

## Risk Management and Modeling for Information Systems

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- 5) **Organizational unit:** Departement Maschinenbau und Verfahrenstechnik, direkt, Institut für Energietechnik, direkt, Kroger, Wolfgang, kroeger@mavt.ethz.ch, LZ=03292
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- 8) **External researcher(s):** no entry
- 9) **Funding source(s):**
  - Industry
  - KTI
- 10) **Partner organizations:** no entry
- 11) **Short Summary:** Modelling and analysis of ICT as information system and business processes; development of corresponding risk analysis techniques; implementation in ICT risk management
- 12) **Keywords:** Information Systems, Risk Management, Safety Technology

# Risk Management and Modeling for Information Systems

## **13) Project description:**

Research concentrates on the modelling of business process chains (information system) which are mainly implemented on ICT. In doing so, the enhanced structured knowledge representation of information systems by a graph theoretical model of business processes improves and extends the risk assessment methodology. However, the common approaches for business process representation need adjustments for risk assessment purposes (e.g. the consideration of faulty processes and cascading events as well as the established risk analysis approaches do in order to handle business process chains.

Recent results show how to link the established FMEA risk analysis approach (Failure Modes and Effects Analysis) and the ARIS business process modelling approach (Architektur Integrierter Informationssysteme).

In a much more sophisticated approach, Petri Nets are used for business process modelling in order to derivate statements about weak spots in the process flow, and risk and availability assessments.

## **14) Popular description:**

The reliable operation of infrastructure (e.g., power supply and road network) is a pre-requisite for the success and advancement of a competitive industrial society. These infrastructure grids are highly integrated and interconnected. At this information and communication technology (ICT) plays a decisive role.

The risk assessment approach covers studies on reliability, risk and safety of technical systems. However, ICT specific constraints (e.g., uncertainty, complexity, and dynamics), as well as strictly limited resources for system analyses on company level, overextend the possibilities of current risk assessment approaches. It is the major goal of running research activities at LSA to develop an innovative approach for ICT risk analyses overcoming these constraints as far as possible.

**15) Graphics:** no entry

**16) Publications:** no entry

## **17) Links to important web pages:**

- <http://www.lsa.ethz.ch/research/projects/active/infrsys>