CS 201
Requirements Engineering, Fall 2023

Project Phase II: Requirements Elicitation, Specification and Validation

Due: November 27 (Monday) – Interim Report II – A softcopy should be submitted on Canvas for your team's evolving WRS and Vision documents, and also posted on your team's GitHub web site. Updated project plan also should be submitted.

Due: December 11 (Monday) – Final Project II presentation and **submission:** a softcopy should be submitted on Canvas and posted on your team's GitHub web site, which should include;

- Final project plan
- Project I (latest version)
- Project II (including a Questionnaire)
- Any dependency/traceability between Project I and Project II, all in one folder.

- Create a single zip file, and submit the zip file on Canvas and put the GitHub link as the description text for that submission.

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, 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).

Your team can use any tool (Online or Offline) as you desire.

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 (Phrase I and II)
- As well as all the other documentations (may be placeholders, do not have to be complete) that you think are important for developing your system

Recommendation on diagrams to be included (minimum):

For a product specification:

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

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

- IDEF0

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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 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.

4. A Prototype

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

A user manual (important) 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 and other similar products on the market.

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}