Information and Society-E2

- Information Law 1-

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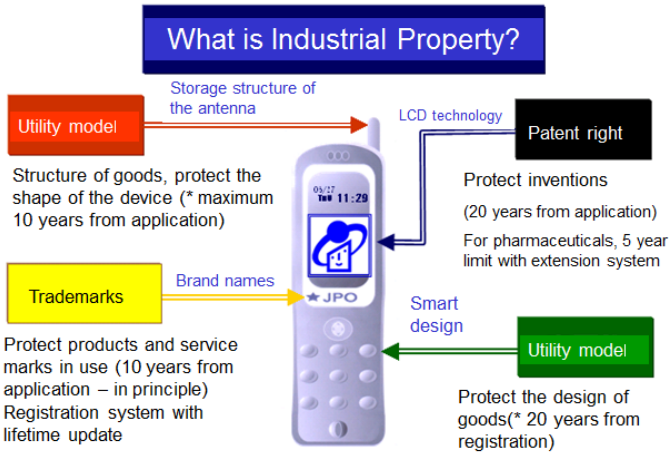
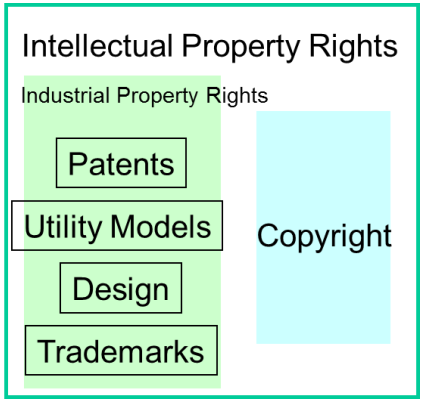
Overview: Information Law

- Intellectual property rights and patents
- Copyrights, distribution of copyrighted work on the Internet
- Personal information protection, privacy

•Can be implemented industrially?	Industrial usability, usefulness
•Is it is new or not?	Novelty
•Could it have been thought of simply?	Non-obviousness, progressivity
•Has it been previously applied for?	Previously applied principle
•Is it not an anti-social invention?	Sociability ?
•Are the contents of the invention adequately explained in the specifications document?	Feasibility





INFORMATION AND LAW: PATENTS

What is a Patent?

What is a Patent?

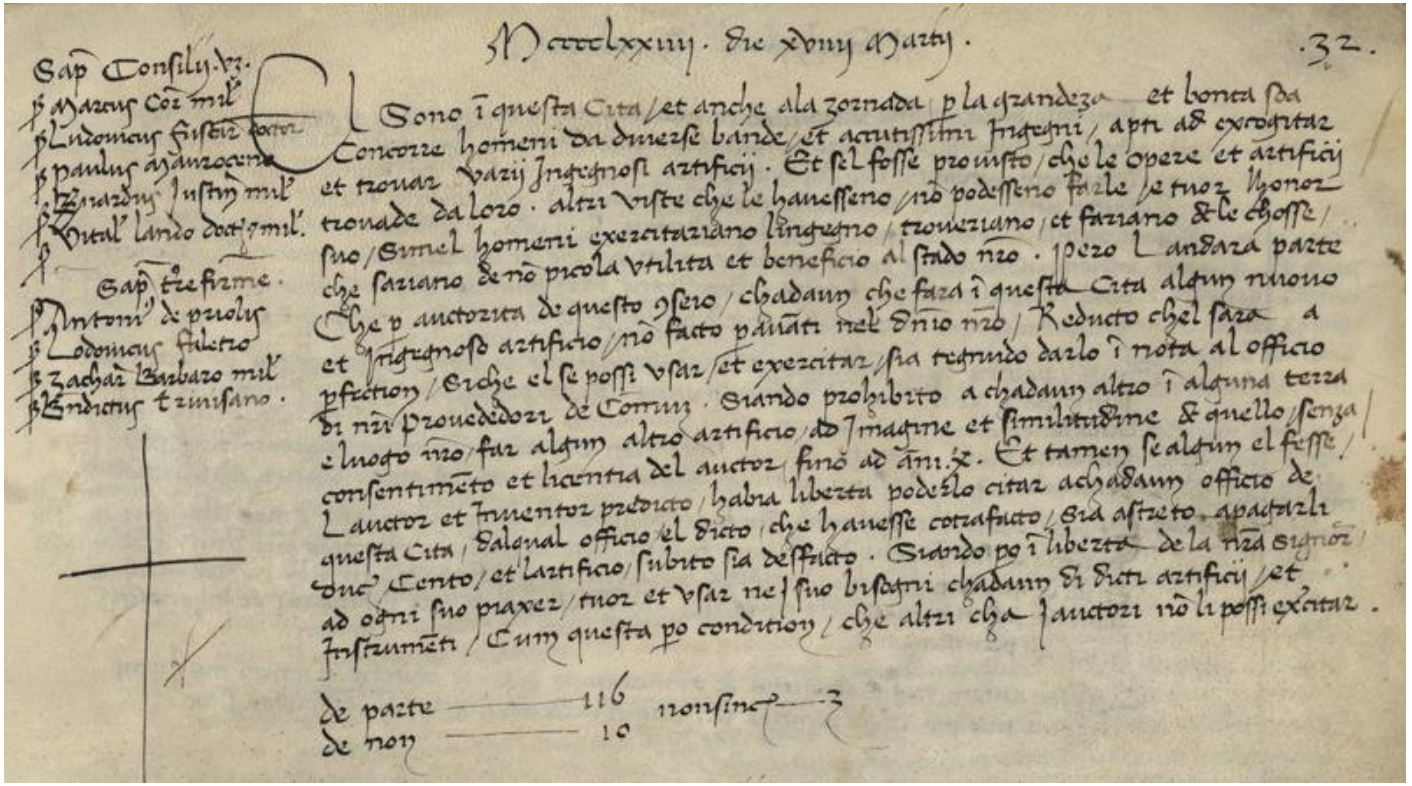
- Right to exclude others from using a particular invention, especially, for commercial exploitation of the innovation
  - Patent allows owner to prevent others from making, using or selling the patented invention

- In return for monopoly, the inventor must disclose the invention so that others may use it subject to payment of a licensing fee

Brief Patent History

- The word patent comes from the term "*letters patent*"
  - Documents from a king or queen granting a privilege or exclusive right to someone
- Patent law originated in Venice, Italy, granting privileges based on the utility and novelty of an invention
- 1421 - first patent given to Filippo Brunelleschi

  - Invention of a barge with lifting equipment for carrying marble upriver to Florence
  - "*he refuses to make such machine available to the public, in order that the fruit of his genius and skill may not be reaped by another without his will and consent; and that if he enjoyed some prerogative concerning this, he would open up what he is hiding, and would disclose it to all.*"
- 1474 - Venice introduces first formal patent law for encouraging inventions
  - Ownership rights afforded by patents helped to achieve high rate of technological innovation and advancement in Italy as well as in other places

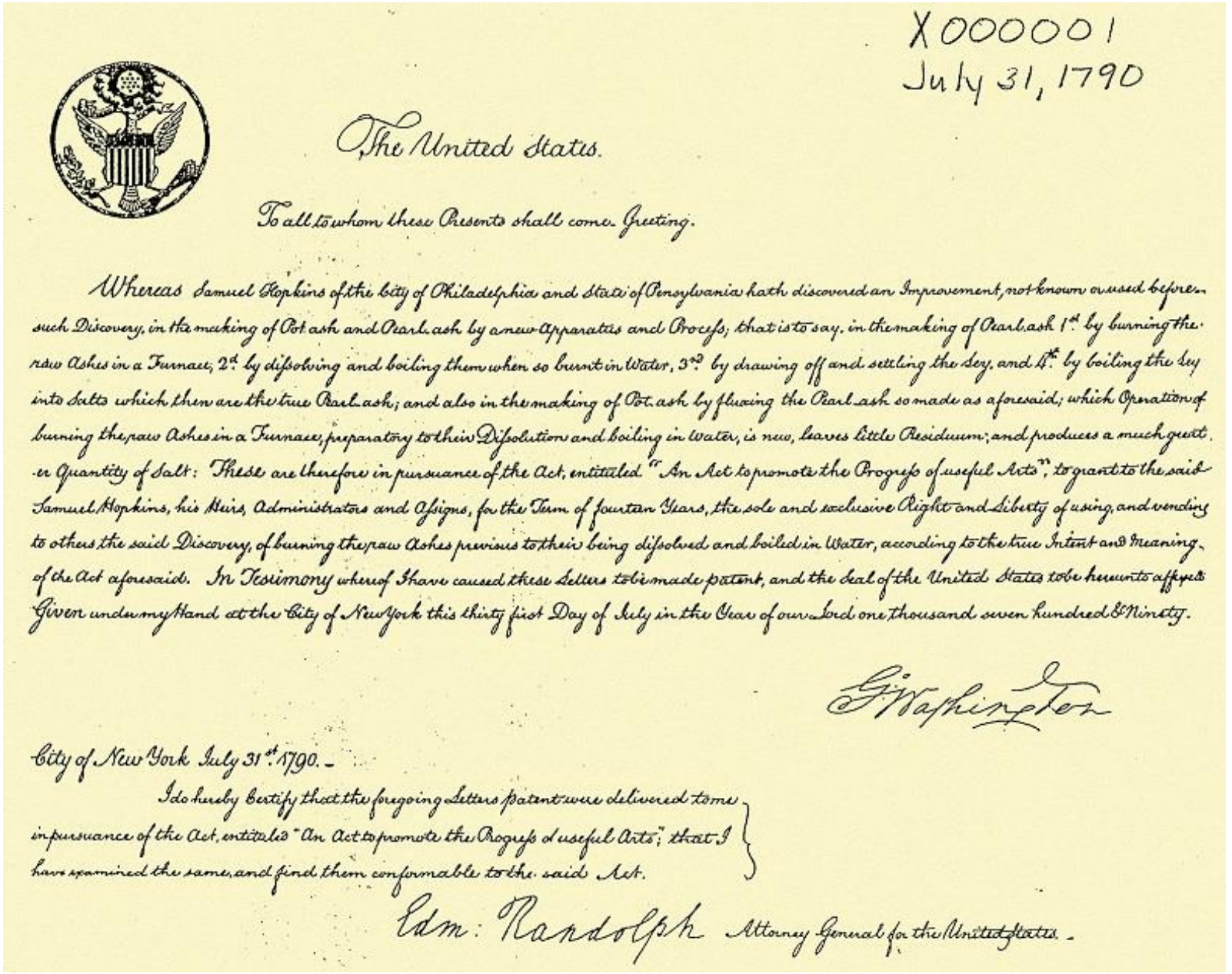


“*Be it enacted that, by the authority of this Council, every person who shall build any new and ingenious device in this City, not previously made in our Commonwealth, shall give notice of it to the office of our General Welfare Board when it has been reduced to perfection so that it can be used and operated. It being forbidden to every other person in any of our territories and towns to make any further device conforming with and similar to said one, without the consent and license of the author, for the term of ten years.*”

First formal patent law enacted in Venice

Brief Patent History (cont.)

- 1623 - Statute of Monopolies in England
  - England was less industrially developed than France
  - The country used patents to encourage craftsmen to come to England
  - This helps to develop and to improve industry
- 1790 - President George Washington signs the bill that laid foundations of modern American patent system
- 1883 - Paris Convention for the Protection of Industrial Property
  - Industrial revolution brought many inventions (e.g., steam-powered ships) but patent laws were not synchronized in different countries
  - The convention established procedure of contract states to inform other states about their patents
    - Date of patent application in one state considered as the first date of application in other states provided the patent application is filled within 12 months in those states
- Edison is example of famous inventor having many patents
  - Over 1090 patents in the US, including one for the light bulb, motion picture camera, phonograph, etc.



X000001
July 31, 1790

The United States.

To all to whom these Presents shall come. Greeting.

Whereas Samuel Hopkins of the City of Philadelphia and State of Pensylvania hath discovered an Improvement, not known or used before such Discovery, in the making of Pot ash and Pearl ash by a new Apparatus and Procefs; that is to say, in the making of Pearl ash 1st. by burning the raw Ashes in a Furnace, 2d. by diffolving and boiling them when so burnt in Water, 3rd. by drawing off and settling the ley, and 4th. by boiling the ley into Salts which then are the true Pearl ash; and also in the making of Pot ash by fluxing the Pearl ash so made as aforesaid; which Operation of burning the raw Ashes in a Furnace, preparatory to their Diffolution and boiling in Water, is new, leaves little Residuum, and produces a much greater Quantity of Salt: These are therefore in pursuance of the Act, entituled "An Act to promote the Progrefs of useful Arts", to grant to the said Samuel Hopkins, his Heirs, Administrators and Afsigns, for the Term of fourteen Years, the sole and exclusive Right and Liberty of using, and vending to others the said Discovery, of burning the raw Ashes previous to their being diffolved and boiled in Water, according to the true Intent and Meaning of the Act aforesaid. In Testimony whereof I have caused these Letters to be made patent, and the Seal of the United States to be hereunto affixed. Given under my Hand at the City of New York this thirty first Day of July in the Year of our Lord one thousand seven hundred & Ninety.

G. Washington

City of New York July 31st. 1790.

I do hereby Certify that the foregoing Letters patent were delivered to me in pursuance of the Act, entituled "An Act to promote the Progrefs of useful Arts"; that I have examined the same, and find them conformable to the said Act.

Edm: Randolph Attorney General for the United States.

The first U.S. patent granted for Samuel Hopkins for a new way of making "pot ash and pearl ash“ (1790)

https://wikispaces.psu.edu/

Patent Example (USA)

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bruce Lehman
Commissioner of Patents and Trademarks

Attest

US007584185B2

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

(10) **Patent No.: US 7,584,185 B2**
(45) **Date of Patent: Sep. 1, 2009**

(54) **PAGE RE-RANKING SYSTEM AND RE-RANKING PROGRAM TO IMPROVE SEARCH RESULT**

(75) Inventors: **Adam Jatowt**, Kyoto (JP); **Yukiko Kawai**, Kyoto (JP); **Katsumi Tanaka**, Kyoto (JP)

(73) Assignee: **National Institute of Information and Communications Technology, Incorporated Administrative Agency**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 343 days.

(21) Appl. No.: **11/652,723**

(22) Filed: **Jan. 12, 2007**

(65) **Prior Publication Data**

US 2007/0174279 A1 Jul. 26, 2007

(30) **Foreign Application Priority Data**

Jan. 13, 2006 (JP) P2006-006692

(51) **Int. Cl.**
G06F 17/30 (2006.01)

(52) **U.S. Cl.** **707/5**; 707/3; 707/10

(58) **Field of Classification Search** 707/101, 707/10, 4, 3, 5, 6, 7, 102, 104.1
See application file for complete search history.

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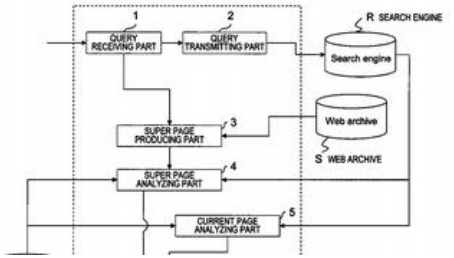
Primary Examiner—Jean M Corrielus

(57) **ABSTRACT**

A page re-ranking system includes a super page producing part that produces a super page where page contents are combined between multiple versions for each of multiple Web pages that can be obtained as a search result page in compliance with a user's query and to which a page ranking is created, a super page analyzing part that analyzes a covering degree of a topic representation that is contained in the super page produced by the super page producing part, and a re-ranking part that grants a renewed page ranking to each of the Web pages by comparing the analysis results obtained by the super page analyzing part between the super pages.

19 Claims, 6 Drawing Sheets



Main Incentive of Patents?

Main Incentive of Patents

- Economical Incentives for investment and innovation
  - Other: self-expression, need for improvement, curiosity, etc.
  - Additional investment: financial, effort and time

- Patents provide incentives for innovating
  - Aim to achieve balance: patent protection for up to 20 years, then the innovation can be exploited by all

Other Incentives of Patents

- Reasons for patenting
  - Licensing: patent holder can seek license fees from others who make and sell products falling within the patent claims
  - Market power: patent excludes others from making and selling the product. It also serves as barrier of entry
  - Investors attraction: easier for companies, especially, start-up companies to find investors. Particularly important in new, uncertain and fast growing technologies (biotech, nanotech, AI, etc.).
  - Reputation, marketing, signaling: disseminating information about promising research direction and own capabilities
  - Defense and insurance: fending off patent claims by competitors with own patent portfolio
  - Attribution: authoritative determination of inventorship

Patentable Subject Matter

- Invention/discovery or improvement of process or product
  - Patentable subject matters: process, machine, manufacturing or composition of matter

Patenting a Process

- Process: “way of making/using/doing something”
  - e.g., way of managing investment fund, creating anti-gravity illusion, method for controlling weeds near rice, method for making high-strength polymer fabric
- Inventor may patent a process, product or both
  - E.g., possible to patent a chair and the way to make the chair in separate claims. If others use the process to build (e.g.,) couches they infringe the process
  - Some processes do not make any product or some result in a common product that is not patentable (e.g., process of purifying water or process to make a chemical that cannot be easily described)
  - Other processes are common but nevertheless result in new product
- Process can be a new usage of a known process, machine, manufacturing or composition of matter or material
  - “Use” patent defines new use of an existing product (e.g., drug useful for hypertension patented as a cure for common cold by a company that may even not invented the drug in the first place)

Patenting a Product

- Products: machines, articles of manufacture or compositions of matter
  - Machine: “product/device that performs some function and produces certain result or effect”
    - e.g., hammer, piano, computer with a new program that essentially creates a new machine, etc. but also a cell in an organism that produces hormones
  - Manufacture: “production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties or combinations”
    - e.g., software can be patented as *process*, a program as a part of *product*, computer with program as a *new machine* and program on floppy disc as an *article of manufacture*
  - Composition of matter: “all compositions of substances, all composite articles” (e.g., ones as result of mechanical mixture, chemical union)

Examples

- Process, manufacture, machine or composition?
  - Bicycle → product (machine, article of manufacture)
  - Technique for riding a bicycle → process (can be described as series of steps)
  - Glue used to fix flat bicycle tires → product (composition of matters)
  - Speery – brand name used to sell bicycles → not product (no physical presence)
  - Newly discovered information about the history of bicycles → not product
  - Special tire that uses aerodynamics law → product (article of manufacture)
  - Manufacturing procedure to make the special tire → process
  - Oven used in that procedure → product (machine)
  - Rules of new card game modeled after rules of Tour de France → process (instruction for playing game)

Patentable Inventions

- Must be: new, useful and nonobvious

- Example of a pencil with specially shaped eraser would not be patentable if:
  - The pencil would be already in public use or published
  - Someone else had already invented the pencil and is proceeding toward patenting
  - The inventor learned about the invention from someone else
  - The inventor has not filed a patent early (more than a year after the invention is made public)
  - Pencil does not work (requirement of usefulness)
  - Pencil is obvious to someone in pencil producing field

Example

- An engineer reads a journal article and learns about newly discovered chemical compound with special superconducting properties
- He does the research and builds a super efficient refrigerator that is novel in the field
- Can his invention be granted patent?

Explanation

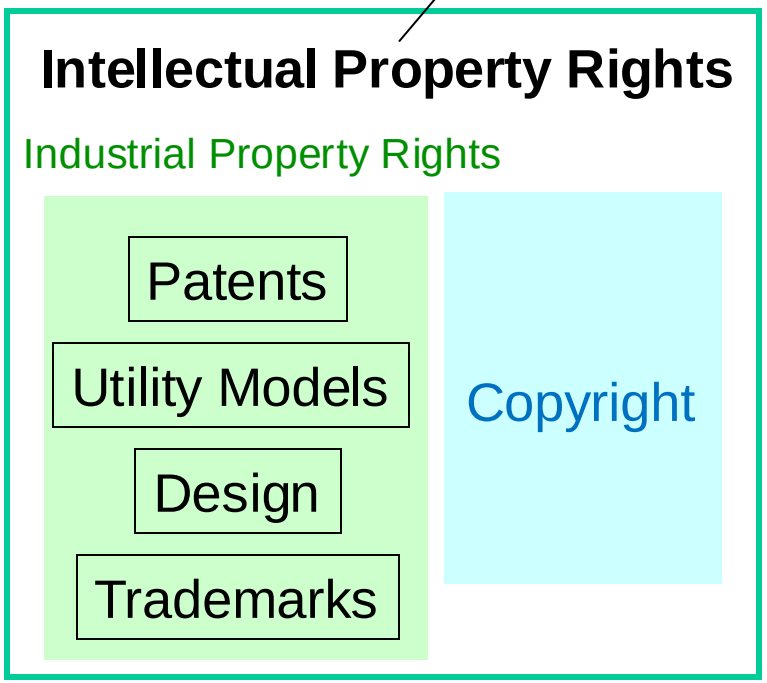
- Yes!
  - Although the engineer learned about the chemical and its characteristics from journal, he applied this knowledge and added considerable inventive contribution

Excluded Subject Matters

- New types of weapons (encourages invention of destructive devices)
- Human cells (as it would grant type of ownership on human organisms)
- Methods of cloning humans (disputed use of science)
- Laws of nature
  - e.g., the law of relativity cannot be patented but its use in rocket can be
- Discovery of some fact
  - e.g., discovery that some materials in TV sets are dangerous as emitting radiation (discovery is not applied in any process). It may be valuable discovery but cannot be patented.
    - The safe way to watch TV or improved TV set would be patentable

Intellectual Property Rights and Patents

Occur through
intellectual activities



Copyright: rights that automatically occur to protect cultural, artistic or academic works

Patents and utility models: protecting technological inventions and proposals

Design: protecting industrial designs

Trademarks: protecting the name and marks of products and services

Source: http://www1.odn.ne.jp/jiii-hiroshima/pat01.htm

What is Industrial Property?

Utility model

Storage structure of the antenna

Structure of goods, protecting the shape of the device
(* maximum 10 years after application)

Patent right

LCD technology

For protecting inventions

(20 years from application, for pharmaceuticals 5 year limit with extension system)

Trademarks

Brand names

For protecting products and service marks in use (10 years from application – in principle)
Registration system with lifetime update

Design

Smart design

For protecting design of goods (* 20 years after registration)

(*) contains the period of rights for Industrial property in Japan

Comparison of Rights

	Patent (特許権)	Utility model (実用新案権)	Design (意匠権)	Trademark (商標権)	Copyright (著作権)
Authorities concerned	Patent Office	Patent Office	Patent Office	Patent Office	Agency for Cultural Affairs
Necessity of registration	Register at patent office	Register at Patent Office	Register at Patent Office	Register at Patent Office	Not necessary
For protection	Invention (invent a product or method)	Device (limited to invention of goods)	Design of an article	Name of product or services, mark	Copyrighted work
Examination on the merits	Yes	None (unexamined registration system)	Yes	Yes	None (because the right automatically occurs)
Period of rights	20 years from application	10 years from application	20 years from registration	10 years from registration (can be renewed)	50 years after the death of the author (changed to 70 years in 2004)
Maintenance fees	Necessary	Necessary	Necessary	Necessary	Not necessary (because right automatically renews, **registration not necessary**)

- Utility Model
  - This protects concepts involving "the shape of an object, its structure and its assembly", and protects small inventions that are not up to the extent of a patent. It is not possible to hold utility model rights on a manufacturing process. According to a legal amendment in 1994, it became an unexamined registration system, and the period of rights validity also became 10 years from the date of application. As it is registered without examination, actually, similar technologies have gained third-person rights as a patent or utility model right in the past.
- Design Rights
  - Design involves an object that can be used industrially (or a part of that object), in terms of its shape, patterns, colours, etc. If design rights are obtained, then it is possible to gain monopoly rights in regard to that design, covering manufacture and sale. Even if the target of transactions is an independent part (for example, a bicycle frame), it is treated in the same manner as a full object, and is registered as a design. Like patents, it is examined as to whether designs are considered to be a novelty or not. If design is successfully registered, then the validity period of the right is 15 years from the registration date.

- Trademark Rights
  - Items protected under the trademark law are names and marks attached to products and services. Unique words and images and suchlike items intended to distinguish one's own products from another's products are trademarks. Upon application, one nominates the category that the product or service belongs to. The period of rights validity is 10 years from the date of registration, but it is possible to renew this as many times as needed via application to the patent office. If one continues to make modifications, the rights are maintained semi-permanently.
- Copyright
  - Copyright is granted as a right that occurs in regard to creations, to authors of the creations. “Creations” refers to “cultural, artistic, academic or musical concepts that display creativity”. CD-ROMs, video and audio recordings, broadcasts, theatre, images and alike are included. A difference between patents and copyrights is that former occur from the time that they are registered, whereas copyright occurs automatically from the time that the works are created, and from that point on, they are protected as a general rule until 50 years after the death of the creator.

What are Patents?

- **"Allowing the public presentation of a technology to the inventor, and giving a monopoly for a fixed period of time as compensation, and under fixed conditions"**

- Patents Law, **first clause**: "This law has the objective of promoting inventions and contributing to the development of industry, via the planning of use and protection of inventions".

- Inventions that are regulated by the **second clause** of the Patents Law: advanced items constructed as a result of technological ideas that utilize the laws of nature

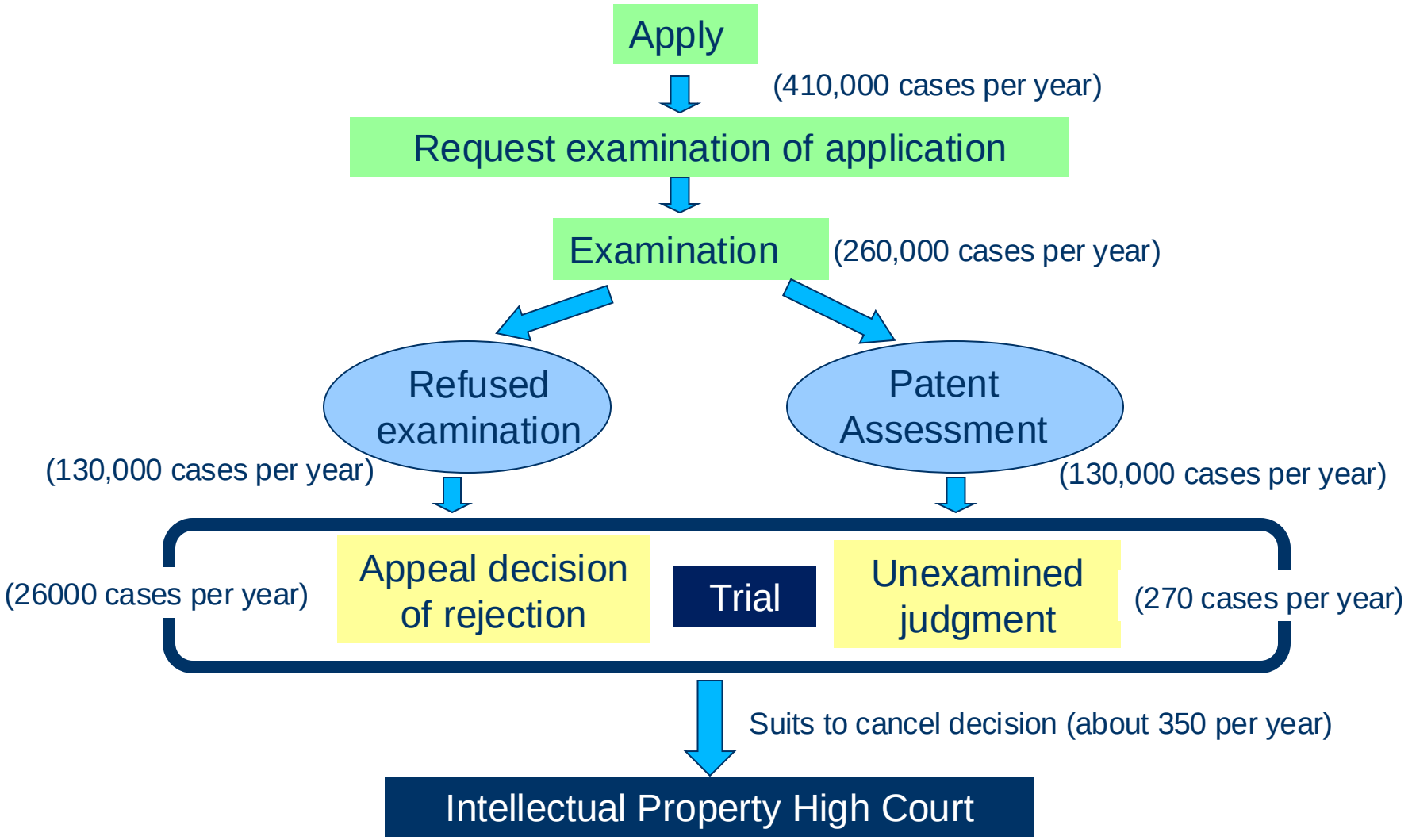
Elements of Patents

Whether it is an invention as per the Patents Law: advanced items within the construction of technological ideas that utilize laws of nature

Can be implemented industrially?	Industrial usability, usefulness
Is it new or not?	Novelty
Could it have been thought of simply?	Non-obviousness, progressivity
Has it been previously applied for?	Previously-applied principle
Is it not an anti-social invention?	Sociability
Are the contents of the invention adequately explained in the specifications document?	Feasibility

Japan Patent Office

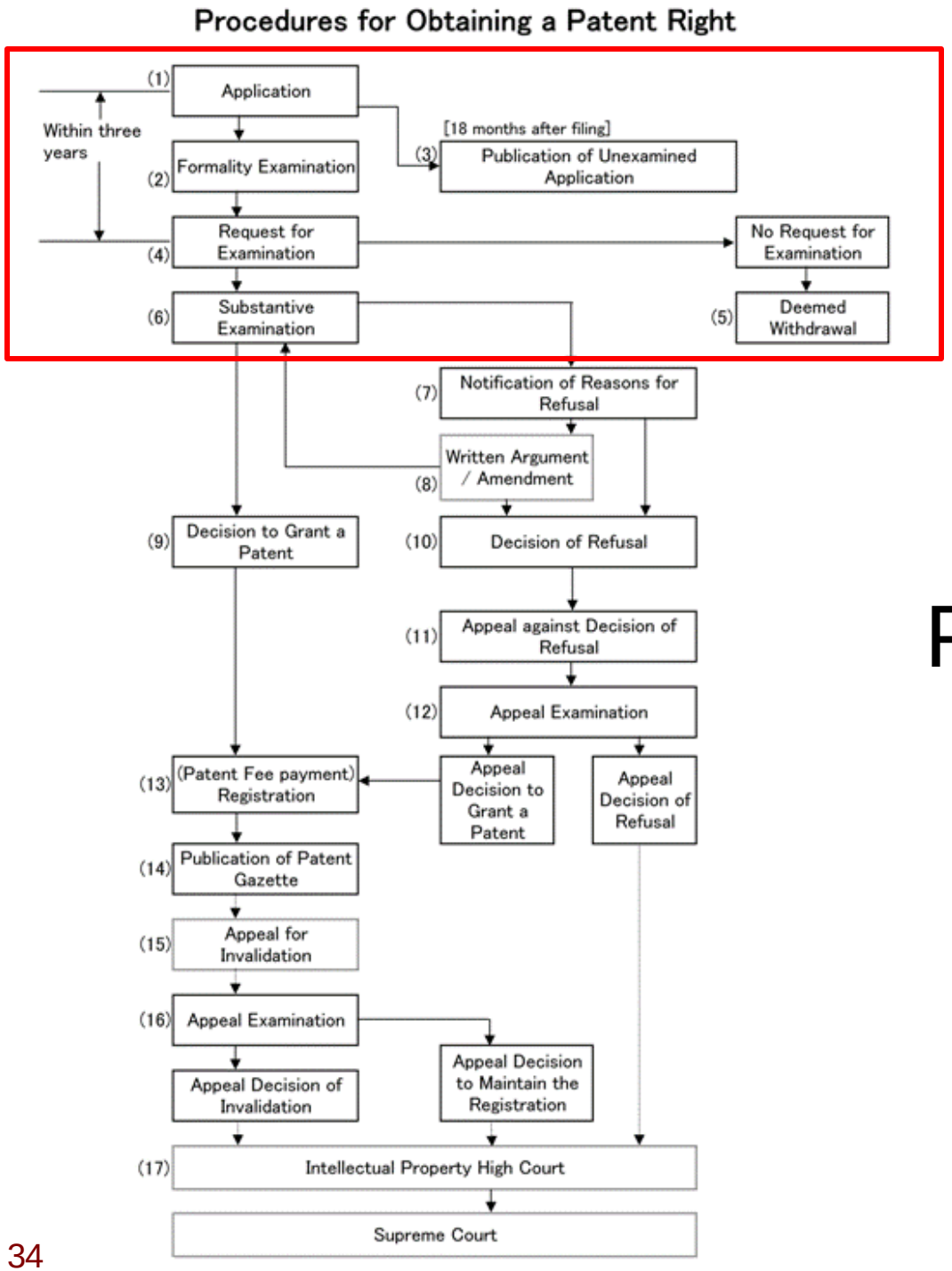
Flow of Examination (Patents)

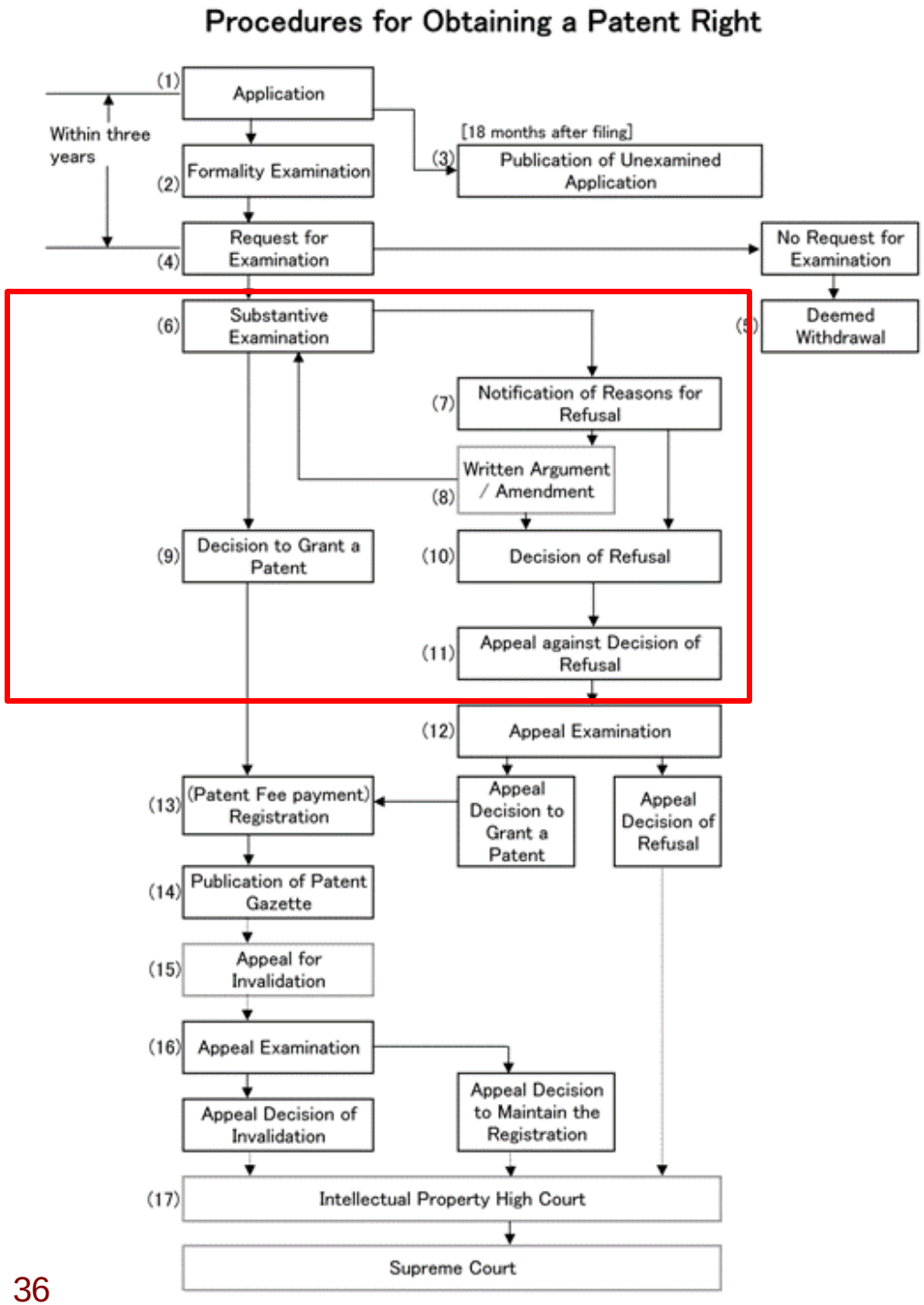


NOTE) 2006 numbers. Here out of cases closed, only the number of [examined] cases and rejected cases is shown. Remember that this number differs from temporary examination results (2006 – 2900,000 cases)

Japan Patent Office

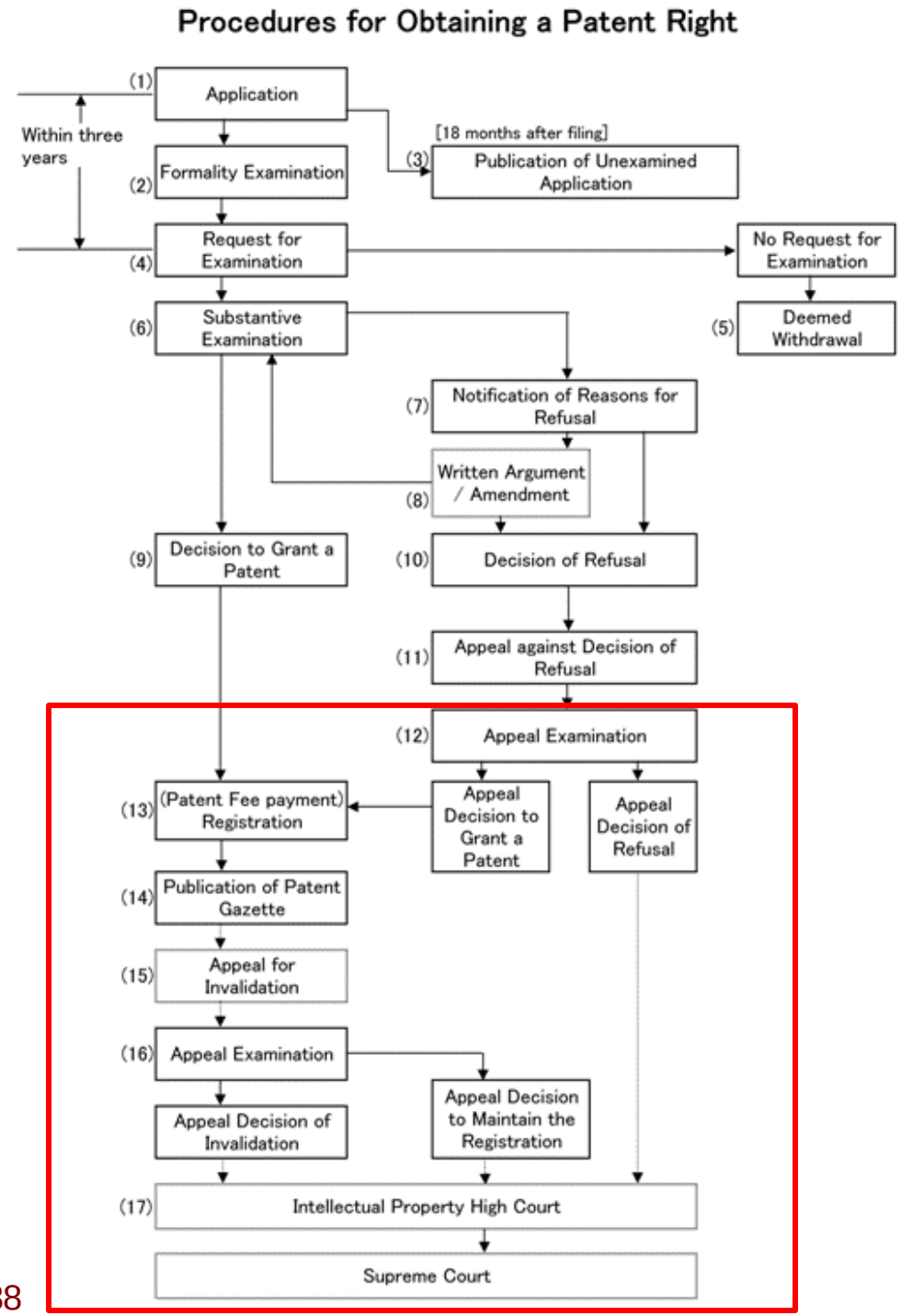
Patent Examination in Japan (flow chart)





Patent Examination in Japan (flow chart)

Japan Patent Office



Patent Examination in Japan (flow chart)

Number of Invalid Examinations and Number of Motions Passed

If patent rights are examined and then registered by the patent office, are they absolute?

After a lengthy re-examination of a pre-existing technology, if it is confirmed that it is pre-existent, the patents will become invalid.

	93	94	95	96	97	98	99	00	01	02
Number of claims	110	113	159	125	184	252	293	296	283	260
Motions Passed	22	41	45	39	22	46	27	77	138	156

This is the number of patents that have been declared invalid after a patent is granted, and the validity is judged as doubtful after a pre-existing technology is examined. In the last decade, 613 patents have been declared invalid, out of 2,065 claims. This is quite a high percentage - 29.7%. After checking the validity of established patent rights, the value of patents must be evaluated.

Numbers of Patents in Japan

[Applications]

	2002年	2003年	2004年	2005年	2006年	2007年	2008年	2009年	2010年	2011年	2012年
Patents	421,044	413,092	423,081	427,078	408,674	396,291	391,002	348,596	344,598	342,610	**342,796**
(Ratio to the previous year)	95.9%	98.1%	102.4%	100.9%	95.7%	97.0%	98.7%	89.2%	98.9%	99.4%	100.1%
Utility Models	8,602	8,169	7,986	11,387	10,965	10,315	9,452	9,507	8,679	7,984	**8,112**
(Ratio to the previous year)	97.7%	95.0%	97.8%	142.6%	96.3%	94.1%	91.6%	100.6%	91.3%	92.0%	101.6%
Designs	37,230	39,267	40,756	39,254	36,724	36,544	33,569	30,875	31,756	30,805	**32,391**
(Ratio to the previous year)	94.4%	105.5%	103.8%	96.3%	93.6%	99.5%	91.9%	92.0%	102.9%	97.0%	105.1%
Trademarks	117,406	123,325	128,843	135,776	135,777	143,221	119,185	110,841	113,519	108,060	**119,010**
(Ratio to the previous year)	94.9%	105.0%	104.5%	105.4%	100.0%	105.5%	83.2%	93.0%	102.4%	95.2%	110.1%

[Registrations]

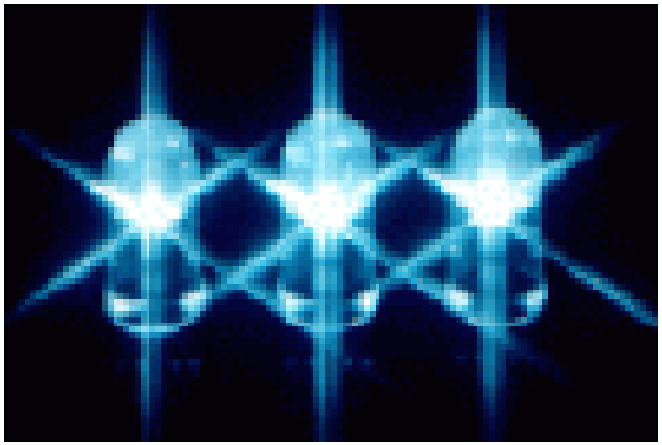
	2002年	2003年	2004年	2005年	2006年	2007年	2008年	2009年	2010年	2011年	2012年
Patents	120,018	122,511	124,192	122,944	141,399	164,954	176,950	193,349	222,693	238,323	**274,791**
(Ratio to the previous year)	98.6%	102.1%	101.4%	99.0%	115.0%	116.7%	107.3%	109.3%	115.2%	107.0%	115.3%
Utility Models under Old Law	142	25	7	4	2	0	0	0	1	0	**0**
(Ratio to the previous year)	20.9%	17.6%	28.0%	57.1%	50.0%	0.0%	-	-	-	-	-
Utility Models under New Law	7,651	7,669	7,356	10,569	10,591	10,080	8,917	9,019	8,571	7,595	**8,054**
(Ratio to the previous year)	87.3%	100.2%	95.9%	143.7%	100.2%	95.2%	88.5%	101.1%	95.0%	88.6%	106.0%
Designs	31,503	31,342	32,681	32,633	29,689	28,289	29,382	28,812	27,438	26,274	**28,349**
(Ratio to the previous year)	95.7%	99.5%	104.3%	99.9%	91.0%	95.3%	103.9%	98.1%	95.2%	95.8%	107.9%
Trademarks	105,114	108,568	95,866	94,439	103,435	96,531	100,243	108,717	97,780	89,279	**96,359**
(Ratio to the previous year)	112.4%	103.3%	88.3%	98.5%	109.5%	93.3%	103.8%	108.5%	89.9%	91.3%	108.2%

(Note)"Utility Models under Old Law" refers to applications of Utility Models filed before the date of enforcement of the 1993-amended Utility Model Law (in or before 1993), and "Utility Models under New Law" refers to those filed after the date of enforcement of the said law (in or after 1994).

http://www.jpo.go.jp/torikumi_e/hiroba_e/pdf/2012syutsugan_kensuu_e/2012_e.pdf

Article 35 of Patent Act (Inventions by Employees)

Professor Shuji Nakamura from the University of California sued Nichia Corporation, where he invented the blue LED (light-emitting diode)



Consideration for the invention was settled at ¥20 billion, per Nakamura's request

Article 35 (Inventions by Employees)

(1) An employer, a juridical person or a national or local government (hereinafter referred to as “employer”), where an employee, an officer of the juridical person, or a national or local government employee (hereinafter referred to as “employee”) has obtained a patent for an invention which, by the nature of the said invention, falls within the scope of the business of the said employer and was achieved by an act(s) categorized as a present or past duty of the said employee performed for the employer (hereinafter referred to as “employee invention（職務発明）") or where a successor to the right to obtain a patent for the employee invention has obtained a patent therefor, shall have a non-exclusive license on the said patent right.

(2) In the case of an invention by an employee, any provision in any agreement, employment regulation or any other stipulation providing in advance that the right to obtain a patent or that the patent rights for any invention made by an employee shall vest in the employer, or that an exclusive license for the said invention shall be granted to the employer, shall be null and void unless the said invention is an employee invention.

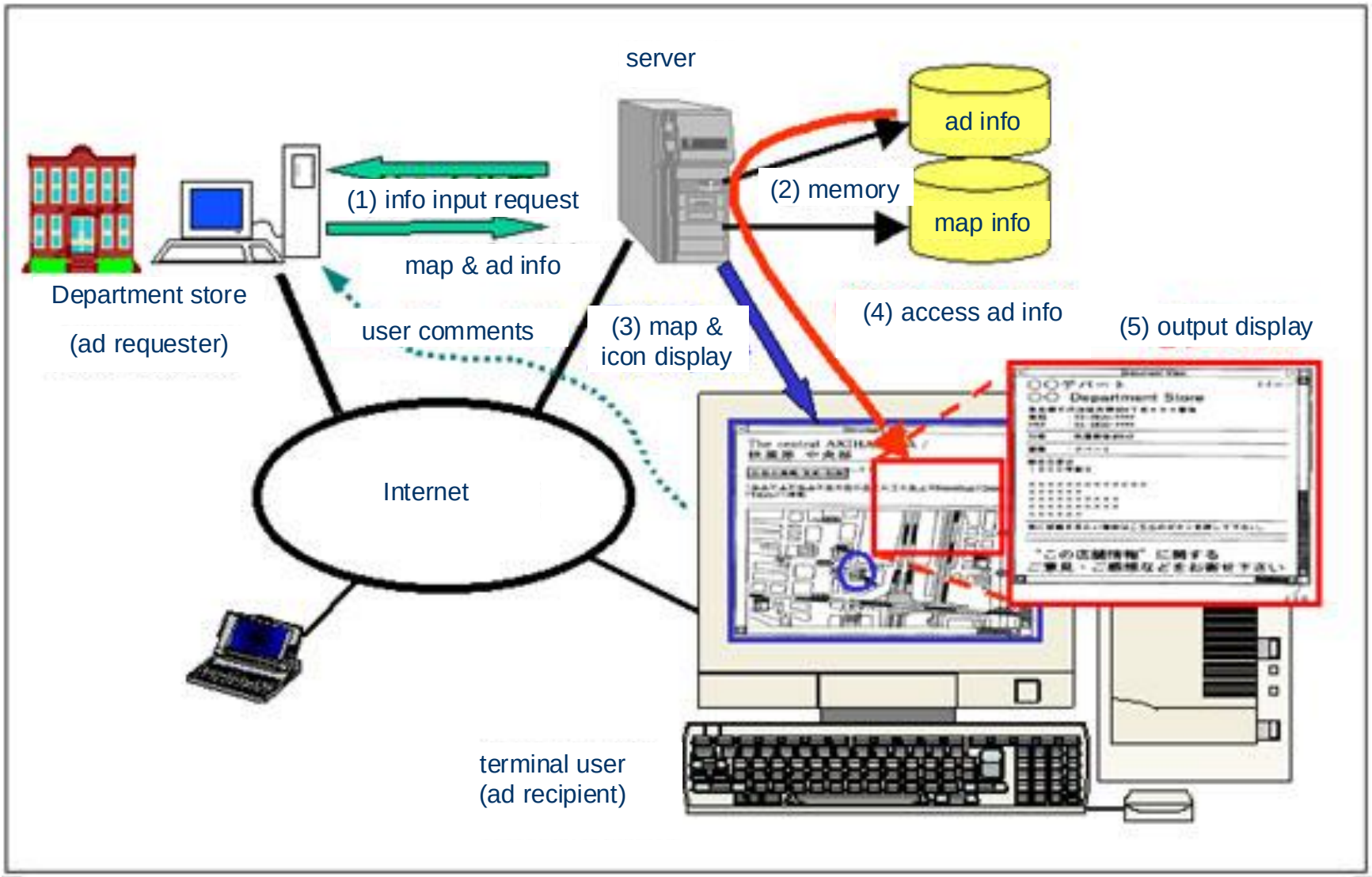
(3) Where the employee, in accordance with any agreement, employment regulation or any other stipulation, vests the right to obtain a patent or the patent right for an employee invention in the employer, or grants an exclusive license therefor to the employer, the said employee shall have the right to receive reasonable value.

(4) The amount of the value under paragraph (3) shall be determined by taking into consideration the amount of profit to be received by the employer from the invention, and the employer's contribution to the invention.

Business Model Patents

- Business model patents
  - Patents awarded for business mechanisms utilizing information systems.
  - July 1998 ruling in US declared that a patent is not necessarily disqualified because it equates to a business method.
  - Software patents themselves are not new, but examples are now being seen in service sectors such as advertising, distribution, and finance, which earlier have not had much connection with patent system.
  - As technological aspects are weak, attention tends to be focused on how business is to be realized via the invention. Hence the label “business model patent”.
  - Per the label “business model patent”, cases are often viewed as patents applied to business or sales methods themselves. However, it does not follow that “artificial arrangement” heretofore denied protection due to non-fulfillment of the “invention” criterion is now subject to protection.

Business Model Patents



Japan Patent #2756483 (Method for supplying and registering advertising information), via JPO site

Problems related to Patents

- Existence of patents can result in some form of resource misallocation
  - Overemployment: several firms/persons can simultaneously seek to obtain the patent on the same invention
  - Underemployment: no firm seeks to develop the product after conclusion that it has no chances to win the race
    - Low expected return insufficient to justify R&D expenses

Comparison of Patents in Japan and USA (General Patents)

- Japan: patent is “highly advanced creation of technical ideas utilizing the laws of nature”
- USA: patent is “any new and useful process, machine, manufacture or composition of matter or any new and useful improvement thereof”

Comparison of Patents in Japan and USA (University Patents)

- There is a big difference in the number of university patents in the USA and Japan.
- In Japan, as opposed to enterprises (which often have to rush patent applications in order to meet a quota), universities do not have much interest in patents.
- In the USA, universities carry the burden of research and development costs, and as such the industrial world is revitalized.
- For fixed period of time after a thesis is presented, if a patent is not applied for, it becomes technology under the public domain.
- Patent applications in the bio-field are frequently made in the USA by universities and public organizations; in contrast, in Japan, these are usually made by large corporations.
- In the USA, university professors apply for patents, and finally ventures are started, and ventures are made into a form that can be purchased by pharmaceutical companies.

Patent Information

- European Patent Office: http://www.epo.org/
- US Patent Office: http://www.uspto.gov
- UK Patent Office: http://www.ipo.gov.uk
- World IP Office: http://www.wipo.int
- Others: http://www.patents.com/

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