

# Intellectual Property (IP) as a Tool for Economic Growth and Business Competitiveness

**Yoshihiro NAKAYAMA**

International Affairs Division  
Japan Patent Office

December 15, 2011



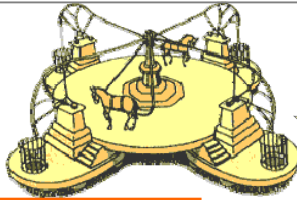
---

## Outline

- Industrial Development in Japan Based on Using Intellectual Property
- Correlation between Economic Development and Intellectual Property
- IPRs Protection for Economic Development and Business Competitiveness

## 15<sup>th</sup> Century

- In 1474, the **earliest patent statute in the world** was enacted in the Republic of Venice.
- Galileo Galilei obtained a patent under the system.

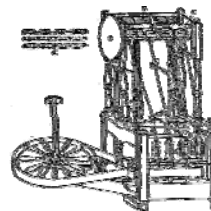
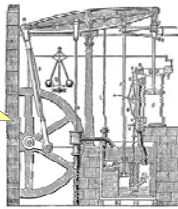


Galileo Galilei's invention was a horse-driven machine designed to pump water from a river in order to irrigate land.

## 17<sup>th</sup> Century

- The Statute of Monopolies was enacted in the UK in 1624 (**the beginning of the modern IP system**)
  - This improved the environment for creating outstanding inventions (e.g. **steam engine by James watt**; **water frame by Richard Arkwright**)
- **The patent system played an important role in the Industrial Revolution**

Steam Engine  
By Watt



Water Frame  
By Arkwright

2

# History of Patent System in US

- 1788: US Constitution grants Congress the power *“to promote the progress of science and useful arts, **by securing for limited time to authors and inventors the exclusive right to their respective writings and discoveries**”*. (Sec.8 of Article I)
- 1790: Enacted **the First Patent Act** and on July 31, 1790, the first US Patent was granted by Thomas Jefferson (3<sup>rd</sup> President of the US)
- The **“patent system added the fuel of interest to the fire of genius”** in the discovery and production of new and useful things



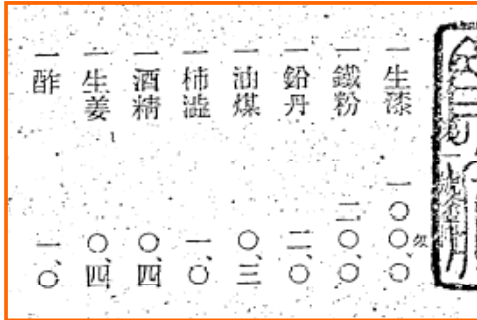
3

# History of Patent System in Japan

- contributing to modernization and industrial development-

## 19<sup>th</sup> Century

- In 1885, the Patent Monopoly Act was enacted and the Patent Office was established
- The first patent was issued in 1885 for an invention, which was an anti-rust paint by Zuisho Hotta



### Patent No. 1 : Antirust paint and method of application

Invention for making anti-rust paint, including the ratio of ingredients such as lacquer, alcohol, vinegar, and ginger; and method of application

Japanese first patent in the US was “**Daylight Fireworks**”. Patent was granted in 1883 to Genta Hirayama, a pyrotechnics technician.



# History of JPO and the Industrial Property Rights System

- Stimulation of Entrepreneurs
- Advancement of Industrial Development
- Utilization of Foreign Patents
- Competition, Innovation, Globalization

1885 Enactment of Patent Act and establishment of the Patent Office (Korekiyo Takahashi was first Commissioner)



Original JPO Bldg. (Established in 1885)

- 1888 Enactment of Design Law
- 1896 Beginning of Foreign Applications
- 1899 Accession to Paris Convention
- 1905 Enactment of Utility Model Law



Korekiyo Takahashi (First JPO Commissioner)



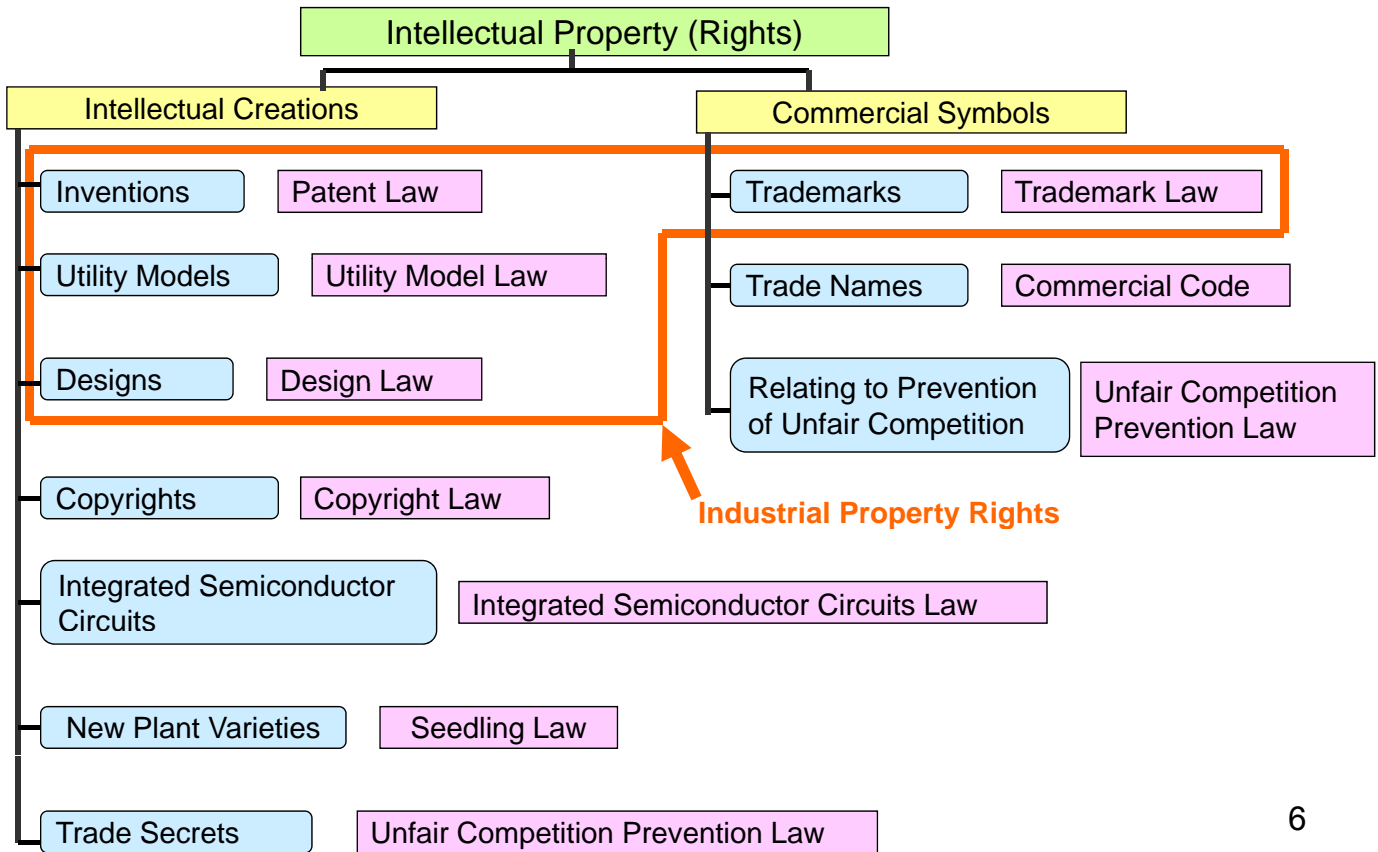
Present JPO Bldg. (completed in 1989)

1959 Revision of Current IP Laws

- 1975 Accession to World Intellectual Property Organization (WIPO)
- 1978 Accession to Patent Cooperation Treaty (PCT)
- 1990 Acceptance of electronic applications (first in the world)
- 1997 Accession to Trademark Law Treaty
- 2000 Accession to Madrid Protocol
- 2005 Establishment of IP High Court
- 2006 Start of Patent Prosecution Highway (PPH) between Japan and the United States (first in the world)
- 2010 125th Anniversary of the IPRs System in Japan



Panels of ten great Japanese inventors (100th Anniversary Project)



## First Phase: Stimulation of Entrepreneurs

**1885 Enactment of Patent Law and establishment of the Patent Office with Korekiyo Takahashi as the first Commissioner**

**Stimulated independent inventors**

**Many entrepreneurs emerged**



**Kokichi Mikimoto**  
(Cultured Pearls)



**Sakichi Toyoda**  
(Wooden Hand Loom and Automatic Loom )



**Jokichi Takamine**  
(Taka-Diastase and Adrenaline )

# Case 1: Toyota Motor Corporation

## Company's Roots



Factory



Automatic Loom

Patent Assignment



## Entry into a New Business Area



Expansion of Business

## Today

# TOYOTA



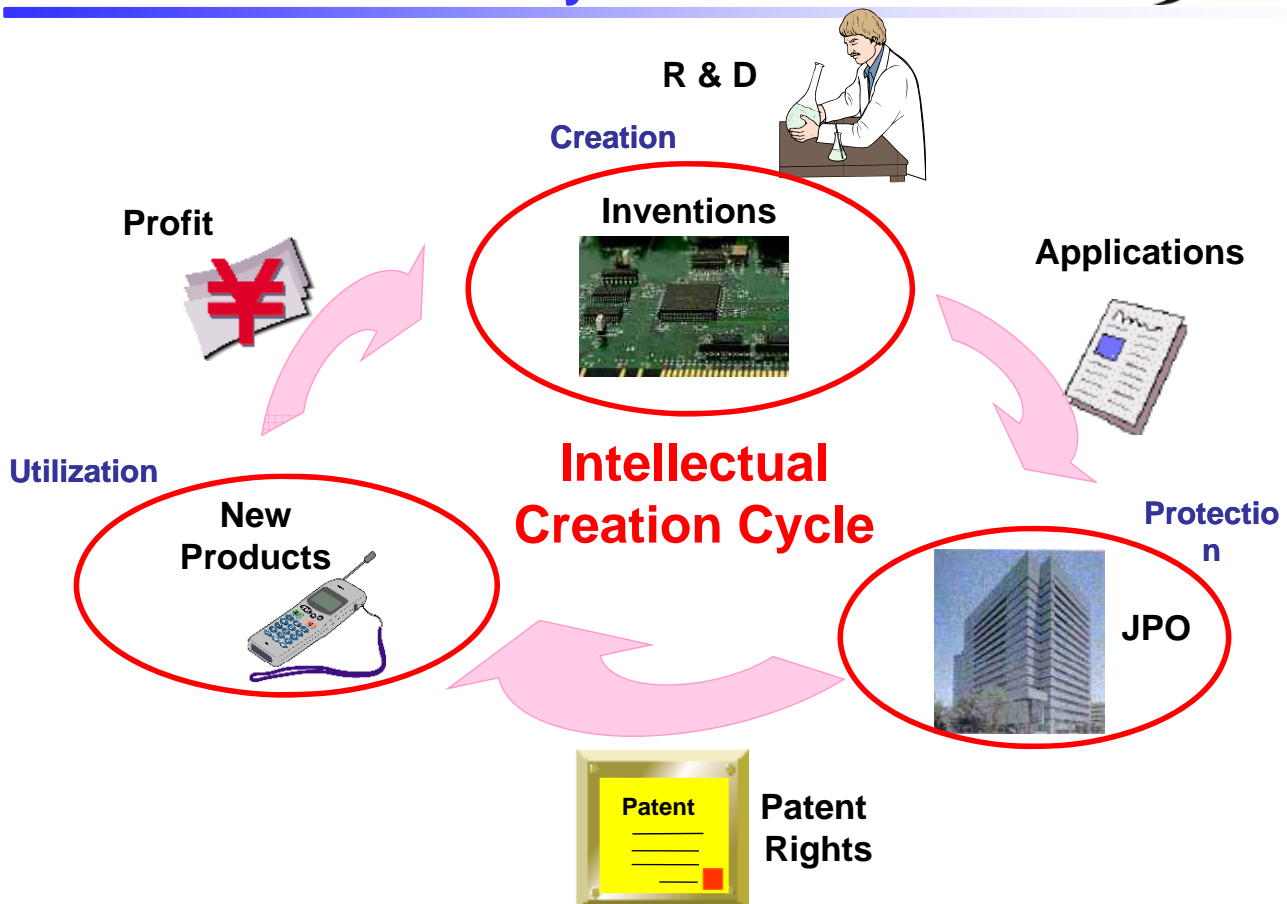
Capital: \$5 billion

Annual sales: \$240 billion



Source: <http://www.toyota-global.com/>

# Intellectual Creation Cycle

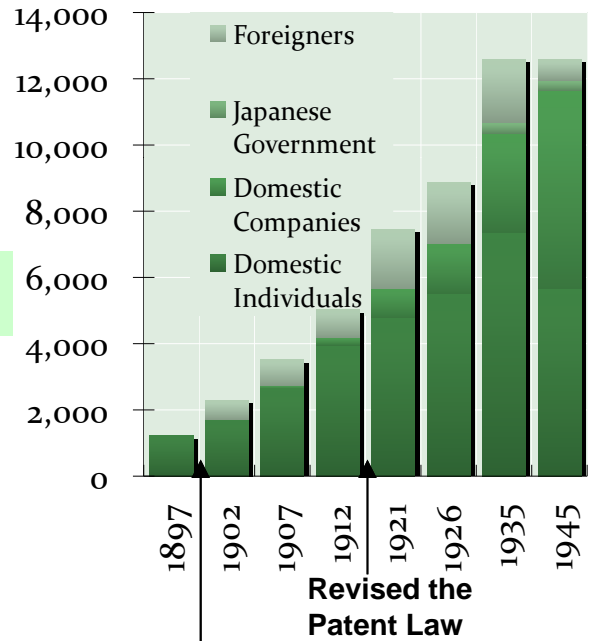




**Independent Inventors**

From innovation by individuals to innovation by organizations

**Change in Patent Applicants**



Joined the Paris Convention

10



**Development of Industrialization**



## Case 2: Panasonic Corporation

**Company's Roots**



**Workplace**



**The first product**



Gradually expanded operations

The company started by making minor improvements to wiring equipment ...

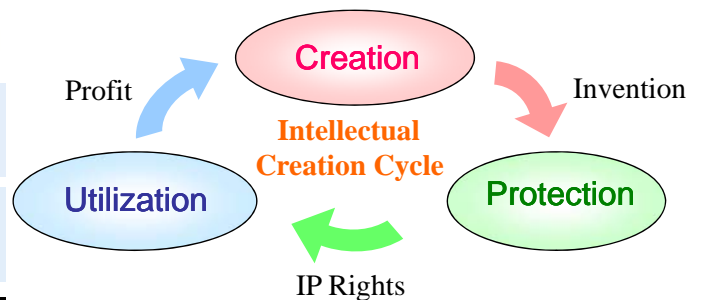
**Today**

**Panasonic**  
ideas for life

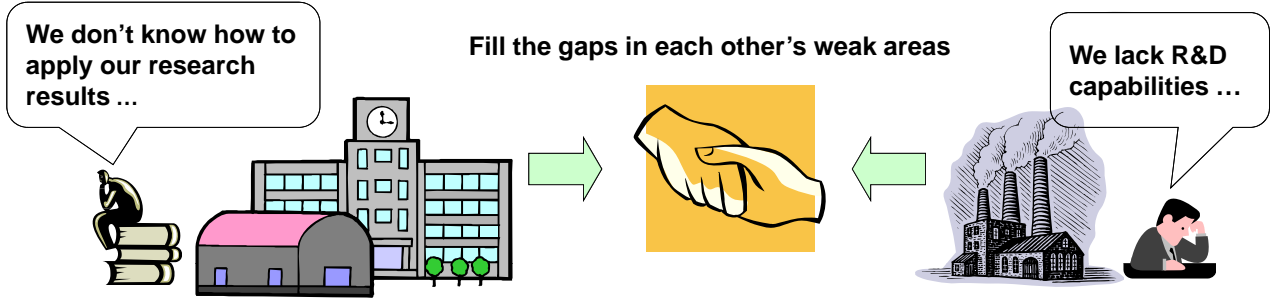


Capital: \$3 billion

Annual sales: \$110 billion



# Industry & University Collaboration



For example:

✓ **“Umami” seasoning**

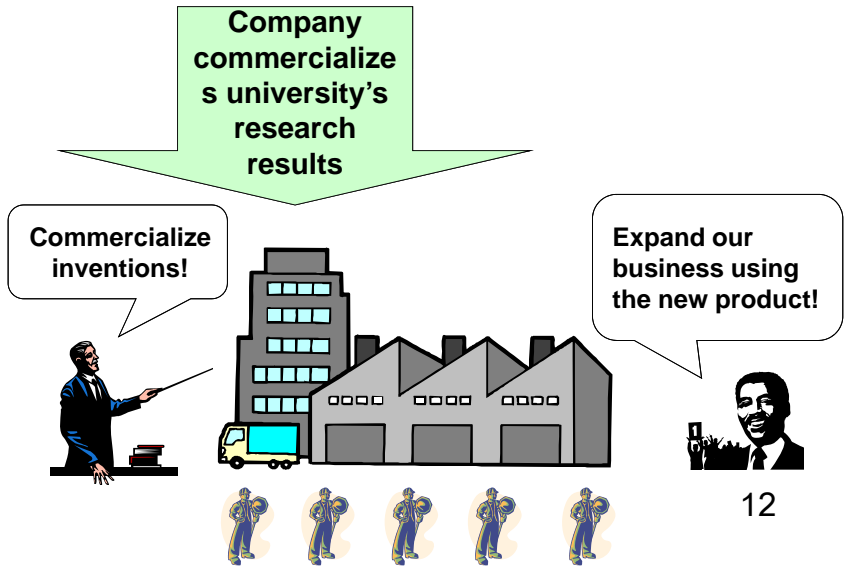


by Prof. Kikunae Ikeda  
(Tokyo University)



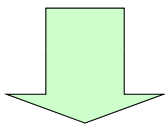
✓ **KS Steel**

by Prof. Kotaro Honda  
(Tohoku University)



## 3rd Phase: Utilization of Foreign Patents

Limited business fields and development capabilities

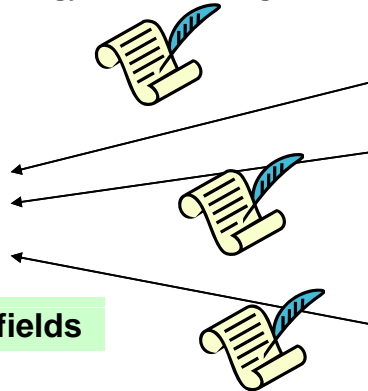


Cultivating new fields

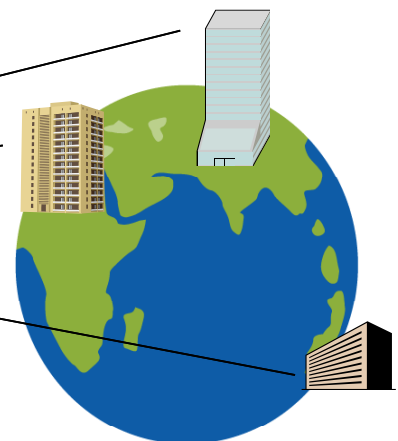


Improving technological development capabilities

Technology transfer through license



Overseas Companies



Driving force for high economic growth



# Case Example 3: Sony Corporation

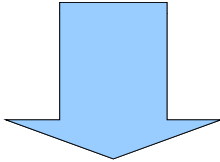
Time of founding



Factory



Tape recorder



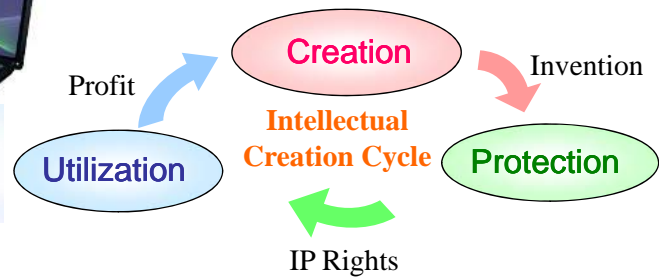
Acquired patent licensing rights for transistors and made its own improvements



Today

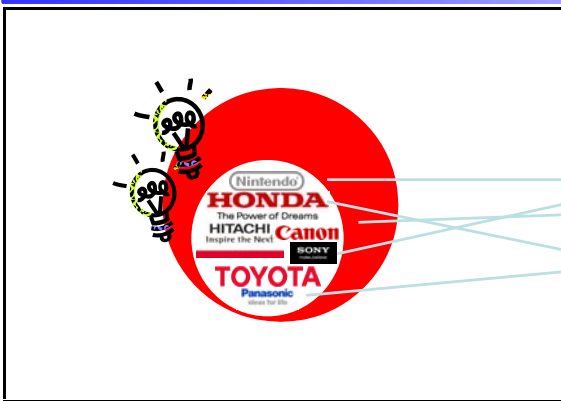


Capital: \$8 billion  
Annual sales: \$90 billion



Source: <http://www.sony.net/><sup>14</sup>

## 4<sup>th</sup> Phase: Competition, Innovation, Globalization

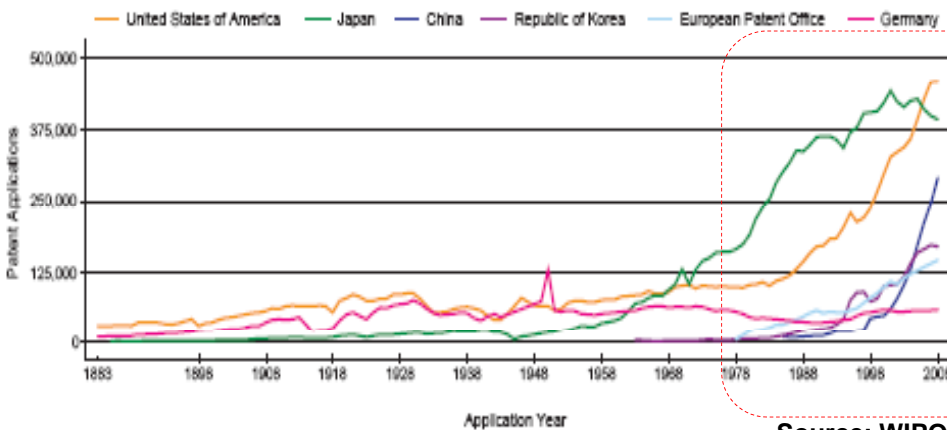


Technology development competition

Filing an application



Trend in patent applications at selected patent offices



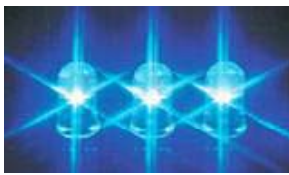
Sharp increase in patent applications

Source: WIPO IP Statistics, World Bank



## Blue LED (light-emitting diode) device using nitride-based semiconductor

- Annual average sales: \$5 billion
- Market size: \$12 billion
- Technology of crystallizing gallium nitride (GaN) achieved the world's first highly bright blue LED, and was developed in Japan.



Display screen with low power consumption

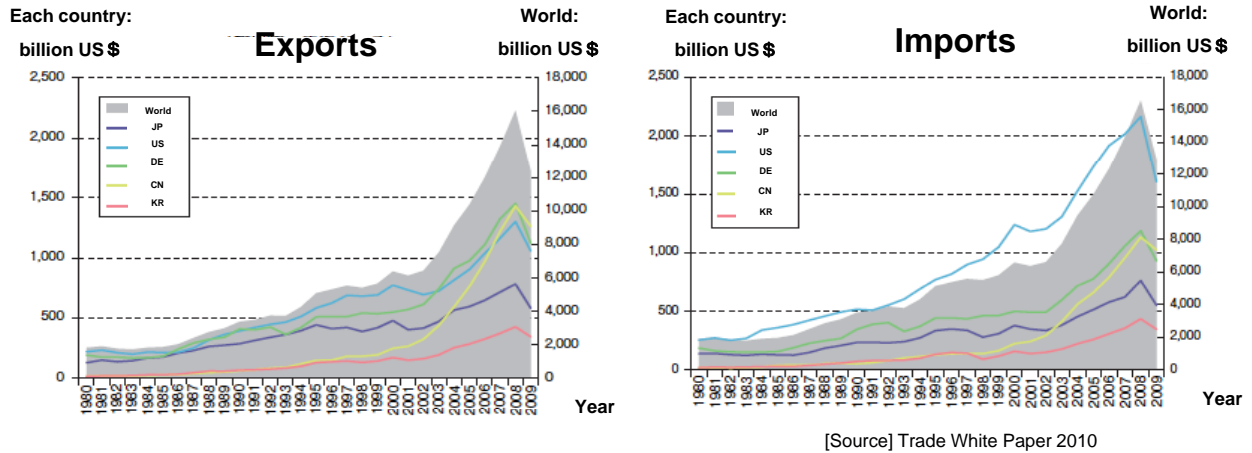


Thin traffic light with long service life

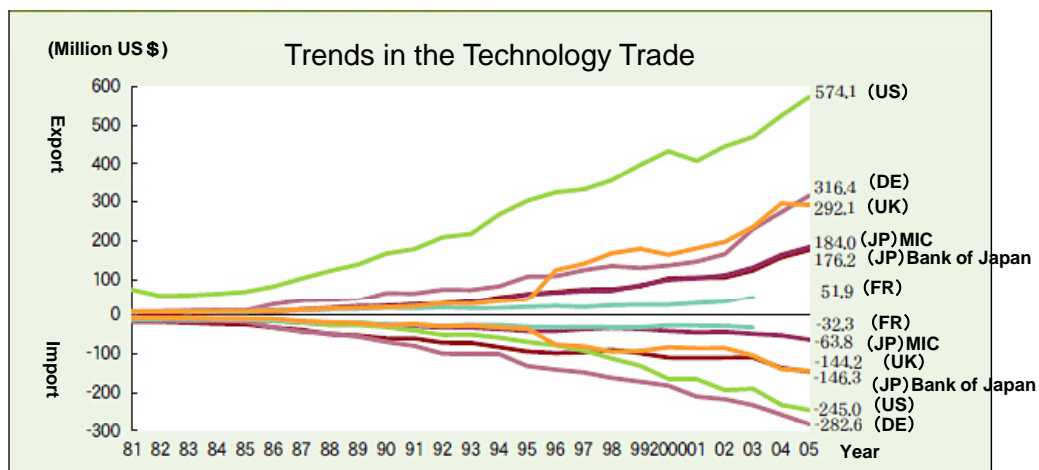
16

## Correlation between Economic Development and Intellectual Property

## Trend in World Trade

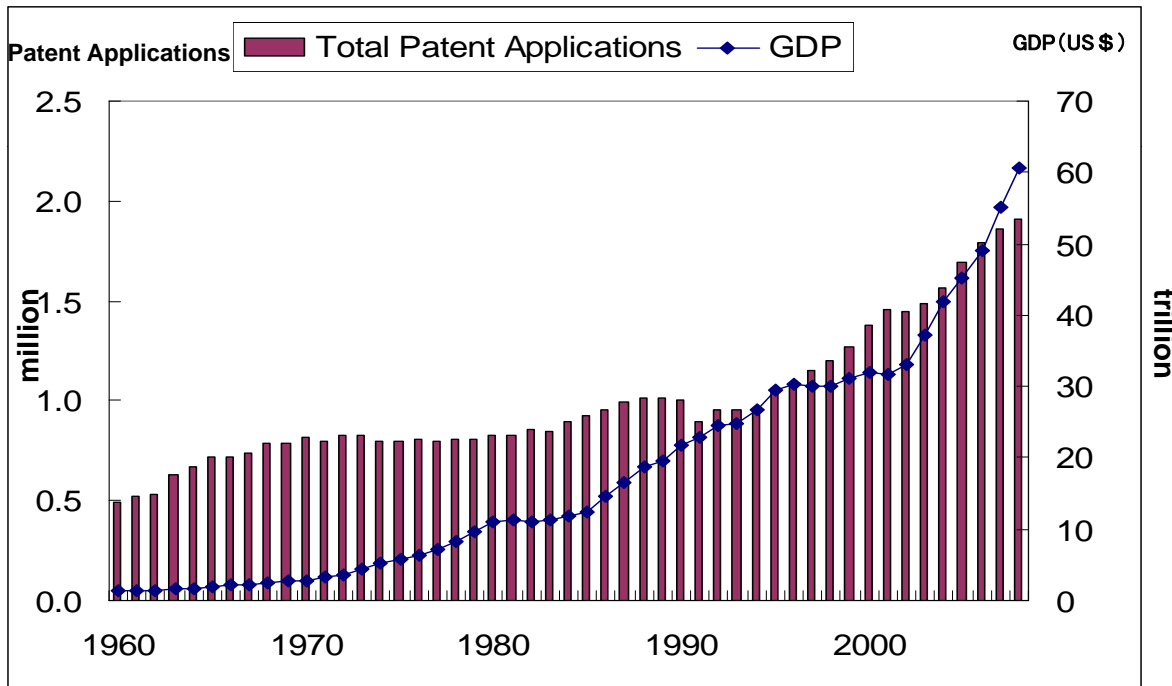


## Trend in Technology Trades by Countries



[Source] White Paper on Science and Technology 2007

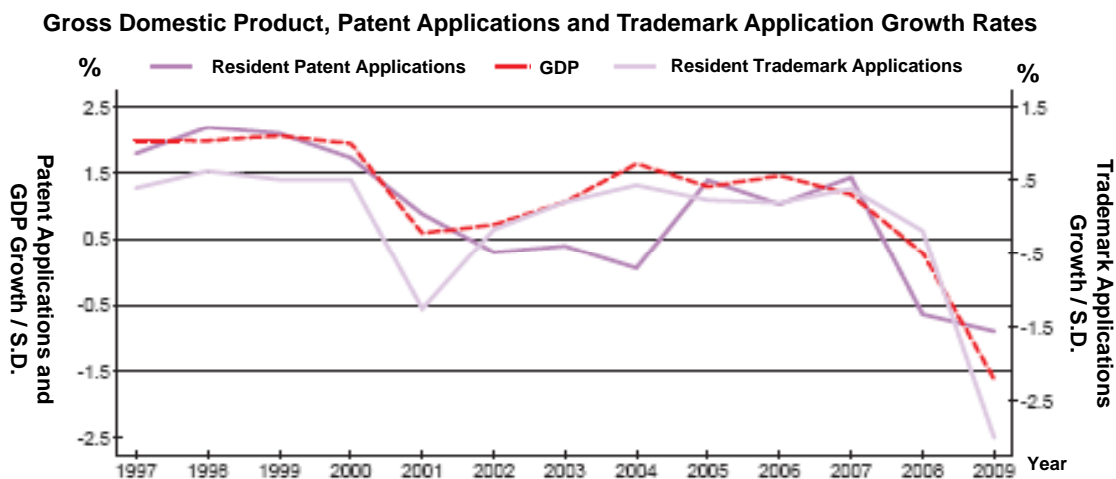
## Trends in the World GDP and Patent Applications



Source: WIPO IP Statistics, World Bank

## Economic Growth & Intellectual Property

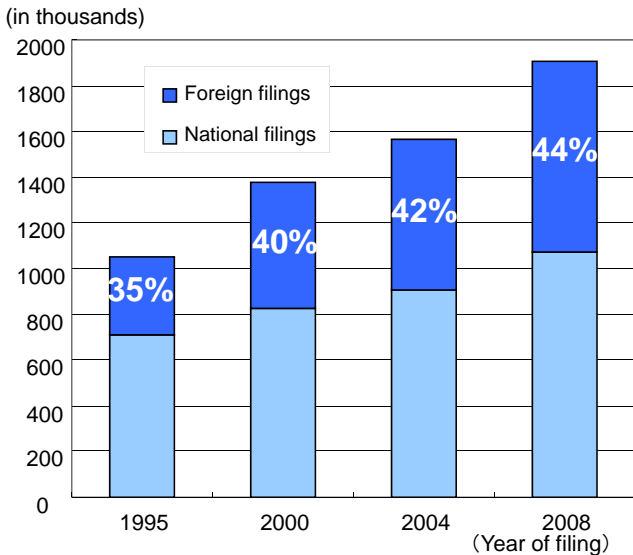
- Relationships between Economic Growth and the Growth Rates of Patent and Trademark Applications
  - ✓ Patent Application and Trademark Application growth rates are synchronized with changes in GDP growth



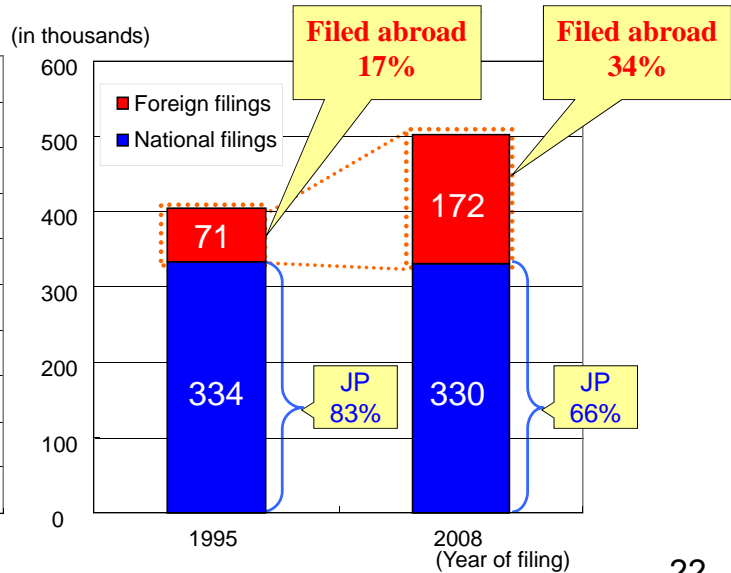
[Source] World Intellectual Property Indicators 2010

- Patent filings are growing in number worldwide. Foreign filings especially are increasing rapidly.
- Foreign filings by Japanese companies are also increasing.

## Number of Patent Filings in the World



## Number of Patent filings by Japanese Applicants

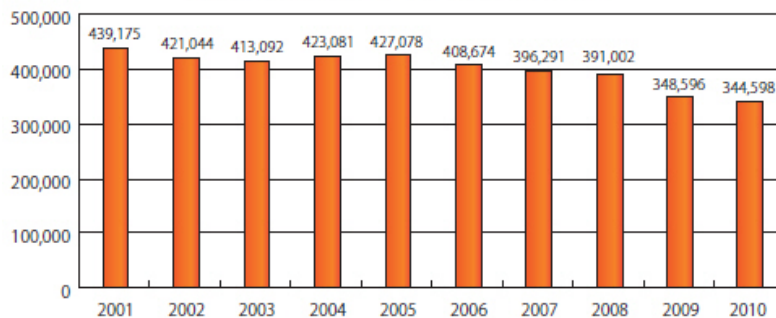


Source: WIPO Industrial Property Statistics

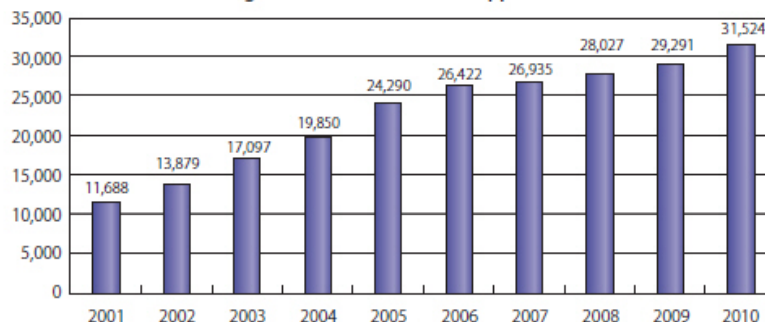
# Trends of Patent Applications in Japan

- The PCT application is increasing while the domestic application is decreasing
- Advanced globally-oriented applications among Japanese applicants

Changes in the Number of Patent Applications



Changes in the Number of PCT Applications



# IPRs Protection for Economic Development and Business Competitiveness

- Roles of Governments and IP Offices -

24

## Patent policy in the United States

- Sifted to Pro-Patent Policy in 1980' s in order to revitalize national competitiveness and to eliminate twin deficits, i.e., budget and trade.
- The US Patent Reform bill became law in 2011 aiming to properly protect patent rights

### □ Shift to the Pro-Patent Policy

- In 1982 Established the **CAFC** to enhance patent protection
- In 1985 “Global Competition-The New Reality” (the Young Report) under R. Regan Administration
  - ✓ Strengthening IPR
  - ✓ Enhancing Trade policy → Special 301 Report (since 1989)

### □ Leahy-Smith American Invents Act (Patent Reform Act 2011)

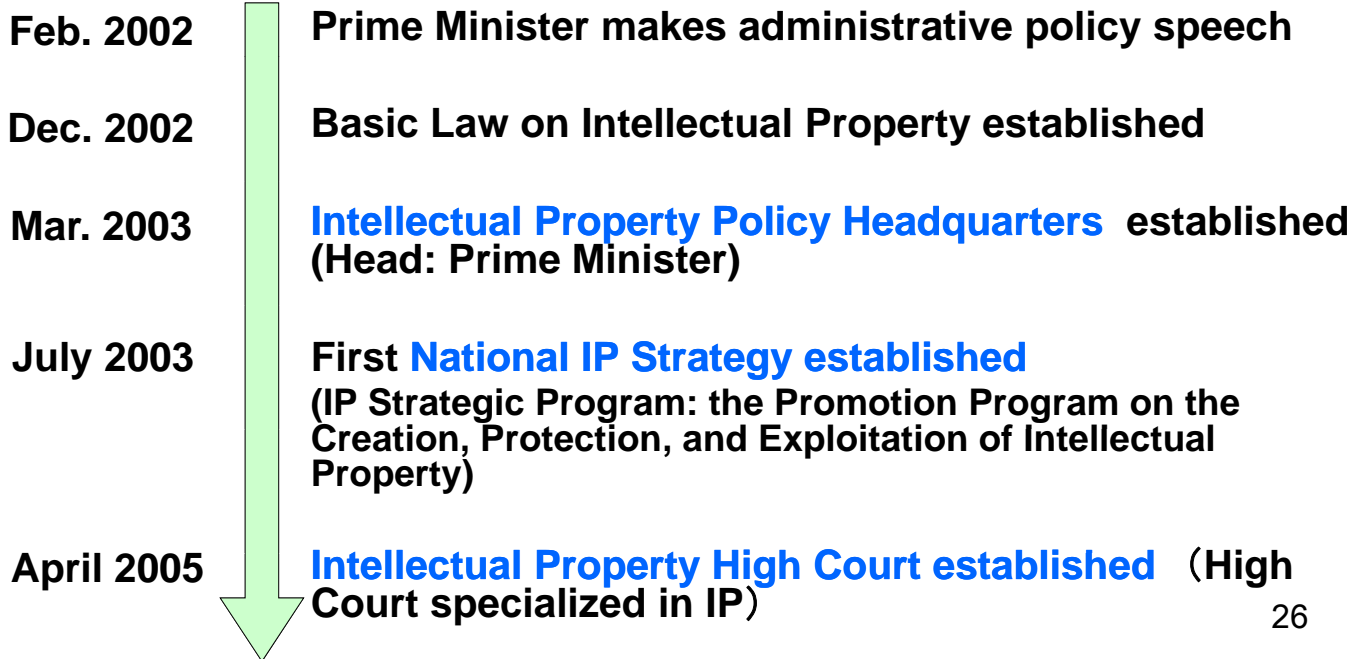
- From “**first-to-invent**” to “**first-to-file**”
- Introducing post grant opposition system allowing cancelations of patents under administrative procedures, etc.

- ⇒ For patent protection with *higher quality and predictability*
- ⇒ For proper protection in the competitive environment

25

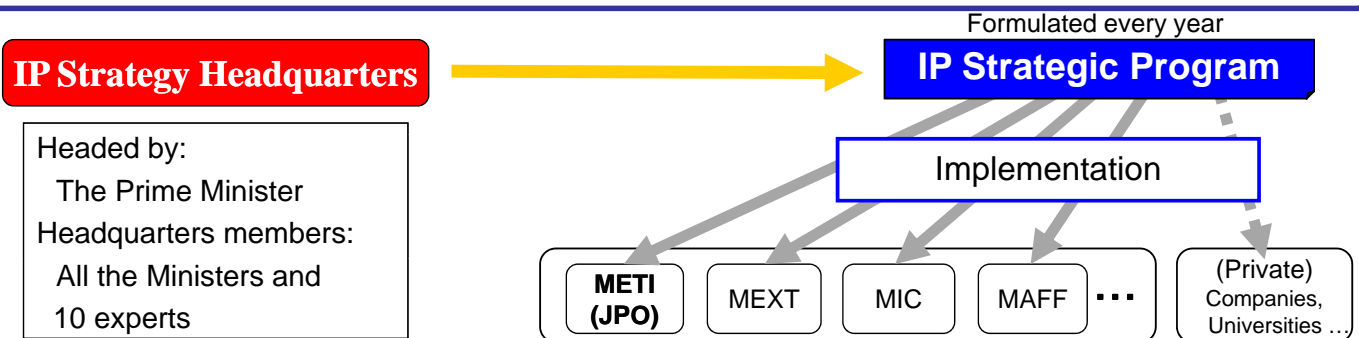
# IP Policy in Japan

- IP Policy in Japan aims at building an “IP-based nation”
- National IP strategy set up in 2003 revitalize national economy and industrial competition by making use of Intellectual Property.



# Intellectual Property Strategic Program

- IP Strategy Headquarters formulate the “IP Strategic Program” every year. Government ministries and agencies implement measures based on the programs.
- On June 3th 2011, IP Strategic Program 2011 was formulated.



## Intellectual Property Strategic Program 2011

1. Strategy for Enhancing International Standardization
2. **Strategy for Innovating IP Infrastructure**
3. Strategy for IP on Cutting-edge Digital Network
4. Strategy for Promoting “Cool Japan”

### Expected Roles of IP offices/agencies involved with IP

- Striking an appropriate balance between competition and IP policy (laws, rules, examination guidelines)
- Improving quality of IPRs' (stable rights and predictable examination)
- Enhancing IP infrastructure to respond to economic globalization
- Raising IP awareness in terms of respecting creators and innovators

28

## Conclusion

- IP is the important factor for promoting innovation
- Encouraging Intellectual Creation Cycle is essential for innovation
- Proper protection of IPRs is needed for enhancing economic development and business competitiveness

29

---

# Thank you for your attention!



*JPO Homepage*  
<http://www.jpo.go.jp/index.htm>