

# **Security Engineering Topics**

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# Dependability Requirements: Engineering Safe and Secure Information Systems

- **Background:**

- Dependability can be defined as the trustworthiness of an information system that allows reliance to be justifiably placed on the services it provides
  - availability, reliability, maintainability, security, safety, ...

- **Goal:**

- Design a systematic method for elicitation and validation of the dependable requirements with focus on security and safety requirements
  - Security - resilience to intended threats
  - Safety - or resilience to unintended hazards

- **Milestones:**

- Perform a survey of techniques and approaches for dependability modelling
- Analyse fine-grained quality of the techniques for dependability requirements

# Security Patterns for Model-driven Information System Security

- **Background:**
  - Security patterns describes a particular recurring security problem that arises in a specific security context and presents a well-proven generic scheme for a security solution
- **Goal:**
  - Develop a set of security risk-oriented patterns which would be applicable within different information system models
    - Secure Tropos, Misuse cases, Mal-activities
- **Milestones:**
  - A literature review on the security patterns
    - Understand the state of the art of the security and security-risk patterns
  - A literature on the security modelling languages
    - Selecting one modelling language for further analyses
    - Determining a set of models expressed using this modelling language.

# Linking (Secured) Business Processes to (Security) Models of Information Systems

- **Background:**
  - Security requirements elicitation from business processes
- **Goal:**
  - Determine how security requirements could be expressed using security modelling techniques
  - Define systematic approach to address/implement security requirements in the business processes
- **Milestones:**
  - How security requirements are elicited from business processes
    - Literature review
  - How to represent security requirements (potentially using the modelling languages)
    - Literature + analytical contribution

**Topic 1:**

**Linking (Secured) Business Processes to (Security) Models of  
Information Systems**

**Topic 2:**

**Security Patterns for Model-driven Information System  
Security**

**Topic 3:**

**Dependability Requirements:  
Engineering Safe and Secure Information Systems**

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