

Research Profile

Department of Information Systems and Operations Management

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The Department of Information Systems and Operations Management (ISOM) is at the heart of the management disciplines at [WU Vienna](#). Our ambition is to "**make things work**" and contribute to the "**creation of value**" through information technology.

Internal processes and governance configurations, supply chain dynamics, as well as environmental and societal transitions, require organizations to understand and efficiently address complex challenges in relation to technological advancements. Furthermore, continuous and rapid technological advancements in Artificial Intelligence (AI) fundamentally transform operations within organizations and society generally. The Department of Information Systems and Operations Management at [WU Vienna](#) works at the heart of these developments, contributing to the value that is generated via innovative business process flows and management, as well as to the evolution of AI and the classical technologies surrounding it. Through its work, it empowers policy- and organizational decision-makers and helps to better understand organizations, socio-technical systems, social structures, and user behavior.

In their thematic and methodological breadth, the Department's institutes address the contemporary requirements of firms (and their ecosystem partners) regarding their operations and their emerging, ubiquitous digital infrastructures. Their heterogeneous, but complementary research and teaching portfolios cover the wide range of new AI-enabled life and production forms at the individual, organizational, national as well as supranational (European), and global levels.

The Department's research clearly pursues a multi-method approach that spans from theory development and basic research in methods and technology foundations to applied IT and AI design. The following research areas are relevant for the Department:

- (i) Socio-technical impact analysis, business process design, and monitoring are of particular relevance. In all these diverse as well as complementary areas of research, the Department has shared strategic visions across institutes. A core objective is to foster responsible and sustainable development and use of technical infrastructure. A key question is for whom information technology is designed and built, and how it can socially, sustainably, effectively, and efficiently improve operations for individuals, organizations, and society at large. Therefore, the societal dynamics surrounding digital transformation are investigated. Taken together and from a bird's-eye perspective, three grand pillars of technological transition are relevant: software- and system engineering, which help build things. Design Science, governance and control, which determines how to build systems well. And last but not least, the consideration of the individual, organizational, and societal context "for whom" systems are built (Figure 1).
- (ii) In the field of Operations Management, ISOM conducts empirical and analytical research in supply chain management, retail and service operations, and sustainable logistics. A particular strength lies in the analysis (descriptive, predictive, and prescriptive analytics) and management of real-world business problems, which focuses on operations and supply chain processes.
- (iii) All institutes are directly or indirectly involved in Digital Humanism initiatives, human-centered and value-based system development, as well as sustainable (digital)

transformations. Another equally important objective is to support more controlled and resilient processes, technology development, strategy, and governance.

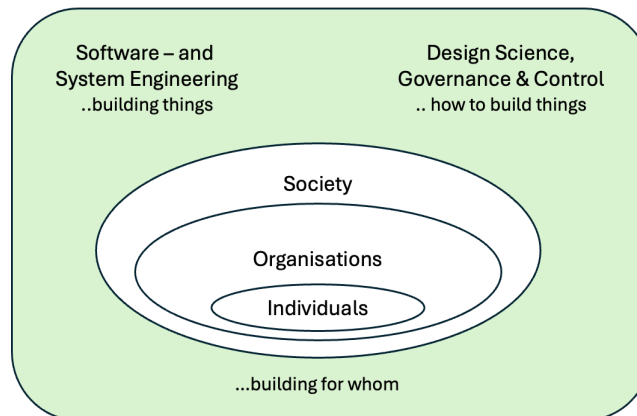


Figure 1: Three grand pillars of technological transition

To be able to integrate the various approaches practiced, the Department has grown into an interdisciplinary group that unites scholars from artificial intelligence, data science, software- and system engineering, operations management, cognitive science, economics, the humanities, organizational studies, and management science. It is the Department's ambition that its research helps address fundamental challenges of our time, such as globalization, sustainability, human-centeredness, and the transition to a knowledge society.

What is being studied, and what methods are employed?

The most differentiating factor of the Department of Information Systems and Operations Management in comparison to other WU departments is that many of its members effectively develop process innovations and/or advance digital technologies, helping *build things* and *make things work*. This, in particular, includes investigating real-world business problems, developing and advancing of new methods, techniques, processes, and tools, as well as system and software engineering. Empirical system modeling of systems is done, including simulations. Experimental methods are used to investigate user behavior causally. The full list of related research publications and projects is available on PURE: <https://research.wu.ac.at/de/organisations/wirtschaftsinformatik-und-operations-management-4/>

Institutes have built a reputation in supply chain management, knowledge management, process- and business modeling, complex system design and analysis, technology innovation, ethical IT innovation, energy and environmental sustainability, as well as technology governance and control. This helps to understand *how* systems are ideally built. Technological development is complemented by research on classical IT management, governance, and user experience investigation.

Shared visions and research interests

The two research streams, Information Systems and Operations Management, generate important synergies that distinguish ISOM from single-discipline departments. While the various information systems institutes use different methods and have different foci in what they specialize in, as roughly depicted in Figure 1, they clearly share interests and visions that foster collaboration among

themselves. In particular, one technology has emerged as a long-standing research focus of the Department: that is, the study of AI.

The Department has attracted scholars working on AI for roughly two decades, even though the term “AI” was not necessarily used as prominently as it is used today. For instance, publications on modeling in economics and management sciences, human-centered AI design, AI for manufacturing systems, and AI acceptance date back to the early 2000s, and fundamental contributions to major AI conferences and emerging paradigms have been made over the past years. Social norm changes due to AI, as well as AI literacy and risk mitigation, have more recently been added as research interests. When it comes to the technical development of AI, the Department has a traditionally strong background in knowledge representation (in emerging AI paradigms such as Knowledge Graphs, Agents, and other systems, but also in terms of aspects and technologies supporting privacy, security, and AI safety). The Department is now actively involved in making this expertise fruitful by integrating symbolic and sub-symbolic AI and addressing the value-alignment problems associated with the technology. Characteristic for this effort is the Department’s research interest in the socio-technical criteria of AI and the dynamics of data-driven economic value creation. The Department’s expertise in energy systems further extends this portfolio, examining how AI shapes (and is shaped by) the transformation of energy technologies and infrastructure.

As outlined above, many colleagues at the Department share the vision of building more responsible and sustainable technical infrastructure. Green energy transition and value-based, ethical system design are a core for this pursuit. Many institutes integrate aspects of Digital Humanism, privacy- and security engineering, and sustainable growth into their research activities. Secondly, the resilience of IT-driven organizations and supply chains is a strong focus. Especially given the Department’s strong traditional focus on supply chain management, business process modeling, and IT governance, the values of control, privacy, resilience, security, and complexity management are strongly reflected in many colleagues’ work.

The Operations Management (OM) stream shares several of these strategic visions. The commitment to resilient and sustainable infrastructure finds a direct parallel in OM’s long-standing research on supply chain resilience and sustainability, risk mitigation, and green logistics. Responsible technology development is equally central to OM research: the Austrian Blockchain Center (ABC) and the Research Institute for Cryptoeconomics have advanced the understanding of how blockchain technology, smart contracts, and cryptoeconomic mechanism design can provide more transparent, trustworthy, and efficient infrastructure for business processes and financial markets. This work aligns with the Department’s broader goal of fostering controlled and accountable digital systems, extending it beyond IT governance to the governance of decentralized economic systems and MiCAR-compliant digital asset frameworks.

The Information Systems (IS) stream’s expertise in knowledge representation, AI, and socio-technical systems analysis provides OM researchers with novel tools for modeling complex supply chains, designing algorithmic market mechanisms, and evaluating the economic and societal impact of operational decisions. Conversely, OM’s deep grounding in quantitative methods, optimization, and empirical field research enriches IS scholarship by offering rigorous frameworks for evaluating the real-world performance of digital systems. Blockchain and cryptoeconomics serve as a particularly vivid illustration of this synergy: questions of decentralized system design combine software engineering and formal protocol analysis (IS) with mechanism design, tokenomics, and market microstructure (OM). More broadly, topics such as digital supply chain platforms, AI-driven demand management, data-driven process optimization, the governance of cyber-physical systems, and energy system transitions all benefit from the integrated expertise of both streams, making ISOM a uniquely positioned department at the intersection of operational excellence and digital technology.