The Fourth International Forum on Paradigm Shift of Research and Development for Information Technology under Changing and Unpredictable Market — Concept-oriented Approach —

Forum Organization Committee Chair and
Steering Committee Chair, ISADS 2017
Kinji Mori
(Waseda University, Japan)

I. BACKGROUND

The Forum on "***Paradigm Shift of Research and Development for Information Technology under Changing and Unpredictable Market***" has been successfully held in conjunction with ISADS2011, in Kobe, Japan, ISADS2013, in Mexico City, Mexico, and ISADS2015, in Taichung, Taiwan. "***Concept-oriented Research and Development (R&D)***", "***Concept-oriented Technology and Application***", and "***Concept-oriented Transformation***" for future directions of information technology under rapidly "changing" and "unpredictable" society and economy environment have been discussed, respectively, in these three forums, by moderators and forum speakers with their own experiences.

II. OBJECTIVES

With the advancement of technology and the rapid progress of information society, it becomes more and more difficult to predict the changes, spreading speed and impacts of innovations. To achieve the sustainable development in society and economy from the viewpoint of information technology, ISADS 2017 Forum will continue with the themes of the previous Forums, but focusing on the topics of "***Concept-oriented Approach***" to push forward with the paradigm shift of research and development.

III. TOPICS

Globalization is the process of international integration arising from the interchange of technologies, products, services and other aspects of values. Advances in transportation, such as the high-speed train, jet engine, container ships, and in telecommunications infrastructure, including the rise of the telegraph, the Internet, and mobile phones, have been major factors in globalization, generating further interdependence of economic and social activities. Through the globalization, the approaches of innovation in developed countries can be applied in developing countries. Therefore, in this Forum, based on the analysis of past and current approaches in ***technology, business and life***,

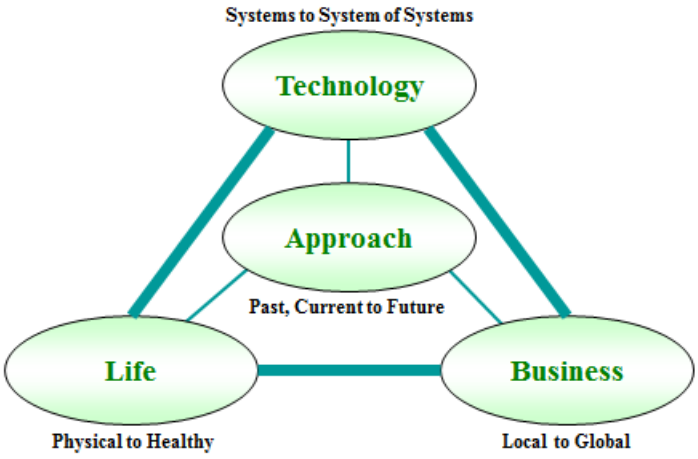
the future approaches for innovation will be discussed.

With the advancement of machine to machine communication and cloud computing, the conventional machine-based development has been changed to system-oriented approach. To produce their own advantages, the control instrument, communication and service providers have begun to develop their own integrated platforms that can maximize benefit of their strengths. Therefore, the approach of technology has changed from a single system to system of systems.

Nowadays, the connectivity of the world's innovations and economies grew very quickly. The business approach has also changed from localization to globalization. As a result, the management has changed from individual operation to alliance, the market has changed from closed to open environment, and the manufacture has changed from distributed to networked model.

When the society entered a mature period, according to the urbanization, the lifestyle has changed from physical requirement to healthy and happy living. To achieve the high quality of life in the aging society, the activity for nature has changed from reformation to protection, the function of city has changed from convenient to resilience, and the cyberspace has become an integral part of daily life.

The concept-oriented approach according to changing situations is very important to achieve sustainability in technology, business and life. In this Forum, based on the analysis of the past and current approaches, the future approaches in these three fields will be discussed.



Concept-oriented Approach

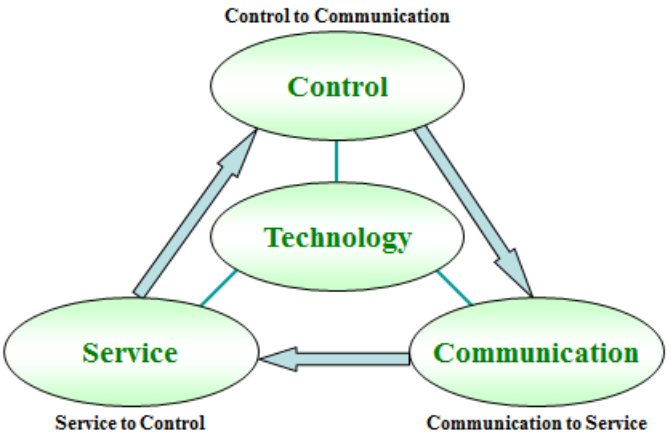
[1] Introduction

Kinji Mori (Waseda University, Japan)

[2] Sessions

[2-1] Session A-Technology

Moderator: TBD



Session A: Technology

The approach of ***Technology*** changes from system to system of systems. The traditional control instrument, communication and service providers have begun to develop their own integrated platform to enhance the advantage of their current systems. The new approaches for (1) ***Control***, (2) ***Communication*** (3) ***Service*** are discussed in this session.

(1) Control

Speaker: Farokh Bastani (University of Texas, Dallas, USA)

Topic: Control to Communication (IoT)

(2) Information

Speaker: Toshiyuki Kanoh (NEC, Japan)

Topic: Concept evolution and revolution in the telecommunication, what will come next?

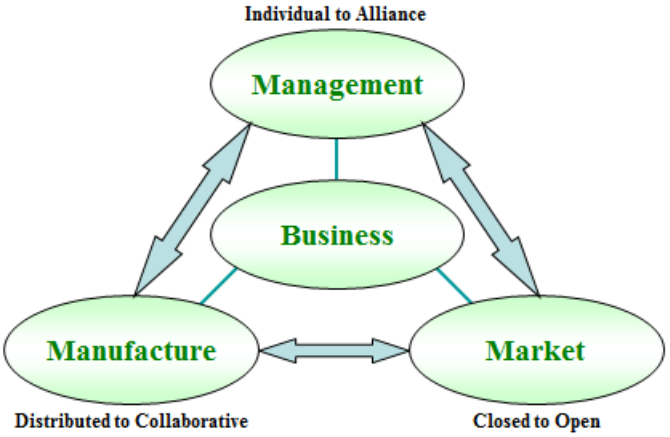
(3) Service

Speaker: Yinong Chen (Arizona State University, USA)

Topic: Robot as a Service and its Application Development in Visual Programming

[2-2] Session B-Business

Moderator: TBD



Session B: Business

The approach of ***Business*** changes from localization to globalization. It is difficult for conventional approaches to meet changing requirement. The new approaches in (1) ***Management***, (2) ***Market***, and (3) ***Development*** are discussed.

(1) Management

Speaker: Atsushi Yokoyama and Takeshi Nakagawa (East Japan Railway, Japan)

Topic: "Mobility Revolution" by IoT, BigData and AI

(2) Market

Speaker: TBD

Topic: Closed Market to Open Market (Industry 4.0)

(3) Development

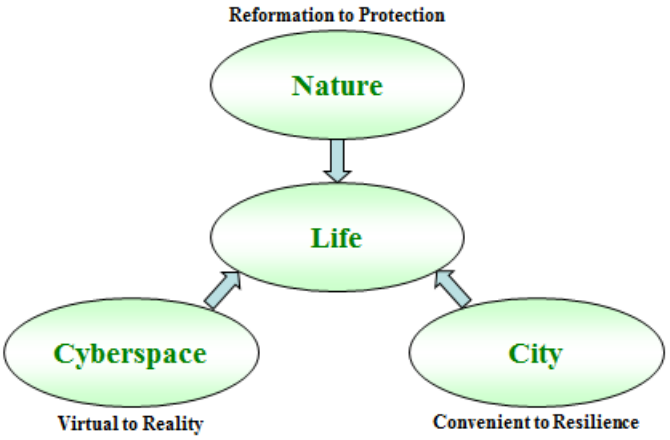
Speaker: Yutaka Saito (Hitachi Ltd., Japan)

Topic: Value Co-Creation in the Global Market

- Hitachi's Challenge to Social Innovation -

[2-3] Session C-Life

Moderator: TBD



Session C: Life

The approach of life changes from physical requirement to healthy and happy living. To achieve the high quality of life, in this session, the new approaches in: (1) ***Nature***; (2) ***City***; (3) ***Cyberspace*** are discussed.

(1) Nature

Speaker: Radu Popescu-Zeletin (ICAM GmbH, Germany)

Topic: Remarks on the Cyber Physical Systems: Challenges and R&D issues

(2) City

Speaker: Colin Harrison (IBM, USA)

Topic: Global Systems

(3) Cyberspace

Speaker: Doug McDavid (ISSIP, USA)

Topic: The Role of Blockchain in Autonomous Distributed Business Services