PM Tadokoro will tackle the Tough Robotics Challenge (TRC)

ImPACT

Satoshi Tadokoro - Program Manager (PM)

1984 M-Eng., Univ. of Tokyo
1993-2005 Associate Professor, Kobe Univ.
2002 Established International Rescue System Institute
2002 -2006 MEXT DDT Rescue Robotics PM
2005- Professor, Graduate School of Information Sciences, Tohoku Univ.
2006 -2010 NEDO Strategic Advanced Robot Component PI
2011 Deployed Quince for the Fukushima-Daiichi Accident
2012 Assistant Dean, 2014 Vice Dean
2014- President-Elect, IEEE Robotics and Automation Society
Awarded METI Robot Award, FDMA Commissioner Award, etc.

Disruptive Innovation

✓ Keys to Breakthrough

Advance technologies with keywords of active robustness, large-scale realtime information, and bio-machine Fusion. Establish remote autonomous robotics that can operate robustly in extreme environments, implement commercialization and create a foundation for social implementation.

PM's Challenges and Impact of Success

✓ Overview of TRC

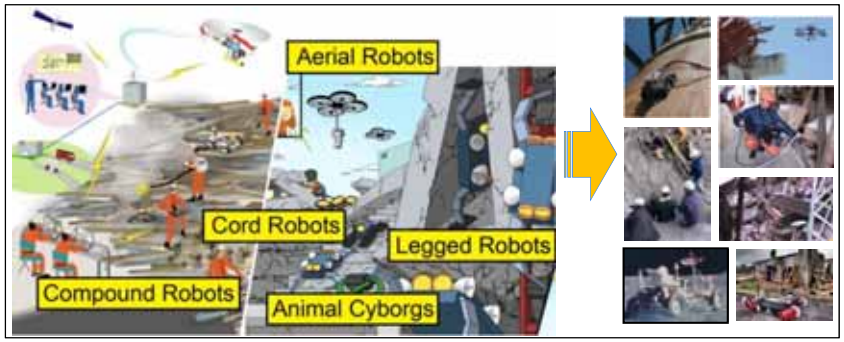
Jointly research and develop the key fundamental technologies for outdoor robots (accessibility, sensing and perception, recovery from failure, and environmental compatibility) in a cooperative competitive environment, with the aim of of achieving remote autonomous robots that can work robustly without faltering even in the unknown, time-varying extreme disaster environments. Conduct focused field evaluations to make robot technologies and their performance visible, and lower the barriers to social application.

✓ Background

In recent years, large scale disasters have occurred frequently. Application of robot technologies to improving disaster response, recovery, preparedness and mitigation capabilities, improving efficiency, and at the same time ensuring the safety of responders is an urgent issue. However, current robots are delicate goody-goodies that cannot show the same performance of work in the extreme environment of disasters as they can indoors. Their ability to respond to unexpected situations is low.

✓ Impact on industry and society

Application of robots to emergency response, recovery, preparedness and mitigation of disasters to contribute the world safety and security. Furthermore, pave the way to commercialization of advanced outdoor robot services by promoting technology spillover.



Scenario for Success and Achievement Targets

✓ Scenario for success

Research into active robustness, large-scale realtime information and bio-machine fusion with integration to five robot bodies. Hold frequent field evaluation events at simulated disaster sites, and promote modest competition between researchers and voluntary information exchange. Encourage fundamental research that meets user needs by reflecting the user opinions in the research planning. Seek integration with the companys' own business plans through business matching, as well as the disaster prevention applications.

✓ Achievement Targets

Technical target: Check technical levels in simulated fields, confirm that each can perform tasks robustly in extreme disaster environments, and reach a stage of disruptive innovation.
Social ripple effect target: Bring out innovative solutions in disaster emergency response, recovery, preparedness and mitigation.
Industrial ripple effect target: Circulation of technologies between users, business operators and researchers proceeds smoothly, and the cooperation is developed to a disruptive level.

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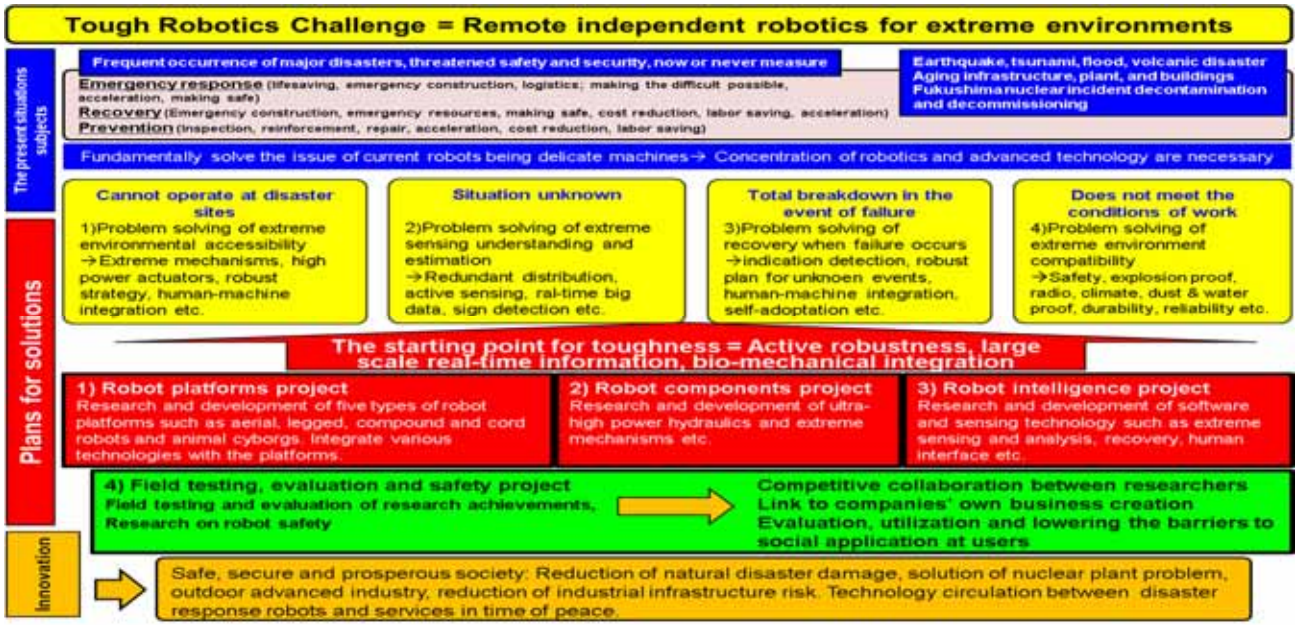
Overall R&D Program Structure Created by the PM

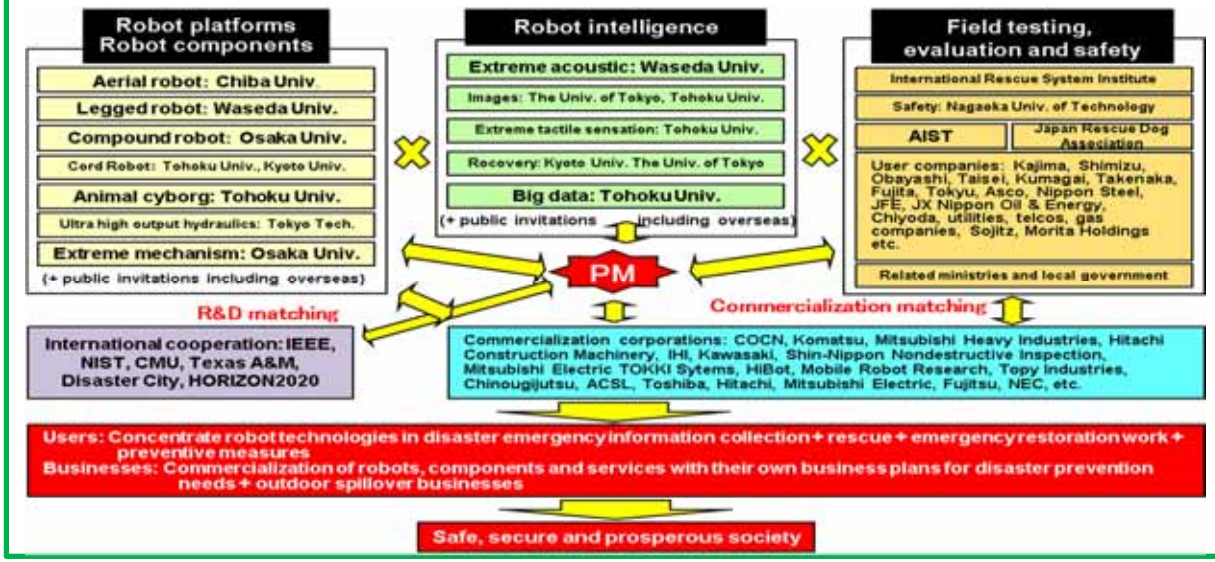


✓ Key points of implementation

- Create mechanisms that promote win-win cooperation between all of the participants including researchers, companies and users.
- Identify disaster application scenarios and maximize the outputs through review and exploration of the research content.
- Promote business matching actively reflecting user and company needs, using field testing & evaluation and joint research.
- Encourage and support utilization and commercialization of ImPACT research fruits.
- Periodically publicize the field testing and evaluation meetings and make the research achievements visible.

Total R&D Program Budget
JPY3.5 billion

R&D Structure Assembled by the PM



✓ Keys of the R&D Structure

- Integrate five types of robot body developed in the robot platform project with the hardware developed in the component project and the software and sensing technologies developed in the intelligence project. They are evaluated in the field testing, evaluation and safety project, seeking to match the research fruits with users and business operators.

✓ Approach to selection of institutions

- Invite the participation of universally recognized, top-class Japanese researchers and organizations with global-level results in each specialist field, who are expected to produce leading-edge research fruits. Public offering gathers wide variety of seeds worldwide. Motivated companies commercialize the research fruits.