



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

Forum Preliminary Program

Forum Organization Committee Chair and
Steering Committee Chair, ISADS 2015
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(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 and ISADS2013, in Mexico City, Mexico. “*Concept-oriented Research and Development (R&D)*” and “*Concept-oriented Technology and Application*” for future directions of information technology under rapidly “changing” and “unpredictable” society and economy environment have been discussed, respectively, in these two forums, by moderators and forum speakers with their own experiences.

II. OBJECTIVES

To achieve the sustainable evolution in society, technology and economy through concept-oriented research and development approaches, ISADS 2015 Forum will continue with the themes of the previous Forums, but focusing on the topics on “*Concept-oriented Transformation*” to push forward with the paradigm shift of research and development.

III. TOPICS

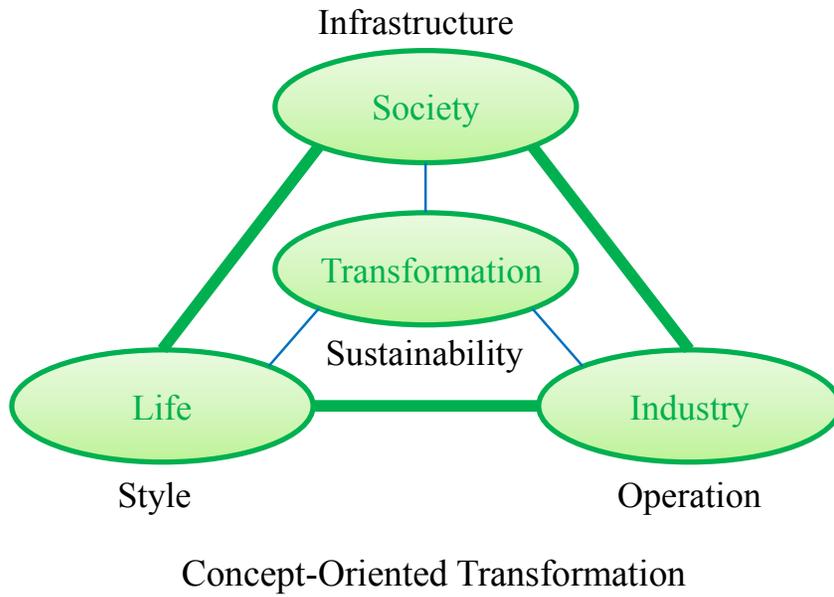
With the advancement of science and technology, the trend of social and economic evolution transforms from the high-speed growth with the competitive relationship to the sustainable development under the global cooperation. Moreover, with the rapid progress in the construction of the information society, it becomes more and more difficult to predict the changes required, spreading speed and impacts of innovations. Therefore, it is a necessity that *society, industry and life* can appropriately transform themselves from an old stage to a new one in their life cycle.

With the development of society entered a mature period, the problem of the declining birth rate, the increasing aging population and the urbanization should be faced by not only the developed countries but also the developing countries. The cost of pension, medical services and elderly care services will become the main part for sustainable development of society. Therefore, for continuously and rapidly changing situations, the *society* transforms to the flexible structure in coop with the situations, and the infrastructure in society is of ultimate importance.

With the transformation of social structure, the *industry* structure transforms from the high-volume manufacturing to ecosystem, long-term service provision and continuous operation. According to the changing industry structure, the capability of an industry to catch a change in real time under big data environment for transforming its operations is necessary.

The development of society and economy reduces the material living gap among countries. As a result, the individual *life* style transforms from the uniform substantial individual to the diversified individual lives. In the future, the multiple individual styles will coexist in the same region. The community will transcend time and space to connect the persons with the same individual life style in different regions.

The rapid transformation according to changing situations is very important to achieve sustainability in society, industry and life. In this Forum, the transformation in these three fields will be discussed: Society, Industry and Life.



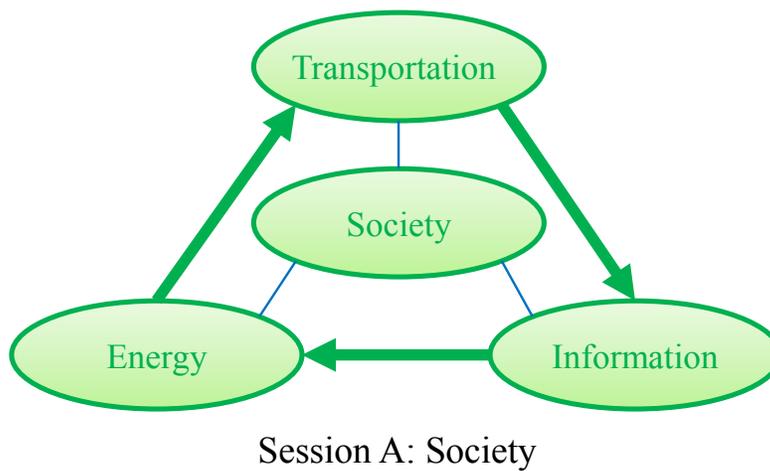
[1] Introduction

Kinji Mori (Waseda University, Japan)

[2] Sessions

[2-1] Session A-Society

Moderator: Yinong Chen (Arizona State University, USA)



The infrastructure of **Society** transforms from providing necessities of Individual to improving the quality of Individual. The new concepts for (1) **Transportation**, (2) **Information** (3) **Energy** are discussed in this session.

(1) Transportation

Gaku Suzuki (Hitachi Ltd., Japan)

Topic: Operator-Oriented Manufacturing: Railway Transportation Transformation toward Social Innovation Business

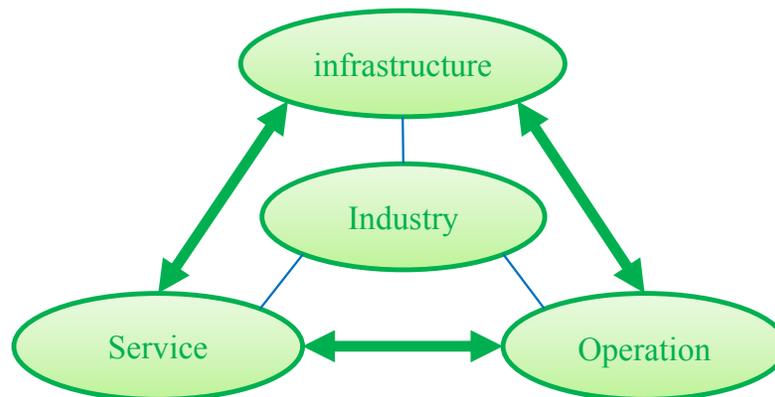
(2) Information

Jeff Tsai (Asia University, Taiwan)

Topic: An integrated systems biology approach for biological systems

[2-2] Session B-Industry

Moderator: Khalid Mahmood, (Oakland University, USA)



Session B: Industry

The function of **Industry** transforms from a single function to multiple functions. In this session, the new models and cooperation in (1) **Infrastructure**, (2) **Operation**, and (3) **Service** are discussed.

(1) Infrastructure + Operation

Farokh Bastani (University of Texas, Dallas, USA)

Topic: Emerging Technologies for Disaster Management and Prevention

(2) Infrastructure + Service

Jie Xu (Leeds University, UK)

Topic: Computing at Scale: Challenges in commercial applications with hundreds of thousands of distributed servers

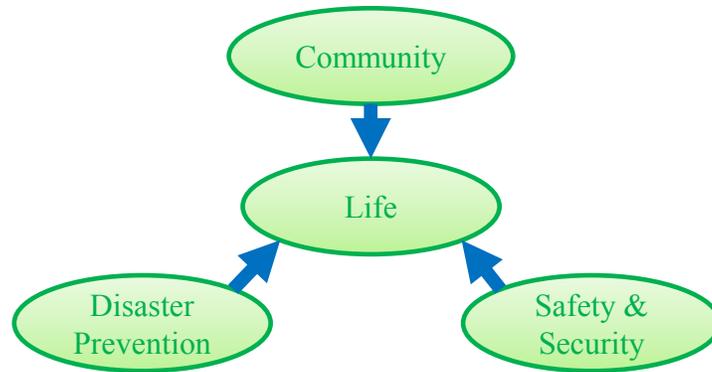
(3) Infrastructure + Operation + Service

Masaki Ogata (East Japan Railway, Japan)

Topic: Innovation of Management and Technology in railway industry as social infrastructure can make higher Quality of Life

[2-3] Session C-Life

Moderator: Carlos Perez Leguizamo (Mexico Bank, Mexico)



Session C: Life

The style of individual **Life** transforms from cooperation among living people to natural disaster prevention. The sustainable development of mature society requires following three factors: (1) **Community**; (2) **Safety & Security**; (3) **Disaster Prevention**.

(1) Community

W. T. Tsai (Arizona State University, USA)

Topic: ADS Technologies in modern computing infrastructure

(2) Safety & Security

Radu Popescu Zeletin (Technical University of Berlin, Germany)

Topic: Internet of Things for Smart Cities

(3) Natural Disaster Resilience

Colin Harrison (IBM, USA)

Topic: Natural Disaster Resilience