

Organizing Digital Work in Emergent Systems

Motivation

Currently, work structures and business models are being upended by digitization in service and process industries. On the one hand, cyber-physical systems, and thus, infrastructures are altering market dynamics, while on the other, work force seek to participate in the development of new ways of organizing work. While digital technology has transformed various systems, providing value added processes, higher business intelligence, and more engaging experiences amid stiffer competition, the digital work systems thus increase in complexity and dynamics. Organizations need continuously renew structural development, both on organizational and technical system levels that capitalize on technology to achieve operational efficiency and at the same time drive innovation. This track revisits Information Systems development and socio-technical design by taking into account the field of current renewal challenges, among them

- **Cyber-physical system and information infrastructures** progressing towards dynamic landscapes, taking into account the sensitivity of mission-critical operations, complexity of transactions, and engaging user experience. Migrating the computing infrastructure to the fog or cloud features Infrastructures-as-a-Service (IaaS) and Platforms-as-a-Service (PaaS) models, thus combining flexibility and scalability with on-demand availability. An enterprise and stakeholder-centered view of platforms, work processes, and applications optimizes the cloud environment and allows aligning the create-adopt-manage life cycle. Of crucial importance is operational stakeholder knowledge to re-structure or encapsulate work-relevant information items and role behavior.
- **Intelligent automation** capturing vertically and horizontally integrated processes. Systemic issues and the ‘subjective layer’ of a business process previously demanding human intervention are successively replaced by algorithms with artificial intelligence and machine learning to automate end-to-end processes. Behavior may emerge through adaptation algorithms to dynamic requirements in back, middle, and front office as well as shop floor and higher level processes. It is still an open issue to allocate work tasks either to information systems or to human work force dynamically in the course of continuous adaptation and development of organizations.
- **Governance and compliance management** targets enterprise-wide and networked systems to be combined as responsive devices safeguarding work force needs and channeling dynamic capabilities. Business intelligence is built aggregating data across products and services, and even partners, for comprehensive reporting and disclosures. Compliance parameters need to be monitored across applications, business processes and partners. Unified platforms provide transparent process and information management informing risk

management life cycles. Workers are increasingly challenged with novel (forms of) responsibilities, and thus need to acquire new skills. An open issue to that respect is guidance and learning support for governance scheme in dynamically changing work environments.

Consequently, renewing the organization of work structures in dynamically evolving socio-technical systems requires transformation support empowering stakeholders in several areas, such as information system development, collaboration, dynamic process evolution, and knowledge-driven participation. In particular, challenges related to personalized products and services, require unified digital platforms that are aligned to business processes leaving room to ad-hoc adaptation and emergent system behavior. Content-wise data from structured information sources and open data stores need to be coupled with those from social media, together with end-to-end digital workflows accelerating lifecycles. Novel forms of collaboration with peers, customers, networks, and competitors need to be established to remain a relevant actor as organizational entity. Besides transcending dissemination of information on online media, collective idea generation drives innovation and promotes stakeholder engagement.

Each of the suggested topics concerns socio-technical change beyond mere digitization while referring to renewal as emergent process addressing system-relevant behavior.

Topics of Interest:

- Behavior emergence and evolution in (meta-)digital work systems
- Open ecosystems, platforms and emergent trans-human systems
- Alignment of ICT, organization, process model, and performance
- Digital resilience and agility in cyber-social designs
- Resource impact analysis in evolving digital information systems
- Leadership and somatic intelligence in digital opportunity and change management
- The role of knowledge in visions of a post-human era
- Interoperability and standards in cyber-physical work systems
- Articulation and negotiation for semantic interoperability
- Exception-as-the-rule management in socio-technical systems
- Governance and compliance when shifting socio-technical to cyber-physical systems
- Dynamic network adaptation and situated action
- UX of dynamic and interactive (re-)design of cyber-physical systems
- Goal development and sharing as inherent part of emergence
- Social engagement, co-creation, and motivation in cyber-physical system development processes
- Roles and functions of human workforce in cyber-physical systems infrastructure
- Process enactment and manifestation in stakeholder-centered work systems
- System-of-Systems design thinking and meta-design
- Digital literacy in cyber-intelligent systems
- Semantic and pragmatic process experience and enactment for service engineering

- Cloud-based transformation and service-oriented architectures
- Cyber-physical and social innovation infrastructures and platforms

Publishing Opportunities in Leading Journals

Selected paper will be invited to be developed to journal contributions. They will undergo fast track reviewing in special issue arrangements that has been made with JoIS.online - The Journal of Interaction Science (www.jois.online).

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Bibliography

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