(Provisional)

Basic Policy for Management of the Impulsing Paradigm Change through Disruptive Technologies (ImPACT) Program

February 14, 2014
Council for Science and Technology Policy

The Council for Science and Technology Policy (CSTP) has decided on the following basic policy for management of the Impulsing Paradigm Change through Disruptive Technologies (ImPACT) program. This program was established based on the *Japan Revitalization Strategy* (Cabinet decision on June 14, 2013) and the *Comprehensive Strategy on Science, Technology and Innovation* (Cabinet decision on June 7, 2013), and it was included in the FY2013 supplementary budget to the General Account as a concrete measure under the *Economic Measures for Realization of a Virtuous Cycle* (Cabinet decision on December 5, 2013).

I. Purpose and Features of ImPACT

Japan is presently exposed to intense international competition and also faces serious socio-economic issues. In order to overcome these issues, it will be important to bring about major changes in the future state of industry and society in Japan. We are being called upon to take action to encourage attitudes and initiatives characterized by challenge, openness, and innovation. ImPACT is one such concrete action, constituting "a new system that, if realized, will create disruptive innovation that brings about change in society" with the purpose of transforming mindsets of the research and development (R&D) community on-site, converting from introversion to the spirit of challenge, and from a go-it-alone orientation to open innovation.

To this end, first, ImPACT is to encourage challenge whose probability of success is not necessarily high (*high-risk*) but which can be expected to have a major impact in the case of success (*high-impact*), and to foster an entrepreneurial climate. The aim, in other words, is to create the disruptive innovation that will bring about major changes in the state of industry and society if realized, and to promote high-risk and high-impact R&D.

Second, ImPACT will rigorously select program managers (PMs) who have promising, innovative ideas regarding themes determined by CSTP. This approach is characterized by significant delegation of authority to each PM, who then works with outstanding researchers to create innovation. In other words, the PM acts as a producer who casts researchers and brings together capabilities in design and management of R&D with Japan's highest-level capabilities in R&D.

The ultimate purpose of ImPACT is to realize "the world's most innovation-friendly country" and "a country abounding in the spirit of entrepreneurship." This cannot, of course, be achieved by the ImPACT program alone, so the aim is also to take successful cases produced by ImPACT and provide them as future models for action to be followed as Japan's various spheres and sectors pursue innovation.

II. ImPACT Program Procedures

1. Committees, Meetings, etc.

The Committee for Promotion of ImPACT Program (hereafter the Committee) and the Panel of Experts on ImPACT Program (hereafter the Panel) will be convened for the purpose of deliberation and discussion on PM selection, evaluation, status of progress, and other such matters. The Panel will be convened under the Committee.

The Committee will be made up of the Minister of State for Science and Technology Policy, the Senior Vice-Minister for Science and Technology Policy, the Parliamentary Secretary for Science and Technology Policy, and the CSTP executive members. The Panel will be made up of the CSTP executive members and outside experts. Matters necessary for convening the Committee and other such actions will be determined separately by the Chairperson of CSTP, and matters necessary for convening the Panel and other such actions will be determined separately by the Chairperson of the Committee.

2. Determination of Themes

In order to point the “exit”, that is, the changes in the state of industry and society that are envisioned by the ImPACT program, the theme is determined in light of the following:

1) To bring quantum advances in competitiveness for Japanese industry and contribute greatly to a prosperous life for the people of Japan through science, technology and innovation that bring about paradigm shifts by means of disruptive change

2) To overcome the serious social issues faced in Japan by means of groundbreaking science and technology innovation that will overturn the conventional wisdom

The resulting five themes are:

- Release from constraints on resources and innovation in “*monozukuri* (manufacturing)” capabilities
  (Japan-style value creation for the new century)
- Realization of an ecologically sound society and innovative energy conservation that changes lifestyles

(Living in harmony with the world)

- Realization of a society of highly advanced functionality that surpasses the information networked society

  (Smart community that links people with society)
- Provide the world's most comfortable living environment in a society with a declining birthrate and aging population

  (Realize healthy and comfortable lives for everybody)
- Control the impact and minimize the damage from hazards and natural disasters that are beyond human knowing

  (Realize a resilience that is keenly felt by every individual Japanese)

3. Determination of the PM

The Cabinet Office will handle the recruitment of PMs and will seek proposals for the concepts of R&D program. The Panel will review the recruitment candidates, select PM hiring candidates, and report on the candidates to the Committee. Taking the report from the Panel into consideration, the Committee will put together an organized PM hire proposal and report it to CSTP. CSTP will then take the Committee report into consideration and decide on the PMs. The Japan Science and Technology Agency (JST) will hire PMs based on the decision of CSTP. JST will respond with certainty to the progress management on PMs implemented by CSTP, and will establish an appropriate structure with taking account of its position as an employer of PMs, a provider of assistance to PM activities, and a proper fund administrator.

The PM will conduct overall management of his/her R&D program while also serving as a producer who channels R&D results into the creation of groundbreaking innovations. As a rule, the PM will be full-time. The nationality of the PM will not be raised as an issue if such is recognized as truly necessary for realization of the changes in the state of industry and society envisioned in the indicated theme.

The criteria and procedures for PM selection will be formulated by the Committee. In doing so, the selection is, based on the fundamental concept of ImPACT, to proceed in accordance with the following perspectives in order to ascertain the PM's suitability as a producer rather than any details of R&D content.

1) PM Qualifications and Record of Performance

- Experience, record of performance, and potential capability in management of R&D, commercialization, and related matters.
- Specialized knowledge and understanding of the theme. Ability to grasp domestic and international needs as well as R&D trends.
- Ability to take a broad view of technology and market trends. Ability to conceptualize

commercialization from multifaceted perspectives.

- Ability to communicate fully not only with researchers but with all concerned parties. Leadership ability for achieving goals.
- Ability to network with specialists in business, academia, and government as well as ability to collect technical information.
- Motivation to carry through with realization of high-impact innovation.
- Ability to give readily understandable explanation of the PM's own R&D concept to outsiders.

2) R&D Program Concept Proposed by PM

- It should bring about change in the condition of industry and society. (Magnitude of impact, possibilities for practical application and commercialization.)
- It should take on high-risk, high-impact challenges that other programs than ImPACT are unable to address. (Whether it aims for disruptive innovation instead of incremental innovation.)
- Even though it is high-risk, it should be rationally explained as feasible.
- It should be capable of bringing together the highest level of R&D capabilities in Japan with a variety of different bodies of knowledge. (Appropriateness of the conceptualized system.)
- R&D plan should be appropriate. (Appropriate in terms of expense and appropriate in terms of results expected within implementation time allowed.)
- Result should be verifiable.

It is permissible to also include dual-use technology that is mutually applicable as industrial technology and as technology contributed to the safety and security of the Japanese people.

4. Implementation of R&D

The PM will select the R&D institution(s), report it to the Panel, and seek confirmation. After it has been confirmed, the R&Dinstitution will implement R&D under the PM's management.

When an institution affiliated with the PM or located outside Japan is to be selected as the R&D institution, the PM will seek approval of the selection from the Committee. The Committee will approve the selection if it recognizes the true necessity for selecting that institution in order to realize the envisioned change in the state of industry or society indicated in the theme.

Management by the PM of the implementation of R&D will as a rule be carried out on the basis of commissioned R&D contract between JST and each R&Dinstitution. Expenses required for the ImPACT program, including for R&D, support of the PM, administration of funds, and other such functions, will be funded by the ImPACT Fund (hereafter the Fund) in accordance with policies for administration determined by the Committee.

The PM will flexibly implement the acceleration, deceleration, suspension, change in direction, and other such actions as necessary with regard to his/her R&D program. When there are prospects for new developments that appear likely to yield high-impact results, even though the results differ from the initial objectives, the PM will be able to reconsider his/her program flexibly by his/her own judgement.

5. Implementation of Evaluation and Progress Management

As a measure for steady promotion of the ImPACT program, the Panel will receive reports on the status of program progress from the PM and on the status of Fund management from JST at approximately half-year intervals, and it will also be able to demand improvement from the PM and JST as necessary. When demanding improvement, however, it will bear in mind the very feature of ImPACT program, which is to encourage high-risk, high-impact initiatives and to delegate the authority to the PM.

When improvements demanded by the Panel are not carried out, or when it is judged that results (the changes in the state of industry and society that are envisioned in the indicated theme) cannot be expected, CSTP can decide, after the matter has been deliberated and examined in the Committee, to dismiss a PM.

After the implementation period of R&D, CSTP will make use of outside experts to conduct an evaluation of the PM from a variety of perspectives. These will include whether or not the anticipated results were obtained, and whether they will lead to further development in the future, whether program management was appropriate, and so on. The evaluation should take into consideration the very feature of ImPACT program and extend to such matters as changes to R&D plans when the achievement of initially envisioned objectives becomes unlikely, advances made or other actions taken in derivative R&D, appropriateness of the program management process, and lessons learned even when results are not obtained in accordance with objectives.

6. Miscellaneous

The Director-General for Science, Technology and Innovation Policy of the Cabinet Office will administer affairs as necessary for the smooth promotion of the ImPACT program.

When it conducts deliberation and examination of basic policy relating to operation and management of the Fund, the status of management of the Fund, and the status of progress of the ImPACT program, the Committee will be able to request attendance by the Minister of Education, Culture, Sports, Science and Technology in the Minister's capacity as manager of the Fund.

Active steps will be taken to disseminate word of results outside the program.

Intellectual property rights that have been acquired will, as a rule, be assigned to the R&D

institution or to the researchers or other such parties who belong to that institution, in accordance with Article 19 of the Industrial Technology Enhancement Act. At the same time, the particulars of that assignment will be determined separately by the Committee with a view to enhancing the industrial competitiveness of Japan and promoting the active utilization of intellectual property.

Other matters necessary for management of the ImPACT program will be decided in the Committee.