Conf-IRM 2027 Bogota, Colombia, 31 May – 2 June, 2027

Conference Theme: **Intelligent & Fragile Infrastructures: Governing Complexity in Information Systems**

Track Number	6
Track Name	Research Methods for Intelligent Infrastructures
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Track Description	As information systems and technology-enabled infrastructures such as digital platforms, AI-enabled systems, edge-cloud systems, Internet of Things, cyber-physical systems, computer vision-enabled systems, digital twins, smart cities, data ecosystems, and many other emerging technologies become increasingly integrated into organizations and society, researchers are recognizing new methodological opportunities and challenges. The intelligent infrastructures, which encompass and interact with many of these emerging technologies, enable adaptive, interconnected, interoperable, and interdependent systems with capabilities for learning, coordination, and decision-making while integrating cognitive, computing, and communication capabilities into traditional physical and digital infrastructures. Understanding, designing, and evaluating these emerging phenomena requires methodological innovation. This track invites contributions that develop, evaluate, and apply research methods for studying intelligent infrastructures. We welcome conceptual, empirical, computational, qualitative, quantitative, mixed-methods, and design science research that strengthens methodological rigor and broadens the range of methods available to Information Systems researchers. Particular attention is given to rigorous methods for assessing the trustworthiness and resilience of intelligent infrastructures under uncertainty. Relevant topics include, but are not limited to: **Methodological Innovations** • Novel research methods for studying intelligent infrastructures • Mixed-methods approaches for AI-enabled systems • Design science research for intelligent infrastructures • Methodological validation, reproducibility, and replicability of AI-enabled research • Experimental and quasi-experimental approaches for intelligent infrastructures • Evaluation frameworks for reliability, robustness, and performance in complex and dynamic systems • Longitudinal and process-oriented research methods for intelligent infrastructures • Action research for intelligent infrastructures • Methods for Human-AI interaction • Multi-agent simulation **Data-Centric Research Approaches** • Big data and analytics-driven research methods • Machine learning and AI-assisted research techniques • Digital trace data and platform data analysis • Social network and ecosystem analysis

	• Text analytics, natural language processing, and generative AI methods • Real-time and streaming data methodologies • Computer vision and multimodal data analysis • Synthetic data and simulation-based research • Explainable AI (XAI) and interpretable analytics methods • Responsible AI research methods addressing fairness, transparency, and ethical considerations **Intelligent Infrastructure Contexts** • Smart cities and urban infrastructures • Internet of Things (IoT) ecosystems • Cyber-physical systems • Digital twins and simulation environments • Intelligent transportation systems • Healthcare and smart health infrastructures • Industry 4.0 and smart manufacturing • Research methods for resilience, uncertainty, and complexity in interconnected socio-technical infrastructures