

# ICServ2016

The 4<sup>th</sup> International  
Conference on Serviceology  
September 6–8, 2016

Shibaura Institute of Technology,  
Tokyo, Japan

Service innovation  
Service design  
Service marketing  
Service management and operations  
Theoretical perspectives on Service  
Value co-creation and context  
Service eco-system  
Human-centered service system  
Service engineering and technologies  
Servitization and productization  
Service economics and policy  
Service practices

Program

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Shibaura Institute of Technology  
Toyosu Campus

## About the Society for Serviceology

Service is the key activity with the globalization of economy and also underlie quality of life of local people. Through the perspective of market globalization, it is important to improve economical values of service. Whereas improvement of individual value in use is more important for the perspective of personalization. Moreover, ecosystem design is essential to promote consensus among stakeholders related to the service, especially for global environmental issues.

Service researches have been investigated in each research discipline, such as business administration, marketing, information science, design engineering and so on. To establish novel smart service in the society, research collaboration in social science, human science and engineering is indispensable. Furthermore, academic researchers should cooperate with industrial partners. As the academic contribution, it is required to establish holistic understanding for not only traditional services related to society and economy, but also servitization in manufacturing industries. Consequently, service researches should lead systematic theories to enhance customer satisfaction through co-creation.

The Society for Serviceology was established in 2012 to explore scientific systematization of service and to promotes technological developments for solutions of industrial issues. It also aims at providing collaborative opportunity among the experts in business and in various research fields on service. The society was born in Japan, while the society aims at global activities. We understand that service activities expand to a global scale under the effect of local culture and social background. Therefore, the society aims at the worldwide communication with a respect for local and regional culture.

The Society for Serviceology publishes an academic journal entitled "Journal of Serviceology." We welcome articles on service researches to the journal. Especially, novel researches based on collaboration with social science and engineering to challenge emergent issues in services are expected to be submitted to the journal. The society also holds a international conference entitled "ICServ, International Conference on Serviceology." The first conference was held in Tokyo in 2013, the second one was held in Yokohama in 2014. We held the third conference in San Jose, CA in 2015. In 2016, we hold ICServ2016 in Tokyo again.

When you are interested in activities of The Society for Serviceology, please join the international conference, ICServ and submit an article to the journal, Journal of Serviceology.



Society for  
*Serviceology*

## Welcome Message from General Chair

Welcome to Tokyo and ICServ2016. ICServ started in 2013 as an international conference of Society for Serviceology. It was held at Keio Univ. in 2014, and at San Jose in 2015, and comes back to Tokyo again. The venue, Shibaura Institute of Technology is located at Toyosu in the bay area of Tokyo. The area was originally a shipyard and turns now high story buildings of offices and residences.

ICServ2016 has several attractive sessions; 69 oral presentations run in parallel, and 3 keynote speeches and 2 special sessions are held in plenary. Poster session is organized on Wednesday to introduce 3 activities: Nihon Service Award, an educational development program by METI, a research program by JST called S3FIRE. You can grasp the trends of service research in Japan.

Japanese government intends to increase the productivity of service sectors. Operation Research and other methodology in manufacturing can be effective at certain level, but above the level service providers need to understand the true nature of service interaction and promote value co-creation with service receivers. The conference provides various viewpoints for these topics.

We would like you to enjoy ICServ2016 and the life in Tokyo.

### Tamio Arai

*General Chair*

*Professor, Shibaura Institute of Technology*



Tamio Arai

## Welcome Message from the Program Committee Chair

It is our great pleasure to welcome you to the 4th International Conference on Serviceology (ICServ2016). In the matured service economy, Serviceology is gaining popularity and importance as an interdisciplinary research domain. It will contribute to the improvement of the productivity of service businesses along with exploring new values seen inside manufacturing businesses. It will also inspire new directions into such fields as the sharing economy, service eco-system, and human IT coordination.

The conference program of ICServ2016 consists of 20 paper sessions for a total of 69 refereed papers and a group of poster presentations. In addition, we have 5 excellent keynote addresses for the most up-to-date issues related to Serviceology. The research topics include the theoretical aspects of services, as well as the service practical aspects of the vertical domains.

The paper sessions have attracted submissions from many various countries. All of the submissions were carefully and strictly reviewed, with each paper receiving at least three reviews. So, putting together the program was a team effort, and we want to thank all of the individual PC members and reviewers. The conference would not be possible without their efforts. With that said, we will be proud to introduce you to this conference, and hope that you will have a wonderful time here.

Sincerely,

### Yoshinori Hara

*Chief Program Chair*

*Professor, Kyoto University*



Yoshinori Hara

## Organizing Committee

General Chair	: Tamio Arai (Shibaura Institute of Technology)
General Co-chair	: Dimitris Karagiannis (University of Vienna), Hajime Asama (The University of Tokyo)
General Vice-chair	: Jun Ota (The University of Tokyo)
Secretary	: Kentaro Watanabe (AIST)
Advisor	: Kanji Ueda (The University of Tokyo), Takashi Maeno (Keio University), Jim Spohrer (IBM)
Society Office	: Shihoko Murakami (Society for Serviceology)
Secretary of General Chair	: Junko Kozakai (Shibaura Institute of Technology)
SfS General Affair	: Tatsunori Hara (The University of Tokyo)
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Program Co-chair (EU)	: Tim McAloon (Technical University of Denmark)
Program Co-chair (US)	: Yassi Moghaddam (ISSIP)
Award Chair	: Yuriko Sawatani (Tokyo University of Technology)
Publication Co-chair	: Takeshi Takenaka (AIST), Koji Kimita (Tokyo Metropolitan University), Natsuki Miyata (AIST)
Local Arrangement Chair	: Nobuto Matsuhira (Shibaura Institute of Technology)
Local Arrangement Co-chair	: Shigeru Furuya (Shibaura Institute of Technology)
Financial Chair	: Ken Fukuda (AIST)
Media (Homepage) Chair	: Wen Wen (The University of Tokyo)
Keynote Chair	: Yutaka Yamauchi (Kyoto University)
Keynote Committee	: Masaaki Mochimaru (AIST), Yoshiki Shimomura (Tokyo Metropolitan University), Takamichi Inoue (Meiji University)
Special Session Chair	: Masaaki Mochimaru (AIST)
Special Session Committee	: Yoshiki Shimomura (Tokyo Metropolitan University)
S3FIRE Project	: Tamio Arai (Shibaura Institute of Technology), Satoko Tsuru (The University of Tokyo)

## PC Committee Members

### Europe

- Clara Bassano (Parthenope University of Naples, Italy)
- Wojciech Cellary (Uniwersytet Ekonomiczny w Poznaniu, Poland)
- Klaus-Peter Fähnrich (University Leipzig, Germany)
- Walter Ganz (Fraunhofer IAO, Germany)
- Dimitris Karagiannis (University of Vienna, Austria)
- Jos Lemmink (Maastricht University, The Netherlands)
- Mattias Lindahl (Linköping University, Sweden)
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- Kyrill Meyer (Institute for Applied Informatics, Germany)
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- Kathrin Möslin (University Erlangen-Nurnberg, Germany)
- Andy Neely (Cambridge, UK)
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- Martin Petry (Hilti, Liechtenstein)
- Rudi Studer (Karlsruhe Institute of Technology, Germany)
- Marja Toivonen (VTT, Finland)
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- Edward Crowley (Photizo Group, USA)
- Louis Freund (San Jose State University, USA)
- Stephen Kwan (San Jose State University, USA)
- Paul Maglio (UCMERCED, University of California, USA)
- Jim C Spohrer (IBM Almaden, USA)

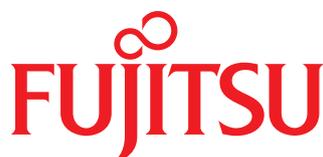
### Asia

- Houn-Gee Chen (National Taiwan University, Taiwan)
- Jashen Chen (Yuan Ze University, Taiwan)
- Xiucheng Fan (Fudan University, China)
- Aditya Ghose (University of Wollongong, Australia)
- San-Yih Huang (Nation Sun Yat-sen University, Taiwan)
- Moon Kun Lee (Chonbuk National University, Korea)

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- Tamio Arai (Shibaura Institute of Technology, Japan)
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- Michitaka Kosaka (AIST, Japan)
- Hiroshi Maruyama (ISM, Japan)
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- Tatsuhiko Shibasaki (Fujitsu Limited, Japan)
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- Yoshiki Shimomura (Tokyo Metropolitan University, Japan)
- Satoko Suzuki (Kyoto University, Japan)
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- Takashi Tanizaki (Kindai University, Japan)
- Keiko Toya (Meiji University, Japan)
- Kentaro Watanabe (AIST, Japan)
- Yutaka Yamauchi (Kyoto University, Japan)

## Sponsors



## ICServ2016 Supporting Committee

### Supporting Members of Society for Serviceology:

- Akira Yushima (Design Center, Toshiba Corporation)
- Hayato Takahashi (GENEX Solutions, Inc.)

- Hideo Hashimoto (Happy Co., Ltd.)
- Yuji Ichimura (Konica Minolta, Inc.)

### Members of Society for Serviceology:

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- Arima Masahito (Daiwa Can Company)
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- Hiroo Chikaraishi (Thomas and Chikaraishi, Inc.)

- Katsuharu Suzuki (Google Japan Inc.)
- Kouichi Murakami (IHI Corporation)
- Masanobu Eto (Lightworks Corporation)
- Masaru Yajima (Eaglebus Co., Ltd)
- Shigeru Hosono (NEC Corporation)
- Tadamitsu Matsui (Matsui Office Corporation)
- Takashi Tsutsumi (Globis University)

# Venue

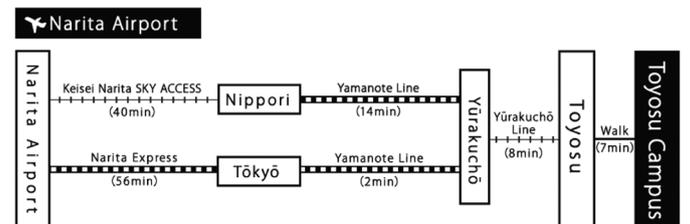
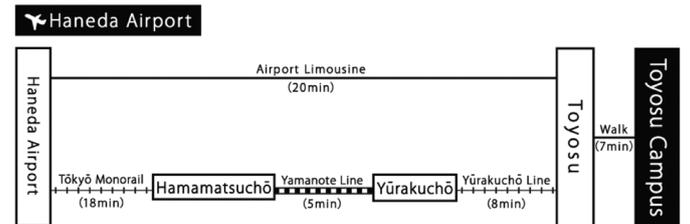
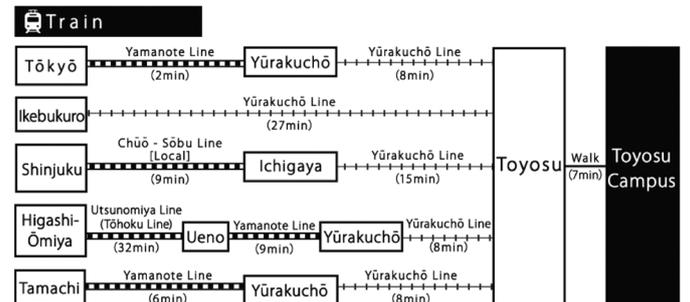
Shibaura Institute of Technology,  
3-7-5 Toyosu, Koto-ku, Tokyo 135-8548, Japan



## Shibaura Institute of Technology Toyosu Campus

### Access:

- 7-minute walk from Exit 1C or 3 (=15-minute walk from platform via Exit 1C or 3) of Toyosu Station, Tokyo Metro Yurakucho Line
- 15-minute walk from Exit 2 of Etchujima Station, JR Keiyo Line
- 9-minute walk from Toyosu Station, Yurikamome Line



\* ( ) ...estimated travel time    - - - - - JR Lines    + + + + + other trains



### Entrance

Reception: 6th Floor (Tuesday), 4th Floor (Wednesday, Thursday)

### Conference Venue

Kouryu-Tou (交流棟)

# Map of Banquet

Ganko Ginza 1-chome,  
Ginza Fuji Bldg B1F, Ginza 1-7-10, Chuo-ku, Tokyo

7



## Ganko Ginza 1-chome

Ginza Fuji Bldg B1F, Ginza 1-7-10, Chuo-ku, Tokyo  
Phone: 03-3567-6789

### Access :

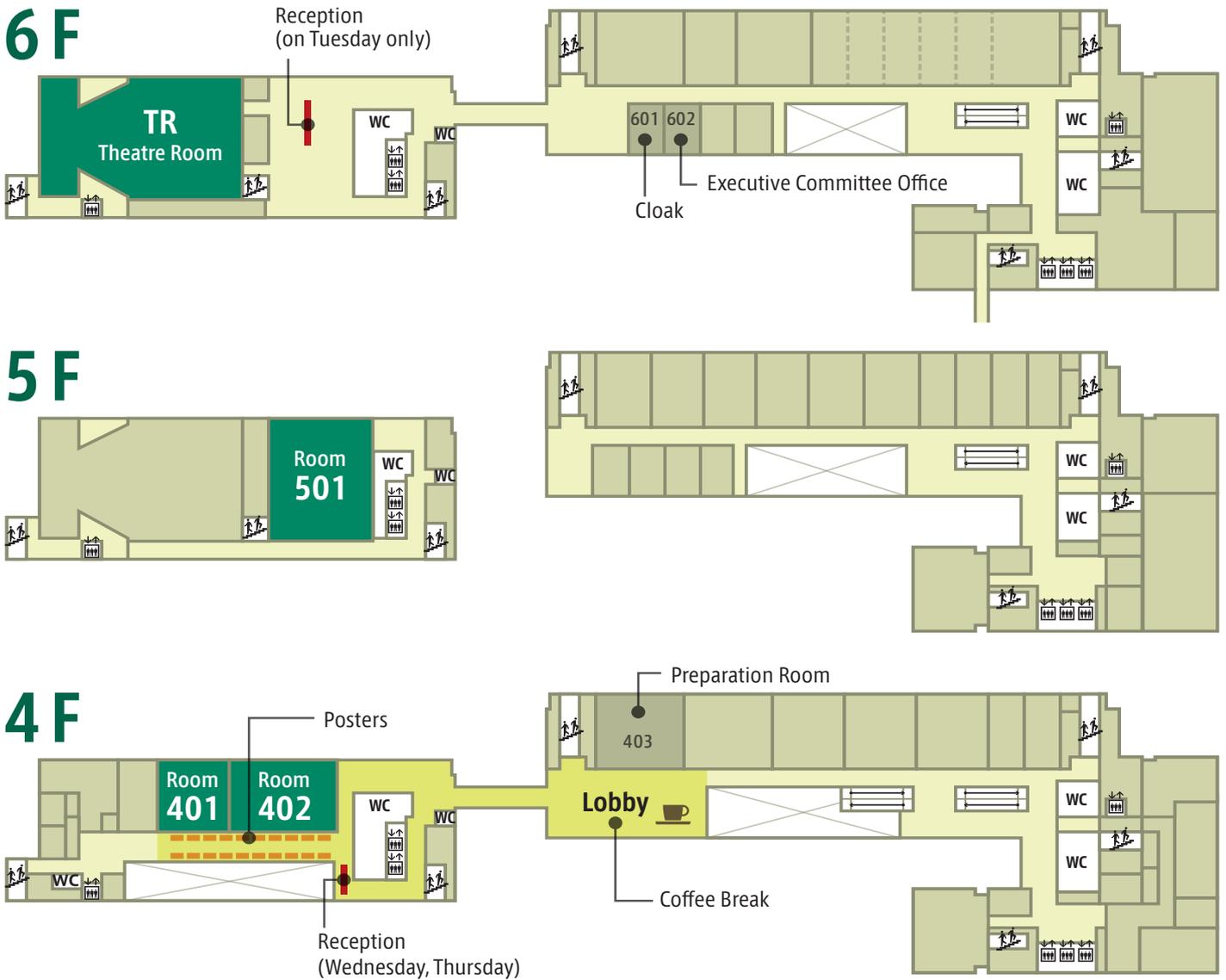
- Right beside Exit 6 of Ginza 1-chome Station, Tokyo Metro Yurakucho Line
- 5-minute walk from JR Yurakucho
- 5-minute walk from Tokyo Metro Ginza Station

### Route (from the Conference Venue):

It is convenient for you to take Yurakucho Line at Toyosu Station. From Toyosu Campus to Toyosu Station, 15 min., from Toyosu to Ginza 1-chome, 6 min. and then walking out to Exit 6, 5 min. Thus all together 31 min. without waiting for trains.



## ICServ2016 Floor Plan



- Smoking is prohibited except designated spots. Please smoke at designated spots:
  - at roof garden on 7th floor
  - at riverside on 2nd floor under arch
- Vending machines are located:
  - inside COOP at 3rd floor
  - near elevator hall at 2nd floor in main building
- You can use WiFi in SIT Campus. The details are informed in an attached sheet.

# Program At a Glance

■ = Room/Place

	Day1 - Tuesday 6 <sup>th</sup>	Day2 - Wednesday 7 <sup>th</sup>	Day3 - Thursday 8 <sup>th</sup>
09:00	09:00-10:00 Registration 6th Floor	09:00-09:30 Registration 4th Floor	09:00-09:30 Registration 4th Floor
		09:30-11:10 <b>Oral Presentations</b> Day2 - Session1	09:30-10:45 <b>Oral Presentations</b> Day3 - Session1
10:00	10:00-12:10 <b>Opening Ceremony and Keynote 1&amp;2</b> TR (Theatre Room)	- Experience Value Co-creation for Skill Learning Services 501 - Human-centered Service System/ Service Practice 401 - Meaningful Technologies for Seniors 402	- Service Engineering & Technologies 501 - Service Management & Operations 401 - Value Co-creation & Context 402
	10:00 Opening Ceremony		10:45-11:05 Coffee Break
11:00	10:20 Keynote 1 <i>Dimitris Karagiannis / Martin Petry</i> 11:10 Keynote 2 <i>Yoshikuni Takeshige / Yoshinori Fujikawa</i>	11:10-11:30 Coffee Break	11:05-12:20 <b>Oral Presentations</b> Day3 - Session2
		11:30-12:20 <b>Keynote 3</b> 501	- Service Engineering & Technologies 501 - Servitization & Productization: Theoretical Perspectives on Service 401 - Value Co-creation & Context 402
12:00	12:10-13:40 Lunch	11:30 Keynote 3 <i>Alexander Josiassen</i>	
		12:20-13:30 Lunch	12:20-13:30 Lunch
13:00		13:30-13:45 METI Policy of Promotion on Services 501	13:30-16:00 <b>Keynote 4&amp;5 and Closing</b> 501
	13:40-15:20 <b>Oral Presentations</b> Day1 - Session1	13:45-14:45 <b>Poster Session</b> 4th Floor	
14:00	- Service Design TR - Service Innovation & Eco-system 501 - Service Practice 401 - From Record to Memory 402	13:45-14:15 The First Half 14:15-14:45 The Latter Half	13:30 Keynote 4 <i>Junichi Tsujii</i>
		14:45-15:05 Coffee Break	14:20 Keynote 5 <i>Chiaki Hirai</i>
15:00	15:20-15:40 Coffee Break	15:05-17:10 <b>Oral Presentations</b> Day2 - Session2	15:20 Panel Discussion & Closing Ceremony
	15:40-17:20 <b>Oral Presentations</b> Day1 - Session2		
16:00	- Service Design TR - Service Innovation & Eco-system 501 - From Record to Memory/ Meaningful Technologies for Seniors 402	- Experience Value Co-creation for Skill Learning Services 501 - Human-centered Service System 401 - Meaningful Technologies for Seniors 402	
17:00			
...		19:00-21:00 <b>Banquet</b>  Ganko Ginza 1-chome (see: P.7)	

# Program - Day 1 - Tuesday 6<sup>th</sup> Oral Presentations

4 Breakout Rooms (Theatre Room/501/401/402)

10

## 13:40–15:20 Oral Presentations (Day1 - Session1)

Number = Paper ID

Room	TR	501	401	402
Session	Service Design	Service Innovation & Eco-system	Service Practice	From Record to Memory
Chair	<i>Koji Kimita</i>	<i>Takeshi Kurata</i>	<i>Nobutada Fujii</i>	<i>Noriaki Kuwahara</i>
13:40   14:05	055 Analysis and Findings on Innovation Creation Methodologies  <i>Y. Sawatani, T. Kashino, M. Goto</i>	091 Developing a Service Business Simulator with Design Thinking  <i>M. Ban, K. Kato, Y. Morimoto, C. Hirai, M. Tanizaki</i>	069 Selection Criteria of Sharing Accommodation. Host-Guest Relationship in Airbnb  <i>A. Javaid, Y. Kohda</i>	026 Hybrid Response Generation Scheme to Reduce Operator's Burden for Communication Robots  <i>K. Murata, D.-J. Lee, H. Yamazoe, J.-H. Lee</i>
10:05   14:30	038 Value Network Visualizations: Revealing Complexity for Contextual Service Design  <i>M. Čaić, G. Odekerken-Schröder, D. Mahr, S. Holmlid</i>	046 Consumer Service Innovation in a Circular Economy - The Customer Value Perspective  <i>M. Antikainen, M. Lammi, T. Hakanen</i>	004 Omotenashi Management in Onsen Ryokan: A Case Study of Kurokawa Onsen in Kyushu, Japan  <i>S. Morishita</i>	041 Design of Face Tracking System using Fixed 360-Degree Cameras and Flying Blimp for Health Care Evaluation  <i>V. Srisamosorn, N. Kuwahara, A. Yamashita, T. Ogata, J. Ota</i>
14:30   14:55	077 An Ideation Framework for Product Service Systems Conceptual Design  <i>K. Muto, K. Kimita, H. Tanaka, E. Numata, S. Hosono, S. Izukura, Y. Shimomura</i>	007 A Stimulus Bank (S-Bank) Concept for Service Process Redesign  <i>R. Karni</i>	023 Reduction of Employee's Work Load by Reducing Moving Distance at a Japanese Cuisine Restaurant  <i>T. Shimmura, T. Kaihara, N. Fujii, T. Nonaka</i>	027 Reminiscence Video as the Tool for Sharing the Life History of the People with Dementia between Care Staffs  <i>T. Doi, M. Iwamoto, N. Kuwahara, K. Morimoto</i>
14:55   15:20			063 Proposal for Increasing Interactive Learning in an Elementary School Class - A Case of Mathematics -  <i>T. Ozawa, I. Maida, T. Toma</i>	052 Seamless Change of Modality Volume in Observation of Elderly People's Daily Lives  <i>T. Yonezawa, Y. Naka</i>

Day 1

# Program - Day 1 - Tuesday 6<sup>th</sup> Oral Presentations

3 Breakout Rooms (Theatre Room/501/402)

11

## 15:40–17:20 Oral Presentations (Day1 - Session2)

Number = Paper ID

Room	TR	501	402
Session	<b>Service Design</b>	<b>Service Innovation &amp; Eco-system</b>	<b>From Record to Memory</b>
Chair	<i>Yuriko Sawatani</i>	<i>Nobuto Matsuhira</i>	<i>Kentaro Watanabe</i>
15:40   16:05	075 Discovering Personas through Exploratory Data Visualization  <i>S. Ray, P.-R. Huang, T.-Y. Lee</i>	072 An Autonomous Concept Creation Method to Support Innovative Service Generation using a Computational Creativity Approach  <i>A. Sudo, N. Fujiwara, K. Tokuda, H. Honda, K. Ueda</i>	030 Interoperable Data Platform Based on Ontological Consideration - A Case Study in Elderly Care Service -  <i>S. Nishimura, K. Fukuda, K. Watanabe, H. Miwa, T. Nishimura</i>
16:05   16:30	043 Modeling of Restaurant Service Process using Cellular Automata  <i>T. Tanizaki, T. Shimmura</i>	092 Text Analysis on Reviews of Travel-Related Content  <i>K. H. Murakami, S. Nakamura, Y. Okada, Y. Furukawa, H. Hasegawa, A. K. Yamazaki</i>	<b>Meaningful Technologies for Seniors</b> <i>Kentaro Watanabe</i>  039 Meaningful Technology for Seniors: Viewpoints for Sustainable Care Service Systems  <i>K. Watanabe, M. Niemelä, H. Määttä, H. Miwa, K. Fukuda, T. Nishimura, M. Toivonen</i>
16:30   16:55	016 A Study on Value Co-Creation by Farming Coach Support Services for Production Community  <i>T. Kamiya, H. Shimazu, A. Shinjo</i>	054 A Value Co-Creation Framework for IT Services  <i>Y. Amagai, M. Ide, M. Aoyama</i>	040 Expectations and Experiences of Adopting Robots in Elderly Care in Finland: Perspectives of Caregivers and Decision-Makers  <i>M. Niemelä, H. Määttä, M. Ylikauppila</i>
16:55   17:20	058 To Pay or Not to Pay: The Elderly's Participation Decision Towards Community-Based Service  <i>P. Zhou, K. Shirahada</i>	059 Service Robot Development Strategy using a Community-Based Approach  <i>N. Matsuhira, M. Narita, T. Yamaguchi</i>	028 Attitude Survey on Nursing-Care Service - Comparison among Active Seniors, Informal Carers and Formal Carers -  <i>H. Miwa, K. Watanabe, H. Määttä, M. Niemelä</i>

Day 1

# Program - Day 1 - Tuesday 6<sup>th</sup>

## Keynotes

Theatre Room

12

10:20–11:10 Keynote 1 TR

## Industrial Product-Service Systems Engineering

### Abstract:

The evolution of the internet to a generic platform and a fully pervasive environment enables an efficient engineering, provision and consumption of digital services. Cloud based deployment models enable service functionalities for a world-wide availability: Services are accessible at any time, independent of location and potential processing limitations of the device used; establishing the basis for novel business models in defining services and related business models.

Based on this observation, two views on Industrial Product-Service Systems Engineering are presented: from an academic perspective, we investigate how the characteristics of digital service engineering can be mapped on product-service systems focusing on hybrid business models as a means to establish smart products.

Smart products are defined as tangible offerings of an enterprise that have been adapted and modified in a way, that service-based business models become operationally feasible and sustainably embedded in their lifecycle. The following challenges have been identified to exemplify current research directions and approaches:

- Servicification Engineering: How can we identify the servicification degree of a product? What are the requirements on product level to bridge the product-service alignment gap?
- Product-Service-Lifecycle: How can an integrated lifecycle for the product-service system consisting of design, operation and evaluation phases be operationalized?
- Knowledge Engineering and Service Modelling: What role do knowledge engineering and modelling play in such realization scenarios?

The industrial perspective on Industrial Product-Service Systems Engineering is provided by Hilti. Hilti, the leading solution provider for construction and engineering products and services is active in 120 countries world-wide and has been established in 1941 as a company focusing on mechanical engineering/machinery construction. The enterprise follows an innovative approach in enabling product-service systems based on innovative products and solutions that enable service interaction, dynamic product/service operation and direct customer relationships as a continuous feedback loop to previous phases.



**Dimitris Karagiannis**  
Professor, University of Vienna

*Dimitris Karagiannis* read at the Technical University of Berlin, where he graduated with a PhD in Computer Science. He was a visiting scientist at research institutions in the US and Japan. From 1987 to 1992 he headed the Business Information Systems group at the Research Institute for Applied Management (FAW) in Ulm as a scientific director. Since 1993 he is full professor at the Faculty of Computer Science at the University of Vienna and head of the Research Group Knowledge Engineering. 2011 he was awarded an honorary professorship by the Babes-Bolyai University Cluj-Napoca in Romania.

As head of the Knowledge Engineering group his main research areas are Business Process Management, Meta-Modelling, and Knowledge Management. Prof. Karagiannis has published several books and scientific papers in journals and conferences on Knowledge Databases, Expert Systems, Business Process Management, Workflow-Systems and Knowledge Management. In 1995 he established the Business Process Management Systems Approach (BPMS), which has been successfully implemented in several industrial and service companies. He is the founder and head of the supervisory board of the BOC Group (<http://www.boc-group.com>). 2008 he was a founding-member of the Open Models Initiative and has created 2012 the Open Models Laboratory (<http://www.omilab.org>). In addition to his long-standing engagement in national and EU-funded research project, Prof. Karagiannis is acting since 2005 as a reviewer for the European Commission. He is a member of IEEE and ACM and serves on the steering committee of the Austrian Computer Society.



**Martin Petry**  
CIO, Hilti

*Martin Petry* became Hilti's CIO in 2005. He is responsible for Hilti's 400 IT employees based in Switzerland (Buchs SG), US (Tulsa, Oklahoma and Plano, Texas) and Malaysia (Kuala Lumpur).

Since 2009 he is also in charge of Hilti's Business Excellence initiatives and EVP. Martin came to Hilti in 1993 and has held various leadership roles in Liechtenstein, Switzerland, Great Britain and Japan. He has developed Hilti's ground-breaking IT Strategy in 2000 and has lead its implementation, in particular Hilti's global SAP implementation cum business transformation project (standard global data structures and business processes supported by a global SAP system with ERP, BI, CRM and SCM which is now being used by 20,000 Hilti employees in more than 50 countries). Recently Martin has initiated various cloud computing / SaaS initiatives at Hilti and he has lead the development of the comprehensive Information Technology at Hilti strategy which is now the foundation of all digital and software initiatives in the Hilti group.

Martin earned his PhD in applied mathematics from Georg-August University in Goettingen, Germany.

# Program - Day 1 - Tuesday 6<sup>th</sup> Keynotes

Theatre Room

13

11:10–12:10 Keynote 2 TR

## Human Centric Innovation and Digital Future

### Abstract:

Digital technology is advancing rapidly, changing businesses, society and our everyday lives. This is digital transformation. It is expected that 50 billion or more things will be connected by 2020. The Internet of Things, Artificial Intelligence and Robotics will give a significant impact to all industries. Business leaders are already aware of the potential of digital, because it will give tremendous opportunities of growth as well as enormous challenges. Digital may disrupt their existing businesses, unless they take any effective actions now. In this revolutionary time, what must they do? In this key note, Yoshikuni Takashige of Fujitsu will talk about on how businesses will be able to approach to digital, using real examples. The key is to put people in the center, providing human centric services. This is realized by empowering people with digital information and digitalized things. Fujitsu calls this Human Centric Innovation. He will also elaborate on steps toward shaping ecosystems, which are critical for creating value in the digital era. For this, it will be essential to leverage a new type of digital business platform.

Yoshinori Fujikawa of Hitotsubashi University will join Yoshikuni Takashige to discuss the importance of a multi-sided platform and what actions businesses should consider to enable this. They will also discuss the impact of Artificial Intelligence and how people can shape a different future.



### Yoshikuni Takashige

Vice President,  
Head of Marketing Strategy,  
Fujitsu Limited

*Yoshikuni Takashige* joined Fujitsu in 1984. He was engaged in developing international business. From 1996 to 1998, he was based in Singapore, working as an investment officer for Asian Infrastructure Development Corporation (AIDEC), a large-scale infrastructure fund established by JBIC, Asian Development Bank and other financial institutions and private enterprises including Fujitsu. From 1999 to 2011, Yoshikuni Takashige took a strong leadership in developing Fujitsu's important strategic partnerships with global enterprises, and contributed to growing joint businesses significantly. Since 2012, he has been responsible for the portfolio management and marketing strategy for Fujitsu's broad range of products and services. Particularly, he leads the creation of the Fujitsu Technology and Service Vision, which sets out Fujitsu's vision and its thinking on how organizations can innovate by leveraging technologies. The first version was launched in 2013 and has been updated every year. He speaks about innovations and future vision internationally. He received MBA from the Johnson Graduate School of Management, Cornell University, and Bachelor of Laws from the University of Tokyo.



### Yoshinori Fujikawa

Associate Professor &  
Faculty in Charge of MBA Program,  
Graduate School of International Corporate  
Strategy, Hitotsubashi University

*Yoshi Fujikawa* is an Associate Professor & Faculty in Charge of MBA Program at Graduate School of International Corporate Strategy (ICS), Hitotsubashi University, Tokyo, Japan (From April 1, 2007). Prior to joining ICS, Yoshi was a Lecturer and Research Assistant at Pennsylvania State University (University Park, PA). He also worked as a Research Associate at the Mind of Market Laboratory and the Division of Research, both at Harvard Business School (Boston, MA). His business experience includes marketing research and strategic consulting work with Olson Zaltman Associates, the inventor of the patented research method ZMET (Zaltman Metaphor Elicitation Technique).

His research focus lies in the following three areas: (1) field-based research on service management issues, with particular emphasis on contemporary issues such as service innovation, service globalization, and service opportunities for manufacturing firms; (2) development, promotion, and application of non-traditional marketing research methods for eliciting customers' tacit knowledge; and (3) social psychological approach to investigate the role of cognition and emotion in firm-customer relationship formations. His research results have appeared as journal articles, conference proceedings, and book chapters in both English and Japanese. He is also an author and co-author of Hitotsubashi ICS and Harvard Business School cases, which are used in marketing and service management courses at major business schools around the world. Yoshi received Ph.D. in Marketing from Pennsylvania State University, M.B.A. from Harvard Business School, and M.A. in Commerce and B.A. in Economics from Hitotsubashi University.

# Program - Day 2 - Wednesday 7<sup>th</sup> Oral Presentations

3 Breakout Rooms (501/401/402)

14

## 09:30–11:10 Oral Presentations (Day2 - Session1)

Number = Paper ID

Room	501	401	402
Session	<b>Experience Value Co-creation for Skill Learning Services</b>	<b>Human-centered Service System</b>	<b>Meaningful Technologies for Seniors</b>
Chair	<i>Hajime Asama</i>	<i>Takeshi Takenaka</i>	<i>Marketta Niemelä</i>
09:30   09:55	018 Changing the Culture of Preventing Back Injury for Japanese Care Workers using No Lift Education Program  <i>J. Yasuda</i>	037 Collecting Data of SNS User Behavior to Detect Symptoms of Excessive Usage by Questionnaires and SNS APIs  <i>P. Intapong, T. Achalukul, M. Ohkura</i>	013 Challenges of Integrating New Technology into Elderly Care Services - Perspectives of Service Provider Companies in Japan  <i>H. Määttä, K. Watanabe, H. Miwa</i>
09:55   10:20	042 Gait Re-Learning with HONDA Robot Device for Individuals after Stroke  <i>K. Ohata, T. Tsuboyama, A. Watanabe</i>	065 Effective Training Method for Reducing the Risk of Visual Delay Assuming Telesurgery Application  <i>I. Maida, T. Toma</i>	034 The Cinderella Story - a Skilled Worker's New Chance in the Digitalization of Services  <i>E. Saari, S. Käpykangas, M. Hasu</i>
10:20   10:45	048 Auxiliary System to Classify Patterns of Patients with Hemiplegia for Transferring Skill of Rehabilitation with Walking Assist Robot  <i>Y. Ishikawa, Q. An, W. Wen, S. Ishiguro, K. Ohata, H. Yamakawa, Y. Tamura, A. Yamashita, H. Asama</i>	<b>Service Practice</b> <i>Takeshi Takenaka</i>  035 Parents and School's Collaboration for Improving Children Food Well-Being by Knowledge Perspective  <i>M. Tran T. N., K. Shirahada</i>	064 Human Impact Assessment of Robot Implementation in Finnish Elderly Care  <i>H. Melkas, L. Hennala, S. Pekkarinen, V. Kyrki</i>
10:45   11:10	017 Visualization of Co-Creation and Experience in Higher Manufacturing Education  <i>K. Mitsuhashi, Y. Ohyama, H. Hashimoto</i>	051 Application of BMW Method for Measuring Satisfaction through Unconscious Responses Reflecting Activities of the Autonomic Nervous Systems to Bedding Materials  <i>H. Okawai</i>	009 Service Digitalization and Information Ecology: Towards Inclusive Solutions in Finnish Social and Health Care Services  <i>S. Pekkarinen, M. Hasu, E. Saari, H. Melkas</i>

Day 2

# Program - Day 2 - Wednesday 7<sup>th</sup> Oral Presentations

3 Breakout Rooms (501/401/402)

15

## 15:05–17:10 Oral Presentations (Day2 - Session2)

Number = Paper ID

Room	501	401	402
Session	<b>Experience Value Co-creation for Skill Learning Services</b>	<b>Human-centered Service System</b>	<b>Meaningful Technologies for Seniors</b>
Chair		<i>Ken Fukuda</i>	<i>Hiroyasu Miwa</i>
15:05   15:30	021 Cognitive Gaps between Instructor and Learner in Skill Education Service  <i>M. Okuyama, J. Chen</i>	031 Evaluation of Key Emotional Value That Influences Saudi Women to Purchase Luxury Fashion Brands  <i>E. Barnawi, M. Ohkura</i>	047 Privacy and Social Influence in the Acceptance of Remote Monitoring to Support Ageing in Place  <i>M. Keenan, K. Shirahada, L. Hederman</i>
15:30   15:55	033 Proposal and Verification of E-Learning System for Physical Exercise Education using Arbitrary Viewpoint of 3D Body Motion and Moving Image Linked Type Instruction Recording DB  <i>K. Mitsuhashi, H. Hashimoto, S.-G. Shin, S. Yokota, D. Chugo</i>	062 Evaluation of Visualized Vision Planning and Its Outcomes  <i>K. Sakaguchi, S. Shirasaka</i>	050 A Qualitative Comparison of Paper and Electronic Health Records of Nursing in a University Hospital in Japan  <i>K. Yamada, T. Hope, K. Watanabe, T. Sunaga, M. Kobayakawa, T. Nishimura</i>
15:55   16:20	068 Database Design for Efficient Storage of Personalized Data using MongoDB  <i>S. Shin, H. Hashimoto, K. Mitsuhashi, S. Yokota, S. Kawata</i>	012 Evaluation of Individual Differences in Machine Operation  <i>M. Uozumi, R. Tsujio, T. Hino, H. Asama</i>	029 Suggestions on the Requirements of Participatory Elderly Care Service for Aging Society - In the Study of Health Check Systems in Day Service -  <i>Y. Katagiri, T. Matsumoto</i>
16:20   16:45	056 Visual Impression to Delay and Amplitude of Imitation Motion of Robot  <i>S. Yokota, H. Hashimoto, K. Mitsuhashi, D. Chugo</i>		005 Objective and Quantitative Evaluations of the Feeling of Difficulty Swallowing Caused by Dry Mouth: The Visualization and Effects of Subjective Complaints  <i>S. Nagaosa, N. Sono, H. Saijo, M. Ono</i>
16:45   17:10	015 Evaluation of an E-Learning Support App Based on an Estimation of User's Mental Status for Skill Education Service  <i>S. Suzuki, M. Anakubo, Y. Mitsukura</i>		044 A Search for Themes in Which Nurses Cooperate with Dentistry in Oral Management using Nursing Strategy Maps: Promotion of Multi-Occupational Cooperation in the Visualization of Strategy Management  <i>S. Nagaosa, K. Sakai, N. Sono, H. Nakamura, H. Kimori, M. Usubuchi, N. Miyashita, Y. Sumi, H. Matsushita, K. Kano, Y. Arai, J. Yaeda</i>

Day 2

# Program - Day 2 - Wednesday 7<sup>th</sup>

## Keynote

Room 501

16

11:30–12:20 Keynote 3 Room 501

### A Formalized Framework of Consumer's Mental Pictures – with implications for brands, companies, countries, and destinations

#### Abstract:

The image concept is widely used in marketing, tourism management and other fields. This speech will look at what image actually means and some of the conceptual pit-falls. Although references will be drawn to other literatures, the main context will be that of the destination image within tourism research. The starting point will be from the extant literature, trying to learn what we know and what we do not know, and where we go from here.

In the talk, I will also discuss the future and potential of researching on destination image, and where it stands vis-à-vis some of the other key research areas in tourism research.



#### Alexander Josiassen

Associate Professor of Marketing, and Center Director of the Center for Service Management, Department of Marketing, Copenhagen Business School  
Visiting Professor at RMIT University, School of Economics, Finance and Marketing

*Alexander Josiassen* is Associate Professor and Director at the Center for Service Management, Copenhagen Business School, Denmark. His PhD is from Melbourne University in Australia. His research focuses on consumer behavior and firm strategy. He has published on these topics mostly in the areas marketing and tourism management and in journals such as the Journal of Marketing, Journal of Retailing, Tourism Management, and Annals of Tourism Research. He was recently awarded Tietgen's Gold Medal, which is awarded to the most promising emerging scholar in the social sciences in Denmark, and Charles R. Goeldner's Award of Excellence which is the most prestigious international award in tourism research. Alexander is currently working with an international network of excellent researcher on projects in marketing, management, tourism, and social psychology. He is the Director of the Center for Tourism and Service Management which hosts the Master in Service Management, Copenhagen Business School; a program that was recently ranked by Eduniversal as one of the World's Top 3 programs in service management. He regularly consults companies on the topics of consumer behavior and firm strategy.

# Program - Day 2 - Wednesday 7<sup>th</sup> Poster Session

Room 501 / 4th Floor

17

## 13:30–13:45 METI Policy of Promotion on Services Room 501

Mr. Takayuki Abe

Deputy Director, Service Affairs Policy Division,  
Commerce and Information Policy Bureau, Ministry of Economy, Trade, and Industry

## 13:45–14:45 Poster Session 4th Floor

13:45–14:15 The First Half [A] / 14:15–14:45 The Latter Half [B]

Nihon Service Award			
1	D2-PS-A	KEIJU Integrated Healthcare Service: Cooperation of Electric Health Records and Human Interface	Masahiro Kanno*
2	D2-PS-B	Re-Aqua - Dry Cleaning Delivery	Shinichi Nakahata*
Human Resource Development Project for Service Management			
3	D2-PS-A	Development of training program for personnel to work for The Integrated Community Care System	Jemin Lee*, Taijiro Kitagawa, Kozue Tamura
4	D2-PS-B	Core Human Resource Development Project for Promoting Aomori Region's Value: Development of JOPPARI-Entrepreneurial Talent	Katsushi Takashima*
5	D2-PS-A	Human Resource Development Project for Services by Ethnography -Value Creation and Productivity Improvement of Manufacturing Industry-	Sadayo Hirata*
6	D2-PS-B	Well Being Design Consortium for High Profit Market	Chihiro Sato*
7	D2-PS-A	Development of the Integrated Hospitality Educational Program	Yoshinori Hara*
8	D2-PS-B	Education program for Management of Community-based Health care Organizations and Clinics in MBA	Shoji Yamamoto*
9	D2-PS-A	Development of Service Management Resources contribute to high added value of Food Industry	Keisuke Watanabe*
10	D2-PS-B	Development of "Glocal" (Global and Local) Service Management Talent that Takes on a Vision of Okinawa for the 21st Century	Yoshiro Shimoji*
Service Science, Solutions and Foundation Integrated Research Program			
11	D2-PS-A	Service Science, Solutions and Foundation Integrated Research Program (S3FIRE)	Japan Science and Technology Agency (JST), Research Institute of Science and Technology for Society (RISTEX)
12	D2-PS-B	Architecting service with customer participation based on the analysis of customer experience and design processes -sophisticating tour design processes as a case study-	Tatsunori Hara*, Yohei Kurata, Kazuhiro Aoyama
13	D2-PS-A	Quantitative valuation and demand-oriented provision of irrigation service	Toshiaki Iida*, Masaomi Kimura, Masaru Mizoguchi, Yoshiteru Takeshita, Katsuhiro Higuchi
14	D2-PS-B	A proposal of adaptive service model into environmental dynamic change with co-creative design	Toshiya Kaihara*, Takeshi Shimmura, Nobutada Fujii
15	D2-PS-A	Learning Model for Realizing Value Co-creation	Kouji Kimita*
16	D2-PS-B	Service System Typology based on Value Creation Model and Design Theory of Service Mechanism	Nariaki Nishino*
17	D2-PS-B	What have the research program of Service Science "S3FIRE" clarified?	Tamio Arai*, Masato Nakajima

# Program - Day 3 - Thursday 8<sup>th</sup> Oral Presentations

3 Breakout Rooms (501/401/402)

18

## 09:30–10:45 Oral Presentations (Day3 - Session1)

Number = Paper ID

Room	501	401	402
Session	<b>Service Engineering &amp; Technologies</b>	<b>Service Management and Operations</b>	<b>Value Co-creation &amp; Context</b>
Chair	<i>Tatsunori Hara</i>	<i>Yoshinori Hara</i>	<i>Koji Kimita</i>
09:30   09:55	078 Behavioral Measurements of Cabin Attendants Together with Observations and an Analysis of Their Tasks by using Service Process Model <i>K. Tachioka, Y. Tsuritani, T. Hara, J. Ota, Y. Tsuzaka, N. Arimitsu</i>	057 Social Capital as a Foundation of Psychological Capital <i>M. Yoshida</i>	036 Value Co-Creation Process: A Perspective on Communities of Practice <i>M. Murata</i>
09:55   10:20	010 Toward an Integrated Framework for Service Design: Converting Service Blueprints to BPMN Processes <i>S.-Y. Hwang, H.-Y. Sung</i>	060 Risks and Performance in Supply Chains Comparison between Manufacturing and Service Firms <i>H. T. Quang, Y. Hara</i>	020 Hyperpersonal Value Co-Creation in Online Communities: A Conceptual Framework <i>B. Abedin, E. K. Chew</i>
10:20   10:45	061 Proposing an Interactive Label Attaching System for Supervised Service Operation Estimation <i>K. Kato, T. Okuma, T. Kurata</i>	049 The Effects of Buyer-Seller Communication on Customer Loyalty in Vietnamese Traditional Wet Markets <i>N. T. T. Tuyet, Y. Hara</i>	079 Representing Context of Service Communications by a User-Generated-List-Oriented Web Questionnaire <i>H. Masuda</i>

## 11:05–12:20 Oral Presentations (Day3 - Session2)

Number = Paper ID

Room	501	401	402
Session	<b>Service Engineering &amp; Technologies</b>	<b>Servitization &amp; Productization: Theoretical Perspectives on Service</b>	<b>Value Co-creation &amp; Context</b>
Chair	<i>Tatsunori Hara</i>	<i>Keiko Toya</i>	<i>Koji Kimita</i>
11:05   11:30	074 Kitchen Layout Planning in Food Service Industry by Integration of Simulation and Genetic Algorithm <i>K. Koyama, N. Fujii, T. Kaihara, D. Kokuryo, T. Shimmura</i>	022 Bill of Service for Service Resource Integration <i>S. K. Kwan, M. A. K. Siddike, K. Hidaka, Y. Kohda</i>	080 Guanxi, Commercial Friendship and Relationship Marketing in B2C Service Settings <i>X. Fan, L. Lu</i>
11:30   11:55	067 Pre-Evaluation of Kaizen Plan Considering Efficiency and Employee Satisfaction by Simulation using Data Assimilation -Toward Constructing Kaizen Support Framework- <i>T. Myokan, M. Matsumoto, T. Okuma, R. Ichikari, K. Kato, D. Ota, T. Kurata</i>	014 Composition Model for Cloud Services with Behavior Ontology <i>M. Lee</i>	071 Does a City Government Connect Equally with Different Groups of the Public through Municipal Citizen Service System? <i>W.-N. Wu</i>
11:55   12:20	045 Accurate Location Service using DMD Projector <i>M. Kodama, S. Haruyama</i>	008 Product-Service Systems for Increasing Customer Acceptance in Terms of Interoperability <i>D. M. Schmidt, D. Hübner, M. Mörtl</i>	006 How to Create Innovative Activities with Limited Discretionary Resources by using Hackathon <i>M. Sumioka, A. Itasaki</i>

13:30–14:20 Keynote 4 Room 501

## Artificial Intelligence for Serviceology

The AIRC is a research centre, established in May, 2015 with aid from the Japanese Ministry of Economy, Trade and Industry (METI), whose objective is to become the leading group carrying out translational research of AI in Japan. It comprises 250 staff, including 75 full-time researchers and 50 part-time visiting researchers.

The AIRC carries out research into a broad range of topics, such as machine learning, big data analytics, multi-agent simulation, robotics, innovative retailing, AI for Biomedical sciences and AI for elderly care. AI is now the core of convergence of diverse scientific and technological fields, such as Robotics, Biomedical sciences, internet of things (IoT) and factory automation, etc. One of the major application domains of AI is in the service industry. AI is a key technology for providing personalized services. Starting with recommendation systems and personalized advertisements, AI is now being used in personalized medicine, care robots, innovative retailing, etc. Integration of social data of various sorts, AI can be used to provide more fine-grained context dependent services. In this talk, I will introduce examples of research at the AIRC and discuss possible application of AI in services.



**Junichi Tsujii**

Director, Artificial Intelligence Research Centre of AIST, Japan  
Professor, School of Computer Science, University of Manchester, UK

*Professor Tsujii* was appointed Principal Researcher at Microsoft Research Asia (MSRA) (05.2011-04.2015), Professor of Natural Language Processing in the Department of Computer Science, University of Tokyo (07.1995-04.2011) and Professor of Text Mining in School of Computer Science, University of Manchester (06.2005-04.2011), before taking up the directorship of the Artificial Intelligence Research Centre (AIRC) at the National Institute of Advanced Industrial Science and Technology (AIST) (05.2015). He has recently been appointed as a part-time Professor of School of Computer Science, University of Manchester. Professor Tsujii has worked in the areas of natural language processing (NLP), question answering, text mining and machine translation. Recently, his main focus has been on linguistics-based parsing, information extraction and NLP-based text mining technology, which he has applied to literature mining in the biomedical domain.

He was the president of the Association for Computational Linguistics (ACL) in 2006, and is now the chairman of ICCL (International Committee of Computational Linguistics). He is also Fellow of the ACL and a Fellow of the Information Processing Society of Japan (IPSJ).

14:20–15:20 Keynote 5 Room 501

## Simulating Service Value

Hitachi has been developing service simulators in various fields of social infrastructure such as energy management, logistics, healthcare, and railways. We call this series of service simulators "NEXPERIENCE/Cyber-Proof of Concept (Cyber-PoC)" because they are used to test new service concepts in cyber space.

Cyber-PoC is definitely an engineering tool; it inputs service models, simulates them, and shows what is going to happen under given conditions. However, it is not a simulator just for system engineers. Its distinctive objective is to visualize service ideas and to present their business impacts to the executives of service providers. The executives are not necessarily experts on state-of-art technologies to improve their services such as IoT, optimization algorithms, or deep learning. Often, they do not care all that much about the technologies. Still, they have to understand the essence of the service ideas, estimate their business meaning, and decide whether or not to invest in the ideas.

Cyber-PoC aims to help business executives understand new service ideas. For this purpose, the simulators are developed under consistent policies on functions, GUI design, and the way of presentation. This session will demonstrate some Cyber-PoC simulators, showing how they have been developed, how they are being used, and how they have been accepted by business people. What we have learned from our experience is that a simulator is an effective tool to tell a story about your service business.



**Chiaki Hirai**

Ph.D. Chief Researcher in Hitachi, Ltd.  
Global Center for Social Innovation - Tokyo

*Chiaki Hirai* graduated from The University of Tokyo and joined Hitachi's research and development department in 1987. The research areas are generally on methodologies to design and evaluate systems in various levels, such as business, service, and software systems. He has obtained Dr. of Knowledge Management from Japan Advanced Institute of Science and Technology.



## Contact:

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