

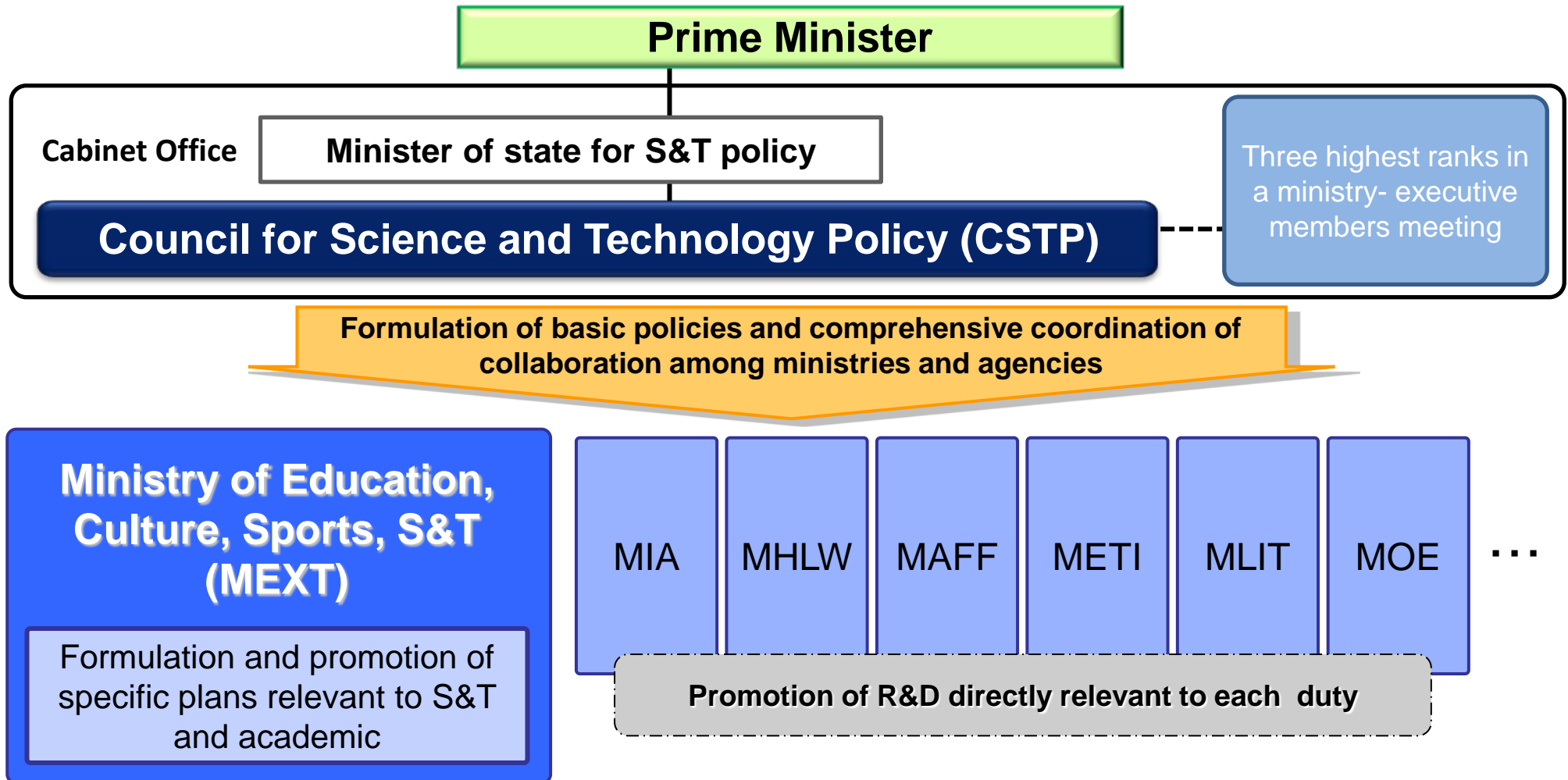
**Science, Technology and Innovation for  
Strengthening Industrial Competitiveness**  
- Prospects for Future Collaboration between Japan and Israel -

**Kazuo Kyuma**

**EXECUTIVE MEMBER**

**Council for Science and Technology Policy, Cabinet Office**

# Administrative organization for promoting science and technology



## Acronyms for ministries

**MIA:** Ministry of Internal Affairs and communications, **MHLW:** Ministry of Health, labour and Welfare, **MAFF:** Ministry of Agriculture, Forestry and Fisheries, **METI:** Ministry of Economy, Trade and Industry, **MLIT:** Ministry of Land, Infrastructure, Transport and Tourism, **MOE:** Ministry of the Environment

# Council for science and technology policy (CSTP)

## Tasks

The CSTP is a 'place of wisdom' in support of the prime minister and cabinet. The CSTP overlooks all of Japan's S&T, formulates comprehensive and basic policies, and conducts their overall coordination.

The CSTP was established in January 2001 within the Cabinet Office as one of the governmental top councils based on the Law for Establishing Cabinet Office.

## Roles

The CSPT 1) investigates and discusses basic policies concerning S&T, 2) investigates and discusses S&T budgets and the allocation of human resources, and 3) assesses Japan's key research and development.









## Members

The CSTP consists of 14 members plus the Prime Minister, who chairs the council.

1) Chief cabinet secretary, 2) minister of state for S&T policy, 3) ministers closely related to S&T policy (MIC, MOF, MEXT, METI), 4) President of science council of Japan, 5) seven executive members (2-year term & up to 2 consecutive term)

### [Executive members]

Prime minister constitutes a member with agreement of both houses. The term is 2 years.

							
<b>Dr. Yuko HARAYAMA</b>	<b>Dr. Kazuo KYUMA</b>	<b>Prof. Kazuhito HASHIMOTO</b>	<b>Takeshi UCHIYAMADA</b>	<b>Prof. Reiko AOKI</b>	<b>Dr. Ryoji CHUBACHI</b>	<b>Dr. Toshio HIRANO</b>	<b>Dr. Takashi ONISHI</b>
[Full-time member]	[Full-time member]	[Part-time member]	[Part-time member]	[Part-time member]	[Part-time member]	[Part-time member]	[Part-time member]
Professor Emeritus, Tohoku University	Former Senior Corporate Adviser, MITSUBISHI ELECTRIC CORPORATION	Professor, The University of Tokyo	Chairman of the board, Toyota Motor Corporation	Professor, Institute of Economic Research, Hitotsubashi University	President, National Institute of Advanced Industrial Science and Technology (AIST)	President, Osaka University	President of Science Council of Japan
2013.3.1-2015.2.28				2012.3.6-2014.3.5			

# Japan revitalization strategy

World's most innovation-friendly nation

Japan

Headquarter function

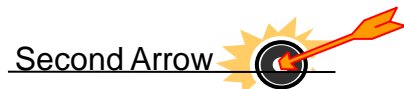
Council for science and technology policy  
(CSTP)



Three prongs or “Arrows”



**Aggressive monetary policy**



**Flexible fiscal policy**



**New growth strategy “Japan Revitalization Strategy”**

Promoting science & technology innovation implements Japan revitalization



# Five grand challenges toward ideal society

CSTP accelerates to address the **Five Grand Challenges** for realization of ideal society in 2030 and powerful promotion toward economic revitalization.

- 1. Realization of clean and economical energy system**
2. Realizing of a healthy and active ageing society as a top-runner in the world
3. Development of next generation infrastructures as a top-runner in the world
4. Regional revitalization taking advantage of the regional resources
5. Early recovery and revitalization from the Great East Japan Earthquake

## Shape of the nation to be attained in 2030

Remaining a world top-class economic power in a sustainable manner

People enjoying wellness, security and safety

Contributing actively to the progress of humankind and international community

# Science and technology innovation policies for Japan revitalization

## (1) Establishment of “Science and Technology Budgeting Strategy Committee”

Initiative in science and technology budgeting for the whole government

Introducing a new mechanism that enables CSTP to take the lead in selective allocation, etc., of the budget for the whole government from the budget request compilation stages

## (2) Establishment of “Cross-ministerial Strategic Innovation Promotion Program (SIP)”

Creation of a cross-ministry program for promoting innovations

Selective cross-ministry budget allocation directly conducted by CSTP for addressing priority issues, which is added to the budget of the Cabinet Office

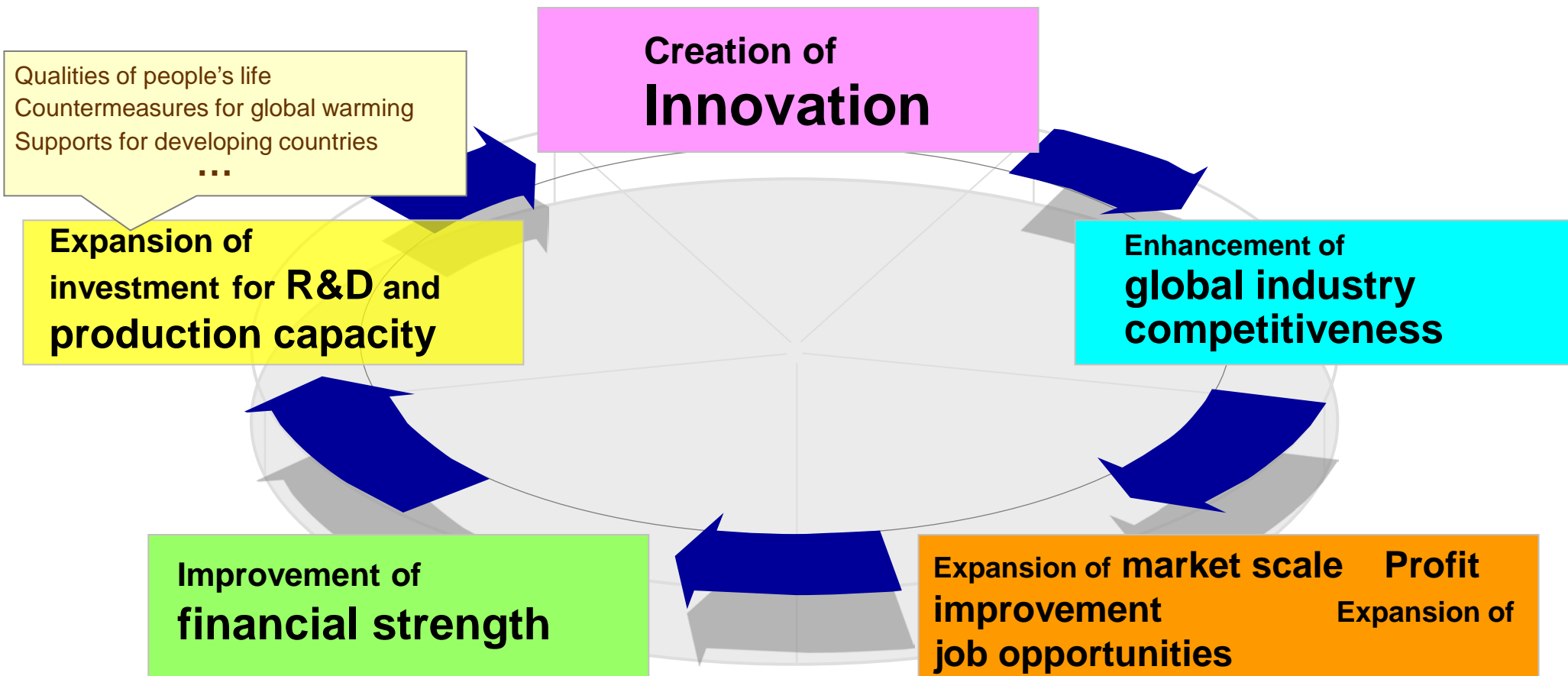
## (3) Establishment of “Impulsing PARadigm Change through disruptive Technologies (ImPACT)”

New development of policies following the FIRST program

Selection of innovative high-impact researches from a long-term perspective and hold promotion under the responsibility of authorized program managers

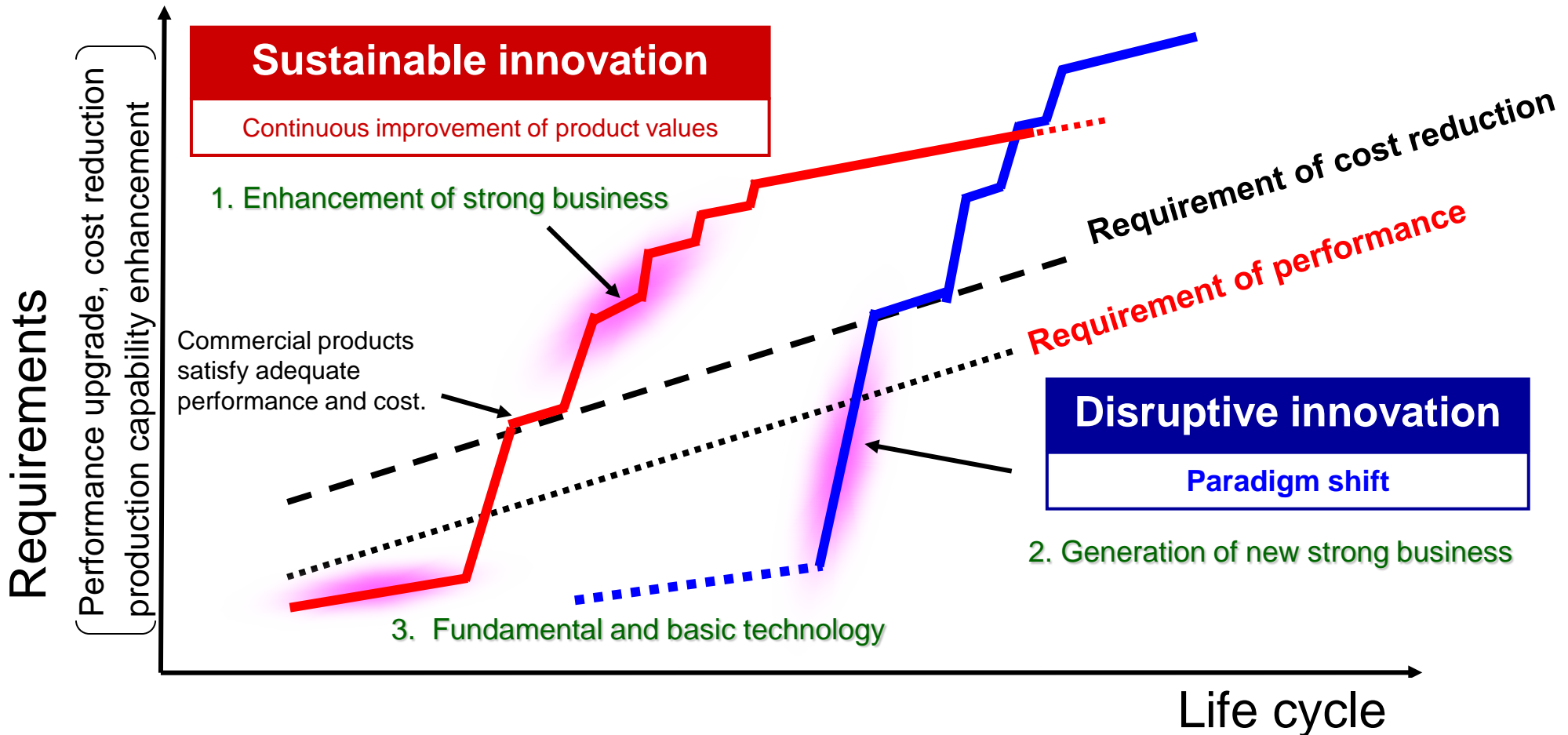
# Cycle of economic growth

Sustainable economic growth is realized by creation of innovation.



# Sustainable innovation and disruptive innovation

- Innovation is action to change society and industry drastically by developing new technologies and new products based on invention and discovery.
- Innovation consists of **sustainable innovation** and **disruptive innovation**.
- Balancing two types of innovation is important.





# Process of innovation

Fusion of different fields

Education and experience

Needs

Excellent technical  
**seeds**

- Technology integration  
Including production technology
- Market exploitation
- Intellectual property and standards

Communication skills  
Presentation skills

Communication skills  
Presentation skills

A creative idea  
Creation of values

Prototype

Commercialization

Talent of  
an individual

Capability of  
a team

Power of  
an organization

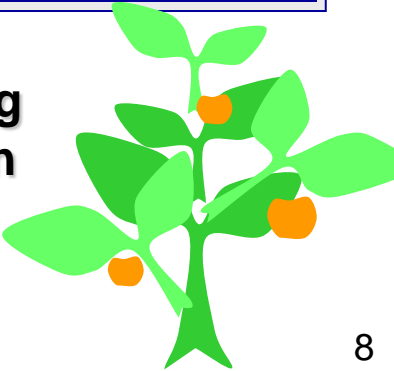
Nurturing  
the sprouts of  
innovation



Activating  
the innovation  
system

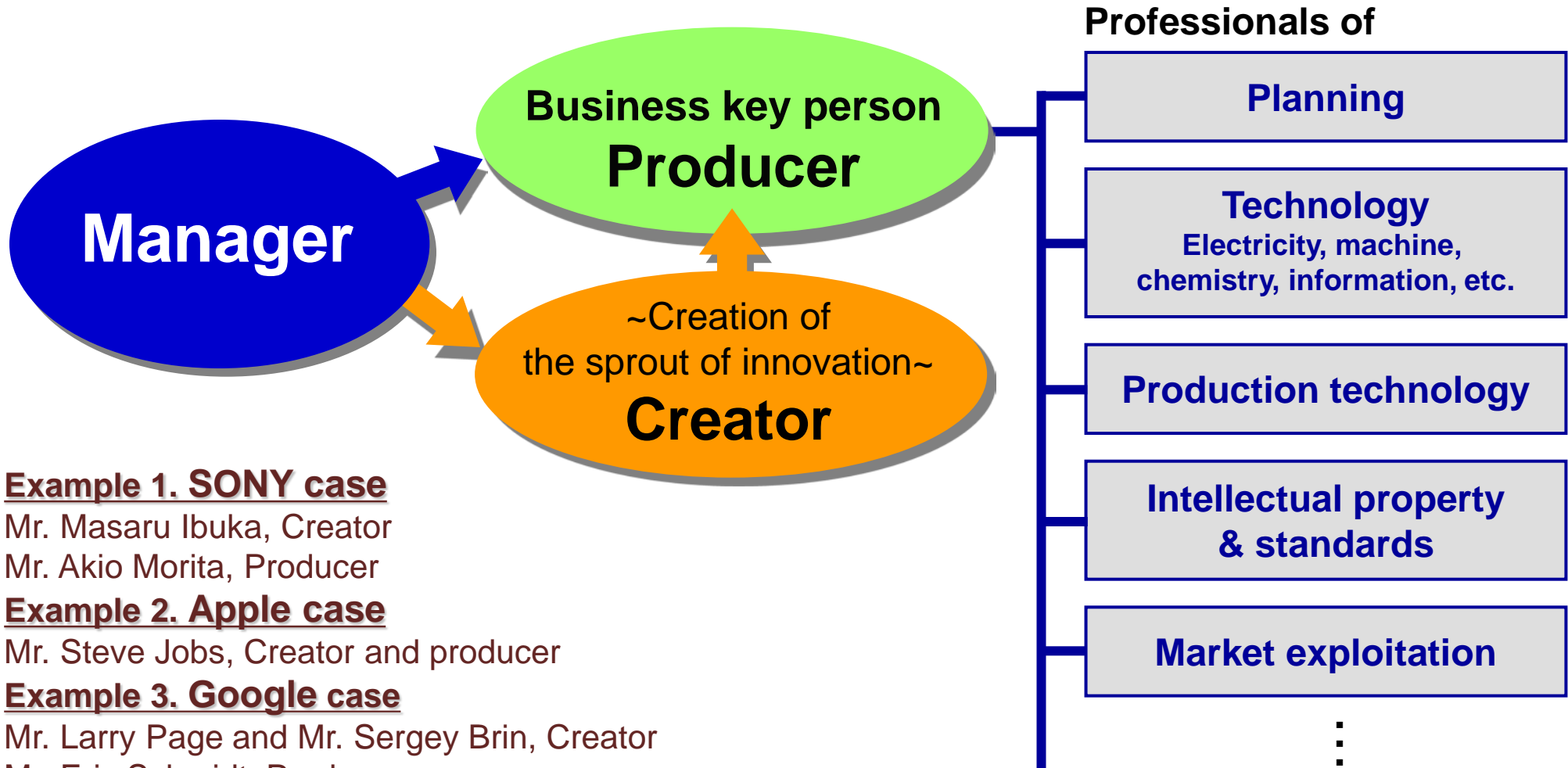


Fructifying  
innovation



# Cultivation of human resources for Creations of innovation

- Creator creates a sprout of innovation and producer fructifies innovation to be business.
- Strategic cultivation of diversified talent (not common talent)
- Both creators and producers are important in innovative business strategies.



## Example 1. SONY case

Mr. Masaru Ibuka, Creator

Mr. Akio Morita, Producer

## Example 2. Apple case

Mr. Steve Jobs, Creator and producer

## Example 3. Google case

Mr. Larry Page and Mr. Sergey Brin, Creator

Mr. Eric Schmidt, Producer

# Example : Creation of Innovation (commercialization of artificial retina)

## Research at California Institute of Technology (CIT)

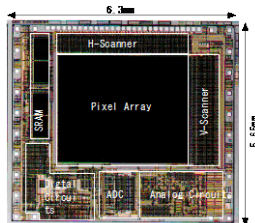
- 1985-1986, visiting researcher at the laboratory of Amnon Yariv at California Institute of Technology
- Exchange possible with top researchers in different fields/from different cultures (fusion of different fields, place for **open innovation**)

### Participation eligibility

must possess: area of specialty, basic academic ability, communication ability, and presentation skills, language skills, fairness, etc.

Concept making, development, and commercialization of artificial retina LSI imitating human eye's functions

- Started research on optical neural network after returning to Japan
- Formed a development team bringing together outstanding human resources from different universities and fields (optoelectronics, LSI, IT, image processing, neurological science, etc.)
- Developed and commercialized artificial retina LSI by fusing hardware and software



**Artificial retina chip**  
(low power consumption,  
low-cost CMOS sensor  
imitating human eye's  
function)

**World-first  
installation in  
portable device**



Pocket Camera  
(Nintendo)

February 1998



Monochrome AR  
camera  
128 × 128 pixels

April 1999

Color AR camera  
(70,000 pixels)



J-D05  
August 2001



## Recognition of the current state of science and technology innovation in Israel

- ◆ Aggressive R&D investment in science and technology field  
R&D expenditures account for 4.25% of the GDP\* and has remained at one of the highest levels in the world for many years. (\*2010, excluding defense-related expenses)
- ◆ High technological expertise, particularly in IT, medicine/pharmaceuticals, aerospace, agriculture, etc.
- ◆ Chief scientists appointed to important ministries related to science and technology. Strongly regulated via a top-down method to ensure that the research themes of each ministry are not duplicated or decentralized.
- ◆ Technologies developed in the military sector are converted to civilian use  
Examples: firewalls (security technology), capsule endoscopy (missile technology)
- ◆ National commitment to attract R&D centers of multinational corporations (Middle East “Silicon Valley”)
- ◆ Aggressively building partnerships related to science and technology with other countries



- ✓ **Science and technology cooperation at the industry level**
- ✓ **Collaboration in fundamental and base research**
- ✓ **Open innovation hub**

