

CS/SE 6361, SYSM 6309

Requirements Engineering, Spring 2024

Project Phase II: Requirements Elicitation, Specification and Validation

Due: April 16 (Tuesday) – Interim Report II – A softcopy should be emailed to the TA for your team's evolving WRS and Vision documents, and also posted on your team's web site. Updated project plan also should be submitted.

Due: April 25 (Tuesday) / April 30 (Thursday) – Final Project II presentation and submission: a hardcopy should be submitted and a softcopy should be emailed and posted on your team's web site, which should include;

- ✚ Final project plan
 - ✚ Project I (if there are any (post-mortem) changes)
 - ✚ Project II (including a Questionnaire)
 - ✚ Any dependency/traceability between Project I and Project II, all in one folder.
- ✚ Create a single zip file, and send the link to the zip file to the instructor and the TA.

The hardest single part of building a software system is deciding precisely what to build. No other part of the conceptual work is as difficult as establishing the detailed technical requirements, including all the interfaces to people, to machines, and to other software systems. No part of the work so cripples the resulting system if done wrong. No other part is more difficult to rectify later. [Brooks, 1987]

I. Summary

Your team shall continue with the problem analysis from the first phase of the course project, but this time using more advanced, (semi-)formal notations with richer ontologies.

For this phase of the problem analysis, you will be doing a second round of elicitation, analysis, specification and validation of the system you developed in the first phase – in the style of the H.O.P.E (Helping Our People Easily), while accommodating some new changes to the preliminary definition of the system.

More specifically, your team's task is to develop:

- **Product Specification:**
 - Enterprise/domain/world/business modeling, using OO (module on enterprise/business/systems modeling), GO/AO (modules on goal-oriented elicitation and non-functional requirements).
 - Software requirements modeling and specification, using OO/GO/AO.

- Process Specification:
 - Functional process modeling, using IDEF/UML to model your own team's RE process.
 - Non-functional process modeling (using the NFR Framework/KAOS).

It is recommended that your team consider using a tool (download – countries and numbers , <http://sourceforge.net/projects/re-tools/files/stats/map?dates=2009-05-26+to+2022-12-06>), which can be found at <http://www.utdallas.edu/~supakkul/tools/RE-Tools/index.htm>.

II. Changes to the Preliminary Definition

Your team needs to introduce some changes to your system – e.g., the scope, the features, etc., in the following style:

If not already, your system must address:

- Safety
- Technical feasibility
- Maximal resource utilization of sensors (temperature, accelerometer, light, microphone, camera, etc. - e.g., for a medical alarm fall detector, image/object/scene recognition).
- The system shall abide by the HIPPA policies and regulations or there should be a disclaimer.

III. The Deliverable

Your description should be elegant and comprehensible. Your deliverable should be available as both on-line (one URL per team member) and off-line specifications (submission of one copy per team).

Your deliverable should include:

- a Vision Document
- a WRS Document for the product
- a Questionnaire
- a Process spec.
- a Final Project Plan
- Presentation slides.

Recommendation on diagrams to be included (minimum):

For a product specification:

- UML: Class, Use Case, Sequence
- PIG
- SIG

For a product specification, a strong recommendation on, in addition to some of the above:

- IDEF0
- (SIG)

1. The Process Specification:

Your process specification should show all the iterations your team has gone through, each involving the modeling and prototyping of your own version of the Theia system. In other words, specify what activities your team has carried out, who have been involved, in the project phases I and II, and what the relationship is between the two phases, in terms of the inputs and outputs – I.e., in the style of IDEF0.

2. Issues:

As with the first part of the course project, discuss any issues (e.g., incompleteness, inconsistency, ambiguity, redundancy), in your WRS, that you/your team has encountered in further carrying out the problem analysis, while using ontologically richer notations. As with the first deliverable, discuss how you have resolved the issues by describing options considered, tradeoffs analysed, and decisions made.

3. The Product Requirements Models and Specification:

You are to develop a Vision Document and a WRS, using *RE-Tools*.

4. A Prototype

Develop a **running** prototype (even a very primitive one), based on the mockup prototype which you constructed as part of the deliverable I. Your prototype should be **functional**, in some way- even if it's incomplete.

A user manual should also be produced.

5. Was your estimation of the creeping rate reasonable?

6. Justifications as to Why to Choose your System.

Describe why your team believes your product will be better than, or at least as good as, the products from other teams. [All your claims should be substantiated in the main body of your slides]

What concepts should be exercised here? – Carefully use a systematic process in making your decisions:

{Problem, Solution} * {Process, Product} * {F, NF} * {Why-What-How, 4-Variable, Reference, 4-Worlds} * {S, D | = R} * {Elicitation, Specification, Validation} * {SA, OO, GO}