

Laboratory / Center profile

The Local Resource Utilization Laboratory

Representative: Associate Professor Tetsuya Toma, Guest Professor Atsuo Yoshida, Professor Ryuichi Teshima

Overview

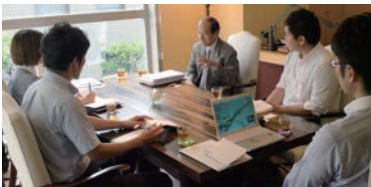


Guest Professor Atsuo Yoshida, the co-representative of the laboratory

Japan is rich in marine and forest resources. The country has 3,500km of coastline in the north-to-south direction, and 68% of the country (a total area of 380,000m²) is covered by forest. In particular, the hilly and mountainous areas, between the outer plains and the mountains, have been contributing not only in terms of agricultural production but also as a rich source of energies including timbers and charcoals. The hilly and mountainous areas, therefore, have established a culture strongly connected to nature. The Local Resource Utilization Laboratory identifies agricultural, mountain and fishing villages

full of natural resources and environment, including the above-mentioned hilly and mountainous areas, as the country's frontier for the new lifestyles of the 21st century. The laboratory conducts research in pursuit of the ways in which these areas, together with local companies, could become proudly self-sufficient through collaboration with neighboring small-to-medium towns. The co-representative of the laboratory, Guest Professor Atsuo Yoshida (CEO of Yoshida Atsuo Accounting Office, licensed tax accountant), has been identified as one of the "institutions supporting business innovation" by the Ministry of Economy, Trade and Industry, and assists the problem-solving efforts of small and medium companies, while working as a member of the Boards of Certification for "Movable Assets Evaluation Advisors" in collaboration with financial institutions in order to promote asset-based lending (ABL), which the Financial Services Agency and the Bank of Japan are promoting.

The Local Self-Reliance Economic Establishment Project



A Seminar of the Local Resource Utilization Laboratory (at the Yoshida Atsuo Accounting Office)

Small and medium companies constitute 99.7% of Japan's businesses. While issues concerning management are becoming diverse and complex for small and medium companies, it is difficult for them to address most of the managerial issues because they lack human and physical

resources. In particular, the reality of countryside is such that managerial issues are not well captured and that there are no bodies to assist companies faced with problems. We attempt to capture the characteristics of each locality in the country from a historical viewpoint, recognize the excellent resources that each locality historically embraces (e.g., agricultural fishing industry, traditional technologies and humanity nurtured by natural environment) and establish industries by leveraging on qualities that are unique to the locality. In so doing we collaborate with city governments, commercial and industrial associations, corporation associations, local shopping streets, local financial institutions and universities with a view to promoting measures that are based on the present situation and understanding of managerial issues.

Fieldwork

Collaborating with the Policy Realization Division inside the Mayor's Office of the Government of Hanno City, the laboratory works toward promoting the city. We will advocate technologies for woody biomass from upstream operations (logging, collection and transportation) to midstream (accumulation and energy conversion) and downstream operations (business generation and energy utilization). We also plan to support efforts

toward sixth sector industrialization, which effectively utilizes regional resources that are originally from Hanno. Additionally, in collaboration with small-to-medium companies and agriculture/forestry businesses, we will pursue the development of new projects, new products and the commercialization of new services, while liaising with the Bureau of Economy, Trade and Industry and the Small and Medium Enterprise Agency.



Systems Modeling Language, SysML

"The Model Based Systems Engineering (MBSE) is systems engineering." The author of *A Practical Guide to SysML* (The MK/OMG Press), Mr. Sanford Friedenthal, would often say this at the International Council on Systems Engineering (INCOSE) and Object Management Group (OMG) meetings. The base for MBSE is systems engineering which is used to develop products and services. However, while conventional systems engineering was based on documents, MBSE bases itself on models. This way, smoother multi-domain communications, more efficient production with model re-utilization and better traceability of requirements can be expected. In recent years, the importance and necessity of MBSE has been increasingly acknowledged not only in the aviation and space sector but also in industries such as automobiles and medicine. In particular, Systems Modeling Language (SysML) is gaining attention as a means of expressing system models. Models using SysML can express behaviors, structures, requirements and parametric constraints, depicting systems from various views during the course of system engineering process. Keio SDM, since its foundation in 2008, has been teaching MBSE using SysML (lecturers: Mr. Laurent Balmelli



Systems Modeling Language, SysML (translated version of *A Practical Guide to SysML*)
Hidekazu Nishimura (supervisor of translation),
Translators: Seiko Shirasaka, Terumasa Narukawa, Akihiro Hasegawa, Yusei Nakajima and Chih-Chiang Weng
Original Author: Sanford Friedenthal, Alan Moore, Rick Steiner
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(former IBM staff) and Professor Hidekazu Nishimura). The publication introduced below is a translated version of a book titled *A Practical Guide to SysML* (The MK/OMG Press), which was published around the time Keio SDM began its lecture on MBSE in Fall 2008. The book is suitable for those who want to deepen their understanding of systems engineering and MBSE, for researchers and technical professionals dealing with multi-domain system developing such as mechanical, electronic and software, and for business managers who are considering introducing MBSE.



SDM Research Institute, Graduate School of System Design and Management at Keio University
Collaboration Complex, Keio University, 4-1-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa 223-8526
Tel : 045-564-2518 Fax : 045-562-3502 E-mail : sdm@info.keio.ac.jp

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