etc, but in other companies it would not work
- Patent fencing: sell portfolio of patents
- Partial disclosure can be beneficial: reveal part of the idea
- Skin-in-the game: seller accepts stocks in other company as payment

Motorola Was a Gargantuan Mistake Only
Google Could Afford to Make



Basically, bought company for IP

Patents were not as valuable as google initially thought

- When does selling IP make sense, economically?
 - When the value of the IP has greater value in the hands of the potential buyer than in the hands of the seller.
- Morally:
 - **1922** Frederick Banting and Charles Best discovered insulin then sold their patent to the University of Toronto for \$1.

- **1972** the university sells the technology, which ends up in the hands of Sanofi, French pharmaceutical firm.
- **Today**, three companies control the market for insulin: Sanofi, Eli Lilly, and Novo Nordisk.
- Sad that a technology basically donated to a university, is sold for a lot of money
- ****Side note**
 - How is market power possible for a patent granted in 1922?
 - Evergreening is “artificially extending the life of a patent or other exclusivity by obtaining additional protections to extend the monopoly period.” (Feldman, 2018)
 - Of the roughly 100 best-selling drugs, almost 80 percent obtained a patent that extended the monopoly period beyond the duration of the initially-granted patent (Bloomberg, 2017).

3. Out-license

- Out-licensing can be a less aggressive strategy
- Retain ownership of IP but give one or more licensees the right to use it.
- Licensor gives permission to the licensee, the licensee gives payments to the licensor
- When is licensing a good idea, **economically**?
 - By licensing IP: strengthening competition
 - Out licensing example: Monsanto: wheat is a huge problem: damages crop etc: herbicide method in wheat: burns all the wheat.
 - Chemical solution to wheat problem. Is an herbicide. One problem: kills everything. Farmers who wanted to use it: needed to time accurate etc
 - They came up with plants who are resistant to the particular weeds' killer. Employed licensing strategy
- Monsanto grants more than 200 seed companies licenses to manufacture the Roundup Ready GM (Genetically Modified) seeds.
- What did Monsanto accomplish with this licensing strategy?
 - Rapid adoption of its product:
 - Genetically Modified seeds have 91% of the soybean market.
 - Of that percentage, 92% are Roundup Ready seeds.
 - Technological lock-in:
 - As Monsanto develops new products, it pressures licensees to buy them
 - (Roundup Ready 2).
 - Rapid adoption of products
 - Now genetically modified seeds are very popular
 - If licensees will not buy new technologies: throw them out
- Issues in licensing:
 - Exclusivity
 - The rights granted licensees
 - Are licensee improvements licensed?
 - Sub-licensing allowed?
 - Territory
 - Royalties
 - Termination
 - Microsoft failed in smartphone market.
 - It's the case because of patent royalties

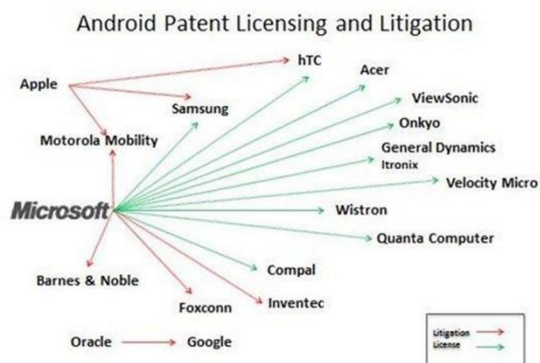
Why Microsoft Makes \$5 to \$15 From Every Android Device Sold

CHRIS HOFFMAN @chrisbhoffman
MAR 5, 2014, 6:40 AM EST | 3 MIN READ



Microsoft makes much more money from Android than Windows Phone. Every time you buy an Android smartphone or tablet, Microsoft is likely receiving \$5 to \$15. They likely make at least \$2 billion per year from Android.

This financial agreement is all about patent royalties. Microsoft claims to hold software patents that Android infringes on, and they threaten lawsuits against Android device manufacturers until they settle.



Green arrows are licensing deals, red one are lawsuits

Samsung and apple have a few lawsuits regarding their patents

Don't protect essential features of the operating systems

When you want to select text on phone and put finger on it and hold, when you then drag the ruler is patented

When you open a webpage and is still loading. Icon that appears then is patented

4. Collaborate

- Competitors
- Complementors
- Customers
- Universities & research institutes

Complementors

- Google is on the side of Samsung and android phone makers and stand against apple

Google-Samsung patent truce will boost Android and wearable tech, say analysts

By Louk Essers
PCWorld | JAN 27, 2014 8:45 AM PST

OFFICE EQUIPMENT JANUARY 26, 2014 / 10:00 PM / UPDATED 9 YEARS AGO

Google, Samsung announce global patent agreement

The companies said the deal "would lead to deeper collaboration on research and development of current and future projects."

By Reuters Staff

"By working together on agreements like this, companies can reduce the potential for litigation and focus instead on innovation," said Allen Lo, deputy general counsel for patents at Google, in a statement.

Signed a collaboration deal, a truce to not fight on IP anymore. Target of this deal is apple -> strategic alliance against a common enemy

5. Donate

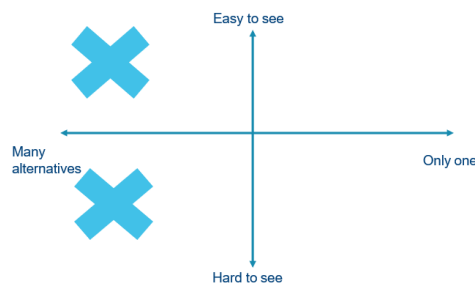
- Companies that have some IP, can choose to donate it to developing countries, but still use it in their domain

IP-strategy- Publish

Publication		
A strategy used to prevent another party from obtaining a patent on a product, apparatus, or method.	Pros	Cons
	Cheap	No leverage
	Prevents others from patenting	No return on invested R&D

- Eliminate option of anyone else patenting invention in future. You don't get any revenue, no legal exclusivity. Defeats novelty requirement so it cannot be patented
- Where?
 - Research disclosure establishes an invention as prior art preventing others from patenting
 - Patent examiners are required to search for publications in research disclosure by PCT statute
 - Research Disclosures are abstracted into the major publication databases over the world
 - Research Disclosure is cited in patents
 - Patent examiners check this journal when they search for prior art.
 - You don't need to publish everything, but enough that can be prior art
 - Can choose to disclose and keep something as a secret

IP strategy- Do nothing



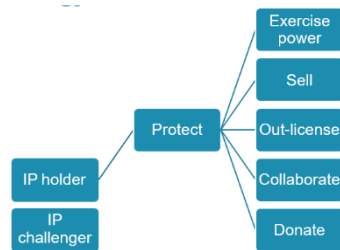
When is it best to not do anything. When infringement is easy to see or hard to see and there are many alternatives. Doing nothing is a good option. It's cheap
If you patent and there are many options: hard to see whether they violated your patent or not

Case LEGO- background

- At LEGO:
- Concept centre developed innovations that improved the speed and precision of plastic injection molder manufacturing processes.
- Experimentation with emerging technologies led to technological improvements. These are process innovations
- Question: there is IP generated to ... What options are available to the company with regards to this IP
- Patent fencing. Disadvantage: duration, but there buying tools from other companies (German manufacturers), those companies protect their technologies as well. All technology they are using from manufacturers: have to get permission from them and get licenses from them in order to patent technology or sell them to them
- "The absolute worst case would be if we come up with an innovation and then our competitors use it, or even worse, they prevented us from using it!" –director of concept centre
- Another major problem with patenting: this is process innovations: difficult to reverse engineer how exactly a piece was made. These are all process innovations; belong to lower side of graph: hard to see if someone is infringing on any kind of patent. Patenting not a good option in this case.
- Left with option: keep secret: major issue being locked out of technology when someone files for a patent

Lecture 3

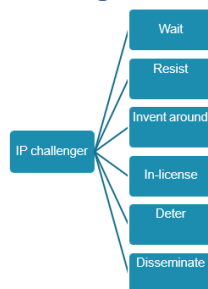
IP strategy



Today we look at generic IP strategies. Options available for a company that wants to enter a market where another company holds IP right

Challenger: new comer

IP challengers



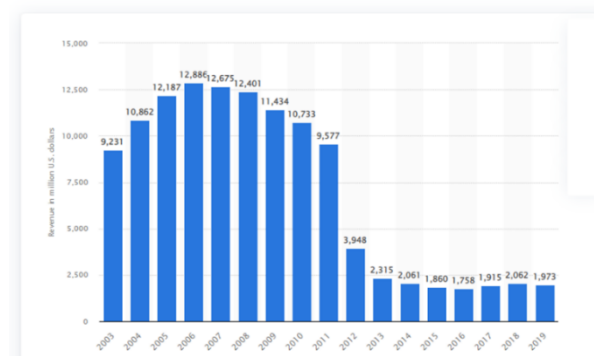
Want to enter a domain, but are confronted with some barriers

Options are not mutually exclusive

Wait

- **Patent cliff**
- **Wait:**
 - Once a patent expires, other companies are free to manufacture and sell products that use the same technology or process without having to pay licensing fees or royalties to the original patent holder.

Worldwide revenue of Pfizer's Lipitor from 2003 to 2019
(in million U.S. dollars)



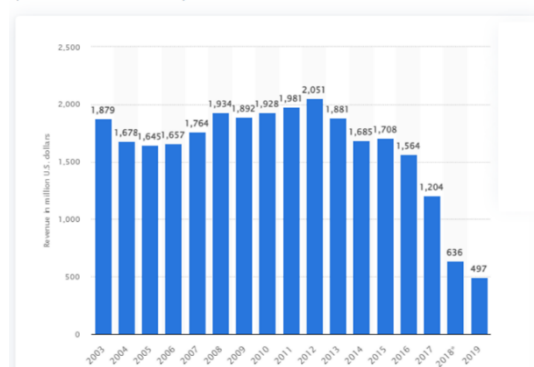
Wait until IP rights expire

One of the most profitable drugs ever

manufactured in history. Manages cholesterol. As you can see in the graph.

There is a **patent cliff**: once patent expires: there is a flood of generic medications which uses the same things and same materials which floods the market.

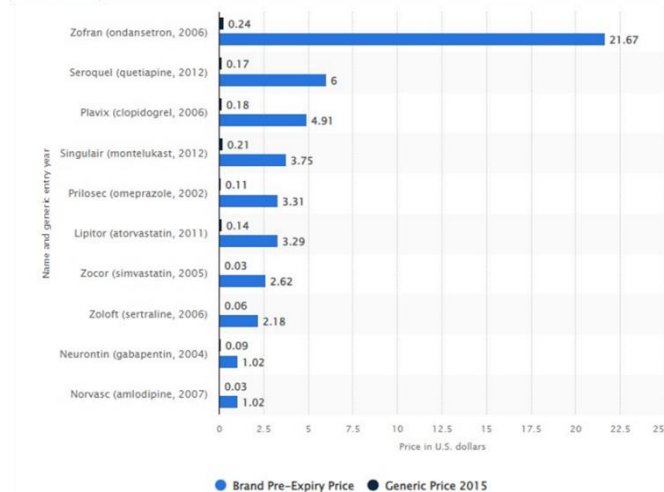
Worldwide revenue of Pfizer's Viagra from 2003 to 2019
(in million U.S. dollars)



Peaked in 2012; generated more than 2 billion in revenue worldwide. Once patent expired.

Revenue dropped significantly

Comparison of brand pre-expiry price and generic price of selected drugs in the United States as of 2015
(in U.S. dollars)



Why are generic medications cheaper? Because they don't have R&D costs. Also explains why originals are so expensive

Zofran: 21,67 and generic sold for 0,24.

- Pfizer's Viagra
 - Active ingredient patent (i.e. composition of matter patent)
 - Viagra was initially intended as a treatment for chest pain due to bad blood flow
 - Didn't pass through clinical trials, but during development they saw the side effect -> filed new patent
 - Use' patent: protects a specific use or method of using an existing product or technology.
 - Original patent was for chemical thing. In title same name, but here they say what they use it for
- Complications

HEALTHCARE & PHARMA AUGUST 16, 2011 / 1:37 PM / UPDATED 12 YEARS AGO

Pfizer wins Viagra patent battle against Teva

By Toni Clarke

3 MIN READ

BOSTON (Reuters) - Pfizer Inc said on Monday it won a patent infringement case against the U.S. unit of Teva Pharmaceutical Industries Ltd, preventing Teva from launching a generic version of Pfizer's erectile dysfunction drug Viagra until October 2019.

United States Patent [19] Bell et al.

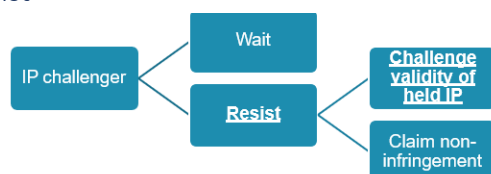
(54) PYRAZOLOPYRIMIDINONE ANTIANGINAL AGENTS
(75) Inventors: Andrew S. Bell, David Brown; Nicholas K. Terrett, all of Groton, Conn.
(73) Assignee: Pfizer Inc., New York, N.Y.
(21) Appl. No.: 882,988
(22) Filed: May 14, 1992

(12) United States Patent Ellis et al.

(54) PYRAZOLOPYRIMIDINONES FOR THE TREATMENT OF IMPOTENCE
(75) Inventors: Peter Ellis; Nicholas Kenneth Terrett, both of Sandwich (GB)
(73) Assignee: Pfizer Inc., New York, NY (US)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
(21) Appl. No.: 08/549,792
(22) PCT Filed: May 13, 1994
(86) PCT No.: PCT/EP94/01580
§ 371 (c)(1),
(2), (4) Date: Mar. 4, 1996

Teva was doing the wait strategy to sell their own version afterwards
Original patent was filed in 1992. which means it expires in 2012. Teva needed to wait until use patent (1994) was expired, not just the other patent

Resist



Resist: to fight back

Claim non-infringement: claim that IP is valid, but say that you not infringed on it

Challenge validity of held IP

- Attempt to invalidate or nullify the protection enjoyed by the IP holder.
 - Lotus speculoos en speculoospasta
 - 2002: Oma Wapsie (Rita) posts a recipe on her blog.

- **2008:** Two contestants present similar idea on Dutch TV show *De Bedenkers* (*The Inventors*):
 - The Belgian constant Els Schepper advances in the show.
 - A team of two other constants leave the show earlier, but had already obtained a patent on the idea of the spread in 2006.
- **2009:** Lotus, manufacturer of cookies, approached Els Schepper to develop spread. Big success on market.
 - Team of contestant holding the patent sue Lotus. Lotus fights back. Patent is sold to Lotus.
 - Lotus, now with patent, uses it against other manufacturers of spread.
 - The other manufactures formed a coalition to fight the patent.
- **2011:** Ghent Commercial Court nullifies the patent, on the basis of *Oma Wapsie's* blogpost.
 - Contestants had already patented the idea
 - Tried to prevent other companies to manufacture the spread.
- ****Side note: is food patentable**
 - Genetically modified food can be patented
 - See video hamdog: combination hamburger and hotdog. Only burger in the world that has been patented -> was awarded a design patent. Does not protect process or method, just protects the shape
 - Meat substitute can be patented
 - A method can be patented
- Drawbacks of challenging validity of held IP:
 - Cost of litigation (e.g. Plavix)
 - In US: very costly to do this
 - Litigate to invalidate held IP
 - Blood thinner used to prevent heart attack and stroke in people who are at higher risk for those events.
 - Developed jointly by Bristol- Myers Squibb and Sanofi.
 - Plavix brought in \$7.1 billion in net sales in 2011 (30% of BMS revenue that year).
 - This drug was a very big part of the company's revenue (30%)
 - Patent filed in 83 and 88
 - Claimed that patent on the right side: should be invalidated because it's obvious. Court ruled that it was not obvious
 - Person who judges this: expert but not the best of the best
 - Apotex
 - Founded in 1974.
 - Canadian generic pharmaceuticals manufacturer
 - Generic Plavix approved in 2006.
 - **Apotex's argument:**
 - The '265 patent, which is due to expire in 2011, is invalid due to obviousness (it is anticipated by a prior patent (US 4,529,596, expired in 2006))

Generic drug maker pays \$445m

Associated Press, February 9, 2012, 12:00 a.m.

TRENTON, N.J. -- Just three months before the world's second-best-selling drug gets US generic competition, a generic company has paid nearly \$445 million to finally end a decade-long, twist-filled patent infringement battle with two heavyweight drug makers over blood thinner Plavix.

Apotex Corp., Canada's biggest drug maker, has paid Bristol-Myers Squibb Co. and Sanofi SA, the two brand-name drug makers that jointly sell Plavix, \$442.2 million in damages ordered over its improper sales of a generic version of Plavix in 2006. Apotex also paid \$1.26 million in interest and another \$900,000 in legal costs.



The patent fight over Plavix began in March 2002. MARK LENNIGHAN/AP/PFILE 2006

APOTEX
Innovating for patient affordability



- Can invest in company for lawsuits. Go on platform if you want to sue. If they bet and court rules in favour: gets a percentage of the money

Claim non-infringement

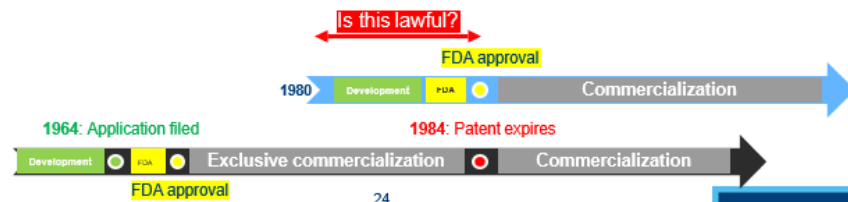
- Acknowledge the validity of held IP but argue that own activity does not infringe upon holder's rights.



- Roche's sales of DALMANE were in excess of \$40,000,000 annually (in 1983).

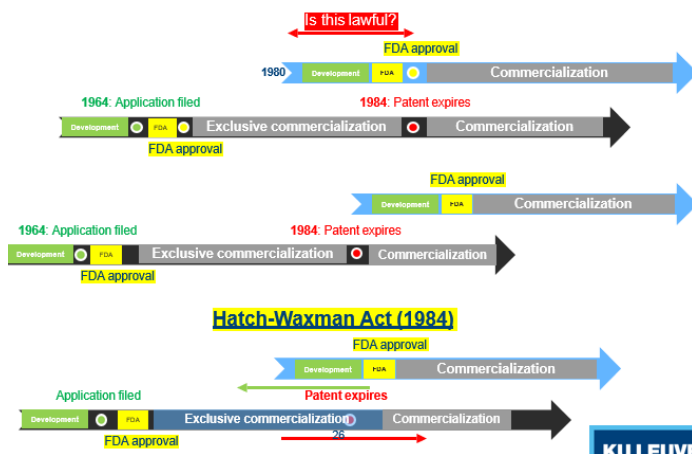


- Imports 5 kg of active ingredient for development



- Interesting case: because of ruling in this case, law changed
- Process of testing compound and see whether it works.
- When they got approval: can produce medication
- If patent expires: competition with generic drugs
- What happened here: other company wanted to produce generic drug for sleep issues. Start to develop it. active ingredient was still patented. Imported product from other country. For the purpose of developing their generic medicine. So, they could launch it immediately after patent expires
- What happened in red phase: company is using product for development. Lawful?
- 13 October 1983: Roche Products, Inc. v. Bolar Pharmaceuticals Co., No. CV 83-4312.
 - Bolar is in possession of five kilograms of flurazepam hcl, which it imported from a foreign manufacturer not subject to United States patent law. Plaintiff seeks to permanently enjoin defendant from performing required FDA experiments with the drug during the term of the patent. There are no disputed facts in this case. There is no argument that the patent is for a pioneer invention and is valid and in force.
 - The United States District Court for the Eastern District of New York held that Bolar's use of the patented active ingredient for federally mandated testing was not infringement of the patent in suit because Bolar's use was de minimis and experimental.
- Roche filed its notice of appeal to The Court of Appeals for the Federal Circuit (CAFC) on the same day.
 - CAFC: Does the limited use of a patented drug for testing and investigation strictly related to FDA drug approval requirements [...] constitute a use which, unless licensed, may constitute patent infringement?
 - 23 April 1984: Bolar's intended "experimental" use was solely for business reasons and not for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry. Bolar's

intended use of the active ingredient to derive FDA required test data was thus an infringement of the patent.

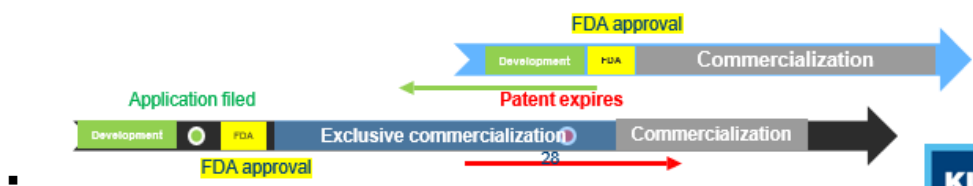


This changed law in US. Result was that first scenario was deemed illegal. Suggested correct alternative: wait until patent expires. Not the best scenario: also for society: prices stay high. Holder of patent gets more exclusivity

Hatch Waxman act: solved problem to get each part something. Allowed development to begin before patent expired. Pushed legal development bit to the left even before patent expires.

To give something back to owners: gave more time for exclusive commercialisation. But have to file application for it

- Hatch-Waxman Act (1984)
 - No liability for making, using, or selling “a patented invention” “solely for uses reasonably related to the development and submission of information” to FDA.
 - Abbreviated New Drug Application procedure (ANDA) for seeking FDA approval for generic equivalent of FDA-approved drug.
 - Extension of patent term to offset FDA approval process up to 5 years, but no further than 14 years from date of FDA approval.



- Fair Use is often cited by defendants in copyright infringement lawsuits.
- Fair Use under Copyright law
 - Perfect 10 v. Google
 - 508 F.3d 1146 (9th Cir. 2007)
 - The framing and hyperlinking of original images for use in an image search engine constituted a fair use of Perfect 10's images because the use was highly transformative, and thus not an infringement of the magazine's copyright ownership of the original images.
 - **Transformative use:** Derivative works that transcend, or place in a new light, the underlying works on which they are based.
 - Transformative use falls under the Fair Use Doctrine.
 - Google images
 - Perfect 10: website that published photos of nude models: sued google because google image search will give minimised versions of photographs they put on their website.
- Drawbacks
 - Cost of litigation
 - Success is captured by others
 - Before it goes to court: people don't know whether scanning books is legal or not.

Invent around

Avoid territory

- Manufacture or use patented technology in territories that falls outside the geographical scope of protection.
- Gilead Sciences
 - Patent coverage:
 - November 1999 to July 25, 2017
- Cipla
 - Introduced in 2010
 - India and other developing nations outside the geographical scope of patent protection.
 - India was out of territory

Avoid technology

- Essential Inkjet patents - Japanese Patent Office (Goto et al., 2015)

Table 1 Essential patents for bubble jet inkjet printers

Purpose of patented invention	Patent no.	Outline of patented invention	Year of filing
Principle of bubble jet	Pat.1389594	Inkjet ejecting ink drops with boiled bubbles	1977
	Pat.1389595		1977
	Pat.1396884	Film boiling produces bubbles to eject ink drops	1978
	Pat.1389608		1978
Structure of inkjet head	Pat.1265874	Inkjet printer head withstands chemical erosion and cavitation caused by bubbles	1979
	Pat.1918345		1983
	Pat.1817038		1983
	Pat.1425475		1984
	Kokoku No.2-42669		1981
	Pat.13896608*	Heat transfer design for high frequency drive	1978
	Kokoku No.59-43312	Wave form of heater input and ejection	1982
	Kokoku No.62-5967**		1980
	Kokoku No.2-25335*	Structure and production system of printer head that implements high resolution, high reliability, long life, and low cost multi nozzle	1981
	Kokoku No.63-4406**		1981
	Kokoku No.2-42670*		1981
	Kokoku No.2-24220*		1981
	Kokoku No.6-2414*		1983
	Pat.2659250*		1989
	Pat.2575205*	Printer head embedded with ink tank	1989

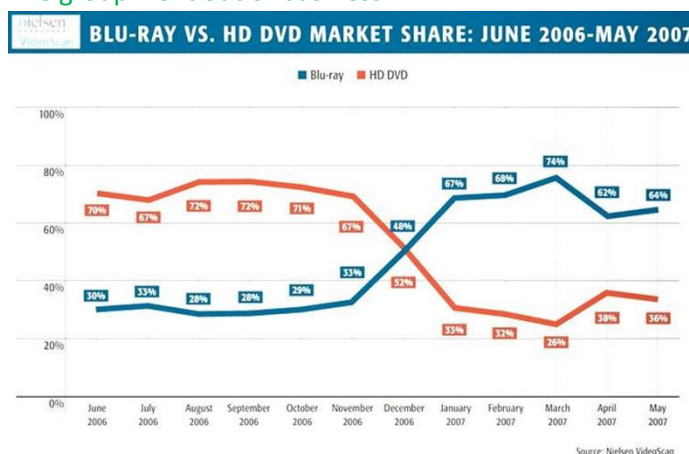
Ink drop ejection control: second-generation fundamental patent of bubble jet	Pat.2783647	Ink drop ejection control scheme based on nozzle pressure and atmosphere before and after ejection	1990
	Pat.3957851		1997
	Pat.3563999		1999
Ink for bubble jet	Pat.1343229	Principle patents for ink of inkjet printer	1978
	Pat.1413606		1978
	Pat.1074027		1978
	Kokoku No.55-18751		1978
	Kokoku No. 60-3499**	Ink composition to prevent clogging of ink channel	1980
	Kokoku No.58-6752**		1979
	Pat.1926280	Ink composition does not burn and stack	1984
	Pat.1926281		1984
Protection against clogging of ink channel	Pat.1784015		1984
	Pat.1928199		1984
	Kokoku No.4-64312**	Preliminary ejection mode	1984
	Kokoku No.4-77670**	Cleaning of cleaning device	1985

Notes: Kokoku: examined patent publications of Japanese patent systems.

* Essential patent for thermal jet.

** Essential patent for both thermal jet and piezoelectric inkjet.

- Solve same problem via different means
- If a patent fence is built, hard to invent around
- DVD
 - DVD is interesting example
 - Was a website for DVD licensing group: group of 8 patents which held most patents for DVDs. Build a gigantic wall of patents. Even if you wanted to read DVD disc, you needed a license. They offered a one shop license.
 - You can see all the patents on the right side. But there are like 100 of them.
 - The group went out of business



Patent fortress strategy failed completely and blue ray became standard: was a successful invent around strategy

US9040439B2
United States

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Inventor: Michio Endo, Shingo Eguchi, Hiroyuki Inoue, Atsunobu Masuno
Current Assignee: Canon Inc., University of Tokyo NUC

Worldwide applications
2014 - US CN JP

Application US14/190,387 events

- Priority claimed from JP2013046908
- 2014-02-26 Application filed by Canon Inc., University of Tokyo NUC
- 2014-04-28 Assigned to THE UNIVERSITY OF TOKYO, CANON KABUSHIKI KAISHA
- 2014-09-11 Publication of US20140256531A1
- 2015-05-26 Application granted
- 2015-05-26 Publication of US9040439B2
- Status Active
- 2034-02-26 Anticipated expiration

Info: Patent citations (10), Cited by (21), Legal events, Similar documents, Priority and Related Applications
External links: USPTO, USPTO PatentCenter, USPTO Assignment, Espacenet, Global Dossier, Discuss

- Why?
 - Avoids litigation and licensing
 - Strengthens bargaining position
- Why not?
 - Cost and Uncertainty regarding success, function of:
 - Thickness of defense
 - Industry (easy in software, difficult in pharma)
 - Wasteful, socially.
 - If you invent around: power effect.
 - In software; easy to invent around
 - Inventing around would be waste of resources. Better to license product and use money for better purposes
- **Side note: what is infringement in patents?
 - All elements rule:
 - Every limitation (i.e. element) in a patent claim must be present in an accused product or process for there to be infringement
 - What is protected under a patent is in the '1 claim' section.
 - Literal infringement: all elements of claim 1 are present in accused product -> **literal infringement**
 - What if one of the elements is missing in the accused product? **Doctrine of equivalents**: "a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is equivalence between the elements of the accused product or process and the claimed elements of the patented invention"
- **Side note: what is infringement in copyrights
 - Substantial similarity
 - You have to prove there is a substantial similarity

In-license

- Licensee obtains permission to use IP in exchange for royalties paid to licensor.
- Why?
 - Faster route to market
 - Safer route to market
- Why not?
 - Licensor can refuse (e.g. Apple)
 - Dependence on licensor (e.g. Monsanto)
 - Cost
- Faster route to market: does not have to develop
- Safer route; don't have to worry about litigation
- Cost applies to both sides: why and why not

Deter

Own power

- Deter is a passive form of strategy: be powerful enough in order to scare IP holder from coming after you
- If you sue me for infringing one of your patents, I'll use one of my stash of patents to sue you back!
 - Ford and gm hold 100 of patents, but don't enforce them. Kind of a mutual agreement: don't come after me and I won't come after you

- For [TI] to know what's in [its patent] portfolio, we think, is just a mind-boggling, budget-busting exercise to try to figure . . . out with any degree of accuracy at all."

Year	Patent family filings	Cumulative sum
1990	437	437
1991	469	906
1992	452	1358
1993	521	1879
1994	712	2591
1995	624	3215
1996	787	4002
1997	852	4854
1998	808	5662
1999	798	6460
2000	843	7303
2001	834	8137
2002	846	8983
2003	909	9892
2004	849	10741
2005	895	11636
2006	816	12452
2007	931	13383
2008	715	14098
2009	512	14610
2010	559	15169
2011	689	15858
2012	599	16457
2013	699	17156
2014	638	17794
2015	517	18311
2016	523	18834
2017	616	19450
2018	655	20105
2019	621	20726

You can see their annual patent filings. Over the years they acquired a huge portfolio, they don't know what is possible with it, but if someone comes after them: will dig deep in patent

Partner's power

- RPX
 - Offers this as a service: kind of an IP partner
 - This company makes a living by offering insurance against litigation claims. Price is claimed on how risky business is

Disseminate

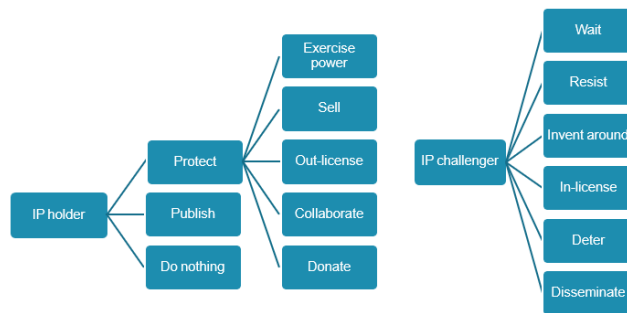
- Release infringing products rapidly and broadly enough to reduce the odds or severity of penalty.
 - Sony Corp vs. Universal Studios "the Betamax Case"
 - Does Sony's sale of "Betamax" video tape recorders to the general public constitute contributory infringement of copyrighted public broadcasts under the Copyright Act?
 - Napster
 - Very high risk, but has been seen to work in some extreme cases.
 - Napster: P2P network, share music into a network from DVDs and then people were able to buy music for free

Case

- What is Apple's IP strategy? Defensive, not only protecting technical stuff, but also design. Key in the case was statement of Steve Jobs to patent everything
- They are not licensing anything out.
- Real hidden enemy for apple was Samsungs introduction of android. Android was provided for free. The real enemy for apple was google
- How would you characterize Samsung's IP strategy: challenging the validity of held IP. They claimed non-infringement. That's where they argued that design galaxy was not substantially the same as the design of the iPhone
- It was an intentional strategy from Samsung
- Interesting that they are fighting, but Samsung is a very important supplier for Apple

Lecture 4

Generic IP strategies



Focus on collaboration today: collaborative R&D

A lot of these strategies involve interaction with other firms

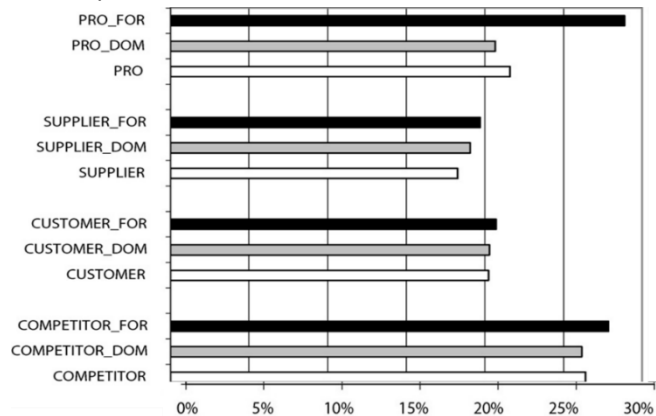
On its own: publish/do nothing. But options such as selling on the IP holder side, it involves a counterpart. Some side of cooperation.

Out and in licensing involve interaction

between companies

- IP can be a driver of collaboration between firms, and results from interorganisational relationships
- Why collaborating in R&D?
 - Cheaper
 - Less risky
 - Each company has strengths and weaknesses and so they get access to each other's expertise
 - Accelerate R&D process
 - In an ideal setting they will chose to do everything on their own. Collaboration is actually complicated.; are also collaboration costs
 - Give kind of endorsement effect. When you are not well known and collaborate with a known firm: joint endorsement
- A successful collaboration
 - See Senseo: collaboration of Philips and Douwe Egberts
- EPO patent senseo pad
 - Development happened in collaboration with each other
 - Patent was granted in 2001
 - Belgian firms wanted to manufacture it and were unable to. Sued back and patent was invalidated on bases of novelty
- Philips sells 50% stake in Senseo trademark
 - Reuters, January 26, 2012
 - Dutch electronics giant Philips said it would sell its stake in the Senseo coffee brand to partner Sara Lee Corp. SLE.N and pledged to keep working with the US- based firm on developing coffee machines and promoting the business worldwide.
 - Single-cup coffee brewers catering to demand for convenience and customization have gained massive popularity in recent years with rival coffee pod systems like Nestle's NESN.VX Nespresso and Kraft Foods' KFT.N Tassimo Senseo's main competition. Philips' announcement that it would sell its 50 percent stake in the Senseo coffee brand baffled some Amsterdam-based analysts.
 - Some said the rationale was not immediately clear, but could have been influenced by the forthcoming IPO of Sara Lee's coffee and tea business.
 - Philips said it would sell the full rights of the Senseo coffee systems to Sara Lee for 170 million euros (\$220.55 million) and continue to develop new Senseo coffee machine models and cooperate with Sara Lee globally through to 2020.

- Why did Philips do this? Product was very successful. Maybe because profit potential was limited, or because of competition. Market became crowded
- A successful collaboration
 - Airfryer
 - Airfryer developed by guy on the right. Partnered with Chinese supplier and manufactured prototype for him. Went with prototype to Philips and they accepted it. Were never able to develop a relatively cheap device by themselves
- Despite clear benefits, the failure rate of R&D collaborations is high (20-40%)



Failure rate of R&D collaborations by partner type

Lhuillery and Pfister (2009). Sample of French R&D active firms

In reality a lot of collaborations failed (20-40%)

Pro: public research organisations

For: foreign

Dom: domestic

Collaboration with foreign are slightly more likely to fail than with domestic

Why do interfirm collaborations fail?

1. Uncertainty of outcomes (incomplete contracting)

- Incomplete contracting: very difficult to anticipate all kinds of complexities that might arise in the future and account for them (who's responsible for what). P.e if it rains that day, the person who does deliveries is sick, who's responsible?
- See in contracts with landlords, employment agreements. Entire range of complexities is difficult to account for
- How do people work to reduce uncertainty? P.e go on dates... Hard to know what person is actually like
- Exchange theory: when firms want to establish relationships? Start with small transactions and gradually increase in commitment. Until they reach the level of strategic alliance

2. Difference among partners along a number of dimensions:

1. Competitive Intent

- Partners have different profiles. Differ in competitive intentions p.e. google and uber
- Not always a bright picture

Google and Uber were like 'big brother and little brother'—until it all went wrong

PUBLISHED WED, FEB 7 2018 1:21 PM EST | UPDATED WED, FEB 7 2018 3:54 PM EST

Jillian D'Onofrio @JILLIANILES Paayal Zaveri @PAAYALZAVERI Deirdre Bosa @DEE_BOSA

SHARE f t in e

KEY POINTS

- * In testimony at the Uber-Waymo trial, former Uber CEO Travis Kalanick describes Google and Uber's initial relationship as like "big brother and little brother"
- * After Google invested in Uber in 2013, CEO Larry Page took Kalanick for a ride in a self-driving car.
- * Later, the relationship started to fall apart when Uber heard that Google was getting into ride-sharing.

Created a company to develop google car further

Invested a lot in uber

Email uber CEO sent to his google counterpart

Subject: Re: Fwd: Google Intel

I'm sorry that these things keep coming up in this way. I will speak to Larry again to reiterate the importance of a meeting with you very soon. I'm returning from London tomorrow and will report back with next steps. I continue to believe that the value of a partnership now far outweighs concerns about an uncertain future.

On Mar 7, 2015 7:45 AM, "Travis Kalanick" <travis@uber.com> wrote:
Is the below true?

We get stuff like this more than I would like.

A meeting with Larry could calm this down if it's not true but he has been avoiding any meeting with me since last fall.

Without any dialogue we get pushed into the assumption that Google is competing in the short term and has probably been planning to do so for quite a bit longer than has been let on.

I hope I'm wrong here, just need to do a meeting with Larry ASAP to get clarity and a mutual understanding of how to do a proper partnership here.

T

Begin forwarded message:

----- Forwarded message -----

From:
Date: Fri, Mar 6, 2015 at 7:57 PM
Subject: Intel
To:

Heard from a reliable source that Google will be starting a self driving service in MV in 3 months.

Sent by phone

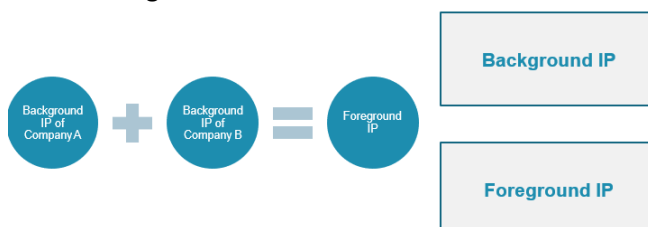
Uber is ride sharing and google is interested in cars. They operated in different markets. Uber gets email that google is now interested in ride sharing (competitive intent)
Just a rumour can ruin a relationship

▪ Transparency

- The cooperativeness of disclosing knowledge to the other organization.

2. Receptivity

- The assertiveness of absorbing the disclosed knowledge.
- Rationally, what is the best orientation for the firm?
- Maximize its share of the joint learning (maximizing the 'taking').
- But! Because existing IP is used to generate additional IP, this orientation reduces the total amount of joint learning from which the organization can attempt to capture knowledge.
- Transparency: bring IP to table during cooperation: being open about knowledge
- Receptivity: firms also differ in how much they share
- Higher absorptive capacity: capable of absorbing knowledge faster
- Don't want to enclose anything at all
- Pursuing most rational option can be self-defeating (not sharing anything)
- Why collaborating in R&D?
 - Interorganizational learning: Collective acquisition of knowledge among a set of organizations.
 - "Vehicles by which knowledge is transferred and by which firms learn from each other" (Kogut, 1988: 184)
- IP arrangements in R&D collaborations



Background IP: IP that firms bring in relationship. Pre-existed in firms (their own knowledge)
Foreground IP: result of collaboration
Important differentiation between concepts

- Receptivity
 - **December 1984**
 - Toyota
 - Wanted to learn how to deal with labour unions and American management culture.
 - GM
 - Wanted to learn how Toyota produces better cars more cheaply.
 - Formed NUMMI together
 - 1984 Joint venture Nummi between Toyota and gm. Were 2 motivations: Toyota was under political pressure. Toyota needed to learn how Americans worked etc. gm was on losing end of battle with Toyota in US market and wanted to learn how Toyota manufactured their cars. Was very efficient: better cars at lower cost. Established joint venture in US (factory to build cars). Objectives on both sides were learning
 - 2 years later: Toyota already learned from GM and made 2 other factories
 - Question is: who can learn faster. Here Toyota won learning race. Left joint venture and build 2 factories. Meanwhile GM failed to internalised Toyotas lessons. They were not able to gain any ground on this basis
 - Illustrates example learning race. Toyota's receptivity was higher.

3. Power

- Power is the main cause of failure in many relationships
- Power is control over valued resources
- Power is control over valued resources, capturing the degree to which actors hold resources that limit their dependence on others (Emerson 1962).
- Corporate venture capital
 - Minority equity investments by an established firm in an entrepreneurial venture that seeks capital for growing its operations.
- The more dependant a company is, the less power it has. The less dependent, the more power
- Opens door to opportunistic behaviour
- Corporate venture capital: multinational vs startup.



Can see what Roche and Samsung invested in
Creates threat and opportunity issue: as a startup: very attractive option. On other hand: power balance not in your favour: vulnerable for opportunistic behaviour of big company

-  Microsoft
 - British manufacturer and supplier of mobile phones founded in 1998.
 - Partnership* in February 2001:
 - Sendo gets \$12m of Sendo shares and a seat on the board.
 - MS was to develop and deliver OS software, but never sent anything.
 - Sendo switches to Symbian as OS.

- MS releases phone based on Sendo's technology, manufactured by HTC.
- Sendo sued Microsoft in December 2002, alleging it stole proprietary technology and trade secrets and gave these to HTC.
- * If Sendo is bankrupt "Microsoft would obtain an irrevocable, royalty free licence to use Sendo's Z100 intellectual property, including rights to make, use, or copy the Sendo Smartphone to create other Smartphones and to, most importantly for Microsoft, sublicense those rights to third parties."
- Formed partnership where Microsoft invested in that company. Waited for the software of Microsoft and waited a very long time: risk of bankruptcy and last they gave up on waiting on Microsoft and use Nokia operating system. Meanwhile Microsoft used technology of the company for their own phone
- Key: in their partnership contract there was a certain clause -> tried to drive company bankrupt in order to get the technology for free-> happens a lot

3. Incompatible institutional logics

- * These dimensions are dynamic; they may change during the relationship.
- Commercial orientation on one side and science on the other
- May have some kind of power position at the beginning, but is possible that power position switches.
- IP issues in university-firm collaborations
 - Publication rights - Publications become part of state-of-the-art and "kill" patent applications
 - Professors are interested in publishing research (patenting is no longer possible then)

How to collaborate

- How to mitigate collaboration risks?
 - 1) Select the *right* partners
 - What firms do in order to mitigate risk of failure
 - First thing: select right partners. Lot of research on. Must be fit
 - Companies often rely on reputation.
 - Key concept of fit: cultural fit
 - 2) Use *contracts* to coordinate and control partners
 - Which terms are included in contracts?

Categories	Examples						
Deal details							
1. Development specifications	"Product specifications: the product shall include the following elements and functions: ...[confidential specifications follow]"						
2. Time frame for the completion of each stage specified	"Major milestones and project deliverables: <table> <tr> <th>Milestone</th><th>Completion Date</th></tr> <tr> <td>Lab prototype phase</td><td>Feb 28, 2011</td></tr> <tr> <td>Production prototype phase</td><td>June 15, 2011</td></tr> </table>	Milestone	Completion Date	Lab prototype phase	Feb 28, 2011	Production prototype phase	June 15, 2011
Milestone	Completion Date						
Lab prototype phase	Feb 28, 2011						
Production prototype phase	June 15, 2011						
3. Number of employees to be contributed	"Each party agrees to commit no less than 5 employees to a joint product development team. The parties agree that Mr. Suzuki of organization Alpha Technologies shall act as project leader"						
4. Specific technologies to be contributed	"Fujitsu shall provide and make available to the program Fujitsu's existing 0.50/0.35 micron CMOS process technology"						
5. IP rights over technologies	"Ramtron gets ownership on all technologies (patents) relating to ferroelectric technologies that are developed during..."						
Monitoring							
6. Reviews of development work	"Fujitsu and Ramtron shall each conduct by the end of each calendar quarter review the progress made in the development"						
7. Content of reviews specified	"As part of periodic reviews, Benchmark shall provide the following deliverables: i) source tapes, ii) hardware documentation..."						
Penalties							
8. Financial penalties for under-performance	"For each deliverable that is delivered more than thirty days late Fujitsu will reduce the milestone payment by ten percent (10%)..."						
9. Rights to terminate for under-performance	"If Ross fails to deliver a deliverable without errors after two attempts, Fujitsu may attempt this agreement"						

What happens if partner has some shortcoming when they don't deliver
Who pays what when anything goes wrong

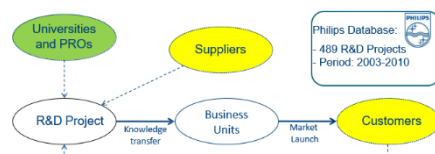
- Teng: IP Control
 - Contractual agreements:
 - Non-disclosure
 - Non-compete
 - Non-use: **important**. If a firm puts existing knowledge on table, may let them sign a non – use contract
 - No-recruit or no-hire: **No-recruit**: one firm can legally prevent partner from hiring one of their employees
 - How to deal with publication rights?
 - Contract arrangements
 - Limitations on what (topics) can be published
 - Timing of publications and patents on same inventions
 - Empirical study on behaviour of academics
 - Study of German academic researchers, employed at universities or public research institutes (Czarnitzki, Grimpe and Toole, 2009)

Industry Funding (N=341)			Non-Industry Funding (N=515)		
No Delay or Ban	Delay	Partial or Full Ban	No Delay or Ban	Delay	Partial or Full Ban
169 (50%)	32 (9%)	140 (41%)	440 (85%)	37 (7%)	38 (7%)

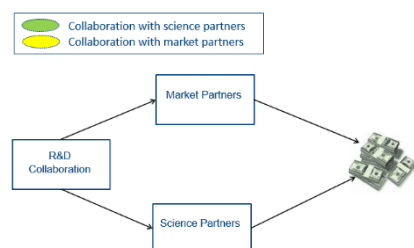
Limitations on timing and what can be published

Difference between university with and without industry funding. When no funding: researches feel more free to publish. When industry involvement: limitations to what they can do with their research

- R&D partnerships @ Philips



Philips pursues open innovation.



Idea was to study whether collaborations were efficient (market partner more beneficial than collaboration with science partners (university)?)

Impact of R&D collaboration on financial performance

R&D Collaboration	
-Collaboration with science-based partners	+
-Collaboration with market-based partners	+
Project resources (FTE)	+
Firm resources (patents)	+
Project patent	+
Project transfer	+
Project management	[...]
Technology	[...]
Sponsor department	[...]
Development department	[...]

Found that they were both beneficial, but there is a complexity: management of collaboration with market partners is different from science partners

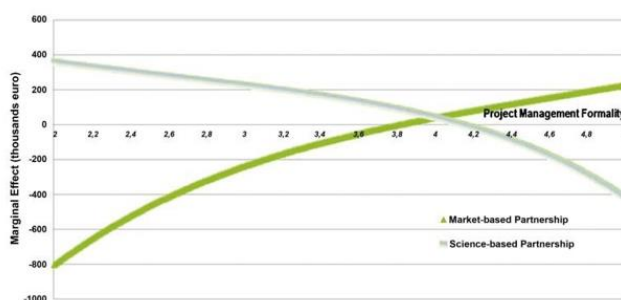
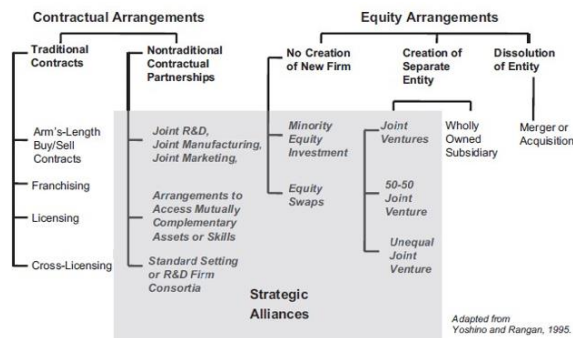


Fig. 1. Marginal effects of market-based and science-based partnerships for different values of project management.

To what extent do you formalise collaborations? If you want to deal with market partners; in best interest financial performance wise to have more formality. However, if a company collaborates with a university; ...

IP control: Equity or contractual measures?



Far left: sell option (discussed as generic strategies before)

On far right: acquire or merge with other entity, obviously a kind of R&D combination, but highly integrated.

All forms in grey are strategic alliances and all are R&D collaborations. Can take many different forms

Swimming with Sharks

Swimming with Sharks: Technology Ventures, Defense Mechanisms and Corporate Relationships

Riitta Katila
Stanford University
Jeff D. Rosenberger
Normis Solutions
Kathleen M. Eisenhardt
Stanford University

This paper focuses on the tension that firms face between the need for resources from partners and the potentially damaging misappropriation of their own resources by corporate "sharks." Taking an entrepreneurial lens, we study this tension at tie formation in corporate investment relationships in five U.S. technology-based industries over a 25-year period. Central to our study is the "sharks" dilemma: when do entrepreneurs choose partners with high potential for misappropriation over less risky partners? Our findings show that entrepreneurs take the risk when they need resources that established firms uniquely provide (i.e., financial and manufacturing) and when they have effective defense mechanisms to protect their own resources (i.e., secrecy and timing). Overall, the findings show that tie formation is a negotiation that depends on resource needs, defense mechanisms, and alternative partners. These findings contribute to the recent renaissance of resource dependence theory and to the discussion on the surprising power of entrepreneurial firms in resource mobilization.

-
- Minority equity investments (see previous slide)
- Defence mechanisms to protect their IP: patents, secrecy

Power

- Corporate venture capital
 - "Firms swim with sharks rather than safer partners when they need the unique resources that sharks possess and can protect themselves with tailored defence mechanisms that maintain their power within the relationship
- Need to make sure that you don't lose the power too soon. Defence mechanisms maintain power within relationships

GEE Logistic Analysis of the Likelihood of Corporate Venture Investment Relationship (N = 701 ventures, 4,077 funding rounds)*

Variable	Model 1	Model 2	Model 3	Model 4
Intercept	-2.45*** (0.29)	-3.96*** (0.35)	-3.56*** (0.78)	-4.93*** (0.81)
Cooperation				
Financial resource need		0.18*** (0.02)		0.18*** (0.02)
Manufacturing resource need		0.39*** (0.18)		0.44*** (0.18)
Marketing resource need		-1.16 (1.38)		-0.98 (1.38)
Competition				
Patent defense			0.002 (0.01)	-0.002 (0.01)
Secrecy defense			0.02** (0.01)	0.02** (0.01)
Timing defense			0.15** (0.08)	0.25*** (0.08)
Controls				
Cumulative corporate investments	4.61** (2.30)	5.39** (2.67)	4.68** (2.37)	5.56 (2.82)
Corporate background	0.63*** (0.18)	0.63*** (0.19)	0.60*** (0.18)	0.57 (0.19)
Prominent VC affiliation	0.26*** (0.09)	0.12 (0.10)	0.27*** (0.09)	0.10 (0.10)
Region	0.09 (0.12)	0.08 (0.12)	0.06 (0.12)	0.05 (0.12)
Firm age	0.16*** (0.04)	0.18*** (0.04)	0.12** (0.05)	0.08 (0.05)
Availability of venture capital	0.002** (0.001)	0.001 (0.001)	0.003** (0.001)	0.001 (0.001)
Biotechnology	0.86*** (0.19)	0.81*** (0.21)	0.79*** (0.20)	0.74 (0.22)
Communications	-0.30 (0.31)	-1.04** (0.45)	-0.24 (0.32)	-1.09 (0.47)
Electronics	0.54*** (0.19)	0.55*** (0.20)	0.54*** (0.21)	0.50 (0.22)
Software	0.08 (0.20)	0.15 (0.20)	0.22 (0.21)	0.29 (0.22)
Wald chi square	127.0	218.1	133.9	231.6

* $p < .10$; ** $p < .05$; *** $p < .01$: one-tailed tests for main effects, two-tailed tests for controls.
 * Robust standard errors are in parentheses. All models include unreported temporal effects.

HOW DO SOCIAL DEFENSES WORK? A RESOURCE-DEPENDENCE LENS ON TECHNOLOGY VENTURES, VENTURE CAPITAL INVESTORS, AND CORPORATE RELATIONSHIPS

BENJAMIN L. HALLEN
University of Washington
RIITTA KATILA
Stanford University
JEFF D. ROSENBERGER
Wealthfront

Interorganizational relationships offer many potential benefits, but they also expose firms to dangers, such as misappropriation, which pull partners apart. This tension between collaboration and competition is central to tie formation, especially for young technology firms that have both a high need for resources and high appropriability of their own resources. Prior work has examined legal and timing defenses that enable interorganizational ties by such low-power firms; we focus here on social defenses. In a longitudinal study of equity tie formation between young firms and established corporate "sharks," spanning five technology-based industries and 25 years, we unpack the effects of social defenses and find, intriguingly, that centrally positioned third parties are a particularly powerful social defense and that third-party social defenses are especially significant when more traditional defenses are unavailable. We thus offer the insight that third-party chaperones (central venture capital investors) play a key role in helping young firms to mitigate and navigate vulnerabilities while mobilizing resources.

Social defence: if you are unable to protect yourself against a shark. Can form an alliance with a powerful partner who can then do the protection on your behalf

TABLE 2
GEE Negative Binomial Regression Analysis of the Number of Corporate Investors

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	-1.14*** (0.11)	-1.03*** (0.12)	-2.09*** (0.17)	-1.05*** (0.12)	-1.38*** (0.16)	-1.03*** (0.11)	-0.16** (0.07)
<i>Defenses</i>							
VC centrality		0.28*** (0.09)	0.05 (0.10)	0.26*** (0.09)	0.21** (0.10)	0.28*** (0.09)	0.12** (0.05)
VC proximity			-0.08 (0.11)	0.01 (0.12)	-0.08 (0.12)	-0.11 (0.14)	-0.41*** (0.09)
Secrecy defense		0.02*** (0.01)	0.01 (0.01)	0.02*** (0.01)	0.01* (0.01)	0.02*** (0.01)	0.02*** (0.01)
Timing defense		0.16*** (0.06)	0.02 (0.06)	0.15** (0.06)	0.16** (0.06)	0.16*** (0.06)	0.09*** (0.03)
<i>Social defenses</i> × <i>Other defenses</i>							
VC centrality × VC proximity				-0.72* (0.37)			-0.71*** (0.19)
VC centrality × Secrecy defense					-0.00 (0.01)		-0.05*** (0.01)
VC centrality × Timing defense					-0.25** (0.10)		-0.38*** (0.05)
VC proximity × Secrecy defense						0.01 (0.02)	0.05*** (0.01)
VC proximity × Timing defense						0.05 (0.16)	0.16* (0.09)
<i>Firm controls</i>							
Round size	0.15*** (0.01)	0.14*** (0.01)	0.14*** (0.01)	0.14*** (0.01)	0.13*** (0.01)	0.14*** (0.01)	0.01* (0.00)
Venture age	-0.09*** (0.02)	-0.16*** (0.02)	-0.00 (0.03)	-0.15*** (0.02)	-0.13*** (0.02)	-0.15*** (0.02)	0.02 (0.02)
Manufacturing intensity	0.35*** (0.08)	0.35*** (0.09)	0.37*** (0.07)	0.34*** (0.09)	0.32*** (0.10)	0.34*** (0.09)	-0.01 (0.07)
Marketing intensity	-3.38*** (0.71)	-1.78*** (0.57)	-0.27 (0.62)	-1.96*** (0.60)	-1.34** (0.67)	-1.85*** (0.58)	-2.27*** (0.61)
Corporate background	0.32*** (0.07)	0.27*** (0.07)	0.18** (0.07)	0.27*** (0.07)	0.31*** (0.08)	0.27*** (0.07)	0.20*** (0.07)
Prior CVC investors	0.42*** (0.05)	0.23*** (0.06)	0.36*** (0.06)	0.24*** (0.06)	0.20*** (0.06)	0.23*** (0.06)	0.35*** (0.03)
Technology assets	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
Patent strength	0.00 (0.00)	0.00 (0.01)	0.00 (0.00)	0.00 (0.01)	0.00 (0.01)	0.00 (0.00)	-0.01*** (0.00)
<i>Industry controls</i>							
VC availability	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.00)	-0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)
VC richness of region	0.05 (0.03)	0.06* (0.03)	0.06** (0.03)	0.06* (0.04)	0.07* (0.04)	0.06* (0.04)	0.13*** (0.02)
Biotechnology	0.04 (0.10)	-0.01 (0.10)	0.36*** (0.11)	0.01 (0.10)	0.29** (0.13)	-0.01 (0.10)	-1.05*** (0.08)
Electronics	0.07 (0.10)	0.01 (0.11)	0.38*** (0.11)	0.02 (0.11)	0.26** (0.13)	0.01 (0.11)	-1.08*** (0.07)
Communications	-1.29*** (0.26)	-1.11*** (0.27)	-0.74*** (0.23)	-1.09*** (0.28)	-0.85*** (0.29)	-1.11*** (0.27)	-1.69*** (0.24)
Software	-0.30*** (0.11)	-0.13 (0.12)	0.24** (0.11)	-0.12 (0.12)	0.12 (0.14)	-0.13 (0.12)	-1.24*** (0.10)
Year fixed effects	Y	Y	Y	Y	Y	Y	Y
n	4,073	4,073	4,073	4,073	4,073	4,073	4,073
Chi-squared	1,210.58	1,024.39	837.92	997.35	640.80	1,030.22	1,622.79

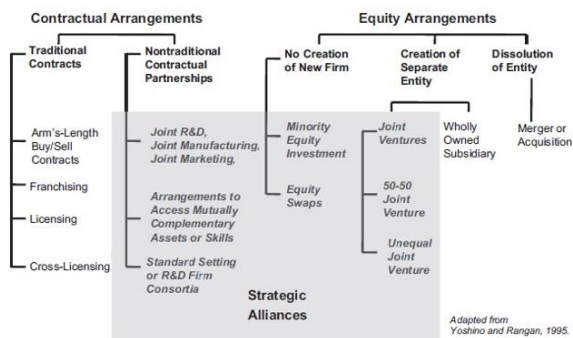
Note. Standard errors are in parentheses; 700 ventures; 4,073 funding rounds.

* $p < .10$

** $p < .05$

*** $p < .01$; two-tailed tests

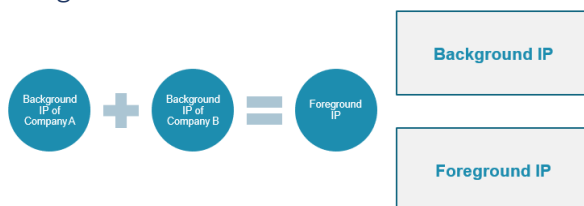
- IP control: Equity or contractual measures?



- IP control: Joint or separate R&D set-up?

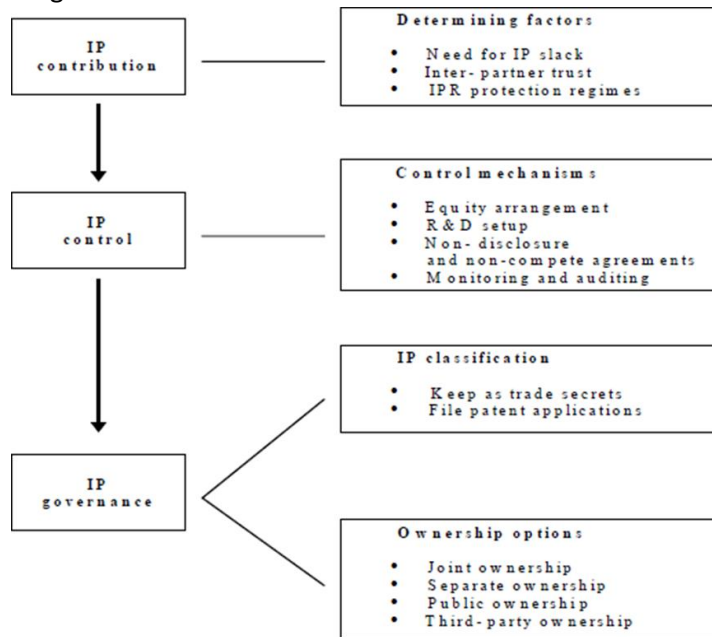
- R&D in one place or does each company does this for themselves?

IP arrangements in R&D collaborations



- Now discussing foreground IP, will also be discussed in the case discussion

- IP management framework in R&D alliances

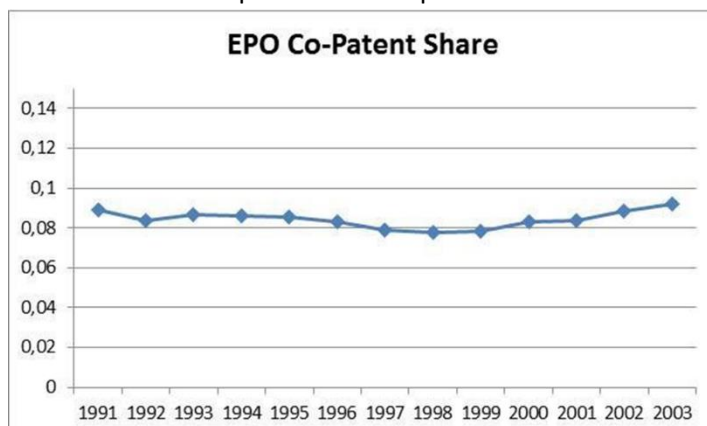


What kinds of things do we see in companies as far as IP. Divides process of collaboration in 2 steps: collaboration, control, contractual parts
Third step: IP governance: what to do with the IP which results of their collaboration
Only complexity: multiple companies sitting on the IP. You have different ownership options

IP governance: Ownership options

	Potential as one's core competencies		
Risk of patent interference		High	Low
	High	Joint ownership	Public ownership
	Low	Individual ownership	Third-party ownership

- Risk of patent interference: The risk that other firms may use patents to block and interfere with the otherwise normal use of IP.
- Risk of interference low: valuable. Try to negotiate with partner that they get the IP alone
- IP with low potential for firm: not very valuable and on other hand entangled with other IP: difficult to use
- Intermediate ones: if technology is important but is messy: IP entangled with IP of partner. More sound strategy, go for joint ownership: better bargaining position
- Third-party ownership: not very valuable for you and not very entangled. Might have value in eyes of someone else. Might have a good price on the market
- Patent co-ownership: A popular choice
 - Share of co-owned patents at European Patent Office

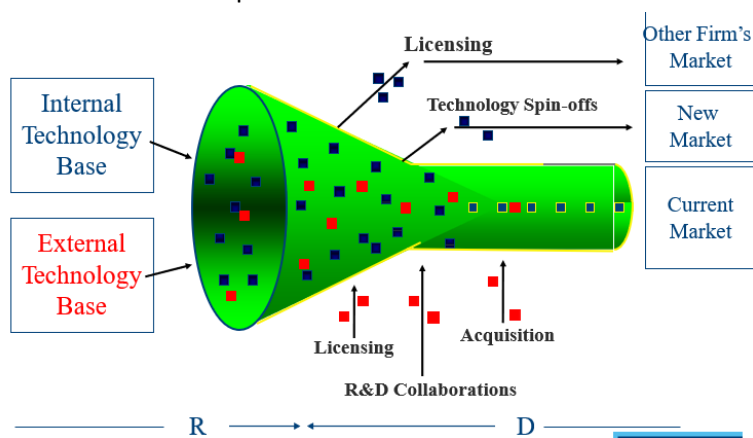


Focussing on joint ownership: both companies own same IP= 'joint custody'
Little below 10% of patents are co-owned (owned by at least 2 companies)

- Patent co-ownership: The legal context
 - Co-patents in Europe (most EU countries)
 - right to exploit the patent for your own benefit without accounting to the others (co-owners)
 - But cannot grant a licence or assign interest in the patent without the consent of the other owners
 - Co-patents in USA
 - right to exploit the patent for your own benefit without accounting to the others (co-owners)
 - right to sell or license a patent without the consent of the other co-owners to external parties
 - Don't need to ask permission from partners to use IP when you have them in Europe
 - European system is more consensus based.
- How to overcome patent co-ownership problems? Add additional contract clauses!
 - Good R&D collaboration contracts specify how R&D partners can use the co-owned foreground patents
 - Two suggested contract clauses
 - Rule out unilateral licensing to competitors
 - Separate exploitation paths (geography/applications)
 - BUT, the ability of firms to separate patent exploitation paths depends on the type of collaboration partner
 - Feasible with universities and inter-industry partners
 - Difficult with intra-industry partners
 - Doing the separation is sometimes easy and sometimes difficult

Multilateral collaborations

- In a lot of cases: more than 2 companies to collaborate in R&D. reason this is happening: idea of open innovation
- From closed to open innovation



Open innovation: kind of idea that firms should open their doors to inflows of external knowledge and open doors to their own ideas leaving to the outside.

Some ideas manage to move through and finally to market. Firms should in addition to internal knowledge base also accept ideas from the outside world.

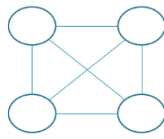
Acquisition: you can internalise al

its knowledge

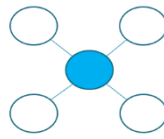
- Inflows of knowledge: in-licensing, R&D collaborations, acquisition
- Need to open doors in funnel for ideas to leave. Can externalise idea in the form of a technology spin off (company creating a smaller company) or out-license so another firm can take the idea to market

- Collaborating in innovation ecosystems

- “An **innovation ecosystem** is a network of organizations who collaborate to create new (IP protected) innovations”



Consortium-Based Ecosystem



Orchestrator-Based Ecosystem

What kind of forms do we find in reality for these partnership networks? Innovation ecosystems: evolution of the open innovation concepts: shows that one firm is part of larger ecosystem. Many forms of networks, but 2 particular are interesting for us

- All falls under different forms of R&D collaborations

- Structural genomics consortium (SGC): consortium-based innovation ecosystem



wellcome trust

they are direct competitors

Example of a consortium. Have a number of organisations, all coming together in consortium to do research in some emerging field. Why do they do this? To share the risk. Is an emerging field. Can share the load with others and don't have to shoulder the risk all on their own

Firms are comfortable working with each other, even though

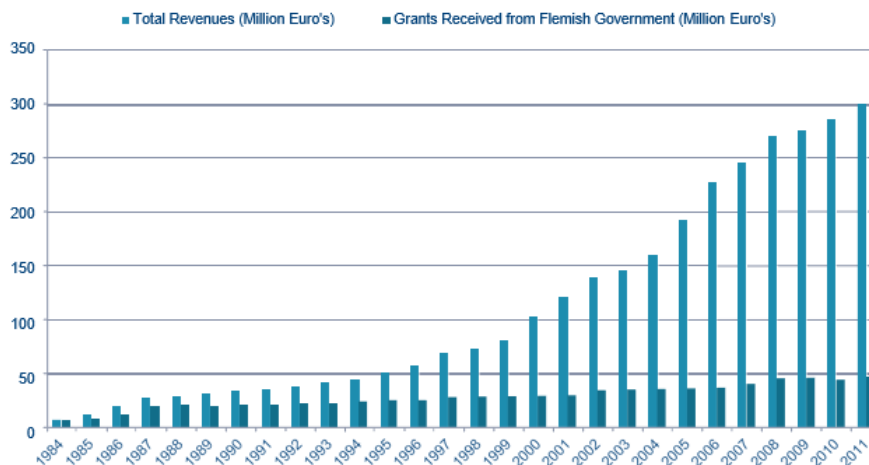
- IBM: Semiconductor innovation network: Orchestrator-based innovation ecosystem



One powerful company sitting in the middle that orchestrates R&D around a particular area
IBM does coordination task of this network

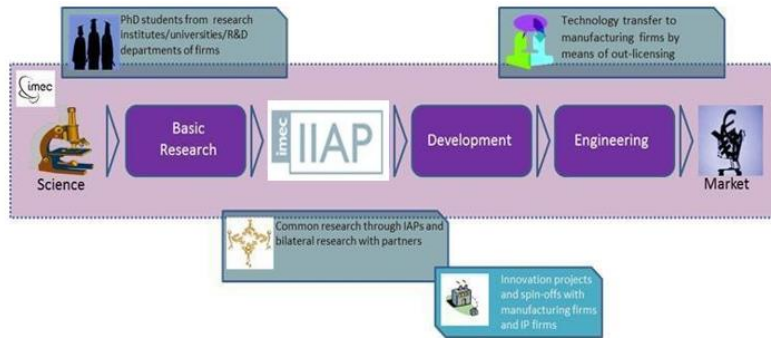
- IMEC: Neutral orchestrator of innovation ecosystems in nano-electronics technologies

- Additional reading specifically studying IMEC and how it manages its IP
 - IMEC: Facts and figures (1)
 - Total staff > 2100 employees
 - Collaborations with > 600 firms and 200 universities worldwide
 - 400 industrial residents and 240 PhD students
 - IMEC has no access to market. Non-player orchestrator (tegengesteld aan IBM)
 - 300 mm silicon pilot line for (sub-)22nm: 24/7 operational



- Darker blue: government funding
 - Light blue: total revenues

○ Industrial affiliation program (IAP)



Applied research: where the picture of IMEC is on
 Basic research: where ideas/ knowledge is still 8/15 years away from the market. Lot of firms don't like to invest in this.
 Outcome is still very insecure

Applied research: 3/8 years away from the market. Still precompetitive. Firms are still comfortable to work with each other

- Development: market applications have become more clear: harder for companies to form partnerships
- IAP: some partnership program that bring together IMEC and some companies from the private sector to work together -> is precompetitive so companies are still okay with working together
- More potential roots for development: more you learn

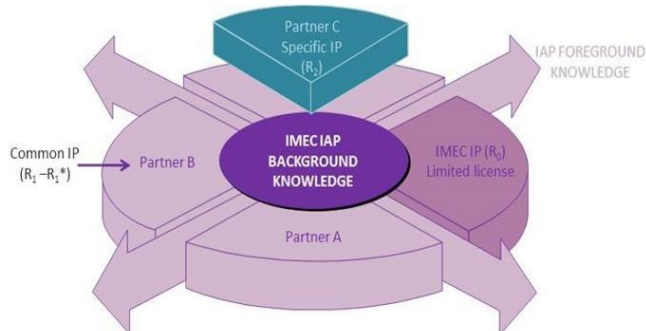
○ 3D systems integration IAP: Partners



Multiple circuits that are hierarchical stacked

Users: Panasonic, intel etc. partners who are interested in technology

○ IAP IP model: Taking into account needs and contributions of different ecosystem partners



Important for us to know: how IP is managed: key to the success of this profile

Background IP in centre: knowledge of IMEC. Owned by IMEC

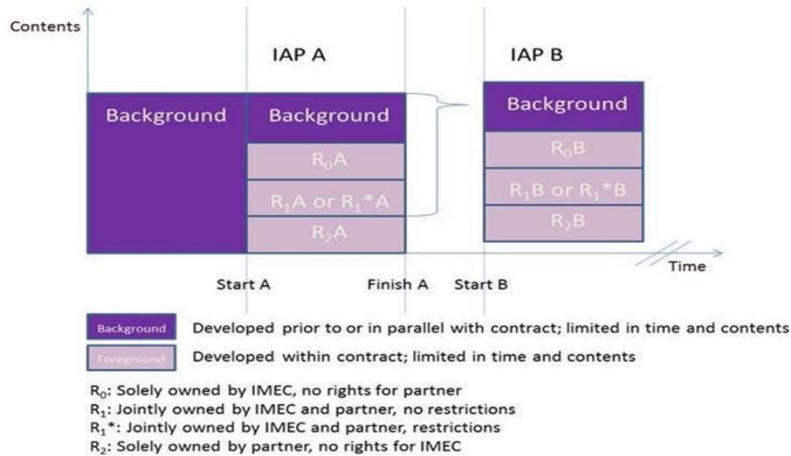
Bigger part of pie: all IP from IMEC and partners involved in collaboration

Partner that steps into the program: pays IP and start working with IMEC on

a specific project. Foreground IP is generated in collaboration with partner and IMEC. Partner gets access to IP. Can use IP that has been contributed to generated.

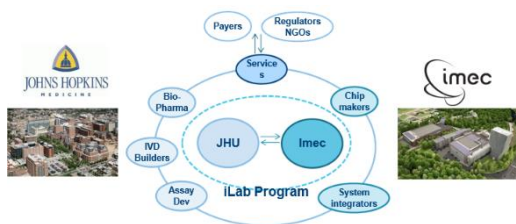
- The slice partner A has contributed to: can use their own part. If they are interested in the one of part B: need to pay for it.
- IMEC IP: its own IP generated by own researches, nobody participated
- Green slice: some companies stepping in in parallel: interesting in developing one particular area: ask for a specific part to work on

- IAP IP model allows IMEC to recurrently orchestrate innovation ecosystems



IAP A happened first.
Then used as
background for a future
program. This is how
they can expand the pie
over time

- Dual core-dual site orchestration model



Own consortium of firms that Hopkins
collaborate with

Case HP – CNSI Columbia University Partnership

- Industry – university partnerships
- HP
 - Founded in 1930 by 2 Stanford graduates
 - Early contracts with US government for WWII equipment
 - Informal management style, flat hierarchy
 - IPO in 1957
 - First computer in 1966
 - Inkjet printers
 - \$49 billion in revenue in 2000, three core business areas: imaging and printing systems, computing systems, and IT systems
 - HP labs: 10 sites worldwide with 700 employees
 - Collaborations with universities (70-100 universities in 2005, 30-40 of these are US universities)
- CNSI
 - California NanoSystem Institute (UCLA and UCSB)
 - Nanotechnology: components with scale between one-billionth of meter and 100-billionth of meter
 - Government initiate (proposal for 2:1 funding public: private)
 - Objectives
 - Establish a world-renowned centre for nanosystems R&D
 - Develop commercial applications
 - Educate the next generation of scholars in nanosystems
 - Promote regional development
 - Generate public appreciation and understanding of nanosystems
- HP-CNSI R&D partnership
 - Whole case centres around negotiations relating funding opportunity

- Discussion

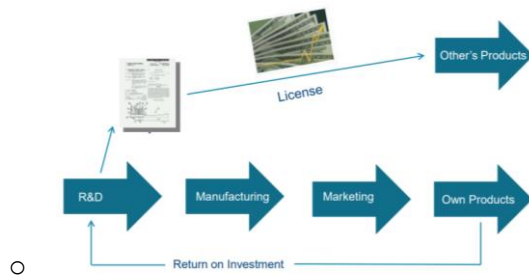
<p>Why is a large company like HP collaborating with university?</p> <ul style="list-style-type: none"> - Reduce risk - Access to technology - HP was not interested in ideas, had plenty of them themselves. Wanted access to students - Access to researchers - Access to facilities - Reduce the cost of R&D; do not have to hire people 	<p>Why are universities collaborating with firms?</p> <ul style="list-style-type: none"> - Government funds decreased, wanted access to money - Better alignment with markets
---	---

- Apply to case

- What was perspective of HP
 - Wanted royalty free licenses: wanted to use foreground IP for free
 - Wanted non-exclusive license
- What was perspective of CNSI
 - They were not big fans of royalty free license because researchers felt that giving a free license will limit their own opportunities. HP will use IP and take away the ground to start a new company
- Finally, case ends with situation where they signed a deal, manager at HP was confronted with choice to renew deal or opt for internal development: see next slide
- Renew
 - Access to students/researchers and professors
- Internal development
 - Has some advantages like for example control.
 - Issue of cost. Each researcher cost 200 000 dollars per year. Deal is costly. How many researchers can be bought and for how long

Lecture 5

- Making money from R&D



- What is an IP license? The basics



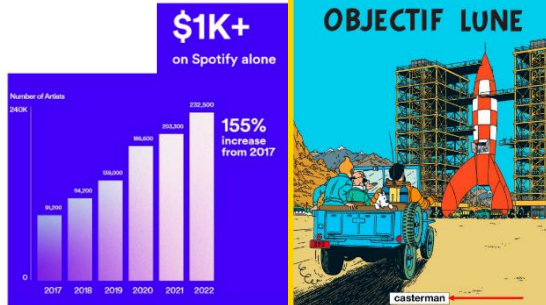
- License agreement – typical structure

- Parties
- Background and definitions
- Key terms
 - Scope
 - Payments
 - Warranties and obligations of licensor
 - Obligations of licensees
 - Duration and termination
- Signatures
- Appendices
- Scope: define boundaries IP
- Duration: how long does deal last. Under what condition is the deal invalid (void). What are results of termination?
- Group assignment: Negotiation exercise
 - Make assignment groups with 3-4 participants who will impersonate two different roles in the SANUS case:
 - Business manager(s) of ACE Food Specialties
 - Manager(s) of SANUS
 - Joint assignment (60 minutes)
 - Negotiate a “letter of intent” between Sanus and ACE FS
 - Focus on key terms of license agreement
 - Summarize your “letter of intent” on 1-2 PowerPoint slides
 - Present your “letter of intent” in class afterwards
 - 10 years and re-evaluate after 5
 - Scope: all over world
 - Ace cannot out-license further
 - Exclusive rights for food industry. Exclusivity as Sanos itself operating in the same market? (Not) allowed to use licensed IP
 - Termination: in case of bankruptcy ACE, exclusive rights disappear. if we go bankrupt; IP divided between licensees

- % of sales as payments every year, even with improvements. Less than 20% (profit margin). Payments for employees helping them (2 years), little bit upfront payment
- Obligation to use name or logo on packaging

Licensing IP

• Copyrights



Authors of intellectual works that license to copy houses

Tintin: family argued that wanted the money of copyrights, but court ruled that copyhouse had rights to IP

Music: 230 000 people who made money on Spotify: case of licensing: artist license to label companies and they give rights to spotify

• Trademark

- Panos: gives license to business: give permission to use trademark
- Porsche: gave license to shoe maker to use logo

Why license?

1) Increase demand (Rapid adoption of products)



Beta max vs VHS

Beta max was better technology, but Sony exercised market power and JVC went for out-licensing strategy. VHS invaded market and JVC won war. Sony failed to pick the right strategy

2) Limit alternative solutions (i.e. inventing around)



Seeds resistant to particular herbicide. Followed smart out licensing strategy

-> allowed firm to increase demand

Out licensed: so other companies were less incentivised to develop alternative solutions

Firm also have right to impose new technology on licensees

- Control access to technology
- Raise barriers to entry

- You are sharing with another company, but limit access from anyone else
- Controlling where IP is in a market



Biovail and Tiazac. Other company invented around it and wanted to launch generic drug on the market. Biovail went after company to manufacture and got an exclusive contract with a firm -> killed generic drug -> works strategically, but in this case, it was a violation of antitrust

3) Generate profit

- May be of interest to those who cannot commercialize products on their own, like:
 - Startups
 - Individual inventors
 - Universities (tech-transfer offices)

4) Learn from licensees

- **Monsanto example:**
 - Allowed some licensees to combine its GM technology (Roundup Ready) with the GM technology of others.
 - Extract value of others' innovations
- **Gave big players permission to combine IP with own IP. Allowed it to learn what other people are doing**

Disadvantages

1. **Sacrifices monopoly profits:**
 - Most money goes to licensee
 - Royalties are subject to taxation
2. **Divergent interests between licensee and licensor**
3. **Antitrust risk**
 - **Do make some money, but sacrifice most of it. On top of it the government steps in to tax royalties you get from licensees**
 - **Divergent interests**
 - 'Brand poisoning' if you are too generous and give licenses to others and produce all kinds of things and now your name is on many devices. Risk is that you end up with poor quality products manufactured by licensees. Results in poor reputation of licensor
 - **Antitrust risk**

Licensing terms

Exclusivity

	<u>Seller</u>	<u>Buyer</u>	
Exclusive (only buyer gets right)	○	○	Sole: licensor keeps right to using technology itself Simple: non-exclusive license: can give to any number of other companies
	○	○	
Sole (seller keeps right as well)	○	○	
	○	○	
Simple (non-exclusive)	○	○	
	○	○	

Sub-licensing

	<u>Seller</u>	<u>Buyer</u>
Sub-license (exclusive)	○	○
	○	○

Future developments

	<u>Seller</u>	<u>Buyer</u>	
Blanket license	○	○	Blanket license: If licensee develops anything on top of technology: it's licensees
	○	○	Grant-back clause: If licensee develops or improves upon technology; licensor has right to license it back. Licensor becomes licensee
Grant-back license	○	○	
	○	○	
Block/packet license	○	○	Cross-license
	○	○	

license: One patent is not enough: lot of interference in IP, so gives a few of them

Cross-license: Payment can be money, but can also be in form of a license: give each other licenses

Licensing terms- obligations

- Exclusive licensee can “sit on” IP
 - Performance obligations (on licensee) can reduce this risk
 - Specific obligations are best
 - Development dates
 - Minimum sales
 - Milestone-based royalty rates
 - What if you license to a company and company does nothing with it?
 - What if you license of someone and patent is invalid?
- Warranties and obligations of licensor
 - Supply of information, training services, meetings
 - Warranties on validity of licensed IP
- Example: Licensing deal between senCer (licensor) and GreenCell (licensee)
 - “7.4 Licensor shall, at the request of the Company and at Licensor’s expense, render all reasonable assistance, including without limitation joining in as a party, providing testimony and all information and documents in its possession, custody and/or control and any witnesses, as is or may be required in the conduct of any actions, suits or proceedings referred to in this Section 7.”
- Example 2: Licensing deal between Zymogenetics (licensor) and Novo Nordisk (licensee)
 - “Article 5: Technology Transfer, ZGEN Services and rFXIII Supply
 - ZGEN shall undertake the following services for NN:
 - (a) At NN’s cost, provide up to two (2) representatives acceptable to NN to participate with NN in the first investigator’s meeting with respect to the [*]. Indication following the Effective Date and to provide reasonable assistance to NN in preparation work conducted by NN for such meeting.
 - (b) At NN’s cost, provide up to (2) two representatives from each of preclinical and clinical development to consult and provide advice to NN regarding NN’s preparation for any meeting with a Regulatory Agency regarding Congenital Factor XIII Deficiency during 2004 and 2005 (including, at NN’s request, to attend such meeting); provided, however, that ZGEN’s personnel shall not be obliged to spend more than sixty (60) hours in the aggregate during 2005 in the provision of such support

Licensing terms – Duration/termination

- Fixed term, e.g. 5 years?
- Or lifetime of intellectual property?
- Early termination
 - For breach or insolvency
 - Usually, licensee can terminate on 90 days’ notice

Licensing terms – payment

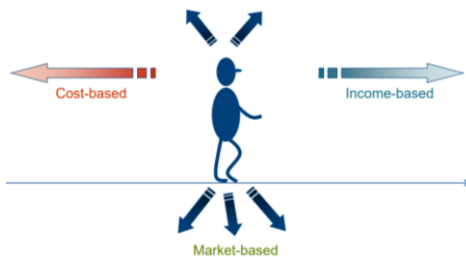
- In cross-licensing, licensing may serve as payment.
- Royalties, otherwise, may take the form of:
 - Lump sum payment
 - Fixed payment per sold product
 - Fixed fee per year
 - Percentage of sales price or revenues
 - Gradual payment that changes per sales volume.

- Licensing terms – Example payments



- o Spotify has around 50% of the market and does not pay very much

IP valuation: Three main methods



-

Cost-based valuation

- Pricing of IP asset is based on the cost of developing the IP protected technology (historical costs of patent)
- Costs usually included:
 - o R&D: salaries, materials and equipment
 - o Trials and testing
 - o Prototyping
 - o IP protection
 - o Cost of capital
- Alternative: Replacement instead of historical costs
- Advantages and disadvantages?
- If you developed in low cost and generates a lot of value: does not take into account value generated

Market-based valuation

- Value is based on transactions of other purchasers and sellers of similar IPRs in the market place
- Idea is that licensee/buyer is not willing to pay more than what others have paid for similar IPRs
- Comparison considerations:
 - o Technology: technical features, stage of development
 - o Background: economic conditions, position of partners
- Where to find transaction data?
 - o Company websites and corporate press releases
 - o Online databases: www.royaltysource.com
- Advantages and disadvantages?
- See how market prices technology
- Disadvantage: sometimes cannot find information



- Example market approach

- Suppose you are the product sales manager of a new European-based manufacturer of inspection machines for semiconductors. Your latest machine is still in the design phase, but you trust that the machine will be able to process tests much faster than existing machines in the market. You own a few patents and you want to license your machine to a Taiwanese distributor. Researching other royalty transactions in the chip testing marketplace, you have discovered data on 10 transactions covering similar semiconductor testing equipment

Licensor	Licensee	Royalty Base	Royalty Rates			Fixed Annual Royalty
			Low Sales	High Sales	Median Sales	
A	01	sales	3%	5%	4%	
B	02	sales				\$5 million
C	03	unknown	1%	1%	1%	
D	04	sales	5%	5%	5%	
E	05	sales	1%	2%	1.5%	
F	06	sales	10%	10%	10%	
G	07	sales	4%	4%	4%	
H	08	unknown	3%	3%	3%	
I	09	unknown	3%	3%	3%	\$3 million
J	10	sales	7%	7%	7%	

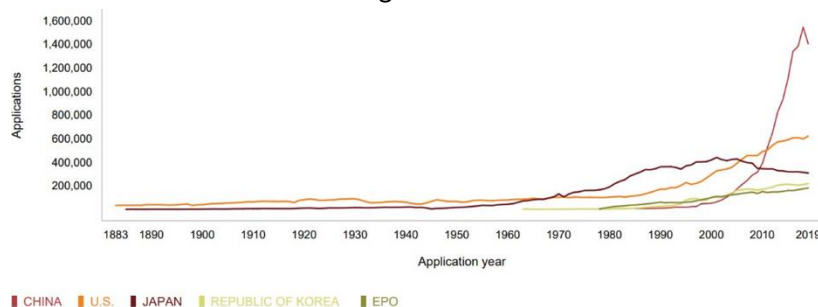
○

Income-based valuation

- IPR Value = Ability of Technology to Generate Future Income
- Value of a patent is the present value of the expected additional income stream (cash flow) for the licensee
- Key parameters:
 - Amount of income stream
 - Duration of income stream
 - Risk associated with the realization of the income
- Advantages and disadvantages?
- How much is this IP worth for licensee: study them and decide value based on that
- Advantage: flexible way to value IP, licensor gets more money
- Disadvantage: information asymmetry: difficult to tell how valuable it is to licensee

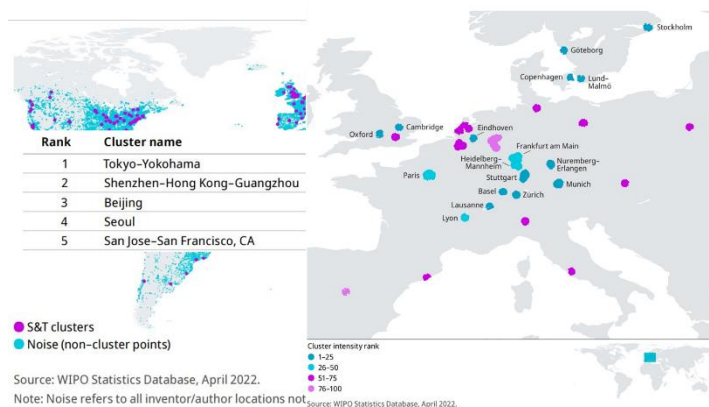
Lecture 6

- What happens when they are interested in doing business abroad and learning IP of companies abroad
- In terms of IP: you have US and European system: both based on same principles
- We will see how companies should be strategic in managing IP
- Why were companies interested in emerging markets: cheaper labour (was important in the past, but IP can leak. Maybe then it was not very important to protect IP. Why not care? Can not enter home market, maybe competitors in those markets are not advanced enough, used to be case that living standards were so poor that you don't really care about prospect of creating local competitors). Lot of science and research in emerging markets
- Global diffusion of knowledge

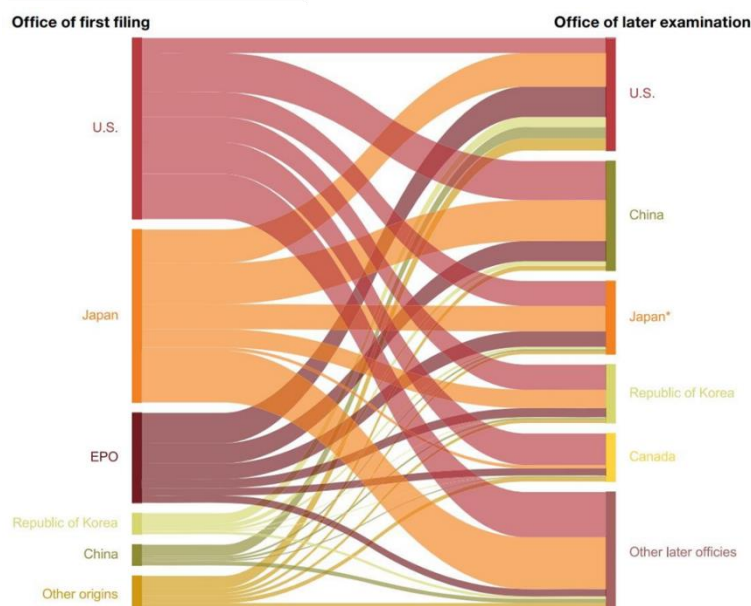


The peak is the Chinese patent office. Office that receives highest number of applications. Second line is US, followed by the Japanese

- Science and Technology clusters



Shows science and technology clusters all around the world
Top 4 are all in Asia



Shows where patents are filed.
Right there are the offices of later examination
China is in second place in places where Japanese, European, ... file for protection. First home market; next is China
Why would they file in China? Because it's an interesting market
You have a period of 12 months to apply elsewhere

Why go international?

- Drivers
 1. Cheaper input costs
 2. Lucrative markets
 3. Knowledge centres

Why strategic IP management?

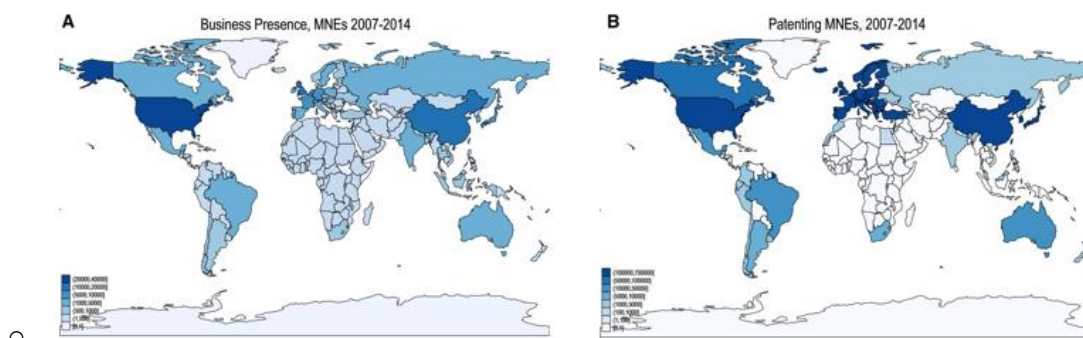
- From an IP perspective:
 - Institutional differences across countries
- Why is this interesting from a management perspective? Institutional differences between IP protection in different environments

Intellectual Property Rights

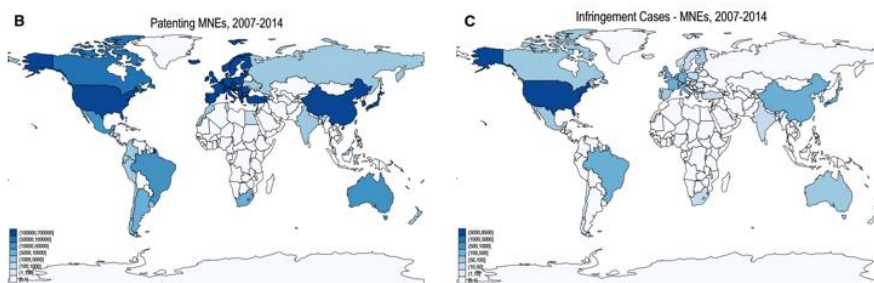
- An IPR is a “government protected right granted to an inventor or creator to exclude others from using the technology or product in question.” (Maskus 2004:22)
- Perceived protection of patent rights, a function of:
 - Breadth of coverage
 - Membership in international treaties
 - Restrictions on patent rights
 - Enforcement
 - Duration of protection
 - Tried to quantify patent protection across different countries. Focus on breath of coverage: what is and what is not patentable
 - Also looked at restrictions on patent rights: some countries do compulsory licensing; don't allow you to use market power.
 - Enforcement: if some company is infringing on your patent: can issue preliminary injunction: can ask court to stop their sales even before their trial.
 - Scale from one to 5: '60 to '90: strength of patent protection. China was not investigated. Chinese patent office only appeared close to 1990
 - What he would like us to know from reading the paper: how different patent offices differ
 - In some countries where IP rights are weak and when 50 companies are infringing on IP: how could you go after them? Increases costs. Worth it to pursue damages?
- Strategies
 1. IP holder
 - Firms wishing to exploit their IP internationally
 2. IP challenger
 - Firms wishing to explore IP in foreign locations

IP Holder

- Protect or publish?
 - Protect: Where do you file?



- Where multinational organisations do business
- Compared with where they patent.
- Looking at both maps, we notice that
- If a company does business in X number of markets. Why wouldn't they apply in all these markets? Sometimes patenting is useless, no risk of imitation. Depends on business presence. If you file a patent and nobody wants to enforce this, useless to patent. It is expensive to patent.
- Average cost for a patent in few patent offices: 500 000 euro
- Even within US: companies file for protection in US PTO and if they want to take people to court: more selective in courts they go to
- If protect, where?
 - Where protection is valuable
 - Where protection is feasible (enforceable)
- Publish, when?
 - When you want to pre-emptively ruin patent possibilities for everyone
- In case of infringement, litigate, but where?



Where to file the lawsuit.
Left the patent map;
right the infringement
map
See evidence that
companies don't always
file for infringement
where they have

patents. Only limited to multinationals on this map. If you both are multinational files: select strategic markets where they choose to sue for litigation for infringement. Paper also found that companies sued in companies where they have more experience in managing litigation disputes

Structural options (for protected IP):

1) Out-licensing

- **Advantages:**
 - Generate profit without the cost of entering foreign markets.
 - When resources are limited, licensing is usually used by smaller firms as the easiest way of penetrating foreign markets.
 - When facing great uncertainty towards a foreign market. Here, these firms can use out-licensing as a device to gain access to information about the foreign market.

- Many pharma companies license the manufacture and use of their products to Chinese companies

Top 10 in-licensing deals

One thing to notice: licensors are all smaller companies. Not big pharma firms. Suggests that big pharma firms would choose to go into China themselves. Small biotech: advantages in previous slide would apply

Licensing-In	Licensing-Out	Deal Source Region	Asset(s)	Therapeutic Area	Deal Value (US\$ mln)
BeiGene	Assembly Bio	US	ABI-H0731; ABI-H2158; ABI-H3733	Infectious disease	540
LianBio	BridgeBio	US	Infigratinib BBP-398	Oncology	531.5
Ji Xing Pharma	Cytokinetics	US	CK-274	Cardiovascular	475
China Medical System	Gelesis	US	Plenity	Metabolic Disease	423
CStone Pharma	LegoChem Biosciences	Korea	LCB71	Oncology	363.5
China Grand Pharma	Telix Pharma	Australia	TLX250-CDx TLX591-CDx TLX599-CDx	Oncology	340
Huadong Medicine	ImmunoGen	US	IMG853	Oncology	305
3D Medicines Inc	Aravive Inc	US	Avb-500	Oncology	219
BioNova Pharmaceuticals	Carna Biosciences	Japan	AS-1763	Oncology	205
3D Medicines Inc.	Sellas	US	GPS GPS+	Oncology	202

- **Disadvantages:**
 1. Creating a competitor
 - The licensee, after gaining sufficient knowledge and expertise, may surpass the skills and abilities of the original innovator, and becomes a highly competent competitor.
 - May improve technology
 - Licensee learning about technology licensor
 - RCA: first producer of colour television in the '60. made a big strategic mistake: wanted to exploit IP internationally and licensed to Sony and another Japanese company. Result was that Sony took IP and improved it. Took over Japanese market and evaded home market RCA. RCA went out of business because they could not compete with licensees anymore
 2. Limited control over IP
 - Burberry: Japanese company could use trade mark. Result was: difference in how 2 companies saw their business. Used name, brand for all kinds of products. Eventually led to brand dilution. Image became diluted. No longer the exclusive brand. All happened because mother did not have control over IP anymore. Wanted to re-establish exclusivity
 3. Licensing may fail to generate sought outcomes due to lack of complementary assets
 - Result: no revenue
 - Culture: if they license products to other firms: likely to fail because culture is not easy to imitate
 4. In the long-term, firms that abandon operations in activities such as product development and manufacturing risk losing their ability to create pioneering products

2) Partnerships

- International expansion via **joint ventures**:
 - **Into Europe:** Xerox corporation (US) + Rank Organization (UK) = Rank Xerox
 - Rank Xerox was given full marketing responsibility everywhere in the world except Canada and the United States.
 - Rank Xerox received licenses to the Xerox patents, and access to knowledge gained by Xerox.
 - Each company maintained a 50-50 split on the board of directors
 - **Into Asia:** Rank Xerox + Fuji Photo Film (JP) = Fuji Xerox
 - Day to day operations were left to the Japanese managers
 - Exclusive rights to the xerographic patents and know-how
 - Capital equipment, labour and management resources from Fuji Photo Film Fuji xerox internalised technology and started their own R&D to improve technology and became very successful
- More integrated form of entering a foreign market. Joint venture with independence in terms of managing itself. Formed strategic joint venture to introduce their technology to the world
- **Advantages:**
 - First, access to the local partner's knowledge of the host country's competitive conditions, culture, language, political systems, and business.
 - Second, sharing development costs and/or risks of entering a foreign market with a local partner.
 - Third, in many countries, political considerations make
 - joint ventures the only feasible entry mode.
 - Sometimes forming a JV is not even an option. In China not allowed for a foreign company to enter and do business on their own: must enter and do business with a local company

- Sometimes, compulsory:
 - Regulation requiring partnerships



- **Risks:**

- Ambitious OEM partners are not content with the old formula of “You design it and we'll make it.” The new reality is, “You design it, we'll learn from your designs, make them more manufacturable, and launch our products alongside yours.”

China Masters German Train Technology, Will Cut Costs

DW staff (jam)
04/28/2006

China has mastered a key part of the German technology to build high-speed magnetic levitation trains and is now aiming to cut the costs of its new line by one third, according to state press.

Very advanced technology and 2 companies spend years and years developing (siemens and thyssenkrupp). Local partners internalised technology and quickly produced a cheaper version of it.

- **1) Technology misappropriation**
 - Creating competitors in host market or worse, in home market.
 - Developing countries sometimes use IP as a device for economic development (e.g. India's Foreign Exchange Regulation Act (FERA) in the 1970s).
 - **Remedies**
 - Contractual agreements forbids Japanese suppliers from supplying other US companies.
 - Incremental, incentive-based approach to technology transfer. Motorola to release its microprocessor technology incrementally as Toshiba delivers on its promise to increase Motorola's penetration in the Japanese semiconductor market. The greater Motorola's market share, the greater Toshiba's access to Motorola's technology.
 - How companies can try to remedy this
 - Incentive based disclosure. It's a joint venture between Motorola and Toshiba. Motorola wanted to gain market share in Japan. The more they gained market share, the more technology they would give to Toshiba; more incentive based
- **2) Bargaining power may shift during course of partnership**
 - Dependence of each partner on the other may change over time.

3) Establishing wholly-owned subsidiaries

- Most integrative of the 3: establishing wholly-owned subsidiaries
- 2 ways of doing this
- Subsidiary
 - Greenfield venture
 - Acquisition
- **Key advantage: Control**
 - Texas Instruments (TI) establishes subsidiary in Japan:
 - To check Japanese manufacturers' market share
 - To limit their cash available for invading TI's markets

- Disadvantages?
- Interesting to read their motivation. Entered Japanese market in order to reduce ability to enter US market. Battle Japanese companies in Japan instead of waiting for them to enter market in US. Wanted to reduce their market share in home markets to reduce their cash
- High risks due to political situation and culture
- Sometimes not allowed
- Will not know how regulators will react (maybe impose tariffs)
- There is a cost of being a foreigner
- High cost: most costly option

IP challenger

- Want to learn: source of learning is located abroad
- Why explore internationally?
 - Localization
 - Access to global centres of expertise
 - Info about global diffusion of cutting-edge technology
- Innovation clusters

Table 1 Characterization of Top 25 Clusters

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Main geographic unit	State	Country	Best known city	Patents in main city (%)	Share of global patents (%)	Share of global plants (%)	Share of global fabless (%)	Share of global publications (%)	For-profit innovators (%)	Large for-profit innovators (%)	Universities (%)
San Jose	CA	US	San Francisco	20	15	6	38	1	95	69	65
Tokyo		JP		33	15	6	0	3	94	94	48
Wappingers Falls	NY	US	Poughkeepsie-Armonk	6	9	2	2	1	87	77	85
Hyogo Prefecture		JP	Kobe	16	5	4	0	1	96	95	43
Boise	ID	US		70	4	1	0	0	100	91	—
San Diego	CA	US		9	4	2	6	1	89	68	63
Seoul		KR		37	3	2	3	1	86	67	30
Hsinchu City		TW		40	3	6	12	1	94	62	13
Essex Junction	VT	US	Burlington	24	2	0	0	0	93	88	100
Plano	TX	US	Dallas-Fort Worth	26	2	2	1	0	91	82	89
Cambridge	MA	US	Boston	8	2	3	3	1	90	78	85
Portland	OR	US		22	2	2	1	0	93	87	100
Austin	TX	US		68	2	2	2	0	94	82	100
Nagoya		JP		12	2	3	0	1	96	95	75
Munich		DE		47	2	1	0	0	84	100	13
Chandler	AZ	US	Phoenix	26	1	3	1	0	93	85	100
Taipei		TW		49	1	0	5	0	89	65	33
Bergamo		IT	Milan	11	1	1	0	0	76	92	50
Colorado Springs	CO	US	Denver	31	1	1	2	0	90	83	36
Minneapolis	MN	US		10	1	1	0	0	90	78	78
Silver Spring	MD	US	Washington DC	9	1	1	1	1	75	65	43
Suwa region		JP	Nagano	27	1	2	0	0	100	97	—
Busan		KR		23	1	1	0	0	72	73	10
Hitachi		JP		38	1	1	0	1	87	98	0
Singapore		SG		97	0	2	0	0	76	95	92

If you want to start in semi-conductors: being in Japan seems quite important

Cluster in San Jose and Tokyo have 50 percent of semi-conductors.

- Firms in a cluster benefit from knowledge spill over across organizations, access to specialized labour, and access to specialized intermediate inputs.
- Geographical proximity facilitates the transfer of tacit knowledge by enabling frequent interpersonal interactions in social networks and local institutions.
- How do you gain from doing that? What does it mean? Benefit from whole issue that knowledge flows. If you locate company close to university; knowledge had a natural way of spilling over to geographical region around it.
- If you have a cluster of knowledge: interaction facilitates knowledge diffusion. Makes clusters attractive for companies
- How to gain access?
 - Acquisition
 - Volvo acquired by GM in 1999 for \$6.45 billion
 - 2000s GM faces bankruptcy
 - Sells Volvo to Geely in 2010 for \$1.8 billion

Chinese Carmaker Geely Completes Acquisition of Volvo From Ford

Give this article

By Chris V. Nicholson
Aug. 2, 2010

The Chinese carmaker Zhejiang Geely Holding Group completed the acquisition of Volvo from Ford Motor on Monday and named a chief executive to lead the company.

Li Shufu, chairman of Geely Holding, said the completion of the deal the first time a Chinese carmaker had acquired 100 percent of a foreign rival was a "historic day." He pledged that Volvo, based in Sweden, would push to expand market share around the world while keeping to the characteristics, like a focus on safety, that have defined it.

Geely named Stefan Jacoby, the former head of Volkswagen of America, to be president and chief executive of Volvo. Mr. Jacoby will join the board of Volvo in August and conduct a strategic review to determine the scope and strategy of the company.

Volvo will remain based in Sweden and keep factories in Belgium.

The Chinese carmaker paid \$1.3 billion cash for Volvo on Monday and issued a \$200 million note payable to Ford to complete the acquisition. Further payments are expected after an audit and final adjustments in Volvo's value, Ford said in a statement.

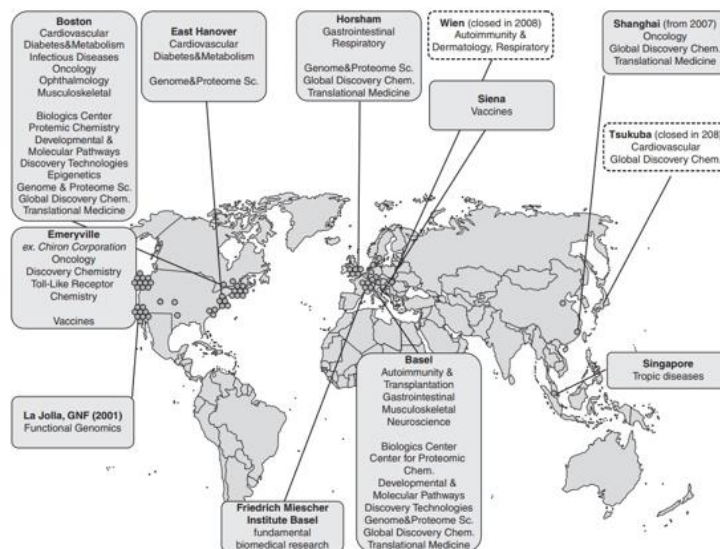
Chinese automaker who was lacking by design. When facing bankruptcy GM sold Volvo to Chinese firm

Establish R&D subsidiary aboard



- Lot of R&D labs around the world.

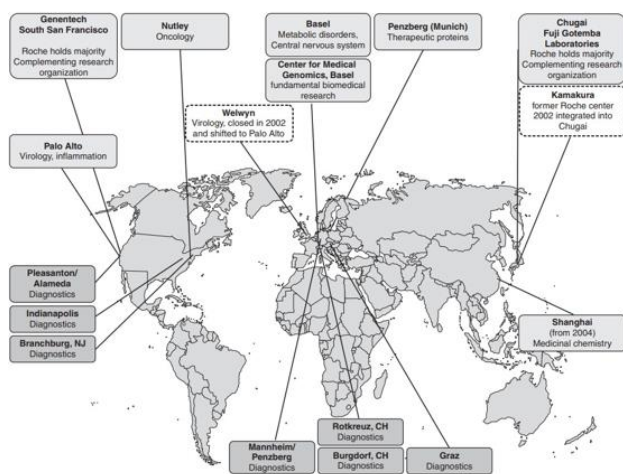
• Novartis



Different labs.

Also an issue of specialisation. Due to issue of centres of expertise. Knowledge is more advanced in some areas

- **Roche**



○
R&D aboard: The problem

- Managing IP across multiple locations, sometimes with heterogeneous strengths of IP protection. Why is this a problem?
 - Knowledge spillovers. Why is this a problem?
 - Creates local competition or strengthens existing local competitors. Why is this a problem?
 - Loss of competitive advantage
- Cluster is learning from you. Knowledge diffusion goes in 2 directions. You're learning from them and they are learning from you
- Want to maximise knowledge you internalise and minimize knowledge you lose. How? Employees sign non-disclosure and non-compete.
- How do you do this in Asia?

Possible solutions

1. Internal linkages
 - A geographically dispersed, but closely integrated, internal innovation network (Alcácer and Zhao, 2012).
 - Advantage:
 - Knowledge spillovers are less useful to recipients.
 - Drawbacks:
 - Managing dispersed knowledge activities raises coordination costs
 - Locate in cluster, but chop up innovation project into multiple pieces and disperse pieces over multiple R&D centres.
 - If knowledge about one component leaks out in China, local competitors cannot use it immediately because they need to combine it with the other knowledge all around the world
 - Limit benefits local competitors can gain from knowledge spill overs
 - Main disadvantage: bringing pieces of puzzle together and integration raises cost
2. Sending home country expatriates
 - Helps expanding routines that protect knowledge
3. Foster relationships in local power networks (e.g. local decision makers)
4. Corporate social responsibility practices
 - Increase loyalty: people are less likely to leave
5. Reputation for toughness in protecting IP rights
 - Pursuing maximum, they can and pursue legal devices to prevent that

What variables determine optimal strategy?

1. Intellectual Property Rights regimes

- Strong and dependable intellectual property right laws decrease the danger of IP misappropriation.

2. Nature of technology

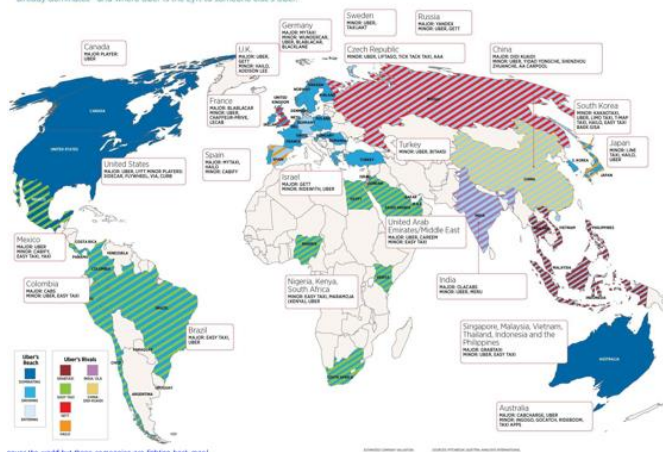
3. Regulation

- Some technologies can be codified and some are more tacit.
- Some are easy to reverse engineer
- Nature of technology does also need to be taken into account

• Uber

THE GREAT GAME

Ride-hailing apps are scrambling to grab market share as demographics shift and smartphones proliferate. Here's where Uber already dominates—and where Uber is the Lyft to someone else's Uber.



and Toronto. In 2014: active in 136 countries -> rapid expansion

- Strategy from IP holder side
- Imitators fought back
- Regulators fought back

Uber London Limited found to be not fit and proper to hold a private hire operator licence

Uber London Limited found to be not fit and proper to hold a private hire operator licence

25 November 2019

Pattern of failures placed passenger safety and security at risk meaning TfL cannot renew licence

TfL has concluded that it will not grant Uber London Limited (Uber) a new private hire operator's licence in response to its latest application.

As the regulator of taxi and private hire services in London, TfL is required to make a decision on Uber's fitness and propriety before its current licence expires. Safety is TfL's number one priority.

"Safety is our absolute top priority"

Helen Chapman
Director of Licensing, Regulation and Charging at TfL

Europe's highest court has made it difficult, if not impossible, for Uber to develop so-called peer-to-peer services | Adam Berry/Getty Images

Media

Press releases

- 2023
- 2022
- 2021
- 2020

distinction. Different rules. Uber was ruled as a transportation company. Implication: uber is not paying drivers; are actually employees but not freelancers

- Uber London: does not offer safety. Discontinued license of uber to operate in London
- Rapid expansion worked in short term, but backfired in long term.
- Lost a lot of market share as a result

4. Complementary assets

- Do you have the resources necessary to exploit technology on your own? Not having them is a strong determinant for which strategy to pursue

Strategic miscalculation here. When they first came out with their business model. Strategy was rapid expansion. Go all in and start service all around the world. Ignoring regulations and local competition. What is uber business model about? Platform: 2sided market: need to bring in people on supply and demand side. Heavily reliant on issue of network externalities. The more people on both sides: the more value for consumers. Their strategy: expand at fast as possible. In 2012 only active in 7 US cities plus Paris

Resulted in appearance of similar platforms. Created ton of imitators abroad. Local competition which they ignored started fighting back and when local businesses started fighting back, pushed regulators to push uber back. Uber had a bunch of problems over years. First issue: what is uber? Transportation or internet company?? Very important