Selection of Competition Categories for the
International Robot Competition (Draft)

February 2016

1.　Concept of the International Robot Competition

In accordance with the "New Robot Strategy" decided in February 2015 by the Headquarters for Japan Economic Revitalization, the International Robot Competition is expected to become an opportunity to accelerate the R&D and the social implementation of robots.

The competition aims to create an opportunity to bring together the most advanced robot technologies globally and to challenge the human limits. By solving actual problems in the society, the competition aims to deepen people's understanding of robots and to induce positive discussions that would lead to concrete uses and applications of robots.

2.　Selection of the Competition Categories

Based on the concept provided above, the competition shall be held in areas that have significant need and importance for the acceleration of R&D and social implementation of robots.

The major focus areas that are identified in the "New Robot Strategy" are "manufacturing," "service industry," "nursing and medical care," "infrastructure, disaster response, and construction," and "agriculture, forestry, fishery, and food industry."

Furthermore, the "New Robot Strategy" highlights the following three major social issues to be solved which are 1) decline in the number of working-age population; 2) shortage of labor and increased social security expenses; and 3) enhancement of disaster

preparedness and responses to aging social capitals.

By considering these social issues and envisioning the actual uses of robots, the competition categories are the following three:

1) B to B category (manufacturing / agriculture, forestry, fishery, and food industry)

2) B to C category (service industry / nursing and medical care)

3) Infrastructure, disaster response, and construction category

By categorizing the above, the rules, know-how, and network of existing international competitions can be referenced when planning for and gathering participants globally for the International Robot Competition.

* There are existing social implementation style robot competitions held worldwide in manufacturing, life support and disaster response fields.

In addition, demonstrations of robots in new applications which are ready for practical use in 2020 shall be conducted to accelerate the social implementation in the three competition categories described above.

3. Selection of Competition Items

Provided below are the list of factors to be considered in selecting the competition items for the three competition categories.

Based on the objective to accelerate R&D, the robots participating in the competition are not limited to those that already have achieved practical use or commercialization; they shall include robots that have been newly developed.

1) Social appeal and message
   - Ability to gain international attention
   - Benefits for the society

2) Acceleration of R&D of robots

- Technical difficulty

- Spillover effect/ impact

3) Acceleration of social and industrial implementation of robot technology

- Implementation of robot technology in the workplace

- Economical effect achieved through the implementation of robots

4) Internationality

- Number of international participants

- Promotion of international interaction

5) Sustainability

- Continuity of technological innovation

6) Development of human resources

- Training and development of researchers and technical experts in industry, academia, and government

4. Examples of Competition Items

Specific competition items shall be determined through further discussions. Examples of the competition items are as follows:

1) B to B category (manufacturing / agriculture, forestry, fishery, and food industry)

- Example uses of robots: collaborative work by humans and robots, automation of cell production, assembly of wire harness on automobiles, packing of food into lunch (bento) boxes, etc.

- Technical requirements and challenges: handling and assembling of objects with various shapes and hardness/softness, teaching technology, system integration technology, etc.

2) B to C category (service industry / nursing and medical care)

- Example uses of robots: providing service industry work with people (e.g. displaying products with humans at stores, providing waiter service to

customers, providing guidance for elderly's outing), etc.

- ・ Technical requirements and challenges: mapping, self-location identification, optimal path/route search, defining tasks for humans and for robots, etc.

3) Infrastructure, disaster response, and construction category

- ・ Example uses of robots: inspection of plants, detecting and rescuing people inside plants, etc.

- ・ Technical requirements and challenges: autonomous mobility, remote operation, recognition of external environment, etc.