Introduction to High-Stakes IS Risk and Decision-Making Minitrack

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Information Systems (IS) have become a vital and ever-present part of our lives. These range from our computing and mobile devices to our business and social networks; from the cyber-physical systems that are embedded in our planes, cars, and appliances to the medical devices that can be embedded in our bodies.

We are increasingly dependent on these systems, as they offer ever greater benefits – and greater risk. This minitrack focuses on "high-stakes" systems, where system failure has a high cost, in damage and harm. The people responsible for building, acquiring, operating, or maintaining these systems face questions throughout the IS life cycle: Are these systems safe? Are they reliable? Are they secure? Based on answers to these questions, decisions must be made, for example: can driverless car software be safely tested on the highway? Should the next rocket to Mars be launched? Should a new insulin pump be approved for human use?

We are looking for contributions from researchers and practitioners, in both academia and industry, who can provide insight into decision-making throughout the IS life cycle and its impact on risk. What methods are being used for risk-informed decision-making? How are trade-offs for risk vs. cost, schedule, and performance handled? How are decisions affected by software or systems assurance? How are decisions affected by the cognitive biases of the decision-makers and the culture of the IS development organization? Cross-disciplinary submissions, including social and psychological factors in addition to technical ones, are particularly welcome. Topics include but are not restricted to:

- Methods for risk-informed decision making
- Assuring the safety, reliability, and security of robotic and autonomous systems
- Risk analyses for critical decisions, such as "certification for launch readiness" or "authorization to operate" critical systems
- Handling trade-offs for risk, cost, schedule, and performance
- The role of government and industry standards
- The effect of cognitive biases on risk perception and decision-making
- The effect of organizational culture or economic pressures on risk perception and decision-making
- Analyses of actual success or failure of risk-critical decisions involving cyber-physical systems, from aerospace to medical devices
- Processes and tools (e.g., risk analysis methods or decision support systems) with the potential for improving risk-critical decision outcomes