



April 2014

March 2014 graduates

## Messages from the Faculty

### Greetings on the Occasion of Joining SDM

Since the day I made my first cry in Takamatsu, Kagawa, I have moved 25 times, worked at seven different places and have changed jobs six times. I am now 56 and have 33 years of work experience. If I exclude the 20 years that I worked for “Nikkei Business”, I changed jobs every five years and on average moved every 2.2 years.

My approach to life has always been that I will not rely on organizations and have been in too much of a hurry. Though I have been self-indulgent, wanting only to do what I enjoyed and felt passionate about, I somehow always expected and believed in a kind-of pre-established harmony. I constantly tried new things and in this way found myself in an amazing port and dropped anchor as the proverb states: “The dog that trots about finds a bone.” And now here I am, at Keio SDM. There is a saying: “Once a journalist, always a journalist.” This is probably true for me, as I believe that what I have been doing all this time is showing others the different ways in which events can be interpreted, by analyzing events in an historical context on the vertical axis and according to geopolitics on the horizontal axis. Now that I have been given a chance to join a faculty consisting of progressive spirits, I will continue my pursuits in this manner.

No economic phenomenon is independent of politics and power is never free

from economic interests. In principle, systems cannot be interpreted without analyzing the history behind them, including the judgment as to whether they are rational or irrational. At Keio SDM, I will strive to move freely between these two seemingly different approaches and hope that my students will share this experience with me.

Management consists of leadership and followership. If management is a technique with which to provide positive incentives to a large number of people, it is essential that leaders who want to be exceptional and followers who want to generate and implement excellent incentive structures have the intellectual reflexes that will allow them to move freely between two or more things. It is my aim to do the best I can to help nurture such reflexes.

In addition to my role at Keio SDM, I will be working on a series of ad-hoc special assignments for Prime Minister Abe. My talents, if you will, are the following two things: I can cut out sleeping and my motivation age does not increase contrary to my physical age. I will do the best I can while relying on these strengths that are, frankly, not worth boasting about.



Tomohiko Taniguchi, Professor  
Graduate School of System Design and Management

## Messages from the Faculty

### Aiming at the Same Goal as Keio SDM

My name is Makoto Ioki. I joined Keio SDM as a faculty member in April 2014. I worked on space systems for 27 years at a private firm. There, I was directly involved in the entire life cycle of satellite systems, from the conceptual phase to the detailed design, manufacturing, testing and finally operation following launching. I have been working toward realizing systemic *monozukuri* (“the art, science and craft of making things”) by utilizing methods of systems engineering, a main discipline at Keio SDM. I was also involved in educational activities for the public. I explained how Japan’s space system was being utilized in everyday life. I also took part in field studies with the aim of introducing Japanese satellites and satellite utilization technologies to other countries, acting as a bridge builder between Japan and these countries to promote the utilization of Japanese technologies. Through these works, I have been exploring how to promote Japan’s space industry.

Building on my experience in space systems, I will be pursuing a means of abstracting this knowledge, thereby linking it to new methods and ways of thinking that are independent of established sectors and fields. I also want to research how the validity and appropriateness of such an approach should

be evaluated. Specifically, I am keen to discover the process – how a concept evolves from the initial stage of its lifecycle to a final output – by applying a range of existing research methods.

Systems engineering has been established as a method by inductively analyzing findings from a number of different cases. In order to apply this particular method to actual cases, a deductive approach is needed; thus, it is necessary to keep in mind the organic mutual relationship between induction and deduction. Additionally, in order to “see the forest for the trees”, one needs to be able to move freely between concrete thinking and abstraction, while keeping multiple perspectives in mind. I believe the key to linking theory to reality is not only about distinguishing opposite concepts from one another, but also by embracing the whole. It is therefore that I apply myself with renewed determination toward Keio SDM’s goal – finding solutions to society’s problems from within a broad range of perspectives, on spatial and semantic scales, as well as on time scale.



Makoto Ioki, Associate Professor  
Graduate School of System Design and Management

## News

TOPIC 1

## Commencement of the Academic Year 2013/14 for March Graduates



A ceremony of commencement was held at Hiyoshi Campus at 10:00 on Friday, March

28, 2014. The ceremony was followed by a Keio SDM ceremony, which was held in Room D201

of the Independence Wing, starting at 11:00. Dean Maeno handed out diplomas to each student who had concluded their studies. Four students were awarded doctorate degrees: Jun Kato, Munehiro Kayo, Tetsuya Toma and Mizuho Sato. A total of 62 students received master's degrees: (1) 26 joined right after completing their undergraduate education, while 36 had prior working experience; (2) 28 pursued SE studies, while 34 pursued SDM studies (3) 52 selected the RI course, while eight selected the LI course for those who joined Keio SDM in the 2012/2013 academic year.

TOPIC 2

## The Second Annual Conference of the Innovation Education Academic Society



Workshop

Keio SDM's members organized the second conference of the Innovation Education Academic Society at Keio University's Hiyoshi Campus on Monday, March 10 and Tuesday, March 11, 2014. The first day consisted of a workshop, which was a digest version of Keio SDM's class for 70 participants. On the theme of "How to Disseminate Innovative Education", each team generated various ideas through brainstorming, structural shift ideation and prototyping. On March

11, the second day of the conference, a keynote lecture and panel discussion were held and actual cases were introduced to the participants. The keynote lecture, "Design Thinking and Innovation: KMD Style" was delivered by Professor Naohito Okude of the Graduate School of Media Design, Keio University (KMD). The panel discussion, "How to Disseminate the Outcomes of Innovative Education among Industry-Government-Academia" was facilitated by Keio SDM's Dean Takashi Maeno

and included the following panelists: Hideyuki Horii (Tokyo University), Yasuyuki Hirai (Kyushu University), Toru Tanigawa (Kyushu University) and Naohiro Nishiguchi (Japan Innovation Network). Finally, a poster session was held and followed by a reception. Attended by numerous participants from different universities, government and companies who aim for innovation, the conference was concluded on a high note.



Workshop



Keynote lecture by Professor Okude



Poster session

TOPIC 3

## PMP® Exam Preparation Course Offered in March and April

The exam preparation course for Project Management Professionals (PMP®), an international certification for project management, was again instructed by Ms. Yukiko Otsuka of Fuji Xerox Learning Institute Inc. this year. The course is not only aimed at those who wanted to prepare for the examination, but also for others who wanted to familiarize themselves with the Guide to the Project Management Body of Knowledge (PMBOK®), an international standard for project management. As the fifth version of the PMBOK – which had recently been revised – was covered this year, it offered a good opportunity for participants to learn

about the latest project management standards. The course was also opened to the public. What made this year's course special was that, for the first time, it was attended by a number of foreign students who did not understand Japanese. Three large-screens were fully utilized to simultaneously display English subtitles for the lectures taught in Japanese. Additionally, two PMP holders, former course participants, were invited as guest speakers and they shared their experiences of how to prepare for the exam, and how to best utilize the certification for work, thereby encouraging course participants. This course boasts a high passing rate; to date, 20 former

participants have passed the exam. It is our hope that the participants nurtured by Keio SDM will play important roles as future professionals in this area.



Reception with the two former participants who passed the exam

## TOPIC 4 Workshop: “The Sixth New Energy Utilization and Sustainable Society Research Program”

The Symbiotic Safety System Design Laboratory, represented by Hidekazu Nishimura (previously known as the “Symbiotic System Design Laboratory” and represented by former Professor Shoichi Sasaki) has organized this workshop since 2011. Specialists of renewable energy such as solar, wind and geothermal power are invited to present their activities. The sixth workshop was held on Tuesday, March 25, 2014. Guest speakers included Deputy Mayor Nagoshi, who spoke about a post-disaster smart-city plan called “Blue Project” for Miyako City, Iwate Prefecture, as well as Mr. Takeda, a board member of Japan Blue Energy Co., Ltd., who introduced “technologies to generate hydrogen from biomass”, an essential aspect of the above-mentioned Blue Project. Participants



Panel discussion on the smart-city initiative utilizing innovative biohydrogen

showed great interest in these themes; “biomass”, which is key to building the next-generation smart communities and “biohydrogen”, which is expected to become an alternative energy within hydrogen

societies by replacing fossil fuels. The workshop provided a great opportunity for examining the next-generation energy mix and social system designs from new perspectives.

## TOPIC 5 Signing of Cooperation Agreements with MIT and University of Copenhagen



Signing ceremony with MIT for cooperation agreement

Keio SDM signed a research and educational collaboration agreement with the MIT Center for Complex Engineering Systems (CCES) on Monday, February 17, 2014. The agreement is expected to contribute to various collaborations, including cooperation on Keio SDM’s Design Project education, as well as faculty and students’ mobility. As shown in the photo, the signing was carried out by Professor Olivier L. de Weck (Professor of Aeronautics

and Astronautics and Engineering Systems) at the Collaboration Complex of Keio University.

On Tuesday March 18, 2014, another agreement was signed concerning an exchange program for students with the Faculty of Humanities and the Faculty of Social Sciences at the University of Copenhagen. The signing ceremony was held in the presence of Professor Ingolf Thuesen (Head of Department of Cross-Cultural and Regional Studies) at the Collaboration Complex of Keio University. The agreement was signed based on the results of a year-long pilot program.

This brings the total of Keio SDM’s partner universities to nine, including those offering exchange programs: Delft University of Technology in the Netherlands, the ETH Zurich in Switzerland, Politecnico di Milano in Italy, the National Institute of Applied Science, Toulouse (INSA) in France, Purdue University in the US., MIT in the US., the

University of Cambridge in the UK, the University of Copenhagen in Denmark and the University of Adelaide in Australia. Each year, we collaborate with these universities through exchange programs for faculty members and students, as well as in joint research. Keio SDM strives to establish and maintain its world-class networks by promoting high-quality and sustainable cooperation with well-known universities.



Signing ceremony with the University of Copenhagen for the students exchange program

## TOPIC 6 “The First Seminar on Agriculture, Rural Area and Local Revitalization”

The Agriculture Laboratory of Keio SDM and its affiliated research group organized “The First Seminar on Agriculture, Rural Area and Local Revitalization” in Otemachi, Tokyo on Thursday March 27, 2013. The lecturers included Mr. Hisashi Sonehara, representative of an NPO in Yamanashi Prefecture, *Egao Tsunagete* (“Relaying Smiles”) and Project Professor Mikako Hayashi. On the theme, “How to develop a business model utilizing agriculture and rural resources”, Mr. Sonehara spoke about the possibility of

rural community businesses, while Project Professor Hayashi stressed the importance of the circulation of human resources, economy and information through rural and urban symbiosis. The seminar reconfirmed the increasing interest in agriculture and rural areas, given that some participants had travelled all the way from remote areas like Hokkaido, Shiga and Kagoshima Prefectures to attend the seminar and that participants included companies of various sectors, such as those dealing in real-estate and machinery manufacturers.



## TOPIC 7 Nakatani, Visiting Researcher, Reveals the “Function of Skin Sensor for Soft Touch”



Visiting Researcher Masashi Nakatani, jointly with a group of researchers including Professor Ellen Lumpkin of Columbia University, discovered that epidermoid Merkel cells play an important role in communicating the “softly pushed” skin sensation to the brain. This research finding was released in the British scientific journal *Nature* in its online version of

April 6, 2014. Although tactile sense is the most basic of the five senses, its research remains the least advanced. It has long been known that Merkel cells, one of the biological tactile sensor systems (the nerve complex) communicates information of what is being touched by skin to the brain; however, its exact mechanism has remained unclear for more than a century. Applying the basic knowledge of Merkel cells revealed through the above-mentioned research is expected to lead to the further development of high-resolution touching

sensors, which will be useful to the remote-control operation of medicine and space development. The research findings are also expected to contribute to the generation of technologies related to touch-sensor-displays, in which the feeling of touching can be freely reproduced, as well as to the development of prosthetic limbs and legs with tactile feedback. Nakatani expressed his aspirations thus: “Inspired by the sophisticated structure of tactile systems, I would like to continue innovating tactile sensation technologies.”