

# Safety and Security in Industry

## Research Lab „SafeSecLab“

#SafeSecLab

### PhD - Project 1: SafeSec System Modeling

This project aims to identify approaches for modeling secure while safe system architectures in industrial environments. The resulting model shall fulfill requirements of both cyber security and functional safety. To model potential dangers arising in the desired architecture, classical IT threat modeling and safety related hazard identification methods are to be revised, adapted and combined. Based on the identified threats, hazards and attacks, a system-tailored catalog of protection measures will be provided to evaluate OT architectures regarding safety and security. This approach may be semi-automated by combining two meta-models, a system model of OT architectures and a threat/hazard model.

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#### Education:

FH St. Pölten

#### Experience:

Raiffeisen Informatik,  
Cognosec,

TÜV Austria: Penetration Testing, Social Engineering, Web Application Testing, working in CERTs and Incident Response teams, performing risk assessments and gap analyses according to IEC 62443

#### Interests:

Cyber security, functional safety and resilience, integration and review of architectures, industrial communication systems, cross-domain thinking

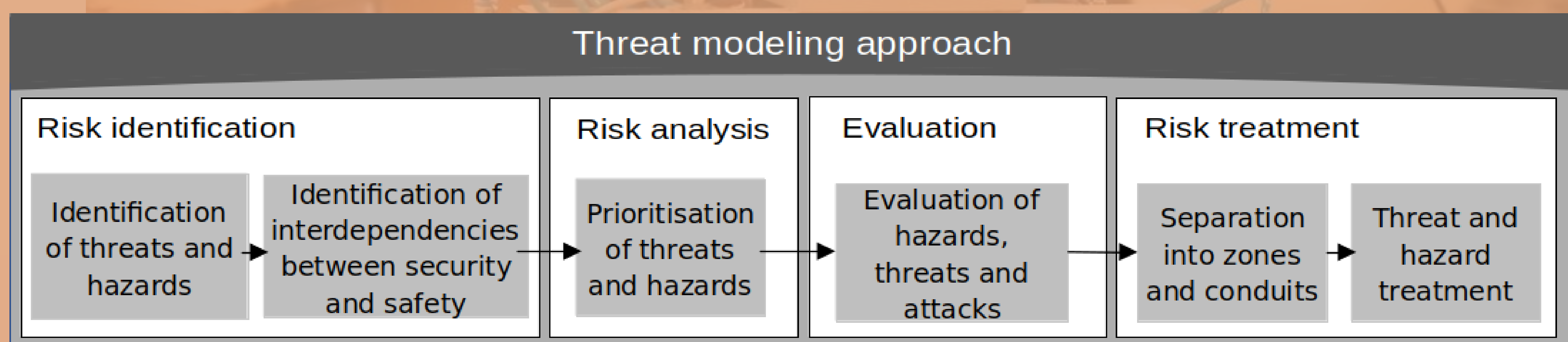


Picture by Michal Jarmoluk

### Background

IT and OT have evolved differently which leads to challenges when merging both areas. IT focuses on security protection goals and OT aims to ensure functional safety and resilience. The configured security mechanisms can lead to safety issues (e.g., machine gets manipulated, data of light barrier cannot be evaluated, machine continues to operate in dangerous situation). Therefore, a model is needed that addresses security and safety in IT/OT environments.

### Threat Modeling



Using STRIDE-LM, safety and security requirements from standards (e.g., IEC 61508, IEC 62443), Mitre Att&ck framework, common metrics (CVSS, SIL, SL) and system-tailored protection measures

### Expected Research Results

- System model considering safety and security
- Identification of threats, hazards AND their interdependencies
- OT protection catalog
- Unified approach according to risk management including prioritization

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