

University of Trento School of Law

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Patent Law Fundamentals

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SCHOOL OF LAW

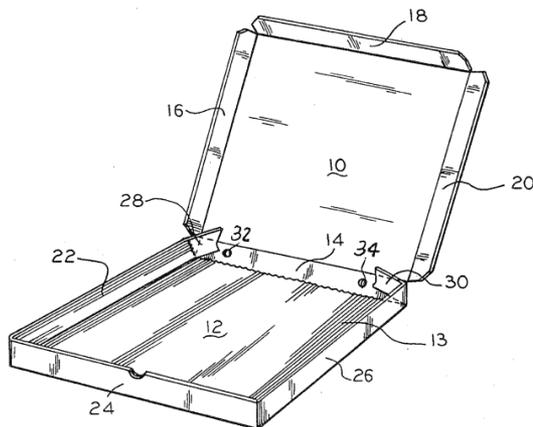
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UNIVERSITY

What is a patent?

-Derived from *literae patentes*, meaning “open letters”

United States Patent [19] 4,441,626
Hall [45] Apr. 10, 1984

[54]	PIZZA BOX	2,782,977	2/1957	Thompson	229/441
[75]	Inventor: Robert E. Hall, Wheaton, Ill.	3,067,921	12/1962	Reifers	229/2.5 R
[73]	Assignee: Fidelity Grafcor, Inc., Elk Grove Village, Ill.	3,145,904	8/1964	Bromley	229/76 X
[21]	Appl. No.: 330,674	3,291,367	12/1966	Carter	229/33
[22]	Filed: Dec. 14, 1981	3,876,131	4/1975	Tolas	206/491 X
[51]	Int. Cl. B65D 81/24; B65D 81/26	4,058,214	11/1977	Mancuso	229/2.5 R X
[52]	U.S. Cl. 229/443; 220/458; 229/2.5 R; 229/31; 229/33; 229/DIG. 14; 426/127	4,237,171	12/1980	Laage et al.	229/33 X
[58]	Field of Search 220/441, 443, 418, 458; 229/2.5 R, 3.1, 33, 36, DIG. 14; 206/550, 545; 426/127, 124; 428/186	<i>Primary Examiner</i> —Allan N. Shoap <i>Attorney, Agent, or Firm</i> —Laff, Whitesel, Conte & Saret			
[56]	References Cited	ABSTRACT			
	U.S. PATENT DOCUMENTS	A box is formed from a unitary, double-sided corrugated cardboard blank having a plurality of scored lines which enable a set up in box form. A bottom panel of the box has cemented thereto a single-sided, fluted corrugated cardboard medium with the fluted side facing upwardly. A moisture-resistant glue is used between the smooth faces of the fluted corrugated medium and the confronting liner of the blank to provide an impenetrable barrier which prevents grease from penetrating through the box. The boxes are manufactured on a conventional production line which is modified by, in effect, running one stage in a reverse direction in order to invert the single-sided medium and to apply the glue in a different manner to establish the moisture barrier.			
	1,184,749 5/1916 Hicks 428/186	9 Claims, 12 Drawing Figures			
	1,449,409 3/1923 Hunt 220/443 X				
	1,865,742 7/1932 Chapman 229/2.5 R				
	1,945,397 1/1934 Gray 229/2.5 R				
	1,974,898 9/1934 Rutledge 229/2.5 R				
	2,164,025 6/1939 Schwertfeger 220/464 X				
	2,278,782 4/1942 Harvey et al. 220/411 X				
	2,434,466 1/1948 Marc 428/186 X				
	2,470,465 5/1949 Broeren et al. 426/127				
	2,497,203 2/1950 Bennett 426/127				



-No such thing as common law patent rights. Rather, a patent is a government issued grant conferring the **right to exclude** others from making, using, selling, offering for sale the claimed invention

Patent rights are territorial

-A patent does **not** give its owner a right to use the claimed invention.

The Right to Exclude and Freedom to Operate

Claims **A, B, and C**

Patent

A – Back



B – Bottom Support



C - Legs



Competing Product – Infringement or
Free to Operate?

B – Bottom



C -



- Back

No **A**

Arm Rests



· Bottom
port

· **C** - Legs

Economics of Patent Law

The Nature of Information



- Two relevant qualities:
 - 1. **Non-rivalous**: “He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.”
 - 2. **Non-excludable**: You cannot build a fence around your idea as you can your backyard or ranch.
- These two traits are common in what economists call public goods

Arrow's Information Paradox and the Free-Rider Problem

- Inventors often need to disclose their ideas to secure venture capital, to arrange for manufacturing capabilities, or otherwise efficiently utilize their invention
- But absent a property right, the inventor will likely be reticent to disclose information for fear of inducing competition.
- Thus, there is an inherent conflict between the desire to disclose information and the need to limit access and use to those whom the inventor has authorized.

Arrow's Information Paradox and the Free-Rider Problem, cont.

- The two distinctive features of information goods (non-rivalrous and non-excludable) can lead to a free-rider problem — that is, consumers who exploit the information without sufficiently contributing to its creation.
- As such, information will tend to be under produced, or not produced at all, due to the riskiness associated with disclosing information or others discovering the information

Addressing the Free-Rider Problem

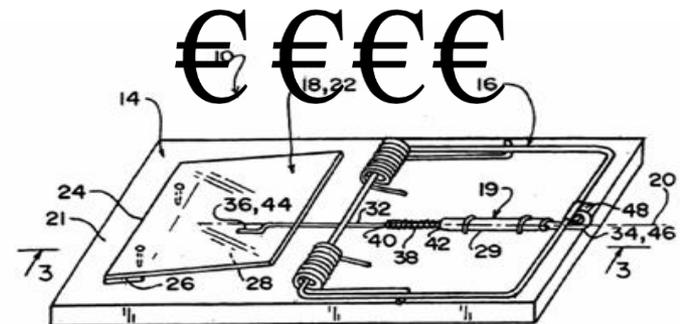
- A common response to this problem is government intervention, which can — for example — take the form of research grants (subsidies), or using the taxing power to fund production or create incentives. National defense — a classic public good — is provided for through tax revenue.
- Another form of government intervention is to create a **private property right** to induce the production of information goods, which has been a government response in the form of patent legislation since 1790 in the United States.

Patent Law and the Marketplace

- The patent system works hand-in-hand with the marketplace
- It is the private market that signals to innovators where to channel their inventive energies
- The patent system provides a property right as an inducement to innovate, but does not channel the direction of the innovation
- Thus, the patent system and the marketplace work hand-in-hand to foster innovation in a decentralized setting

Patent Law and Monopolies

- A patent provides its owner with a **legal** monopoly
- But a patent rarely provides its owner with an **economic** monopoly
- The reason is that a patent typically does not provide sufficient market power because there are almost always viable substitutes



Economic Theories of Patent Law

- Even though patents do not provide an economic monopoly, they still impose costs on society.
- With exclusivity comes the risk of:
 - reduced output,
 - excessively high prices; and
 - therefore less access to the patented product
- This is referred to by economists as deadweight loss

Incentive to Invent

- Focuses on efficiency gains and the internalization of externalities
- This theory seeks to address the effects of Arrow's paradox, and holds that — due to the public goods nature of information — without the prospect of a property right, inventors would be unable to recoup (internalize) their research and development costs because third parties could simply copy the invention and compete with the inventor unencumbered by the need to recover fixed costs. In an increasingly competitive market, prices will be driven down, resulting in an under-investment in invention.

Incentive to Disclose

- The prospect of a property right will induce inventors to seek patent protection, and thereby disclose their inventions in accordance with patent law's disclosure requirements
- Without the availability of patent protection, inventors are more likely to opt for trade secret protection, thus depriving competitors (and the public generally) of a technical disclosure — that is, information that can be used by competitors to improve the patented technology or design around it

- This theory focuses on the role of patents in inducing the transformation of inventions into downstream, commercialized products by serving as a signal to relevant parties, namely investors (e.g., venture capitalists), potential licensees, and downstream players (e.g., entities with marketing, distribution, advertising, and manufacturing capabilities).

Weaknesses of These Theories

- The incentive to invent theory assumes the inventive act is driven by the prospect of a patent, rather than reputational gains, monetary prizes or rewards
- With respect to the incentive to disclose theory, an “enabling” disclosure seldom suffices for potential licensees to practice the claimed invention. This results in licensees asking the licensor/patentee to provide them with an “enabling package,” which includes technical know-how and other forms of tacit knowledge not required to be disclosed under § 112.
- Moreover, this theory does not fully take into account that — because of reverse engineering concerns or other issues associated with confidentiality — trade secrecy is sometimes not a viable option.
- In contrast, trade secret is the preferred option

Weaknesses of These Theories, cont.

- The incentive to innovate theory loses some of its force when one considers that oftentimes patentees neither commercialize, nor license their patented technology.
- In other words, the development and realization of downstream products may not be consistent with the preferences of the patentee
- Why do firms patent?

The Economic Welfare Problem

- Our understanding of patent law's relationship to economic welfare is incomplete as is the the question of whether stronger patents increase or decrease innovation.
- “If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible on the basis of our present knowledge, to recommend abolishing it.” Fritz Machlup (1958)



An interdisciplinary, graduate-level
certificate program at
Case Western Reserve University

fu·sion

fyoo-zhuhn: noun

the process or result of joining two or
more things or ideas together to
form a single entity.

Patents and Applications Held by Start-Ups: The Importance of Patents to VCs

Source	Industry	All Respondents	Biotechnology	Medical Device	Software	IT Hardware
Population of companies (D&B)						
Companies holding patents/apps (share)		39%	75%	76%	24%	-----
Average # patents/apps held		4.7	9.7	15.0	1.7	-----
Average # filed by company		8.1	8.5	13.0	5.0	-----
Average # from founders		1.9	2.0	3.0	0.9	-----
Average # acquired		2.1	2.4	3.7	0.9	-----
Venture-backed companies						
Companies holding patents/apps (share)		82%	97%	94%	67%	91%
Average # patents/apps held		18.7	34.6	25.2	5.9	27.4
Average # filed by company		15.8	22.9	16.1	7.1	23.6
Average # from founders		2.5	3.8	3.8	0.7	3.1
Average # acquired		4.2	9.0	6.5	0.7	3.5



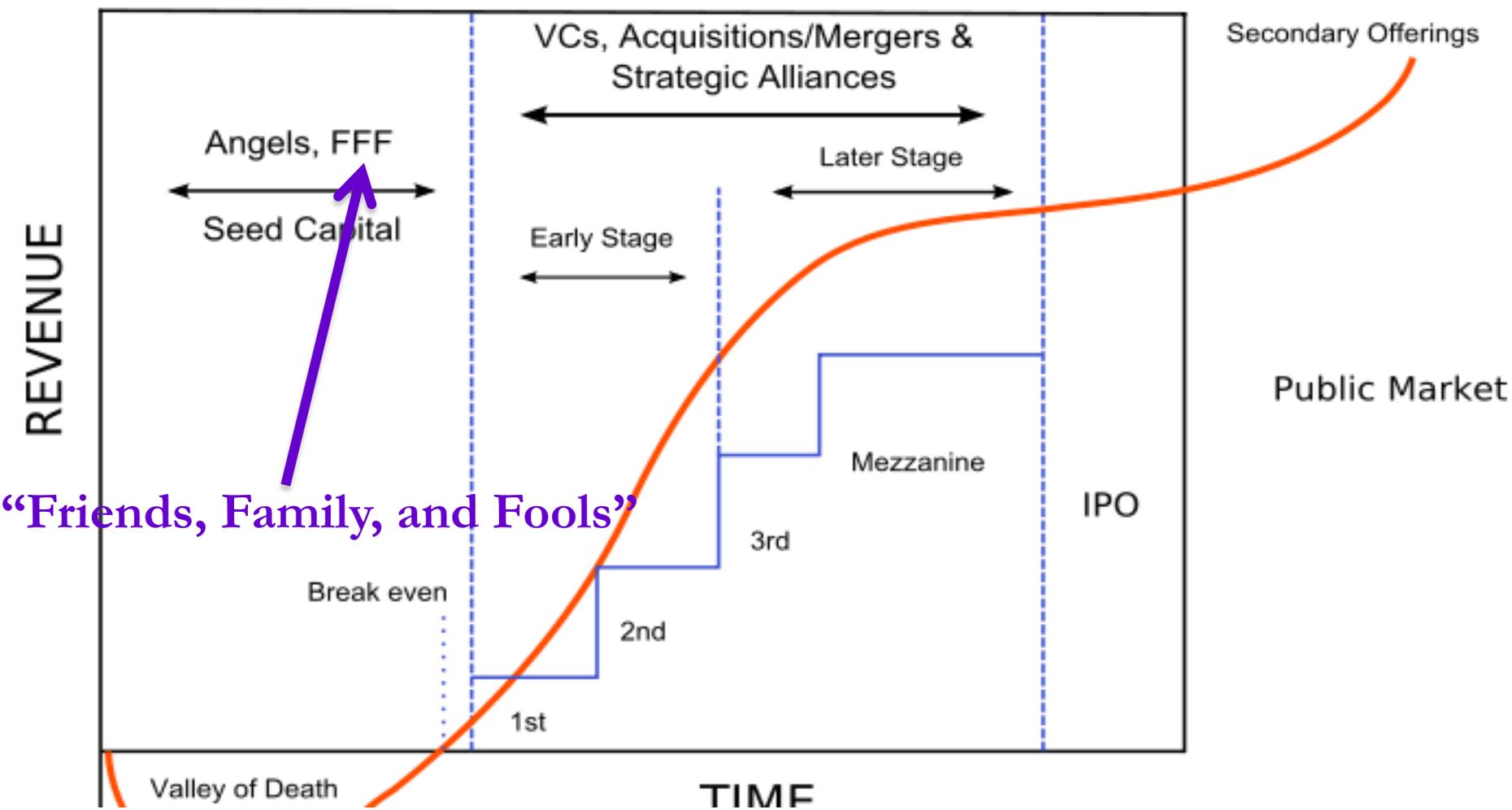
What is Venture Capital?



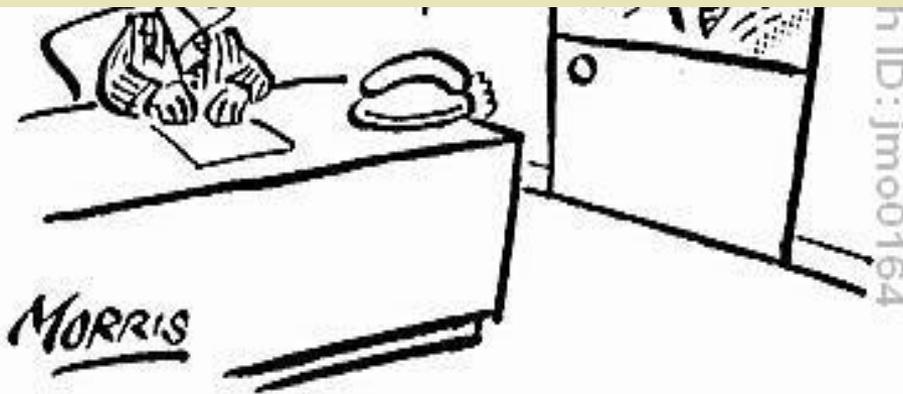
VC investment strategy typically has the following attributes:

- 1. Emphasis on new technology;
- 2. Active (and sometimes controlling) participation of the VC in actual management of the business;
- 3. Investment in outstanding people (entrepreneurs) at least as much as in outstanding business plans;
- 4. Investment in an early stage of development, but **after** IP (typically patents) has been secured;
- 5. A time horizon ranging from a year or two to as long as ten years, followed by an “exit” through an IPO or sale of the entire enterprise; and
- 6. Investments where the VC can add value through technical, financial, and management expertise

Seeds and Rounds: The Financing Cycle



But VC financing remains a very important part of the U.S. economy: **According to one survey, U.S. companies that have relied on venture capital financing at some point in their history generate revenue equal to approximately 21% of GDP.** *See National Venture Capital Assoc, Venture Impact 2 (6th ed. 2011)*



"Simpson, you promised you wouldn't tell anybody I turned down Bill Gates!"

Patents are **DURABLE** assets

Patent Eligibility

Life Sciences

- Section 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.

Article 52 – EPC – Patentable Inventions

(1) European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:

(a) discoveries, scientific theories and mathematical methods...;

EPC - Article 53 – Exclusions of Patentability

European patents shall not be granted in respect of:

(a) inventions the commercial exploitation of which would be contrary to "**ordre public**" or morality; ...

In the United States

- Pre-emption
 - **Laws of nature, natural phenomena, and abstract ideas**
 - “Monopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it,” thereby thwarting the primary object of patent law
- Must distinguish between patents that claim building blocks of human ingenuity and those that integrate the building blocks into something more, thereby transforming them into a patent eligible invention.

Applying for a Patent

The U.S. Patent & Trademark Office



The USPTO is a federal agency under the Department of Commerce, and is located in Alexandria, VA, just across the Potomac River from Washington D.C.

The agency's mission is:

“Fostering innovation, competitiveness and economic growth, domestically and abroad to deliver high quality and timely examination of patent and trademark applications, guiding domestic and international intellectual property policy, and delivering intellectual property information and education worldwide, with a highly skilled, diverse workforce”



-2012 Performance and Accountability

2015 Average Pendency Rates

For Patents

-First Office Action: 17.8 months as of June 2015
(18.3 in June 2013)

- Biotech: 15 months (2014)
- Mechanical Eng/Mfg & Products: 21.3 months

-Total Pendency: 26.6 months as of June 2015
(29.8 in June 2013):

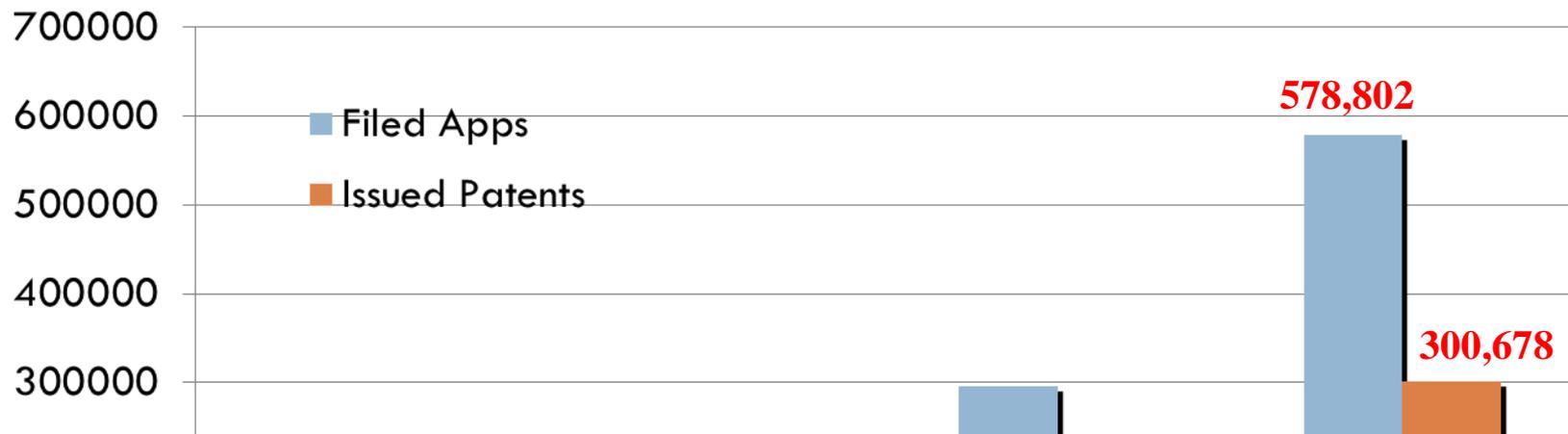
-Biotech: 26.2 months

-Mechanical Eng/Mfg and Products: 31.1

months

Utility Patent Filings

U.S. Utility Patent Applications Filed and Granted, 1980-2015



In comparison, the European Patent Office (EPO) received **279,000** filings in 2015 (142,941 were filed in 2000) and granted **64,421** patents.



European Patent Office

- No such things as a European Patent that has legal effect throughout the EU or EPC countries
- Obtainment is centralized, but then patent turns into a series of national patent rights
- Very expensive: translation costs, procedural costs, and renewal fees paid to each state
- Much more expensive than a U.S. or Japanese patent



EPO Designations

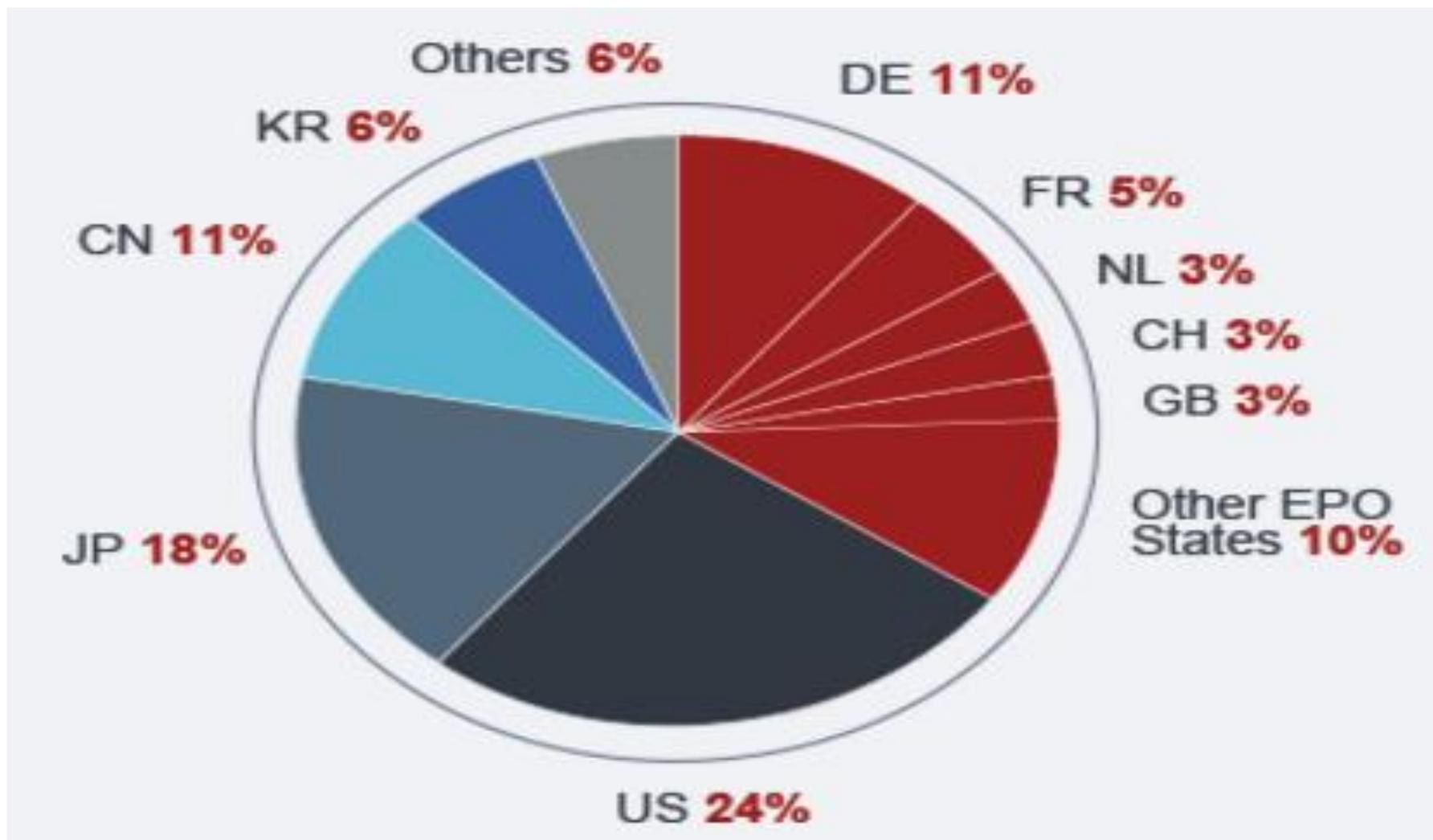
- The top designation countries for patent protection (2015):
 - 1. Germany (99.6%)
 - 2. France (98.4%); and
 - 3. U.K. (98%)
 - 4. Italy (94.8%)

Unitary Patent

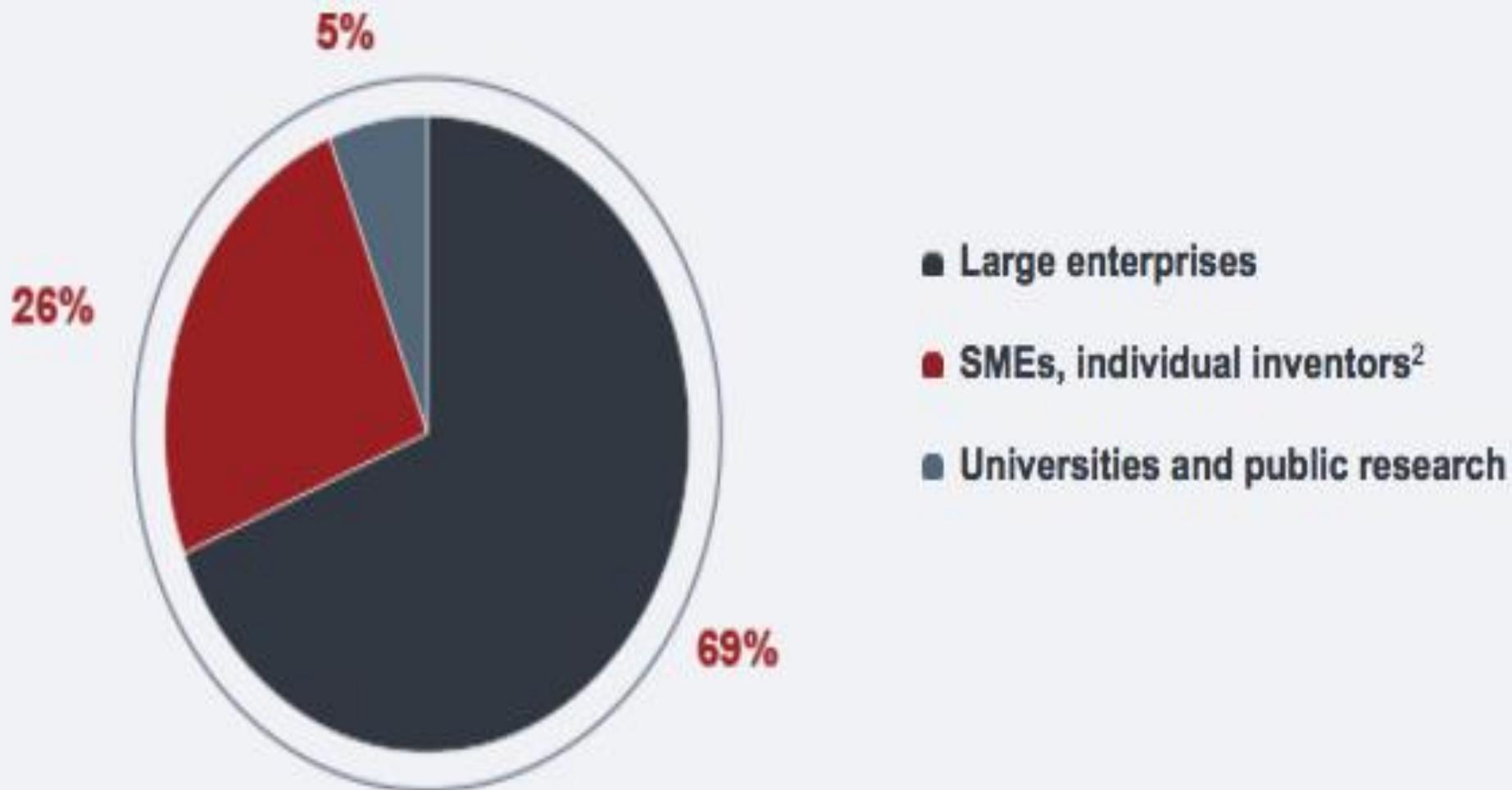


- Proposal: **Community Wide Patent** (Unitary Patent)
- Legal effect throughout the EU
- Single renewal fee paid to EPO
- Application can be filed into one of three languages: English, German, or French
- After Grant, no translation is required into other languages

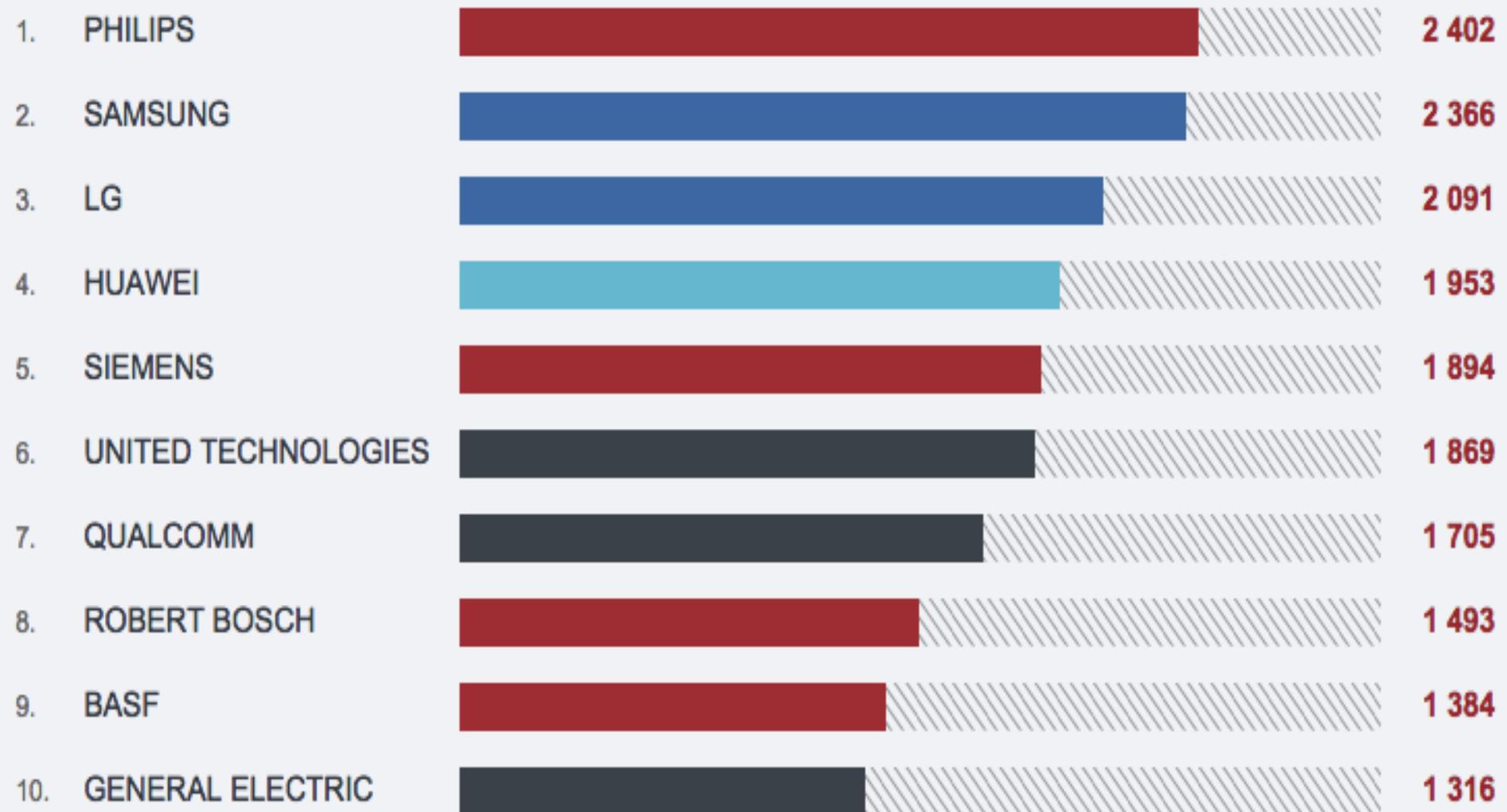
Patent Filings by Country of Origin



Patent Applications by Category



Top Ten Patentees at EPO - 2015



Patent Applications by Country at EPO

(per million inhabitants)

Rank	Country	Applications per mio inhabitants	Population	Applications
1.	Switzerland	872.7	8 121 830	7 088
2.	Netherlands	418.9	16 947 904	7 100
3.	Sweden	391.7	9 801 616	3 839
4.	Finland	365.2	5 476 922	2 000
5.	Denmark	345.8	5 581 503	1 930
6.	Germany	307.0	80 854 408	24 820
7.	Austria	229.9	8 665 550	1 992
8.	Belgium	180.2	11 323 973	2 041
9.	Japan	168.8	126 919 659	21 426
10.	France	162.0	66 553 766	10 781

Questions