



# HyRiM

## Hybrid Risk Management for Utility Networks

### A Project Overview

Stefan Schauer

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- Project Details
- Project Partners
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# Project Details



- **Start of the project:** 01.04.2014
- **End of the project:** 31.03.2017
- **Project duration:** 36 Months
  
- **Project volume:** € 4,657,587.60
- **Funding:** € 3,387,085.00
- **Person months:** 440
- **Work program:** SEC-2013.2.5-4



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# Project Partners



Name	Short	Country
AIT Austrian Institute of Technology GmbH	AIT	Austria
Universität Passau	UNI PASSAU	Germany
Lancaster University	ULANC	UK
ETRA Investigacion y Desarrollo SA	ETRA	Spain
Akhela SRL	AKH	Italy
Suministros Especiales Alginetenses COOP. V.	ECA	Spain
Linz AG für Energie, Telekommunikation, Verkehr und kommunale Dienste	LINZ	Austria



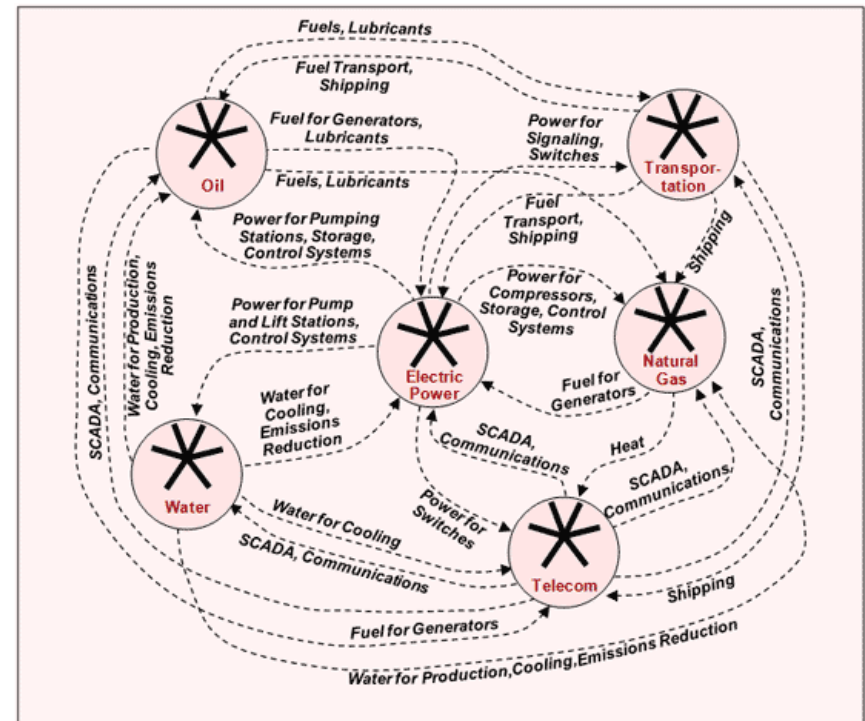
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# Project Idea

- Past few decades we experienced an **increasing demand** on utilities (water, electric power, oil, gas, transportation, etc.)
- Utility providers represent **critical infrastructures** which have to be secured
- Potential failures in utility networks (due to cyber-attacks or natural disasters) pose a major threat

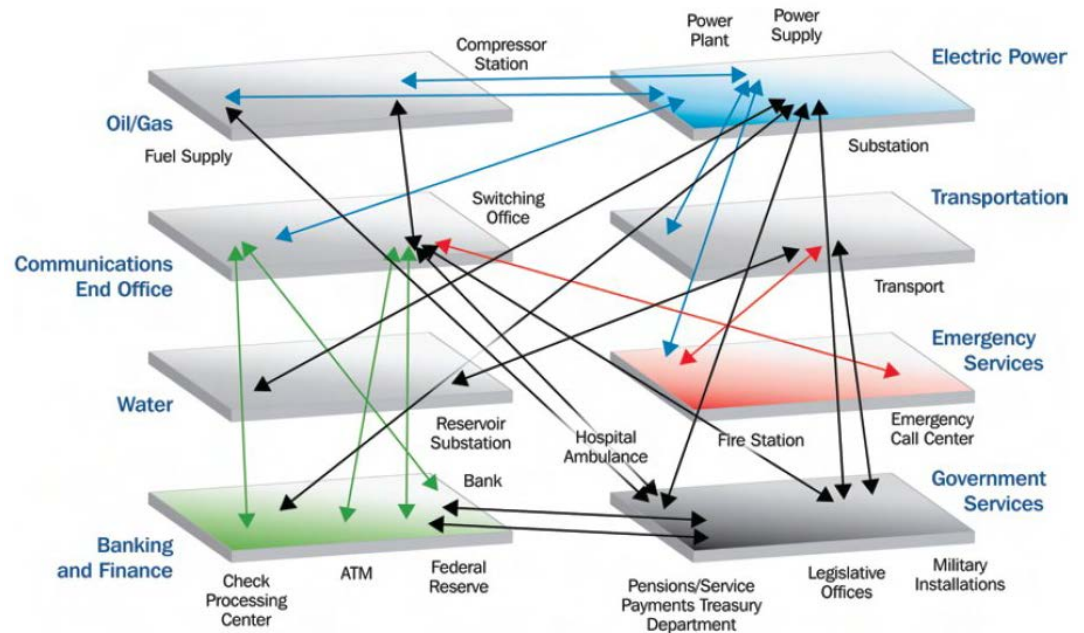


Source: J. Peerenboom, R. Fisher, and R. Whitfield, 2001.



# Project Idea

- **Interdependencies** among various kinds of utility network infrastructures increase
  - Utilities and their control networks (e.g., SCADA systems) are interlinked with national and international partners
  - Bears new **potential threats and attack scenarios**
- Attacks have **cascading effects** within a utility provider (e.g. between the control and utility network) or on other utilities



Source: Department of Homeland Security, National Infrastructure Protection Plan

# Project Idea

- HyRiM focuses on these **interconnection points** between control networks and individual utility networks, defining **Hybrid Risk Metrics**
  - Providing a quantitative (mathematical) approach to support decision makers
  - Assessing the potential threats and their cascading effects
- HyRiM focuses on **organizational aspects and the human factor**
  - Application of ethnographic studies to identify vulnerabilities arising from working conditions or social context
  - Evaluating and integration the effects of the human factor into risk metrics
- HyRiM focuses on **novel surveillance technologies**
  - Usage of personally owned devices (e.g. smartphones) to enhance surveillance technologies of the extended perimeter
  - Evaluating surveillance information to improve the Hybrid Risk Metrics

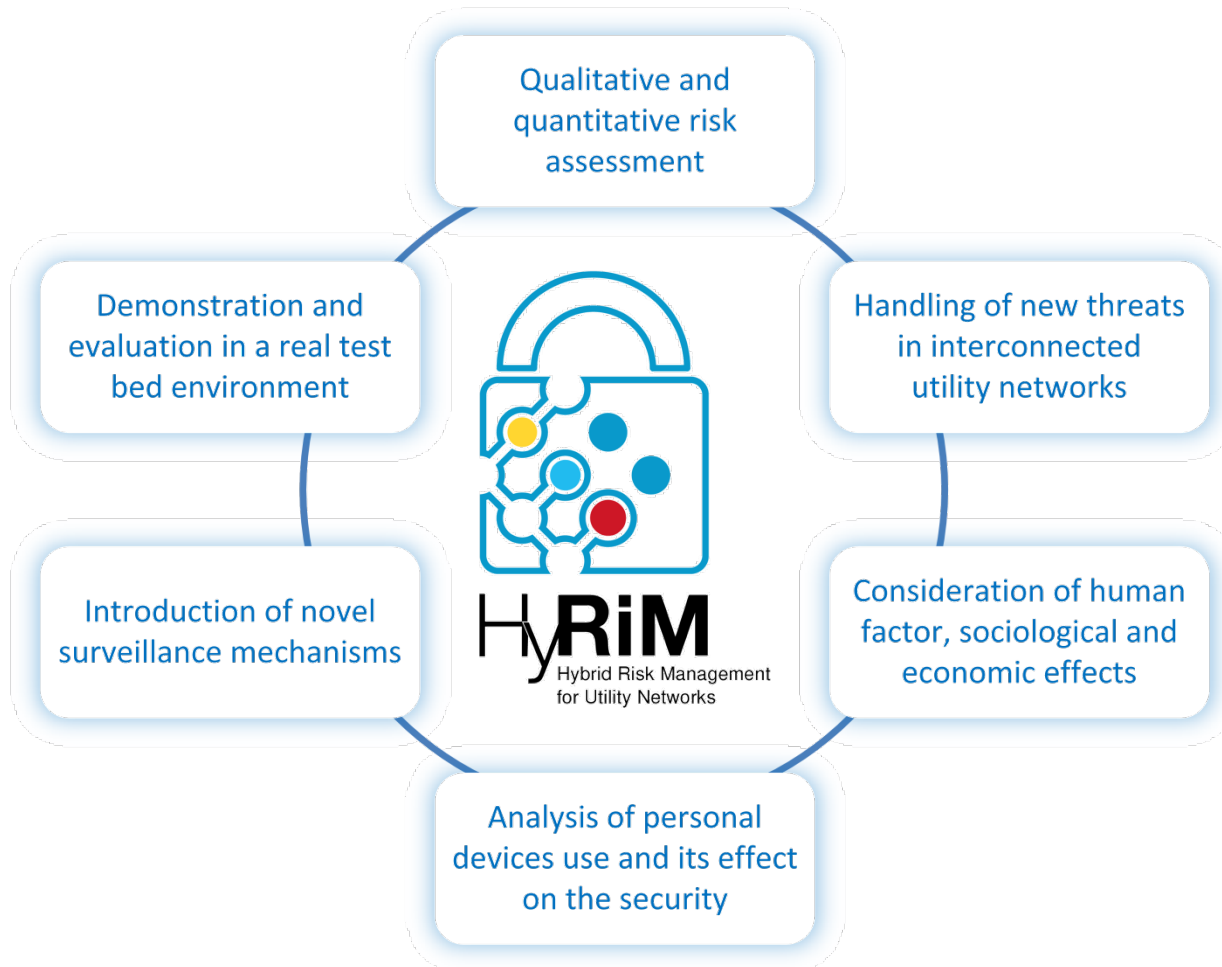


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# Project Objectives





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# Project Results

- Definition of a **mathematical framework** for Hybrid Risk Metrics
  - Application of **game theory and statistical methods**
  - Considering unknown attacker behavior and decisions with unknown effects
  - Providing support for decision makers
- Consideration of **organizational and human factors**
  - **Ethnographic studies** within the pilot sites (Alginet, Cagliari, Linz)
  - Questionnaires and studies in cooperation with external organizations
  - Identification of **critical aspects and potential vulnerabilities**
- Assessment of current **surveillance technologies**
  - Threats detected and/or mitigated by surveillance technologies
  - **Enhancement of surveillance** using personally owned communication devices (e.g., smartphones)

# Contact

- If you would like further information on the project, contact the HyRiM project members via the web page: [www.hyrim.net](http://www.hyrim.net) or contact us directly:

Dr Stefan Schauer  
[stefan.schauer@ait.ac.at](mailto:stefan.schauer@ait.ac.at)

Dr Christian Monyk  
[christian.monyk@ait.ac.at](mailto:christian.monyk@ait.ac.at)

- HyRiM is also on:

– **LinkedIn**

<https://www.linkedin.com/groups?gid=8246558>

– **XING**

<https://www.xing.com/communities/groups/hyrim-hybrid-risk-management-for-utility-providers-f6a8-1075112>



# HyRiM Partners



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LINZ AG



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