

IAC News No.61

**2017 JSCE Annual Meeting Report I
International Roundtable Meeting
“Implementing ICTs within the Construction Industry and
Infrastructure Maintenance”**

The 2017 International Round Table Meeting (RTM) “Implementing ICTs within the Construction Industry and Infrastructure Maintenance” was held at Inamori Center, Ito Campus, Kyushu University on September 11, 2017, organized by the Japan Society of Civil Engineers International Activities Center.



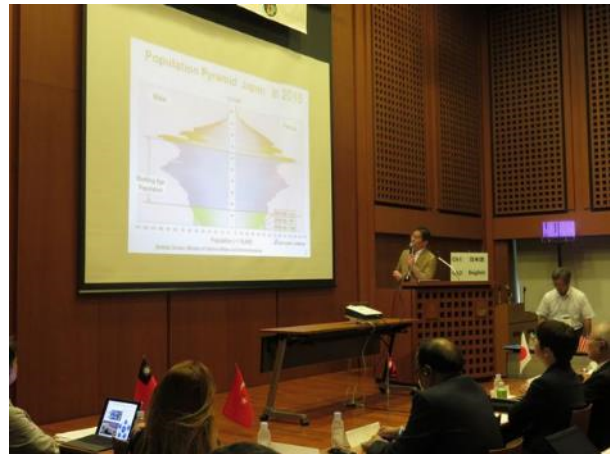
Mr. Ohishi (in the center) and RTM speakers

Five Agreement of Cooperation societies: American Society of Civil Engineers (ASCE), Chinese Institute of Civil and Hydraulic Engineering (CICHE), The Institution of Engineers, Bangladesh (IEB), Korean Society of Civil Engineers (KSCE), and Nepal Engineers’ Association (NEA), and JSCE Turkey Section dispatched a speaker to participate in the RTM. The program below shows the six speakers and their presentation titles.

<Program>

Chair	Prof. Shinichi Akutagawa (Kobe University Graduate School, Task Force Chair in Subcommittee of JSCE Tunnel Engineering Committee)
Keynote Speech	Prof. Kazuyoshi Tateyama (Ritsumeikan University, Chair of JSCE Robotics Committee in Construction) Title: A New Stage of Construction in Japan i-Construction
Presentations	<ol style="list-style-type: none"> 1. Ms. April J. Lander (ASCE) Title: ASCE and ICTs 2. Dr. Lian-Jenq Leu (CICHE) Title: Implementing ICTs within the Construction Industry in Taiwan 3. Dr. A.F.M. Saiful Amin (IEB) Title: Infrastructure Maintenance: Bangladesh Scenario 4. Dr. Beyza Taskin (JSCE Turkey Section) Title: A General Review of ICT Applications in Construction & Recent Developments in Turkey 5. Dr. Hyoungkwan (KSCE) Title: Construction Information Technology for the Post-Information Age 6. Mr. Kishore K. Jha (NEA) Title: Scope of Implementing ICT for Road Maintenance in Nepal

Professor Shinichi Akutagawa of Kobe University Graduate School conducted the RTM as a moderator. At the beginning of the meeting, the JSCE President Hisakazu Ohishi delivered an opening speech, followed by the keynote speech “A New Stage of Construction in Japan i-Construction” by Professor Kazuyoshi Tateyama of Ritsumeikan University. “i-Construction” is a new policy promoted by Ministry of Land, Infrastructure, Transport and Tourism, which aims to improve the productivity of entire construction and production systems, and make construction sites more



Prof. Tateyama delivers a keynote speech.

attractive by introducing “full-scale application of ICT” to the construction site. In the keynote speech, social problems such as a decrease in the number of skilled engineers due to an aging population, and a declining labor productivity across civil engineering and construction sites were explained. In the present civil engineering and construction industry, which a reform should be brought about, the introduction of ICT technology was shown to be a method of solving various problems, along with examples including the utilization of three-dimensional data and UAV (Unmanned Aerial Vehicles) in survey, design and construction, the application of Machine Guidance Systems (MG: technology to provide operators with construction positioning support by means of satellite positioning systems), and also the actual examples of the introduction of bulldozers and diggers equipped with a Machine Control System (MC: technology, in combination with MG, to automatically control a hydraulic pressure on construction machinery). Those examples showed reducing working time, improving productivity and securing safety of workers.

Next, the speakers introduced the actual examples of introduction of ICT technology in their countries. For example, the KSCE speaker discussed the introduction of “Google Glass” into field in South Korea that would make possible to predict and visually inform workers of possible risks and dangers, and the NEA speaker explained the user application, “Mero Sadak” for road maintenance in Nepal, in which users would share information concerning dangerous sections and defects on roads, and the shared information would help to determine the priority of road maintenance works.

In the latter half of the RTM, a panel discussion was carried out among Prof. Tateyama and the six speakers, being led by the chair Professor Akutagawa. They exchanged views and opinions about the topics such as whether or not cooperation between civil engineering and other fields could be made regarding ICT technology, how civil engineering education should respond to the introduction and utilization of ICT, in what way evolving and miniaturizing ICT devices would change daily lives in the future, and what the future architectural and civil engineering industries would be in the society in that people were threatened by terrorism.

A large audience attended the RTM. In the panel discussion, the speakers and the audience exchanged opinions and ideas about from the introduction of ICT to further current issues in society and emerging or possible technical challenges in the future. They ran out of time as the discussion was getting interesting.

【Reported by Ryosuke Takahashi (Akita Univ.), Leader of Information Group, IAC】

2017 JSCE Annual Meeting Report II

The 19th International Summer Symposium (The 19th ISS) and International Workshop for Young Civil Engineers

The 19th International Summer Symposium was held for two days, on September 11 and 12, 2017, at Inamori Center and other buildings on Ito Campus, Kyushu University in Fukuoka.

This symposium was the opportunity for young civil engineers to present their research projects, organized as part of international meetings including international workshop and networking reception. It worked well for them to build communication and friendship with their international peers who were studying and working in Japan.

Since 2012, the symposium has been held in JSCE Annual Meeting every year. Its participants consisted of international students studying in Japan and the participants in Study Tour Grant (STG) program, which is supported by the JSCE International Scientific Exchange Fund, who are nominated by JSCE's Agreement of Cooperation societies.

The 19th symposium accepted 72 presentations including six STG participants' presentations, and those presentations were delivered in the total 9 parallel sessions in the mornings of the two days. The participants avidly engaged in discussions and freely exchanged views and ideas. It should be an informative and meaningful experience for them.

In the 11th afternoon, the International Workshop for Young Civil Engineers was held with 34 participants under the theme "Innovative Construction Methods – a Case of Cut-and-Cover Tunneling Method", and the participants studied the innovation of construction technology.

The workshop was carried out by active learning method under the guidance of Dr. Shunsaku Komatsuzaki (The University of Tokyo). Two highly experienced specialists in the field of tunneling technology, Dr. Shinji Konishi (Tokyo Metro) and Mr. Toshiki Takahashi (Obayashi Corporation), contributed their expert opinions and supports to the workshop. Many innovative ideas about reducing a cut-and-cover construction period were proposed in discussions. In sharing ideas with each other, the participants built



The 19th International Summer Symposium on Kyushu University Ito Campus



Group discussion at the International Workshop for Young Civil Engineers 2017



Participants in the International Workshop for Young Civil Engineers 2017

mutual understanding. From the viewpoint of international students and young civil engineers, the symposium and workshop should be the best opportunity to acquire hands-on experiences of creating innovation in civil engineering technology.

【Reported by Masato Saitoh (Saitama Univ.), Leader of Int’l Student Network Group, IAC】

Report on “11th Joint International Symposium on Disaster Risk Management in Fukuoka, Japan”

11th Joint International Symposium on Disaster Risk Management (DRM) was held at Kyushu University, Fukuoka (Japan) in the morning of September 13, 2017, with the collaboration of Japan Society of Civil Engineers (JSCE), Architectural Institute of Japan (AIJ), Japan Federation of Engineering Societies (JFES), and WFEO-CDRM, supported by Science Council of Japan (SCJ). The symposium has been held annually since 2009 in order to disseminate the significance of Disaster Risk Management (DRM) that is the key concept to promote disaster prevention and reduction. The symposium attracted approximately 50 participants. Seven guest speakers discussed their great expertise and valuable experiences relating to natural disasters. They were invited from five countries. Three Japanese professors (Dr. Mazda, Dr. Shimizu, and Dr. Shimatani) reported the situations of severe earthquake-, or water-related disasters that recently occurred in Japan. Dr. Mujumdar (USA) talked about the framework for resilience and sustainability. Dr. Saber (Egypt) and Dr. Sutcu (Turkey) introduced the updated technologies locally developed to respond to disasters. Dr. Lai (Taiwan) showed severe landslide hazard mapping. The audience showed much interest in their talks and gave several questions and comments to those speakers. For example, one member of the audience exchanged opinions with Dr. Mazda about specific breaking mechanism with the examples of broken bridges over highways which were caused by Kumamoto Earthquake. The symposium, which had greatly valuable talks by the speakers and their constructive discussions with the audience, ended successfully.

※The WFEO-CDRM is a standing technical committee consisted of worldwide professional engineers group (WFEO) that discusses and addresses disaster risk management.

<Program>

Opening remarks
Toshimitsu Komatsu (Chair, WFEO-CDRM; Vice President, JFES; Emeritus Professor, Kyushu University)
Earthquake disaster session
1. “Overview of damage due to the 2016 Kumamoto Earthquake.” Taiji Mazda (Professor, Kyushu University)
2. “The recent developments in seismic isolation and response control technology and research in Turkey.” Fatih Sutcu (Assistant Professor, Istanbul Technical University in Turkey)
3. “A framework for resilient and sustainable communities.” Vilas Mujumdar (National Member, WFEO; Consulting Engineer; Vice chair, WFEO-CDRM)
Water & landslide disaster session
4. “Heavy rain-induced disasters in Hokkaido, August 2016.” Yasuyuki Shimizu (Professor, Hokkaido University; Chair, Committee on Hydraulic Engineering in JSCE)

- | |
|---|
| 5. “Torrential rain-induced disasters in Northern Kyushu, July 2017 - preliminary report.”
Yukihiro Shimatani (Professor, Kyushu University) |
| 6. “Hazard mapping and disaster management of large scale landslides in Taiwan.”
Wen-Chi Lai (Professor, Taiwan National Cheng Kung University) |
| 7. “Wadi flash floods integrated management in Egypt by considering climate change for secured development in Wadi basins.”
Mohamed Saber (Assistant professor, Assiut University in Egypt; Senior researcher, Kyoto University) |

Closing Remarks

Kenichi Tsukahara (Secretary, WFEO-CDRM; Professor, Kyushu University)



Guest speakers and organizing committee’s members (© 2009 - 2017 WFEO-CDRM. All rights reserved)

[Alumni of DOBOKU Series]

“How My Education and Experience in Japan Transformed My Life”

Madan Tandukar

Director, Technology, Höganäs Environment Solutions

My younger son is 13 years old now. We are going to apply for his passport. In the application form, we have to mention the country he was born in.... he was born in Japan.... while I was pursuing my Ph.D. at Nagaoka University of Technology. My son started asking me why we went to Japan and what we did there. This brought back all old but good memories.

My Student Life at Nagaoka University of Technology

I am originally from Nepal, a country full of nature. But due to recent urbanization, the small country was suffering from localized pollution problems. As a result, I decided to study environmental engineering and do something to fight the pollutions of air, water and soil. After I completed my undergraduate studies from Kathmandu University, I was granted a 6-year Monbu Kagaku Sho Scholarship to pursue my graduate studies in Japan. For one reason or the other, I chose Nagaoka University of Technology as my destination university. I was placed in Niigata University for 6 months to study Japanese language. I started my Masters at Nagaoka University of Technology in 2001.



Madan Tandukar

I was very lucky to be in Professor Harada Hideki's research group. Professor Harada's team is renowned in wastewater treatment. I was able to take advantage of a very rich knowledge available for me in his team. During my Masters and Ph.D. studies, every day was a learning day. I was either learning new things related to the subject matter or cultural aspects of Japanese life. Learning how to create a project, how to plan it, how to execute it and how to close it was very valuable for me. Ph.D. is not only about being expert in your subject matter. ***Ph.D. is about learning how to learn new things in a systematic way.*** Ph.D. is about critical thinking and analysis of problems and solutions from several different angles and perspectives.

After I graduated from Nagaoka University of Technology, I was able to utilize both aspects of the knowledge I learnt from Professor Harada. Professor Harada's team was very competitive and he provided us with lots of opportunities, freedom to carry out our projects and studies. We never had any shortage of resources. We were required to attend and present to at least two domestic conferences and two international ones per year. This boosted our confidence, presentation skills, and networking in the academic and scientific community as well.

Journey to the World

After I completed my Ph.D. at Nagaoka University of Technology, I moved to Tohoku University with Professor Harada as a JSPS* post-doctoral fellow. At Tohoku University, my learning curve was very steep, coming right out of the school. I had even more opportunity to sharpen my knowledge on subject matter and beyond. By this time I had eight scientific publications in renowned international journals and several conference presentations. I was invited as a JICA expert to deliver a lecture on wastewater treatment in Indonesia. I was able to make a bigger network of researcher and academics. One important opportunity



Fig. Educational and professional transformation of Dr. Madan Tandukar

was to get to know Professor Spyros Pavlosthasis of Georgia Institute of Technology, USA. I was given an opportunity to be a research engineer at Professor Pavlosthasis' research team at the prestigious Georgia Institute of Technology. I worked at Georgia Institute of Technology for 5 years as a research engineer, where I not only carried out several research projects related to anaerobic and aerobic treatment of waste and wastewater, but also had opportunity to teach several graduate and undergraduate level courses. This was the first time I consciously utilized all my knowledge and skills I acquired and gathered during my student life in Japan. I was able to create my identity in my new work place. I went back to Professor Harada and my team mates for any help and assistance I needed for my new work and new life. On the other hand, I was also able to help my old team mates from Professor Harada's group. I invited Dr. Onodera (my junior at Nagaoka University of Technology) for a year to my laboratory at Georgia Institute of Technology to conduct a 1-year research. Dr. Onodera successfully completed his one-year tenure at the institute and published three high impact scientific articles. He was able to create his own unique identity among his peers.

My life and responsibilities in corporate world

In 2012, I received an opportunity to move on with my career to Industry. North American Höganäs, NAH (now Höganäs Environment Solutions, HES) invited me to join them as a senior engineer. At NAH, I was responsible

to developing new products and technology for water and wastewater treatment. Soon, I was promoted to a manager and then to a director in the environmental business area of the organization. Now I have 15-20 people reporting to me. My responsibility extended to business development as well. Planning and strategy for current and future business is my day-to-day responsibility. I was also able to receive additional education from Harvard Business School, MIT and Stanford Graduate School of Business on leadership, business and organization management.

I am very happy to be able to serve the human society in the way I thought I should, which was only possible because of the vast education, knowledge, skill and experience I acquired in Japan. I hope to expand my contribution to developing world including my own country, Nepal. Only then I would think that I have fully leveraged the Japanese education.

Thank you Professor Harada, thank you Japan. You are my second home.

*JSPS: Japan Society for the Promotion of Science

Profile: Author is born in Nepal and has PhD in Environmental Engineering from Nagaoka University of Technology. The author then worked for Georgia Institute of Technology as a Research Engineer for 5 years before taking the current job as a Vice President of Technology at Höganäs AB. The author is also an alumni of Harvard Business School after completing PLD program at the institute. The author currently resides in the U.S. with his wife and two sons.

《Column》 Hideki Harada, Professor, Tohoku University, New Industry Creation Hatchery Center (NICHe)



Dr. Madan Tandukar, an international student from Nepal, has completed his MsS degree (2001—2002) and PhD degree (2003—2005) while I served Nagaoka University of Technology. I asked him to conduct a new research topic as his thesis study, which our lab had just launched. His topic was rather challenging and even ambitious, regarding a novel sewage treatment technology with minimum energy requirement, which aims a new global standard technology for replacement of conventional Activated Sludge Process. He exhibited an excellent potential for a research career and achieved a great advancement in his study, and successfully made it one of the most principal themes in our research group. He has also friendly and cheerful nature and shows an outstanding leadership

in our lab, and well relied upon by all around him.

In 2006 he moved, together with me, from Nagaoka University of Technology to Tohoku University while he was a post-doc fellow of JSPS. Besides energetic research activity, he devotedly helped me to set up a new lab there for two years (2006—2007). Afterward, he was invited to a research fellow by the distinguished Georgia Institute of Technology, US. After 5 years academic life at GIT, he challenged to change his engineer's course by joining a private company, North-American Höganäs. I was pleased to hear of his promotion in this July to the vice president of such a big company with 1,700 employees and annual turnover of one billion US\$. It is definitely utmost delightful for a teacher to watch his former students spreading their wings in the sky to maximize their potential in their fittest world.

※Alumni of DOBOKU Series is in collaboration with Editorial Committee of JSCE Magazine.

Introduction to the Activities of Robotics Committee in Construction

The population of Japan, which had been continuously increasing over many years, peaked and began to decrease around 2008. This is a social phenomenon being experienced for the first time in Japan, and it is feared that its effects will begin to appear in various societal contexts. There are concerns that shortages of personnel in the construction field, especially in the productive age range of 15 to 64 years, will become increasingly serious.

Meanwhile, in recent years, there have been remarkable technological developments in ICT etc. and, through their active introduction, productivity in field of construction has been improved dramatically; with efforts underway to make reforms necessary to build a sustainable industry, even in a society that is seeing a decreasing in its number. The introduction of robots for construction is an example of this.

For more than 30 years, beginning in 1985, Robotics Committee in Construction has been engaged in the development and dissemination of robotic technology for use in the field of construction. Over those years, in response to remarkably changing social trends, the committee has reviewed its management system flexibly: its activity is now focused on the work of the following subcommittees: 1) “Disasters and Accidents Subcommittee” aims to develop and disseminate technologies for life-saving and reconstruction in a period of continually intensifying natural disasters; 2) “Maintenance Management Subcommittee” aims to introduce and advance robotic technology in the maintenance of civil engineering structures while the issues of deterioration and aging are becoming serious; 3) “Construction Operations Subcommittee” aims to introduce robotic technology in general construction for labor-savings and improvements in construction quality; 4) “New Technology Subcommittee” aims to introduce various new technologies being developed in a wide range of fields into construction robots.

As robots for construction are equipped with various types of ICT equipment, their cost is generally higher in comparison with existing machines, which stands as an obstacle to a more widespread use of robots. For this reason, the Committee is currently focusing on discussions, aiming to make robotic technology easier to introduce for general construction purposes, through positive construction costs and benefits achieved when introducing robotic technology, such as labor-savings, improved efficiency and safety improvements.



Prof. Kazuyoshi Tateyama
Chair of Robotics Committee
in Construction
(Ritsumeikan Univ.)



Unmanned construction technology used in disaster recovery

Updates

- ◆ Summary of feature articles in JSCE Magazine Vol. 102, No. 11, November 2017 is available on the JSCE website.
<http://www.jsce-int.org/pub/magazine>
- ◆ Journal of JSCE
The Journal of JSCE is the collection of research papers which can be viewed on the JSCE website.
<https://www.jstage.jst.go.jp/browse/journalofjsce>
- ◆ CECAR8 Call for Abstract has started on August 1st.
<http://www.cecar8.jp/>
- ◆ Concrete Committee International Newsletter No. 50
<http://www.jsce.or.jp/committee/concrete/e/newsletter/newsletter50/index.html>
- ◆ Asian Civil Engineering Coordinating Council (ACECC) International Newsletter archives
<http://www.acecc-world.org/newsletter.html>
- ◆ [Previous Announcement] Japanese Civil Engineers the Global Leaders Symposium Series No.11 “the Construction Project of Osman Gazi Bridge in Tukey – one of the world’s longest suspension bridge”(tentative title) will be held on January 24, 2018.
<http://committees.jsce.or.jp/kokusai/>
- ◆ IAC Students and Alumni Network
http://www.jsce-int.org/IAC_network

§ IAC News Subscription §

The IAC News is one of the communication tools to share information and ideas with the members. We would like to invite you, your friends and colleagues to join the communication and to subscribe the IAC News. Please register online: (<http://www.jsce-int.org/node/150>). We look forward to meeting you.

§ IAC Facebook §

Recent activity of International Activities Center is introduced on this Facebook. By all means, please see this home page. (<https://www.facebook.com/JSCE.en>)

Comments and Questions

Please send us your feedback and comments to help us improve the IAC news. We look forward to hearing from you.

JSCE IAC: iac-news@jsce.or.jp