



Message from the Director and Dean

Why is system design and management study so powerful?

You'll find the answer in this issue. Although it may sound odd, team problem solving, which is part of the core studies in system design and management, resembles a neural network in that both can solve various problems. If a perception, an artificial neural network, has enough interlayer neurons and learning processes are executed adequately, it can express every nonlinear calculation. Abstractly speaking, it can solve any kind of problem, just as a team can. Theoretically, if a team of experts in every field can thoroughly discuss a problem, they will find the best solution for it. Of course, it is impossible to gather enough experts to cover all areas or to have discussions that are extensive enough to find the best solution.

In the real world, like at SDM, the best possible teams are formed and team members conduct efficient discussions by utilizing various perspectives. In other words, SDM's framework is already powerful enough to solve various problems. All we need to do is to share the framework among SDM and the stakeholders of the particular problems and cooperate to find solutions. We wish to apply SDM's framework and solve various problems of our time—from science and technological issues to political, economic, and foreign affairs. If you have such issues, SDM would like to hear from you.



Takashi Maeno
Director, SDM Research Institute
Dean, Graduate School of
System Design and Management

People who take on challenges

— Takashi Maeno, Dean, Graduate School of System Design and Management —

“Students of international politics are like stars on the silver screen who have prevailed against fierce competition.”

Those were the words of Dr. Bryan Hehir, an international political scientist and Catholic priest who taught me about nuclear strategy at Harvard University immediately after the end of the Cold War. It was extraordinarily difficult for researchers to adjust to the Post-Cold War era from the Cold War era. It was similar to the transition from silent movies to talkies, a transition that some of the biggest stars of the silver screen were never able to make. The end of the cold war also saw the attrition of large numbers of international political scientists.

When we look back on it, the tragedy of 3.11 will also be seen as a transition point, a juncture at which the mechanisms of our society changed. The accident at the Fukushima nuclear reactor will leave deep scars on both our day-to-day life and our social and technology systems. Perhaps Professor Takashi Maeno, the new Dean of the SDM, sensed that this was coming because he has consistently been a pioneer of new fields. He did his undergraduate and master's degrees in mechanical engineering at Tokyo Institute of Technology before joining Canon and eventually earning a doctorate. His life plan was almost certain to be achieved; his work was well funded, and all he had to do was continue on that path. But less than 10 years after joining the company, he left to become a full-time lecturer in the Faculty of Science and Technology

of Keio University, where he went on to become an assistant professor and professor. As one of the leading researchers in the field of robotics, he has been awarded 18 prizes, including the Prize of The Japan Society of Mechanical Engineers (outstanding academic paper). Certainly, it has been a rich life, surrounded by ideal colleagues and students.

But there were other impulses moving this robotics expert. He wanted to investigate more complex systems that involved human beings. That desire led him to join the SDM, which was inaugurated on the sesquicentennial of Keio University. He had chosen to make his home in a new graduate school that advocated a fusion of the human and physical sciences. The domains of his research have expanded into areas like “personal psychology” and “the quantification of happiness.” In the post-Fukushima world, few will doubt his prescience. On the day that this enormous crisis struck Japan, staff and students who had studied at the SDM rushed to the scene of the tragedy and worked valiantly in the relief effort. They went there as members of different organizations--electric power companies, Maritime and Air Self Defense Forces, and NPOs--but their goals were the same. Their messages from the front lines of the disaster paint a stark picture about the increasing distortions in our current social and technology systems. Their work hints at the precipitous summit to which Professor Maeno aspires.

Ryuichi Teshima, Professor, Graduate School of System Design and Management

TOPIC 1

SDM Special Open Lecture “Application of standardization in business strategy – making the most use of in-house intellectual properties”



Mr. Manabu Eto

Manabu Eto, Director General at JETRO Geneva (Former Director at the Conformity Assessment Division of METI) gave an open lecture titled “Application of standardization in business strategy – making the most use

of in-house intellectual properties (IP)” on July 1 in Room C3S10, of the Collaboration Complex on

Hiyoshi Campus.

Although the importance of standardization has been acknowledged, the business impact of standardization is not properly understood; it may cause a loss of business competitiveness. On the other hand, it allows other companies’ IP to be obtained at a low cost. Moreover, standardization can strengthen business activities if it is applied appropriately and in a timely manner. However, inappropriate standardization will only cause

business to be unprofitable. In his lecture, Mr. Eto explained how to make use of in-house IP and about standardization for developing a successful business based on his extensive experience. SDM students learned to place more importance on considering not only technologies and businesses, but also IP and standardization over the life cycle of systems.

TOPIC 2

SDM Special Open Lecture “Interactive Design”



Lecture by Yugo Nakamura

Yugo Nakamura, a popular web designer / media director gave an open lecture titled “Interactive Design” on June 29 in Room D205, Independence Wing, Hiyoshi Campus to a large audience that included over 100 outside participants. He introduced works from his early period (1998 when he started interactive design) to his latest

works (INFOBAR) and shared how he drew inspiration. Though he called himself “second generation”, it was apparent that he is a pioneer in that he seeks new ideas and designs unique products. This rare opportunity to hear how a designer comes up with ideas was valuable. One characteristic pattern is the successful application



Yugo Nakamura (right) and Associate Professor Seiko Shirasaka

of physical phenomena for design. The demo of water splash designs and the models of gravity, reactive force, and human touching fascinated the audience. Mr. Nakamura spoke not just about the actual design, but about the system design and the philosophy behind the design, which also benefited the SDM students.

TOPIC 3

Look cooler in “waso- style”



Students and professors in “waso style”

As introduced in the July issue of SDM News, SDM discussed how to respond to the electricity shortages following the Great East Japan Earthquake, in light of Japan’s energy saving and “coolbiz” efforts. Associate Professor Ken L.V. Hijino’s idea was to encourage teachers and students to wear “waso-style” traditional Japanese clothing because it seems “cooler” to

the eye and the body during the muggy summer climate in Japan. We expected not only that the traditional clothing that had been developed over the centuries would be comfortable and refreshing to wear, but also that it would be so inspiring; waso-style clothing is comfortable and airy so motion becomes elegant. We feel unusually creative and free. The waso-style project was

featured in Japan Times (Morning edition, August 22, 2011) and Yomiuri Shimbun (Morning edition, August 22). Pictures of students and faculty members in waso-style walking on campus and talking in a seminar were featured in nationwide newspapers. It was a good opportunity to promote SDM’s creative ideas and to show Jiga sakko, “the pioneering of new classics.”

Press release : ▶ <http://www.sdm.keio.ac.jp/en/news/2011/07/waso-style.html>

TOPIC 4

Launch of Kannai Future Center



Launch event at Kannai Future Center (mass x mass Kannai)

On July 7, a shared office business incubation center “Kannai Future Center” was launched at mass × mass Kannai (Kitanaka-doori 3, Naka-ku, Yokohama). Over 120 participants gathered for a lively networking session. “mass × mass Kannai” is a community facility for entrepreneurs and creators in the Kannai area involved in city planning. In addition

to a meeting space, it provides information and support for social entrepreneurs, artists and creators and aids in their collaboration in international networks. From SDM, Dean and Professor Takashi Maeno and Yoshinobu Soda, a SDM Research Institute researcher, introduced SDM and the Social Design Center. In addition, Hiroyasu Ichikawa (President of SocialCompany.

org.), Haruaki Tanaka (President of Harumaki Project Co. Ltd.), Yutaro Yatsuzuka (President of KOKUYO Furniture Co, Ltd), Kenji Sekine (President of United People Corporation), and Tomohiko Okabe (CEO of kotolab.LLC), had a lively discussion about future collaboration, local revitalization, and social business.

TOPIC 5

Motoko Takeuchi wins the Best Paper Award at Euro SPI Conference

Motoko Takeuchi, VSE Center researcher at the SDM Research Institute, and co-authors Associate Professor Naohiko Kohtake, Associate Professor Seiko Shirasaka, SDM Research Institute researchers Kazunori Shioya and Yumi Furuishi won the Best Paper Award for their Industrial Experience Report at the 8th Euro SPI Conference, held at Roskilde University in Denmark on June 27-29. The Euro SPI Conference is an international conference of industry-academia-government collaboration for sharing experiences and results through workshops and presentations on process improvement of services,

software and systems. The paper used an example that applied ISO/IEC29110, the international standard for software development process for VSE (Very Small Entities) enacted in February 2011. This highly regarded research utilized actual cases to evaluate the feasibility of the new ISO/IEC29110 in industry based on perception and issues obtained from real cases. Furthermore, the paper introduced implementation plans for process assessment and process improvement in the VSE center using ISO/IEC29110, followed by a lively discussion with participants from all over the world.



Presentation by SDM Research Institute researcher Motoko Takeuchi

TOPIC 6

Report on Earthling 2011



Planning committee and students



Talk session

Think The Earth Project hosted Earthling 2011 with SDM and the Graduate School of Media Design (KMD) at Fujiwara Memorial Hall on Hiyoshi Campus on July 30 and 31, 2011. This event aims to think about possibilities for human beings 50 years from now in commemoration of the 50th anniversary of Gagarin’s flight into

space. Over 600 people attended and 37,000 viewed the six sessions held over the two days on Ustream. The first day’s sessions were hosted by creators in advertising, media and manufacturing (Session 1), women working in disputed and deprived areas (Session 2) and venture capitalists starting up an ethical jewelry brand and a natural

energy system (Session 3). Sessions on the second day were led by scientists and engineers in space, deep water and brain science (Session 4), SDM and KMD students (Session 5), and organizers of Earth Summit 2012 Japan and “Parent and child day” (Session 6). After the sessions, the presenters engaged the audience in discussion. From SDM, Professor Takashi Maeno and Associate Professor Naohiko Kohtake presented in Session 4 and Tomoaki Sakurai (2nd year master’s course) presented in Session 5. In addition, many SDM and KMD students assisted with the preparation of the event and with the Ustream delivery.

Earthling 2011 :

▶ <http://www.thinktheearth.net/jp/earthling/>
(in Japanese)

Laboratory Profile

Introducing two labs directed by Professor Shinichiro Haruyama

Professor Shinichiro Haruyama

Total design of information and communication systems for ubiquitous society and entrepreneurship



Visible Light Communication Laboratory

Representative: Professor Shinichiro Haruyama

1 High precision navigation system using LED lighting



We have the technology to develop indoor 3-D positioning to centimeter precision by adding information on visible LED lighting. This technology enables a robot in an indoor setting to be guided via overhead LED lighting placed two meters overhead. We can guide a wheelchair equipped with this system through a hospital as shown in the photo.

Wheel chair guides itself through positioning information contained in the LED lighting.

2 Integral system design of visible light communication and augmented reality (AR) technologies



AR system to show advertisement information dispatched from lighting sources and similar objects overlaid on the physical surroundings.

Augmented reality combines and adds virtual objects as electronic information on top of image information of real environments such as the physical surroundings. Our research resulted in a friendly user interface, which overlays helpful information in floating graphics or objects. Future research will apply this technology to intelligent transportation systems.

3 System design of visible light communication survey

We have developed a "visible light communication 3-D position measurement system" together with Sumitomo Mitsui Construction Co., Ltd. This system applies visible light communication and a photo survey in a construction site. Thanks to this system, night-time surveying and unattended surveying, which were difficult with conventional technologies, are now available at a low cost. This system can measure with millimeter precision in a 40m x 40m area and maintain a survey of movement for a 24-hour period. In 2009, the Japan Society of Civil Engineers named this system as one of ten innovations in civil engineering.

Visible light communication survey system awarded as one of ten innovations in civil engineering by Japan Society of Civil Engineers



Train Services Laboratory

Representative: Professor Shinichiro Haruyama



Experiment of high-speed communication of about one gigabit per second for a bullet train moving at 270 km per hour.

We are proposing various ideas for future train transportation and related services from the users' perspective based on technological, social, and psychological considerations. We have been conducting joint research on high-speed communication technology for

a high-speed train with the JR Railway Technical Research Institute since 2007. In 2010, we achieved high-speed communication of about one gigabit per second between the moving Shinkansen bullet trains, local trains, and fixed sites. Currently we are working to improve the performance.



Image of potential on-board high-speed communication services

In the Train Services Laboratory, we are researching the viability of on-board services using high-speed communication technology and other information technologies. If adopted commercially, individual passengers will be able to enjoy on-demand video and sound as well as use cloud computing services, as shown in the photo image.



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