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Outline of NEDO's R & D Funding Programs

Yoshiyuki Sasaki
Program Director
Research and Development Promotion Department
New Energy and Industrial Technology Development Organization

About NEDO

History

1980; original NEDO (New Energy Development Organization) was established as a semi-governmental organization in the wake of the two oil crises in the ‘70s.

1988; R & D of Industrial technologies other than energy related ones were added to its portfolio.

2003; reorganized as an incorporated administrative agency: NEDO (New Energy and Industrial Technology Development Organization)

Mission

1. to enhance Japan’s industrial competitiveness by promoting R & D of industrial technologies
2. to contribute to the resolution of energy and global environmental problems by the dissemination of energy and energy conservation technologies

Head Office in Muza Kawasaki Building

Departments

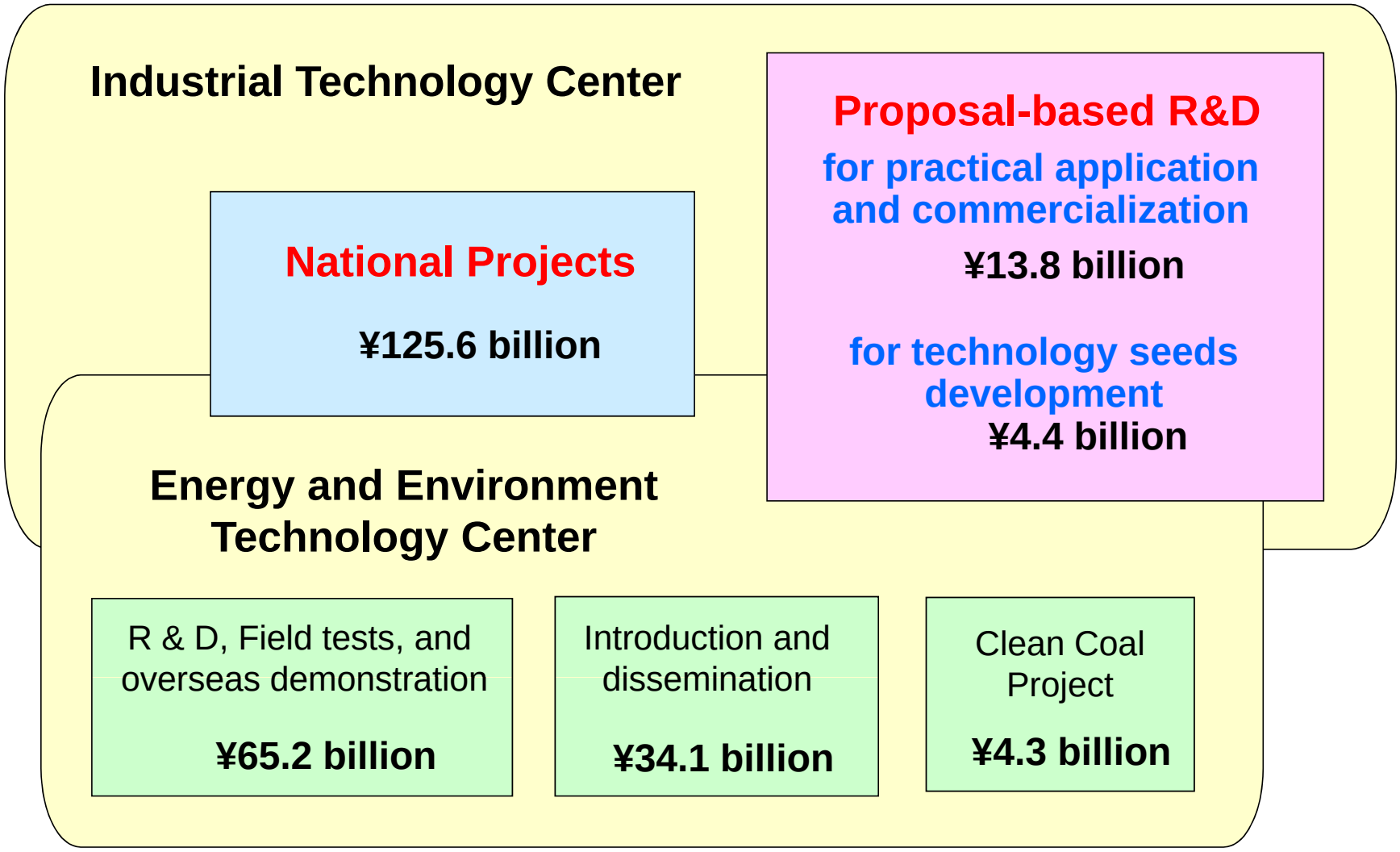
Industrial Technology Center

1. Research and Development Promotion Dpt.
2. Electronic and Information Technology Development Dpt.
3. Nanotechnology and Materials Technology Development Dpt.
4. Biotechnology and Medical Technology Development Dpt.
5. Machinery System Technology Development Dpt.

Energy and Environment Technology Center

1. Fuel Cell and Hydrogen Technology Development Dpt.
2. Energy and Environment Policy Dpt.
3. New Energy Technology Development Dpt.
4. Energy Conservation Technology Development Dpt.
5. Environment Technology Development Dpt.
6. Kyoto Mechanisms Promotion Dpt.
7. Clean Coal Projects Dpt.

Overview of NEDO's Main Activities
(FY2009)



Total ¥234.7 billion

National Projects
(FY2009)

Industrial Technology

1. Electronics and Information Technology (22 projects)
2. New Manufacturing and Robot Technologies (5)
3. Nanotechnology and Materials Technology (22)
4. Life Science (20)

Energy and Environment Technology

1. Fuel Cell and Hydrogen Technologies (13)
2. New Energy Technology (11)
3. Energy Saving Technology (7)
4. Environmentally Friendly Energy Technology (6)
5. Environmental Technology (10)

Total 116 projects

Proposal-based R & D

Practical Application and Commercialization

1. Innovation Promotion Program
2. New Energy Venture Business Technology Innovation Program
3. Promotion of R&D on Practical Welfare Equipment
4. Research and Development of an Intellectual Infrastructure
5. Technology Innovation Program for Small Business Innovation Research
6. Strategic Development of Energy Conservation Technology

Technology Seeds Development

1. Grant for Industrial Technology Research

Innovation Promotion Program

Applicant requirement for each division:

◆ Grant for Practical Application of Industrial Technology

Private enterprises that develop new technologies which can be put to practice within three years from the end of the grant period

Key requirement: Enterprises must be registered in Japan and have less than ¥30 billion in capital.

◆ Grant for Technological Development by R&D Venture Businesses

Spin-offs of existing companies or R&D ventures originating from universities

Key requirement: Enterprises must be established within the last ten years and either have less than ¥300 million in capital or 300 or fewer employees.

◆ Grant for Practical Application of Next-generation Strategic Technology

Private enterprises that develop technologies for practical application to achieve breakthroughs in next-generation technology

Key requirement: Enterprises must be registered and have a principal R&D base in Japan.

Continued

R&D theme requirement:

A proposed theme must address a technological challenge that contributes to the creation of a new industry as indicated in the Science and Technology Basic Plan, fall under one of the fields indicated below, and have a plan for practical application within three years (or five years for next-generation strategic technology) after the grant period.

Research fields:
1) Life science, 2) information and telecommunications, 3) environment,
4) nanotechnology and materials, 5) energy, 6) manufacturing technology,
7) social infrastructure, 8) frontier technology

R&D period and subsidy amount:

- Grant for Practical Application of Industrial Technology
  Two years; up to ¥50 million each year; subsidy rate = up to 1/2
- Grant for Technological Development by R&D Venture Businesses
  Two years; up to ¥50 million each year; subsidy rate = up to 2/3
- Grant for Practical Application of Next-generation Strategic Technology
  Two years; up to ¥50 million each year; subsidy rate = up to 2/3

Grant for Industrial Technology Research

Objectives: To discover and develop the promising seeds of industrial technology pertaining to the needs of industry and society, and to develop human resources in relevant fields

Program type: Proposal-based R & D, Fixed Amount Funding

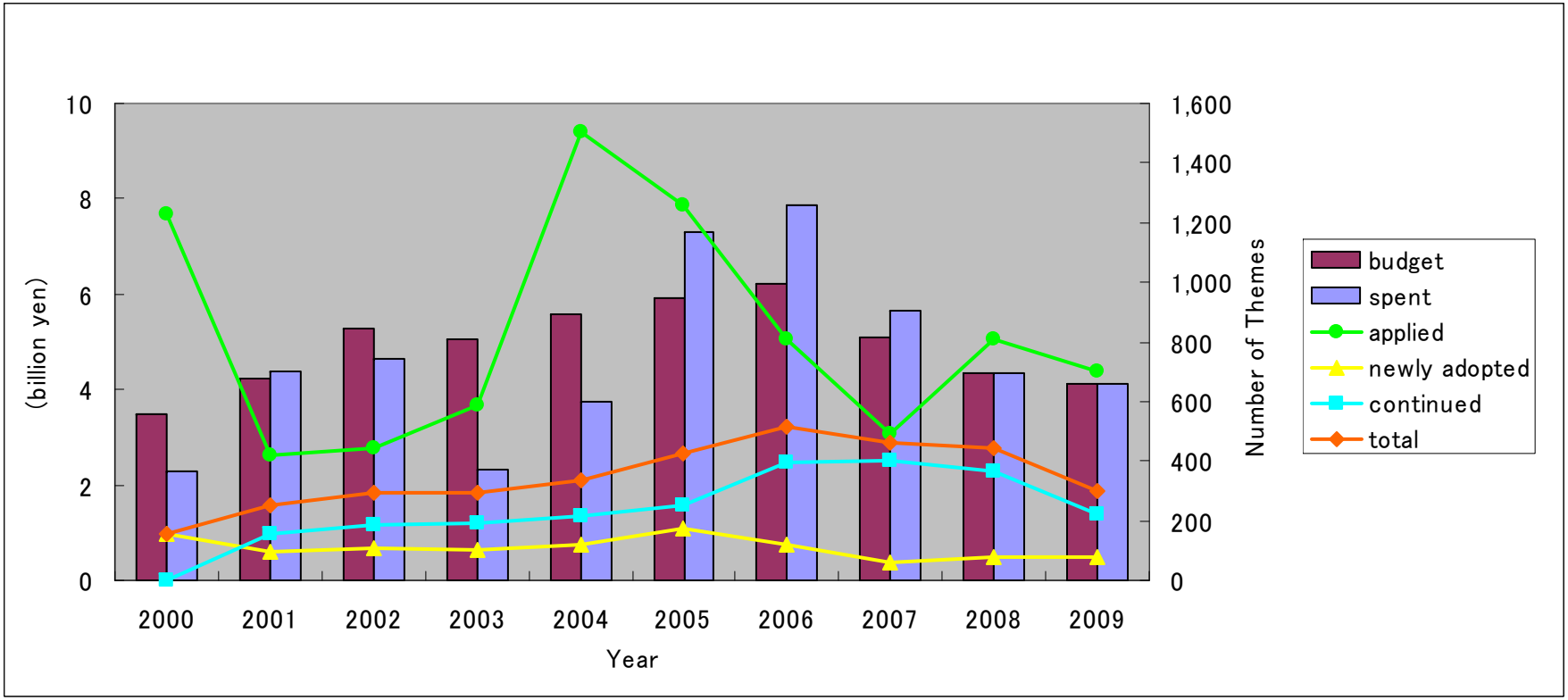
Applicant requirement: Researchers younger than 40 years of age (in principle) from universities and public research institutes (an individual or in teams)

Grant amount: Direct expenses up to 30 million yen for a two-year research period or 50 million yen for a four-year research period (with overhead expenses equivalent to 30% of direct expenses)

Stage gate system: For four-year projects, an evaluation of performance and prospects will be conducted in the second year to determine whether a project will be continued or terminated; approximately 30% of projects are discontinued.

Changes in Budget and Number of Themes

The number of themes to be supported is determined by NEDO according to the total budget set by Ministry of Economy, Trade, and Industry (METI) for each financial year.



Overall adoption rate (2000–2009): 1060/8029 = 13.2%

Research Fields

1) Life Science
2) Information and Telecommunications Technology
3) Nanotechnology and Materials
4) Manufacturing Technology
5) Environment and Energy
6) Social Science related to Industrial Technology
7) Innovative and Synthetic Fields of Technology
8) International Research

The grant is open to any challenges in these fields but those irrelevant to the mission of NEDO and/or METI such as R & D of nuclear power related technology, food in its own, or those including invasive clinical trial during the grant period.

Categorization of R & D Themes

1) Life Science

Machine
Individual System
Organ
Cell
Gene
Protein
Low Molecule

- Microbe
  - Manipulation
  - Visualization
  - Storage
  - Cytomembrane
  - Analysis
- Flow Cytometry
- Biomarker
- Microarray
- Probe
- ELISA
- Screening
  - Cytokine
  - Aptamer
  - miRNA
  - Methylation

Machine – Physical Treatment – Thermotherapy – Solid Tumors
Individual System – Experimental Animal – Zebrafish – Screening
Organ – Implanted Device – Stent – Biocompatibility
Cell – Visualization – Screening – Methylation
Gene – Posttranslation Modification – Methylated DNA – Promoter
Protein – Assay – Aptamer – Drug Discovery
Low Molecule – Metabolome – Biomarker – Diagnostic Kit

Continued

2) Information and Telecommunications Technology

Display – Material – Nanostructure – Photonic Crystal
Service – Authentication – Random Digits – Algorism
Telecommunication – Optical – Frequency Comb – Laser
Computer – Implementation – Junction – Pb Free
Memory – Spintronics – Devise – Spin-RAM
Semiconductor – Organic Semiconductor – CMOS – Flexible Display

3) Nanotechnology and Materials

Environment and Energy – Polymer – Electrolyte – Li-ion Battery
Bio and Medical Technology – Nano Particle – Surface Modification – DDS
Electronics and IT – Graphene – Epitaxial growth – Transistor
Manufacturing – Nano Structure – Photo Regulation – Evanescent Wave

Continued

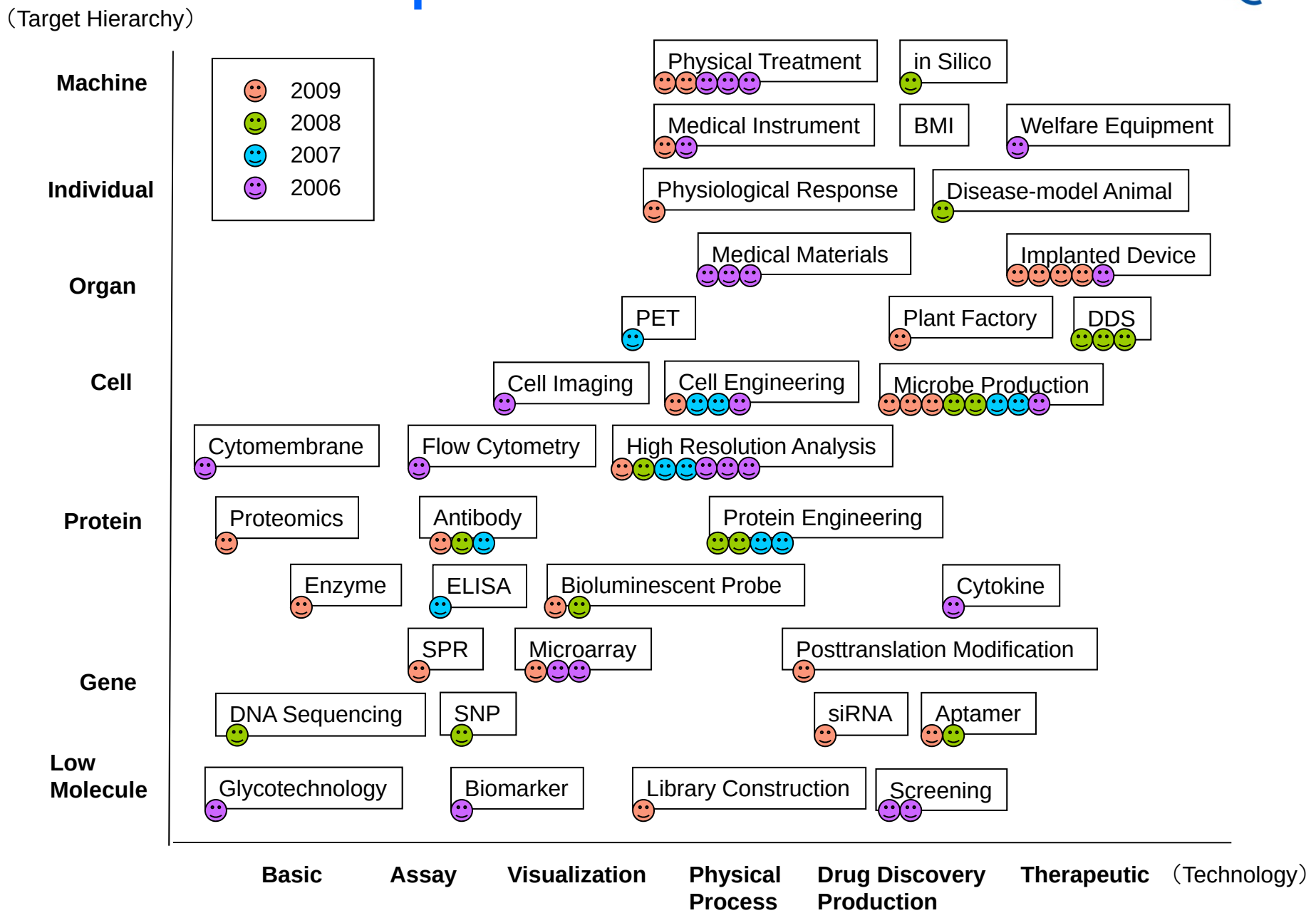
4) Manufacturing Technology

Environment and Energy – Polymerization – Renewable Material – Green Chemistry
Health and Medical – Service Robot – BMI – Welfare Equipment
Electronics and IT – Precision Processing – Wafer– Semiconductor
Manufacturing – Production Robot – Force Sensing – Skill Learning
Nanotech - Material – Material Property Analysis – In-process Measurement – MEMS

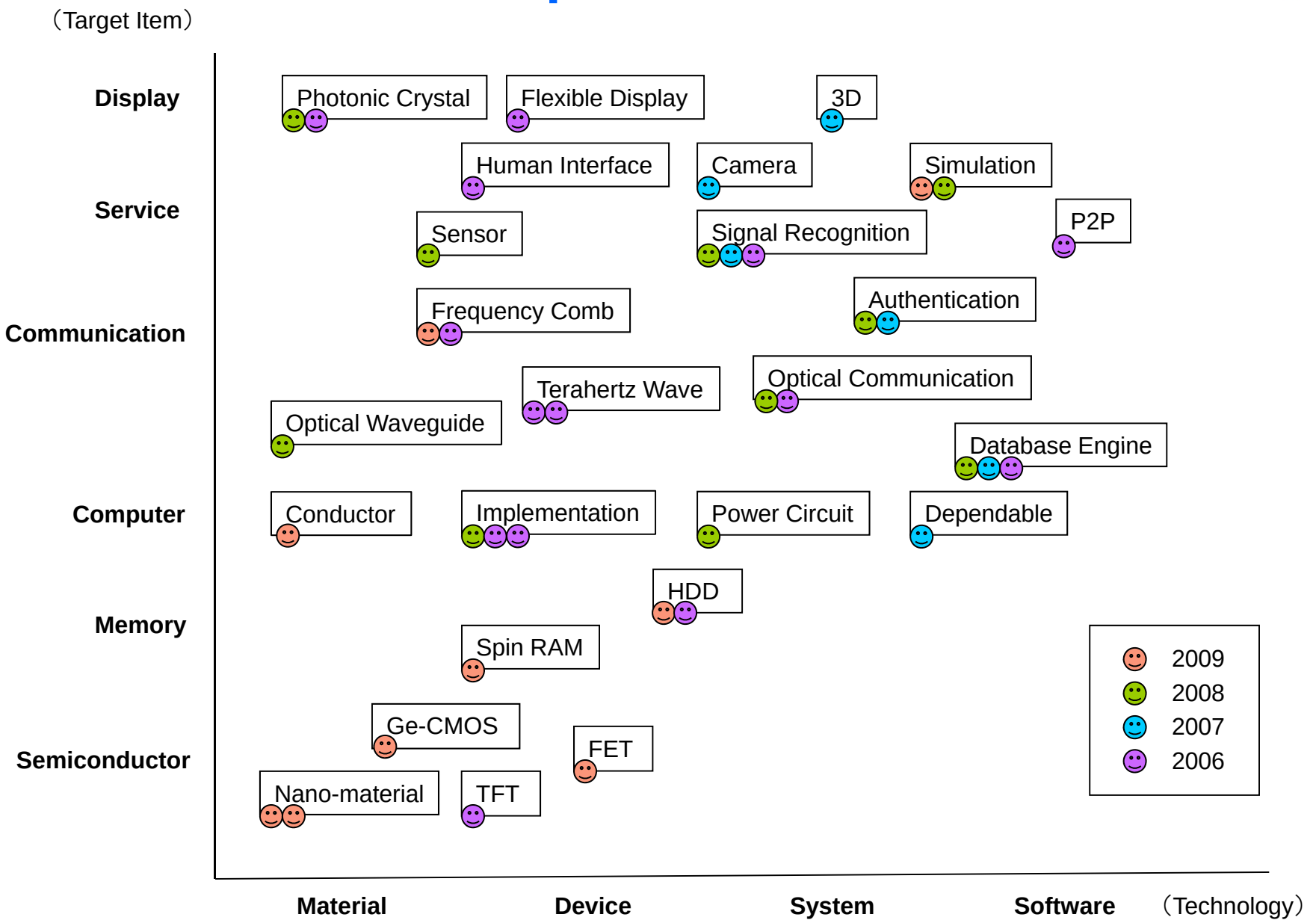
5) Environment and Energy

Global Warming – N_2O – Decomposition – Plasma
Environmental Management – Assessment – Pollutant – Simulations
Waste – Recycling – Rare Metal – Electrolysis
Fossil fuel – Fuel Cell – Hydrocarbon Reforming – Catalyst
New Energy – Bioethanol – Cellulase – Pretreatment
Energy Saving – Friction – Flow Control – Micro Bubble
High Efficiency – Power Device – Diamond – Semiconductor

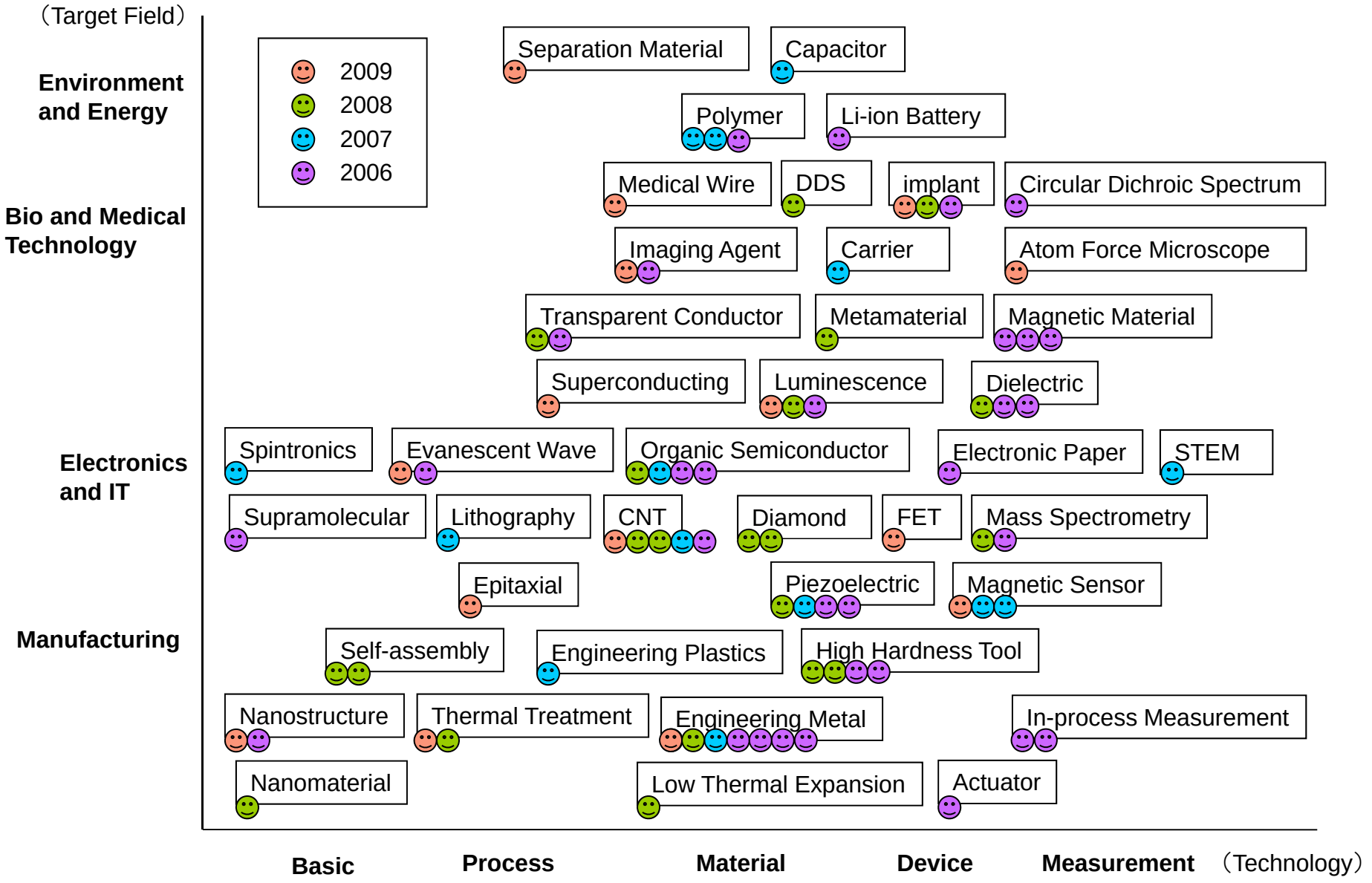
Accepted Themes in Life Science



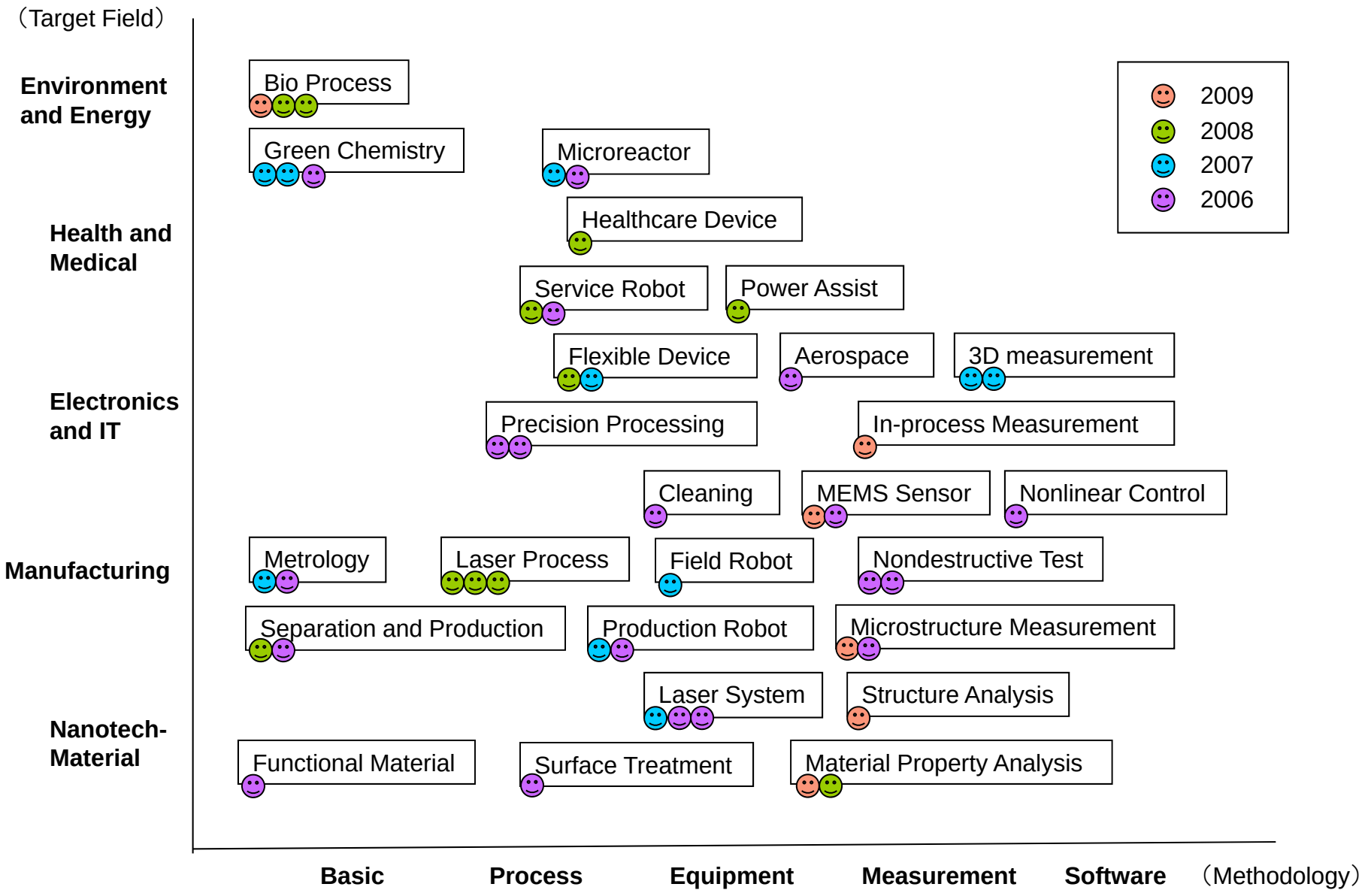
Accepted Themes in IT



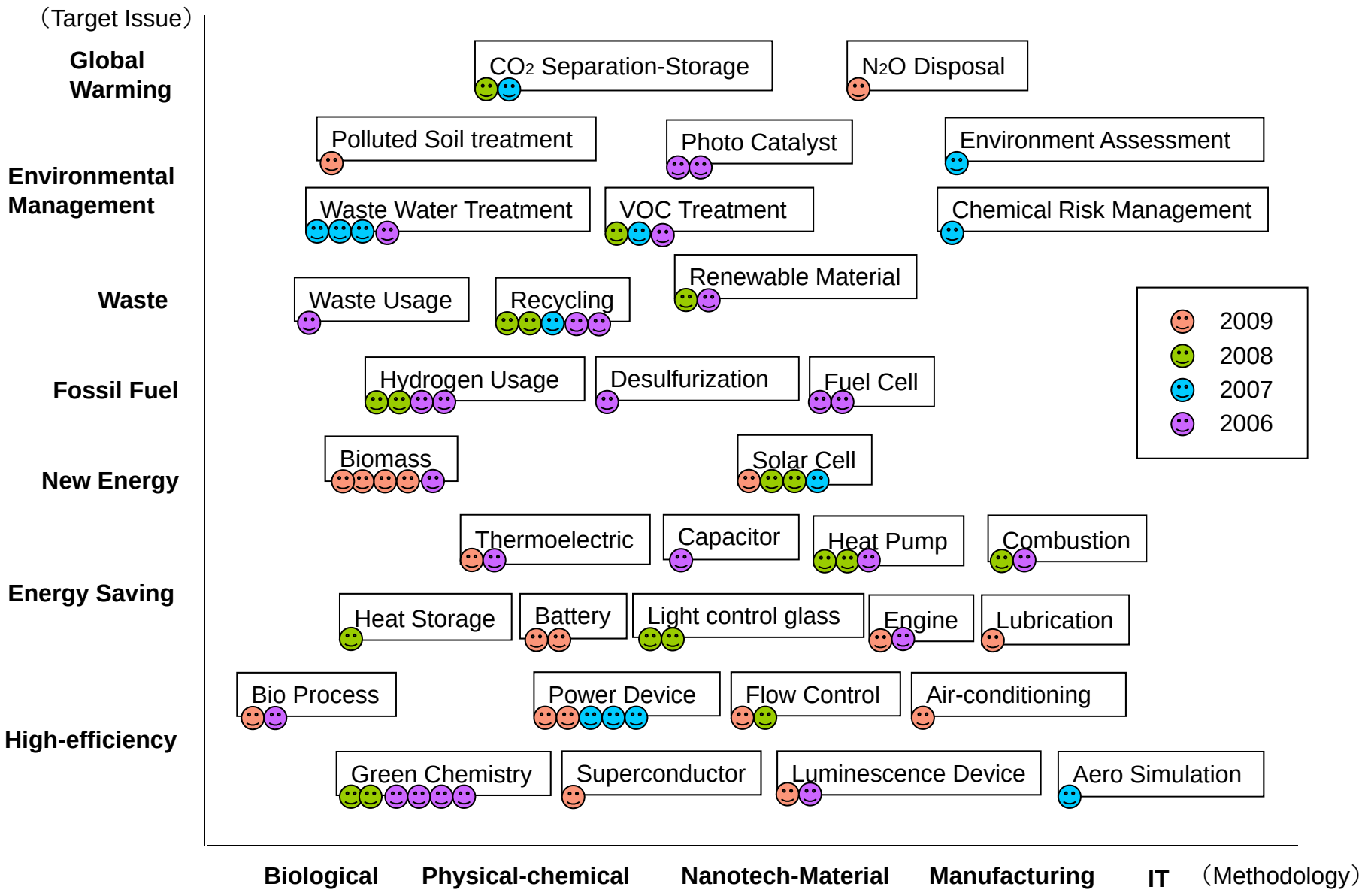
Accepted Themes in Nanotech and Material



Accepted Themes in Manufacturing Tech



Accepted Themes in Environment and Energy



Examples of The Completed Projects

Neo-bone

Porous hydroxyapatite and human cell hybrid with high bone restoration property

Intelligent Operation System

Increased percentage of successful brain tumor removal with 400 samples

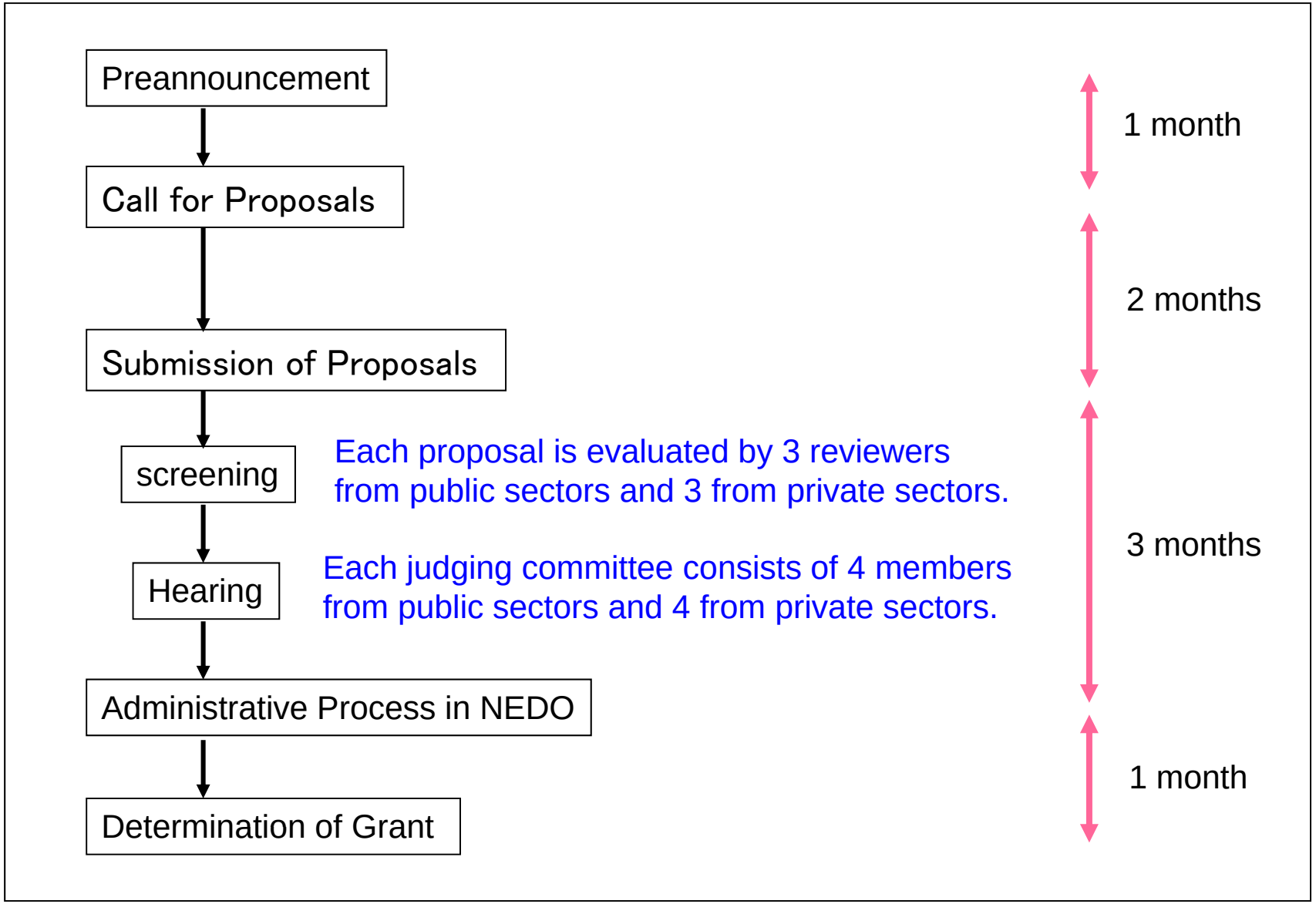
Continued

Waste Materials Separation

A dry gravity separation equipments using fine particles blown up by pressurized air for waste plastics(left) and mixed metal(right)

A questionnaire survey of the research themes completed by September 2006 showed almost 30% of the developed technologies were in practical use or in advanced stage.

Selection Process



Evaluation Items for Initial Screening

1. Importance of challenges in the proposed research and validity of the proposal **(max 20 points)**
2. Novelty and advancement of the proposed research **(20)**
3. Advantage of technology **(20)**
4. Possibility of practical application **(20)**
5. Impact on industry and society **(20)**

(max 100 points)

Criteria for Each Item

1. Importance of challenges in the proposed research and validity of the proposal

①Social circumstances concerning the proposed challenges are explained in such a way that can be understood by non-expert persons.
②The proposed challenges have a substantial need (a high priority) as a theme to be addressed by NEDO from the viewpoint of advancement of industrial technology or development of a safe and secure society or a sustainable society[1].
③ The proposed research is based on significant industrial or social needs, and its cost-benefit performance is high. The budget scale and R&D period is also reasonable for the proposed research.

2. Novelty and advancement of the proposed

①Techniques, ideas and phenomenon to be used in the proposed research have not been reported in any preceding research papers, patents and research (including ongoing and completed research of the research leader and research team members that are being or were carried out with support of other funds).
②Based on the nonpublic data provided in the proposal and other sources, the proposed technology has a breakthrough point (significant advancement) to dramatically advance a technology level, and the target level (final target) is expected to be sufficiently high in the world at present and even at the end of the research period.

Continued

3. Advantage of technology

①Not only a similar technology but also conventional and competing technologies, including other approaches to overcome the proposed challenges, are sufficiently referred to and analyzed.
②When practical application of research results is achieved after the completion of the research, it is expected to have an advantage over conventional and competing technologies, including those that use other approaches, at that time.

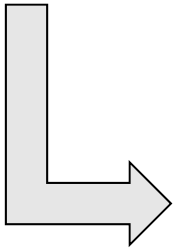
4. Possibility of practical application

①The research plan and schedule are developed based on sufficient preliminary research results, and practical application is highly feasible.
②Researchers have sufficient capability to complete the proposed research based on their research performance. In the case of a research team, research work systems and allocation of work are reasonable[2].
③Optimum collaboration with industry and companies for practical application is well considered, and prospects of developing collaboration with them are high. A scenario (e.g., roadmap) for practical application has been developed. Plans concerning intellectual property rights (e.g., patent applications) are appropriate.

Continued

5. Impact on industry and society

①When the proposed targets are achieved, expected research results are considered truly meaningful for the enhancement of industrial competitiveness and/or sustainable development of society in Japan.
②When the proposed targets are achieved, technological spillover effects in the relevant field and to other technology fields are expected.
③An energy-saving effect or petroleum substitute effect is specifically described, and a significant effect is expected.

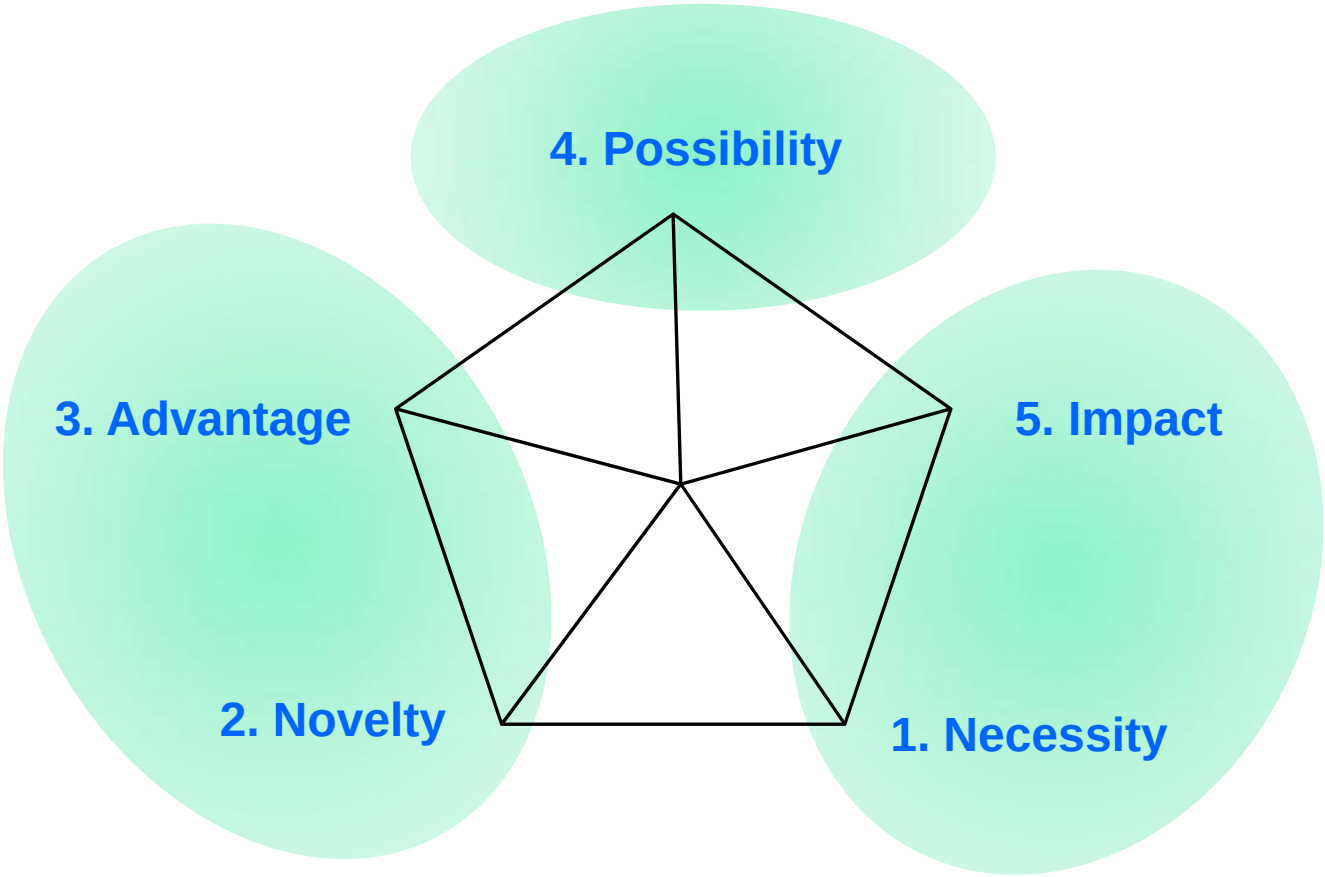


Scale for Criterion ③

1. Description is specific and a large effect is expected.
2. Description is specific and a certain level of effect is expected.
3. Description is not specific and an effect is limited.
4. Description is minimal or a visible effect is not expected.

What are evaluated?

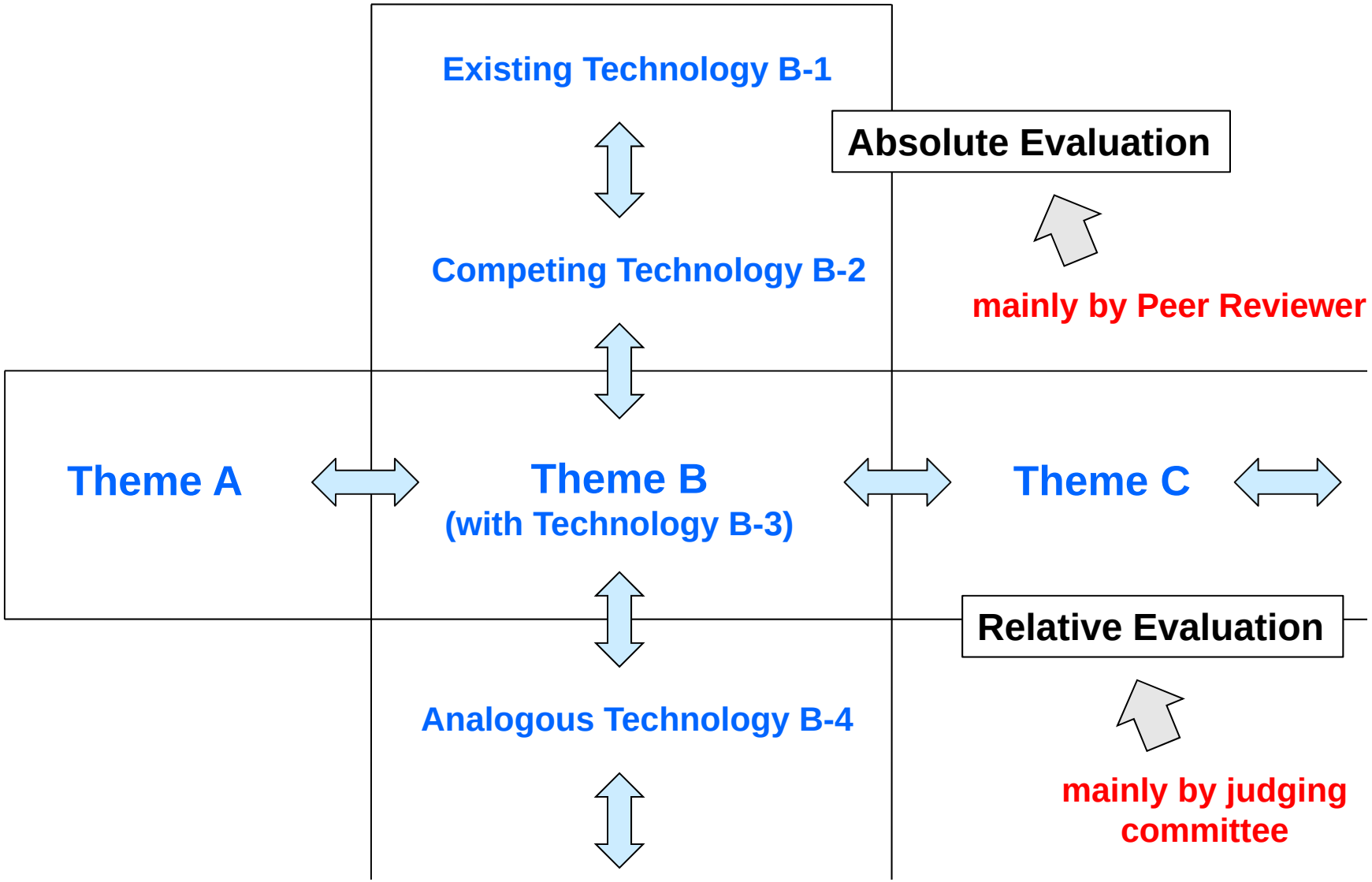
The **activities** of the players engaged in the theme in question



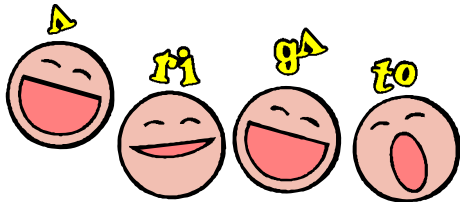
The **content** of the theme in question

The **situations** surrounding the theme in question

A Difficulty of Two-track Evaluation



Thank you!



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