

Innovative Cybernic System for a ZERO Intensive Nursing-care Society

Yoshiyuki Sankai - Program Manager (PM)



1987 received a Ph.D. degree in Engineering from Univ. of Tsukuba
 1998 Visiting Professor, Baylor College of Medicine in Houston (U.S.)
 2003 Professor, Graduate School of Systems and Information Engineering, Univ. of Tsukuba
 2004 CEO, CYBERDYNE Inc.
 2011 Director, Center for Cybernics Research, Univ. of Tsukuba
 2014 ImPACT Program Manager

Profile

Pioneered leading-edge technology in a new field called innovative Cyborg-type robot, and established a venture company. Led the intellectual property strategy, and international standard setting by ISO. Robot Suit HAL acquired CE marking certification for medical devices and realized the application to the public worker's compensation insurance in Germany. Displayed a high capacity for international business management, leading an IPO and international expansion. Achieved results as a principal researcher in the FIRST program (2009-2014) organized by the government Cabinet Office. Has been a council member on the global agenda of the World Economic Forum. Received numerous awards for his achievement.

The Challenges for the PM and the Impact of Success

✓ Overview and background

Intensive nursing-care in developed countries with longevity is a serious unresolved common social problem placing a heavy burden on families and society. PM's challenges are to research and develop assistive technology, Innovative Cybernic System, realizing fusion/combination of human and robot, and to realize "a ZERO intensive nursing-care society" through constructing the life-support infrastructure and promoting social implementation of proposed innovative technology.

✓ Impact on industry and society in the event of achievement

Creation of innovative human assistive technology and industry fusing/combining human and robot, Paradigm shift from a conventional consumption economy to a social problem-solving economy, and Realization of industrial and social transformation through social business innovation

Paradigm shift from a consumption economy to a social problem-solving economy

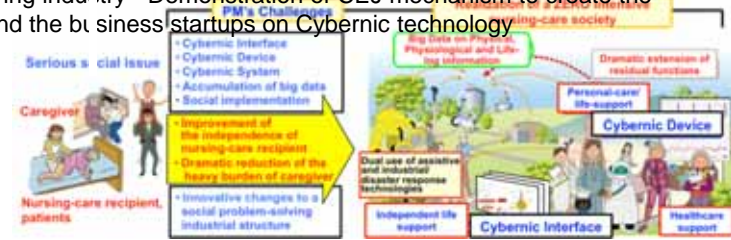
- Improvement in the independence of nursing-care recipient
- Reducing burden of caregiver dramatically



Disruptive Innovation

✓ Keys to Breakthrough

- Innovative Cybernic technologies to process and treat the information of the brain-nerve-muscular system for fusing/combining human and robot in order to realize a ZERO intensive nursing-care society - CEJ (Cybernics Excellence Japan) with straight-through process as Multidisciplinary Innovation Platform to create a social problem-solving industry - Demonstration of CEJ mechanism to create the innovation and the business startups on Cybernic technology



Scenario for Success and Achievement Targets

✓ Scenario for Success

Research and development of the innovative technologies (Cybernic Interface/Device/System) in order to improve the patient's independence and to reduce the caregiver's burden dramatically

✓ Achievement Targets

- To realize the partial or easy nursing-care by the proposed innovative technologies for the patients/caregivers in the movement/excretion/physiological management
- To develop the Cybernic Interface/Device/System with international standards (ISO13482/13485)
- To demonstrate and validate a zero intensive nursing-care in some local community fields
- To create/establish the CEJ (Cybernics Excellence Japan) in cooperation with partner organizations for the Industrial/Social innovation as the Multidisciplinary Innovation Platform
- To become possible to adapt the proposed technologies to the industrial/disaster response fields as dual-use technology

✓ Management strategies

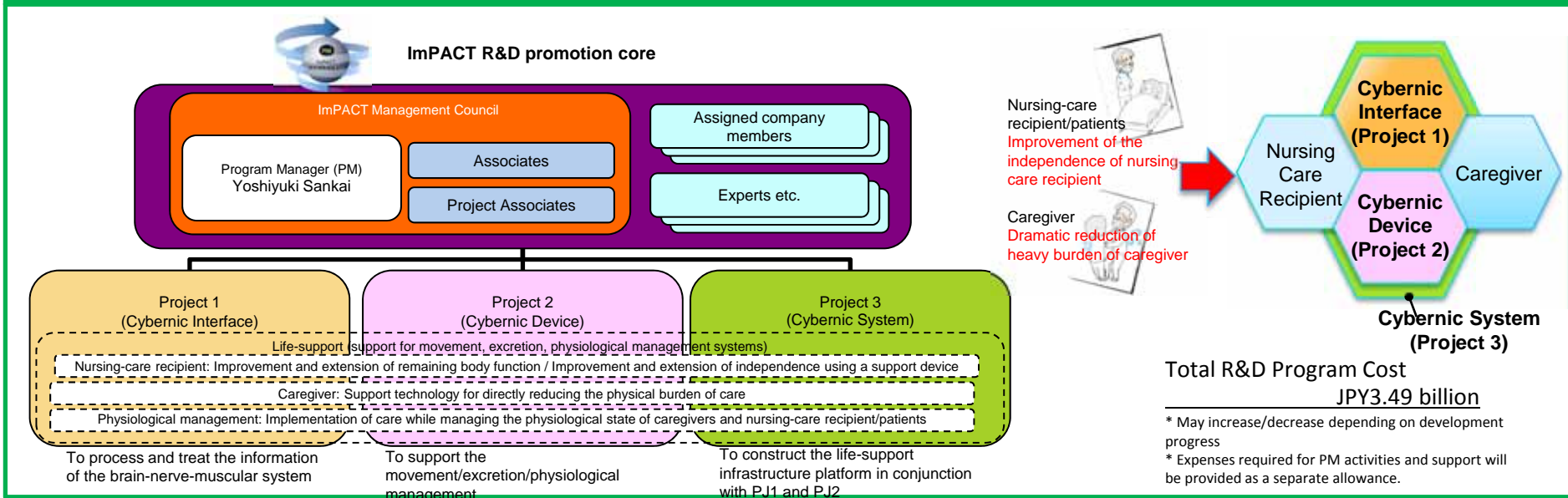
Flexible management through the establishment of the ImPACT R&D promotion core and the on-demand competition corresponding to the requirement of R&D elements through the feedback of the progress. Management constructing partner organizations for the creation of the new industry toward a social problem-solving economy, and industrial and social transformations

✓ Risks

- Dramatical reduction of intensive nursing-care in developed countries with longevity
- Social acceptance of transformation from conventional consumption economy to social problem-solving economy

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Overall R&D Program Structure Created by the PM



Implementation Structure as Assembled by the PM

✓ Keys of the Implementation Structure

The ImPACT R&D promotion core which consists of core members (PM, associates) and assigned company members, supports the PM's challenges and selects the R&D companies/organization corresponding to the requirement of R&D elements in order to realize the purpose of this program by the on-demand competition through the feedback of the progress. The PM with the ImPACT R&D promotion core manages the whole program and hedges the risks by assigning some companies concurrently to develop the specified R&D element.



✓ Approach to selection of institutions

The Univ. of Tsukuba (Center for Cybernics Research) is the only research center in the world that develops and leads a new research field, "Cybernics (Fusion of Human, Machine and Information Systems)" required for the fundamental research and development. In addition, it is the only essential institution to implement this program as well as to promote the collaboration with an industry-government-academia and the returning the profit to society.

The Assisted Living Robot Safety Test Center is an organization for testing safety, the only organization in the world with a safety standard compatibility evaluation method in this field. The National Institute of Advanced Industrial Science and Technology (AIST) is its parent organization.

CYBERDYNE is the only world-leading university venture and only one company having the exclusive license of patents attributable to University of Tsukuba in order to carry out this program. The business domain is the social problem-solving field in order to return the research achievements in Cybernics to the human and the society. In addition, this company is the only company in the world that got certificates of ISO13482/13485 as the world's first innovative robotic therapeutic device manufacturer and the world's first personal-care/life-support robot, and also is an ISO expert member of this field. It means that newly developed innovative devices through the ImPACT Program can be smoothly certified by certification authority because of its safety validation test experience and its performance. There is no other company in the world.