Linnæus University
Sweden

# Requirements Engineering (RE) Assignment

21VT - 2DV608 Software Design

**Deadline: February 14th 23:59 2021**

**General Information:** The RE assignment is individual. The RE assignment has two tasks. You will submit/upload three deliverables (check below). Task 1 has two deliverables and Task 2 has one deliverable. For Task 1, you need to apply the theory on requirements elicitation, analysis, validation, and modeling concepts that you learned during the first three lectures. For Task 1, you need to utilize the Eclipse EMF IDE (Eclipse Modeling Tools) with Ecore and OCL enabled/installed. For Task 2, you need to download and use the STS tool to identify and model security requirements discussed in the final RE lecture.

## 1. Task 1

Consider the one of following systems as your case study:

1. *Amazon* – Imagine you are designing and developing an online shopping portal.

2. *Netflix* – Imagine you are designing and developing an online video streaming service.

3. *Hertz* – Imagine you are designing and developing a car rental service that rents all sorts of vehicles and trucks.

4. *Maersk* – Imagine you are designing and developing a system for a freight and logistics company that transports goods across the cities in Europe.

5. *Lufthansa* – Imagine you are designing and developing an air traffic controller system.

Now, complete the following sub-tasks on requirements elicitation, analysis, validation, and modeling. Organize your sub-sections according to the tasks.

- Stakeholders: Identify the complete list of stakeholders.
- Requirements: Elicit and label three functional and three non-functional requirements. (*Check the slides to properly label requirements. A wrong-way will affect your grade.*)
- Requirements Analysis: Perform a systematic 'checklist-based' requirements analysis. (*Refer to the slides*).
- Requirements Classification: Classify the identified requirements using the 'faceted approach'. (*Refer to the slides*).
- Risk Assessment of Requirements: Systematically assess the risks of your requirements. (*Refer to the slides*).
- Systematic Validation of Requirements: Perform a 'systematic validation' of the requirements. (*Refer to the slides*)
- Test Cases for Requirements: Propose one test case (i.e., criteria) for each requirement.
- **Requirements Document:** Create a final '*requirements document*' with the above 7 topics. Use the LNU template (*See the guidelines below*).
    - **Deliverable 1*:*** *Create and deliver a PDF as* ***RequirementsDocument_LastName.pdf****.*
- Pick one of the requirements and model it using UML by identifying classes, attributes, operations, and relationships. Use Eclipse EMF modeling tool and this specific version https://www.eclipse.org/downloads/packages/release/2019-09/r for less technical troubles.
- On your UML diagram, define at least three OCL constraints verifying different properties.
    - **Deliverable 2*:*** *Export the Eclipse OCL project as* ***OCL_LastName.zip*** *and upload it on MyMoodle.*

## 2. Task 2

For the system that you chose in Task 1, model the operational views (social, information, and authorization) using the STS tool https://www.sts-tool.eu. In particular, complete the following sub-tasks on the identification and modeling of security requirements:

- Express the security needs for the context of the chosen system using the 'social view', 'information view', and 'authorization view' of your security needs after identifying the roles, goals, and interactions.
- Perform the well-formedness, security, and risk analysis and derive the security requirements document for the context of the system.
- **Deliverable 3:** *Create and deliver a final **STS_LastName.pdf** document by exporting (i) the social, information, and authorization views and (ii) the derived security requirements.*

## 3. Assignment/Report Writing Guidelines:

You must follow the following guidelines. The RE assignment will be evaluated according to the following: Content relevance 90%, presentation quality 10%.

- Use the LNU template to write your report available here.
- Recommended tools: for RE-1.1 Eclipse EMF and OCL (follow Lecture 3) and for Task 2 STS-tool (follow Lecture 4). Consider the Eclipse Modeling Tools Version: 2019-09 R for Eclipse EMF to minimize technical issues.
- **Be aware of the presentation quality**:
  - Font: Times New Roman in 12pt using black
  - Line Spacing: At 1.5 lines
  - Page limit: Max 10 pages for Deliverable 1, default limit for Deliverable 3 by STS.
  - Page size: Letter/A4
  - Well organize your tables and lists, no colorful texts and tables, respect the margins.
  - Format: PDF for the report (from Latex, Doc, STS), and ZIP for the OCL project.
  - File upload: Only three files. Deliverable 1 and 3 in PDF, Deliverable 2 in ZIP.
  - Be aware of the recommended naming scheme!

**For questions, book a slot on MyMoodle under the RE block.**

**Good Luck!**