Department of Management Science and Technology

Laboratories	Staff	Research Themes
Value Proposition (Technology Strategy and Intelligence)	Prof. Shuichi Ishida	The research domains envisaged within this field are primarily concerned with issues related to "technology strategy" and "research and development organizations" from the perspective of "management systems." Additionally, there is a focus on new business creation and regional revitalization, where "entrepreneurship" is regarded as one of the key areas of study. To explore the relationship between technology and society, the research employs a wide range of methodologies cultivated within the field of engineering. ・Research and Development Strategy ・Technology Marketing ・Technology Intelligence ・National Innovation Systems
Value Proposition (Management System)	Prof. Akira Nagamatsu	The laboratory will promote research on management systems targeting quality improvement of business processes such as business planning, demand forecasting, and R&D, with the aim of realizing corporate growth in the digital environment. ・Business Process Research ・Business planning ・Demand forecasting ・Research and development management
Value Proposition (Value Creation Engineering)	Prof. Hirokazu Moriya	In our field of specialization, we are interested in research with a primary focus on organizations and strategies such as corporations and universities that place a strong emphasis on value creation. Our research encompasses the strategy of value creation, educational initiatives aimed at fostering it, and the process for facilitating meaningful experiences. We conduct analyses of corporate and organizational social value creation strategies, leveraging financial statements. Additionally, we research innovative value-creation engineering education to cultivate entrepreneurial creativity and explore technology and social innovation for the purpose of creating a better society, all from a global perspective. ・Social value creation strategies in corporations and other entities. ・Engineering education aimed at nurturing social value creation competence and entrepreneurship. ・Technology and social innovation for the creation of an enhanced society.

Laboratories	Staff	Research Themes
Value Proposition (Information affective engineering)	Prof. Takahiro Ishinabe	Our research group focuses on light control technology and its applications, aiming to develop human-friendly information systems for the future sustainable society. We will clarify the relationship between information and human cognition, understanding, and sensitivity and establish functional photonic devices based on the structural control of organic molecules and polymers. Research topics ・Structural Control of Organic Molecules and Polymers ・Functional photonic devices ・ Clarification of the relationship between information and human cognition, understanding, and sensitivity and information ・Human-friendly information display system
Social System Design (Energy Sustainability)	Prof. Toshihiko Nakata	The laboratory focuses on an integrated design of energy systems for sustainable development. Methodologies includes dynamic modeling, GIS, Sankey diagram with social and economic dimensions based on both engineering economics and systems engineering. The research considers various aspect of energy systems such as technological learning by possible innovation, resilience, zero carbon society, and Sustainable Development Goals. ・Estimation and analysis of renewable energy resources potential ・Estimation and analysis of energy demand ・Design of carbon-neutral energy systems
Social System Design （Advanced Energy Systems）	Prof. Kenji Nakamura	In this field, we conduct education and research aimed at realizing a sustainable society in harmony with human society and the natural environment. This involves the development of advanced electric equipment to support a series of systems including electricity generation, transportation, conversion, and utilization, as well as the construction of electrical energy application systems that combine these technologies highly tailored to various scales and applications. Specific research areas include: ・Performance improvement of electric machines ・Development of magnetic gears and geared-machines ・Variable inductors for voltage stabilization in electric power systems ・Offshore wind power generation systems ・Next-generation electric mobilities

Laboratories	Staff	Research Themes
Social System Design (Socio-Technical System)	Prof. Makoto Takahashi Assoc. Prof. Daisuke Karikawa	The aim of our research is to enhance the safety of large-scale complex systems by utilizing the methods of risk assessment and management. Focusing on the aspects of interaction between human and machines, we study human factors problems from variety of viewpoints. In addition, dialogue between experts and citizens about science and technology is also studied for promoting mutual better understanding of the risk and benefit of advanced technologies. The examples of our research topics are as follows: ・Human factors study for air traffic control (ATC) system ・Evaluation of human-machine interface using human brain mapping method ・Cyber security ・Science and technology communication
Social System Design (Intellectual Property Right)	Assoc. Prof. Nobuya Fukugawa	We explore the strategic role of Intellectual Property Rights (IPR) in promoting innovation and entrepreneurship. The influence of patent quality on the initial public offering (IPO) of biotechnology startups is analyzed, along with the impact of scientific productivity on the IPO success of university spinoffs. Additionally, we study how knowledge spillovers from university research fuel industrial research and development (R&D), the process of technology transfer from local public research institutions (*Kohsetsushi*) to small and medium-sized enterprises (SMEs), and the factors that determine new firm creation at incubators.

For further information, contact us by e-mail: admission_mst@grp.tohoku.ac.jp