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# February 2012

Participants in the "International Symposium on Yoshiwara and Ukiyoe"



S ince its inception, one of the key ideas behind education and research at the Graduate School of System Design and Management (SDM) has been "see the trees and also the forest." In actual practice, however, it is extraordinarily difficult to do this in system design. Understanding the details of the trees means using your hands, and understanding the forest means using your brain and your hands. The philosopher Immanuel Kant once said that the hands are a second brain. We use our hands to collect data, make drawings, build prototypes, give form to our ideas, and view objects and phenomena objectively. This second brain has, thanks to the advances of science, acquired new tools and expanded its functions. Getting our hands on the compass and ruler allowed human beings to work with geometrical concepts; learning programming and IT skills allows us to use computers as extensions of our own brains. Today, smartphones and tablets continue to expand the functions of our hands. The practice of system design continues to evolve.

Tetsuro Ogi, Professor Graduate School of System Design and Management

# News



Nick Venderbosch's report on his studies

# Report presented by Delft University of Technology exchange student

An exchange student from Delft University of Technology (TU Delft) in the Netherlands presented his final report on Wednesday, January 25, 2012. Nick Venderbosch of the university's Faculty of Technology and Policy Management (TPM) gave a lively presentation in which he related his reasons for choosing to study in Japan during the uncertain times after the earthquake and described the lectures that he attended at Keio University, the friendships that he made outside of school, and his travels around the country. He was particularly proud of being a member of the Adidas team that earned the Kos ISHII Award, the prize for excellence, in the international design project ALPS (Active Learning Project Sequence). SDM is currently hosting Lilyana Lee and Steven Ankersmit from TU Delft. Since 2009, it has welcomed a total of eleven students from TU Delft, an indication of the strength of the exchange program. In January 2012, SDM also welcomed Satadru Roy of Purdue University in the United States. They bring a welcome perspective to the educational and research environment at SDM.

# AY2011 study abroad programs (short-term)

uring AY2011, a total of eight students from SDM went abroad to further their studies. This issue features reports from three students who left on threemonth programs in the summer of 2011 and returned before the end of the year.

### **Experiences studying at Purdue University** Aria Iwasawa (2nd year masters course)



In front of airplane wings

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**Experiences studying at Purdue University** 



the wings from my airline seat many times, but my experience abroad has changed what I see. In August

've looked out at

Shusuke Morimoto (2nd year masters course)



was only abroad for a short period of time, but was able to move forward on my research and make At the UIUC Open with teammates many new friends

both in the university

and the community. I

from Purdue University (Morimoto is in the center)

studied at the School of Aeronautics and Astronautics of Purdue University under Professor James Garrison, an authority in my research field of using GPS for seamless indoor and outdoor positioning. I attended classes, but

Experiences studying at Delft University of Technology Yuko Kagami (2nd year masters course)



With friends at TU Delft (Kagami is second from the right)

L2011, I traveled to Delft University of Technology (TU Delft) in the Netherlands for a three-month exchange program. The university is very cosmopolitan;

the end of August

2011, I left for a three-month exchange program at the School of Aeronautics and Astronautics of Purdue University (Indiana, USA). At Purdue, I studied under Professor William Crossley, an expert in the optimization of complex systems, and did research on optimization techniques and decision-making when confronted with conflicting engineering requirements. In classes on the

was able to conduct my research in the Radio Navigation Lab at my own pace. Once a week, members of the lab would take turns presenting their findings, which would be followed by discussions and advice from professors and other lab members. These experiences brought new depth to my research. There were many things I wanted to do and I received many invitations, but my highest priorities were on badminton, my first love, and on socializing with friends in the laboratory. One experience I'll never forget is a trip to Illinois to participate in the Chicago Open and a tournament at the University of Illinois (UIUC). Those days of spending every waking moment with my teammates cemented our friendships. Returning back to Japan, I think my time abroad was

there are large numbers of Germans, Chinese, and Indians studying alongside the Dutch students.

I participated in the "Introduction Program" at the end of August. We broke into small teams and were asked to discuss assigned topics for presentation on the final day. This project work taught me how difficult, but also how fun, it is to exchange opinions with students of completely different backgrounds and to arrive at a consensus.

There were many things that I did not fully

optimization of complex systems, I learned the mathematics and engineering that govern decisions on airplane wing shapes. When I took my seat on the plane home, I looked out at the wings and my mind was filled with optimization formulas.

I hope that many more students will make use of the environment at SDM and take up the challenge of studying abroad!

valuable in teaching me how to shut out the noise and concentrate on the task at hand. I experienced difficulties along the way, but the benefits were far more numerous. I gained confidence in my ability to work according to my principles regardless of the environment. I doubt that I will have many more experiences like this in my life. I would like to thank the many people who helped make my studies abroad possible.

I would like to close with a quote from one of my favorite authors, Mark Twain: "Twenty years from now you will be more disappointed by the things that you didn't do than by the ones you did do. Sail away from the safe harbor. Explore. Dream. Discover." - Mark Twain

understand in the two classes I took, but I was able to discuss the material with my friends, which helped to deepen my understanding.

These three months helped me to grow in spite of the many obstacles and impediments I had to overcome. Students from around the world study at TU Delft, and my interactions with them increased my ability to explain myself to people with completely different cultures and also my ability to understand their positions.

### 3 PhD Dissertation Jury and posthumous doctoral thesis

PhD Dissertation Juries were held for the following four car dilla following four candidates who completed their studies during the AY2011 Fall Semester. SDM in its fourth year has produced results with an "only at SDM" flavor. Below are the highlights.

### The Quality Verification Process and Design **Change Management for Components Replacement in Case of End of Life** Takayuki Tomaru

This dissertation proposes methods for accelerating the assessment of quality for alternative components and resolving incompatibilities between products and alternative components so that product production can continue after the production of components has been terminated. The effectiveness of the proposed method was verified in field data covering more than 20,000 parts.

### Major papers:

Takayuki Tomaru, Masaru Nakano, and Hidekazu Nishimura, Supplier quality assessment to identify depth technical knowledge of component reliability, Production planning and control, 2011. (Scheduled for publication)

**Distributed Collaborative Design Method using** Structural and Functional Modeling for Complex **Consumer Electronics Products** Kenichi Seki

This research examines ways to create a collaborative, distributed design framework as well as prevent rework in collaborative international environments for the design of consumer products by viewing the physical spaces between the modules as another module, by using SysML to describe the relationships between the modules, and by using DSM to express the interdependencies among distributed design tasks.

### Major papers:

Kenichi Seki, Hidekazu Nishimura, A module-based thermal design approach for distributed product development, Research in Engineering Design, Volume 22, Number 4, 279-295, DOI: 10.1007/s00163-011-0113-x

### **Architecture Framework Development Process** using Meta-Thinking and Enable Seiko Shirasaka

This research proposes a framework for building system design architecture frameworks, one of the leading-edge fields in systems engineering. In the SDM spirit of "seeing the trees and the forest," it combines both meta and detailed perspectives.

### Major papers:

Seiko Shirasaka, Shinichi Nakasuka, Realization of the Concept of the Reasonably Reliable System, Engineering in the Design of Nano-Satellites, 2011. (Scheduled for publication)

### Green Policies for Clean Energy Vehicles Using Life Cycle Assessment Tomomi Nonaka

This research into socio-technology policy examines combinations of environmental taxes and technology (batteries, etc.) in the spread of environmentally friendly automobiles. It proposes a policy-formulation framework and uses detailed lifecycle data to simulate and verify its impact. In true SDM spirit, it examines

### Major papers:

Carbon Taxation Using LCCO2 and LCC for Clean Energy Vehicles Transaction of the Japan Society of Mechanical Engineers Series C, Vol. 77 (2011), No. 783 pp.4024-4033

### Posthumous doctoral thesis

both the details and the big picture.

### (candidate passed away just prior to jury)

Empirical research into the use of human behavioral psychology to prevent foodproduction scandals Toshio Ishikawa

This research uses working-level observations of the psychological background behind foodproduction scandals and combines them with surveys and interviews to provide new perspectives on the organizational culture and worker solidarity required to find fundamental solutions.

## **Master's Thesis Jury**

is customary, on February 10 and 11,  $S_{2012, SDM}^{1s}$  convened the Master's Thesis Examination Committee to hear presentations on a wide range of topics in both technology systems and social systems. Outside jury members gave the master's theses high marks for addressing real social concerns and using systems engineering principles in detailed system design and verification & validation.





# VSE Center sponsors process improvement seminar



Participants practice process improvement methods

Wednesday, January 25, 2012, the "1st 11-Day Hands-On Seminar with the SPINA3CH Autonomous Improvement Method" was held under the sponsorship of the VSE Center at the SDM Research Institute and with support from the Information-technology Promotion Agency, Japan. During the seminar, VSE Center lecturers explained the eight steps of the "SPINA3CH autonomous improvement method" developed by the Information-technology Promotion Agency, Japan for process improvement activities in software development and gave the participants the tools to implement each step. Using these steps and the insight they have gained during the software development process improvement activities so far, the participants can further improve their skills on with self-study, yet keep an eye on the big picture.

We plan to hold additional seminars and practical tests several times between now and June 2012.



Lectures by VSE Center seminar lecturers

VSE Center <u>http://www.vse.jp/</u> (in Japanese) SPINA3CH autonomous improvement method

http://sec.ipa.go.jp/reports/20110707.html (in Japanese)

Information-technology Promotion Agency, Japan http://www.ipa.go.jp/index-e.html

# "Training Tour for Young People" proposed by AGRI laboratory students comes to life in Mogami, Yamagata



Preparing for the local festival

he "AGRI" (Agricultural) laboratory, which is made possible by a donation from Norinchukin Bank, toured the Tohoku area in August 2011. One of the towns they visited was Mogami in Yamagata Prefecture where a "Community Treasure Hunting Workshop" was held. During the workshop, students proposed "training tours for young people" in which "snow shoveling volunteers" would help the town while experiencing for themselves the region's bitter cold. Town officials welcomed the idea, and the tour took place on January 14-15, 2012. Five 1st year master's course students participated as monitors from the laboratory.

Students were overwhelmed by the snow-covered scenery and how different the town looked compared to last summer. They helped out in the annual "Osaito Festival" and cleared snow from the homes of elderly residents who live alone. Participants reported that they had no idea how difficult life was in this region

before the tour. It did indeed give them "training" and also warm friendships with local residents.

They plan to go back to Mogami in late February with a proposal for an effective tour plan after they have had a chance to study local marketing perspectives.



Helping clear snow from the rooftops

# SDM Research Institute cosponsors "International Symposium on Yoshiwara and Ukiyoe"



Free discussion among participants over actual ukiyoe in

December 3-5, 2011, the "International I Symposium on Yoshiwara and Ukiyoe" was held at the Japan Ukiyoe Museum in Matsumoto under the co-sponsorship of the SDM Research

Institute. Along with theater, Yoshiwara was one of the central facets of Edo culture. However, research to this point has focused on narrow, individual issues such as legal systems, public morals, ukiyoe, kabuki, haikai, and kyogen. Edo was one of the world's largest cities in the 19th century, and understanding its society and culture requires an ability to "see the trees but also the forest, " a perspective that led to SDM sponsoring the symposium.

The panel discussion included participants from the Netherlands, France, the US, Korea, and China. They discussed the need for more comprehensive, interdisciplinary, and systematic approaches to research, not only for documentary research but also for iconographic approaches that make use of databases, the economics of Edo, and materials research, for example, on the paper used in the publication of ukiyoe. From SDM, Professor Tetsuro Ogi presented "Perspectives in Ukiyo-e and Digital 3D Ukiyo-e" and the lecture by Former Professor Taketoshi Hibiya (Executive Advisor of the SDM Research Institute) was titled "Evidence-based Study on the History of the House Izumi-ya".

http://lab.sdm.keio.ac.jp/isyu/cfp-E.html

# Laboratory / Center profile

# **Comparative Political Systems Laboratory**

**Representative:** 

Associate Professor Ken Victor Leonard Hijino Areas of expertise: Comparative political institutions, party organization theory, comparative systems of local politics and local democracy





Laboratory members and Associate Professor Hijino (center)

he faculty and students at SDM research systemic solutions for a range of pressing global issues such as: energy, food, and climate security; domestic social welfare provision; education reform; and the reviving of local communities and economies. In many of these domains, technical and/or substantial solutions to the problems seemingly exist, but are not implemented because of a clash of vested interests and an inability to reach effective collective agreement on the matter among stakeholders. The Comparative Political Systems Laboratory (CPSL) focuses on such diverging requirements between stakeholders in social systems. Its frame of reference is "politics", the process of arriving at agreement among actors with varying interests and influence. Without understanding these political dynamics, we believe realistic solutions or re-designs of social systems cannot be achieved.

To analyse these political dynamics, the laboratory adopts the empirical approach and conceptual tools of comparative institutionalism in political science. This approach focuses on how various political institutions (such as electoral, executive, local government, and bureaucratic systems) shape and constrain the behaviour of political actors and influence the outcome of political contestation. By understanding how these "rules of the game" affect collective decision-making, the comparative institutionalist hopes to generate predictive theories to be able to better engineer political systems. CPSL covers political institutions and processes in general, but focuses particularly on the domain of local government and autonomy as well as decentralisation and federalization. My current research interest concerns the role of party organizations and systems in local governance.

This laboratory was established only in April of 2011, but currently consists of five seminar students and two external researchers. The students' themes cover a wide range of topics which include: the designing of local electoral campaign pamphlets; policy-formation process in local governments; local community strategies to attract foreign tourists; funding strategies for NPOs; and immigration policy in France and Japan. The laboratory centres around instructing students on the basics of social science and methods of comparative analysis while guiding them on their particular research themes. Early in the term, books of interest from related fields are recommended, read and discussed among students.

As an extra-curricular activity for this laboratory, we conducted a "walk and think tour" last semester in honour of peripatetic philosophers of history starting from Aristotle. Beginning in Yokohama harbour, we stretched our legs and cooled our heads for a day's trek to the new Skytree tower in Sumida ward. We hope to continue such outings to spark ideas and insights outside of the normal research environment.



Laboratory poster



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