ISADS – Forum – Workshops – Student Session

Final Program
**Program at a Glance**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td><strong>3/24/2015</strong></td>
<td></td>
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</tr>
<tr>
<td>18:00 - 20:00</td>
<td>Pre-Registration</td>
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<thead>
<tr>
<th><strong>3/25/2015</strong></th>
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<tbody>
<tr>
<td>7:30 - 9:00</td>
<td>Registration</td>
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<tr>
<td>Splendor Room II</td>
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<tr>
<td>9:00 - 9:20</td>
<td>Opening Remarks: General Chair</td>
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</table>
| 9:20 - 10:00  | **Keynote:** Yu-Chee Tseng  
Dean, College of Computer Science, National Chiao-Tung University  
IOT and Situated Computing |
| 10:00 - 10:20 | Coffee Break with Cookies (20 minutes) |
| 10:20 - 11:00 | Forum Introduction, Kinji Mori, Waseda University, Japan |
| 11:00 - 11:20 | Forum A - Society: Introduction, Yinong Chen, Arizona State University, USA |
| 11:20 - 12:00 | Forum A - Society: Transportation, Gaku Suzuki (Hitachi Ltd., Japan)  
Operator-Oriented Manufacturing: Railway Transportation Transformation toward Social Innovation Business |
| 12:00 - 12:40 | Forum A - Society: Information, Jeff Tsai (Asia University, Taiwan)  
Big Data, IOT, Systems Biology for Personalized Medicine |
| 12:40 - 14:00 | Lunch |
| Splendor Room II |                |
| Fong Lo Room II |                |
| 14:00 - 15:40 | ISADS Session 1 (four papers) |
| 15:40 - 16:00 | Coffee Break with Cookies (20 minutes) |
| 16:00 - 17:40 | ISADS Session 3 (four papers)  
ISADS Session 4 (four papers) |
| 18:00 - 20:30 | Reception |

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<thead>
<tr>
<th><strong>3/26/2015</strong></th>
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<tbody>
<tr>
<td>8:00 - 8:30</td>
<td>Registration</td>
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</tr>
<tr>
<td>Splendor Room II</td>
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| 08:30 - 9:15  | **Keynote:** Lionel M. Ni (University of Macau, China)  
What Is the Big Idea behind Big Data? |
| 9:15 - 9:45   | Forum B Industry: Introduction, Khalid Mahmood, Oakland University, USA |
| 9:45 - 10:30  | Forum B Industry: Infrastructure + Operation, Farokh Bastani (University of Texas, Dallas, USA)  
Emerging Technologies for Disaster Management and Prevention |
<p>| 10:30 - 10:50 | Coffee Break with Cookies |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>10:50 - 11:35</td>
<td>Forum B Industry: Infrastructure + Operation + Service, Masaki Ogata (East Japan Railway, Japan) Innovation of Management and Technology in Railway Industry as Social Infrastructure Can Make Higher Quality of Life</td>
</tr>
<tr>
<td>11:35 - 12:00</td>
<td>Forum C Life: Introduction, Carlos Perez Leguizamo, Bank of Mexico, Mexico</td>
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<tr>
<td>12:00 - 13:00</td>
<td>Lunch</td>
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<tr>
<td>14:00 - 14:45</td>
<td>Forum C Life: Community, W. T. Tsai (Arizona State Univ., USA) ADS Technologies in Modern Computing Infrastructure</td>
</tr>
<tr>
<td>14:45 - 15:30</td>
<td>Forum C Life: Safety &amp; Security, Radu Popescu Zeletin (Technical University of Berlin, Germany) Internet of Things for Smart Cities</td>
</tr>
<tr>
<td>15:10 - 15:50</td>
<td>Coffee Break with Cookies</td>
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<tr>
<td>15:30 - 15:50</td>
<td>Forum C Life: Colin Harrison (IBM, USA) Natural Disaster Resilience</td>
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<tr>
<td>16:40 - 18:00</td>
<td>Splendor Room II: SADEI (5 papers) ADROIT Systems (3 papers) SASWIM (2 papers)</td>
</tr>
<tr>
<td>18:30 - 20:40</td>
<td>Banquet and ADS and TEA Cultural Exchange</td>
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<tr>
<td>3/27/2015</td>
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<tr>
<td>8:00 - 8:30</td>
<td>Registration</td>
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<tr>
<td>8:30 - 10:00</td>
<td>Splendor Room II: SmartGridComNet (6 papers) Saswim (6 papers)</td>
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<tr>
<td>10:00 - 10:20</td>
<td>Coffee Break with Cookies</td>
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<tr>
<td>10:20 - 11:05</td>
<td>SmartGridComNet (3 papers) Student Papers (5 papers)</td>
</tr>
<tr>
<td>11:05 - 12:30</td>
<td>ISADS Committee Meeting: Open to all participants and Discussion</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch</td>
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<tr>
<td>14:00 - 16:30</td>
<td>Cultural Exchange “ADS and TEA”, $20 per person</td>
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<tr>
<td>3/30/2015</td>
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<tr>
<td>09:00 - 14:30</td>
<td>Factory Tour / Sightseeing: $30 per person, including:</td>
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<tr>
<td>9:00 - 12:00</td>
<td>Plant Tour: AU Optronics Corp</td>
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<tr>
<td>12: - 13:30</td>
<td>Lunch</td>
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The Third International Forum on
Paradigm Shift of Research and Development for Information Technology under Changing and Unpredictable Market
— Concept-oriented Transformation —

Forum Final Program

Forum Organization Committee Chair and
Steering Committee Chair, ISADS 2015
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 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)

Session A: Society

The infrastructure of Society transforms from providing necessaries 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: Big Data, Iot, Systems Biology for Personalized Medicine
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 + 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
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

ISADS 2015:
International Symposium on Autonomous Decentralized Systems

Section 1: Web and Cloud-Based Systems

Session Chair: Wen-Thong Chang, Asia Univ., Taiwan

VOBC Data Storage and Online Diagnosing System Based on Data Cloud
Youqi Gu, Xiaoqing Zeng, Tuo Shen, and Weiyang Wang
Section 2: Dependability and Performance

Session Chair: Yingxu Lai, Beijing University of Technology

Enhancing the Performance of Tree Algorithm Using Re-split Mechanism
Warakorn Srichavengsup

Autonomous Decentralized Combinatorial Testing
Wei-Tek Tsai, Guanqiu Qi, and Kai Hu

Web-Based Performance Monitor for Distributed Computing
Kai Hua, Kai Wu, Yi Ding, and Wei-Tek Tsai

High Reliability Cloning Technology for Autonomous Descentralized Service-Oriented Architecture
Raymundo García-Gómez, Juan Sebastián Guadalupe Godínez-Borja, Pedro Josué Hernández-Torres, and Carlos Pérez-Leguízamo

Section 3: Distributed and Network Systems

Session Chair: Hidenori Nakazato, Waseda Univ., Japan

Physiological-Signal-Based Key Negotiation Protocols for Body Sensor Networks: A Survey
Huawei Zhao, Ruzhi Xu, Minglei Shu, and Jiankun Hu

Trust-Based Task Assignment in Autonomous Service-Oriented Ad Hoc Networks
Yating Wang, Ing-Ray Chen, and Jin-Hee Cho

Flexible Manufacturing System with CC-Link Network Descentralized
Gabriel Hernández López and Alejandro García Ravizé Guizar

Bayesian Method of Slotted Aloha Based Anti-Collision Protocol for RFID Systems
Robithoh Annur, Warakorn Srichavengsup, Suvit Nakpeerayuth, and Lunchakorn Wuttitsittikulkij

Section 4: Industry Applications

Session Chair: I-Ling Yen, Univ. of Texas-Dallas, USA

Autonomous Push-Pull Coordination Technology to Achieve Reconciling Resource Utilization in Heterogeneous Communities Environment
Titichaya Thanamitsomboon, Xiaodong Lu, and Kinji Mori

Implementation of an Agent-Based Manufacturing Grid
Leo van Moergestel, Erik Puik, Daniël Telgen, and John-Jules Meyer

Autonomous Community Architecture and Construction Technology for City Petrol Supply Management System
Fan Wei, Liumei Zhang, Tianshi Liu, Xiaodong Lu, and Kinji Mori
ADROIT Systems 2015:  
Workshop on Agile Decentralized Resilient Operation of Internet of Things Systems  
Session Chair: Farokh Bastani, Univ. of Texas-Dallas, USA

Tourism Service Composition Based on Multi-objective Optimization  
Xuwei Zheng, Ruzhi Xu, Yun Peng, and Shuaiqiang Wang

Analysis of Industrial Control Systems Traffic Based on Time Series  
Lai Yingxu, Jiao Jiao, and Liu Jing

A Decentralized Negotiation Method for Stable Resource Allocation Based on Symbiotic-Autonomous Decentralized System Concept  
Koichiro Iijima, Yu Ikemoto, and Takashi Fukumoto

SADEI 2015:  
International Workshop on Systems and Algorithms for Distributed Embedded Intelligence  
Session Chair: Qingguo Zhou, Lanzhou Univ., China

The Design and Implementation of an Automatic Burdening System Based on Proview  
Fenglong Yan, Chunlin Chen, Xuhui Yang, Qingguo Zhou, Changyan Di, Binling Jin, and Rui Zhou

A Foot-Mounted Sensor Based 3D Indoor Positioning Approach  
Lingxiang Zheng, Wencheng Zhou, Weiwei Tang, Xianchao Zheng, Hui Yang, Shuxiang Pu, Chenxiang Li, Biyu Tang, and Yinong Chen

A Hybrid Feature Based Mobile Forensics System  
Zhihua Wei and Rui Zhao

Robot as a Service in Computing Curriculum  
Yinong Chen and Zhizheng Zhou

Rehabilitation Training System for the Motor Deficit of Upper Extremity  
Deqiang Han, Zongxia Wang, Weicheng Xu, and Nian Wang

SASWIM 2015:  
The First International Workshop on Service Assurance in System Wide Information Management

Welcome Address  
General Chair: Tadashi Koga

Session 1: Architecture  
Session Chair: Tadashi Koga, ENRI, Japan

The Research Synopsis about SWIM in China
Milong Zhao, Xiling Luo, Ming Qi, and Feng Zeng
Real-Time Oriented System Wide Information Management for Service Assurance
Xiaodong Lu and Tadashi Koga

QoS Implementation in System Wide Information Management (SWIM) Network Model
Kiratipong Ongkasae, Hideori Nakazato, Tadashi Koga, and Xiaodong Lu

**Session 2: Communication**
Session Chair: Atsushi Kanai, Hosei University, Japan

The Sender Controlled Security Model for Message Service
Lu Songtao and Qi Ming

SARPs Validation Using Aero MACS Prototype—Example of Future Aeronautical Mobile Airport Communication System for SWIM
Yasuto Sumiya, Kazuyuki Morioka, Naoki Kanada, Naruto Yonemoto, Shunichi Futatsumori, and Akiko Kohmura

Discretization of Simulated Flight Parameters for Estimation of Situational Awareness Using Dynamic Bayesian Networks
Carlos Morales and Serafin Moral

**Session 3: SOA Technologies**
Session Chair: Xiaodong Lu, ENRI, Japan

An Approach to Selecting Cloud Services for Data Storage in Heterogeneous-Multicloud Environment with High Availability and Confidentiality
Yuuki Kajiura, Shohei Ueno, Atsushi Kanai, Shigeaki Tanimoto, and Hiroyuki Sato

Autonomous Decentralized Tenant Access Control Model for Sub-tenancy Architecture in Software-as-a-Service (SaaS)
Qiong Zuo, Meiyi Xie, and Wei-Tek Tsai

A Semantic Approach for Traceability Link Recovery in Aerospace Requirements Management System
Khalid Mahmood, Hironao Takahashi, and Mazen Alobaidi

**SmartGridComNet 2015:**
**International Workshop on Smart Grid Communications and Networking**
Workshop Chair: Zhenyu Zhou, North China Electric Power University

A Study of Emulator with Trema for Ad-hoc Networks
Osamu Akizuki and Takurou Fujikawa

Signal Path Loss Simulation of Human Arm for Galvanic Coupling Intra-Body Communication Using Circuit and Finite Element Method Models
Kenichi Ito and Yu Hotta

Preventing Attacks in Real-Time through the Use of a Dummy Server
Ahmad Bazzi and Yoshikuni Onozato

Theoretical Analysis of Pure Waiting Time for Battery Charging While Doing Something
Kazuyuki Miyakita, Keisuke Nakano, and Hiroshi Tamura
A Stackelberg Game Approach for Energy Management in Smart Distribution Systems with Multiple Microgrids
Zhenyu Zhou, Jinfang Bai, and Sheng Zho

Cell Search Time Performance Using Same Frequency Spectrum for Heterogeneous Networks Including Indoor Small Cells
Naoki Noguchi, Mamoru Sawahashi, and Satoshi Nagata

A Security Mechanism for Demand Response Using RBAC and Pub/sub
Longhua Guo, Jianhua Li, Jun Wu, Zhengmin Xia, and Shengjun Zheng

Energy Efficiency Scheme with Cellular Partition Zooming for Massive MIMO Systems
Di Zhang, Keping Yu, Zhenyu Zhou, and Takuro Sato

An Optimal Information Centric Networking Model for the Future Green Network
Quang N. Nguyen, M. Arifuzzaman, T. Miyamoto, and Sato Takuro

**ISADS Student Session**

**Session Chair: Roberto González Ojeda, Panamerican University, Mexico**

Study on Authentication Protocol of SDN Trusted Domain
Ruikang Zhou, Yingxu Lai, Zenghui Liu, and Jing Liu

Lane Detection Method Based on Improved RANSAC Algorithm
Jie Guo, Zhihua Wei, and Duoqian Miao

Affinity and Conflict-Aware Placement of Virtual Machines in Heterogeneous Data Centers
Kui Su, Lei Xu, Cong Chen, Wenzhi Chen, and Zonghui Wang

Novel Social Innovation Concept Based on the Viewpoint of the Infrastructure User
Masato Adachi, Gonzalo Aguirre Dominguez, Taka fumi Sasaki, Ryosuke Tsumura, Tomoya Koshi, and Kinji Mori

A Full Symbolic Reachability Analysis Algorithm of Timed Automata Based on BDD
Huiping Zhang, Junwei Du, Ling Cao, and Guixin Zhu

**ISADS 2015**

**Social event: Cultural Exchange**

– ADS and TEA –

March 26 & 27, 2015
Yuri Kawakami and Kinji Mori, Waseda University
Objectives:

New technologies have been motivated from the conventional technology, science, and business and the users' requirement. Some of them are contributing to the real world and, the others are unfortunately not to be utilized. Even if the technologies are applicable in the society, some of them have shortly faded away. The innovation of the technology and business are required to be sustainably contributing to the human life under the changing society, economy and life style.

ADS was proposed 38 years ago, and its research and development have been continuously pursued in the world and the ADS technologies have been well applied and utilized in the real world. That is, ADS is the innovation for the society and human life.

There are many cultures in the world, which has succeeded for hundreds and thousands years. The culture has its original concept and it is recognized and evaluated as the value of the society.

The social event, “ADS and TEA” is arranged to clarify the ADS concept with the analogy of the tea cultural concept, where we drink, enjoy and feel happiness through its aroma, taste and atmosphere. In this event, we can really enjoy not only the cultural exchange of ADS and Tea but also to be experienced the tea of Japan, UK and Taiwan.

Both of the cultural exchange and the tea party can be experienced in the social event. The basic cultural features among the different cultures in the tea world is shown in the attached materials. Please enjoy this social event.
## Comparisons

<table>
<thead>
<tr>
<th>Concept</th>
<th>Japan</th>
<th>UK</th>
<th>Taiwan</th>
<th>ADS</th>
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</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>Conduct</td>
<td>Conduct</td>
<td>Autonomy</td>
<td></td>
</tr>
<tr>
<td>Propositi</td>
<td>n</td>
<td>Incomplete</td>
<td>Complete</td>
<td>Complete</td>
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<tr>
<td>Situation</td>
<td>Abnormal</td>
<td>Normal</td>
<td>Normal</td>
<td>Abnormal</td>
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<tr>
<td>Value</td>
<td>Resilient</td>
<td>Optimal</td>
<td>Resilient</td>
<td>Resilient</td>
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<tr>
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<th>Japanese Tea Ceremony</th>
<th>English Tea Party</th>
<th>Taiwanese Tea Performance</th>
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### Concept

- **autonomy**
  - Japan
  - UK
  - Taiwan

- **conduct**
  - Japan
  - UK
  - Taiwan

### Proposition

- **incomplete**
  - Japan

- **complete**
  - UK
  - Taiwan
Situation & Value

<table>
<thead>
<tr>
<th>abnormal &amp; resilient</th>
<th>normal &amp; optimal</th>
<th>normal &amp; resilient</th>
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<tbody>
<tr>
<td>Japan</td>
<td>UK</td>
<td>Taiwan</td>
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