On the Questionnaire for the Agile Product Line Requirements Engineering Project

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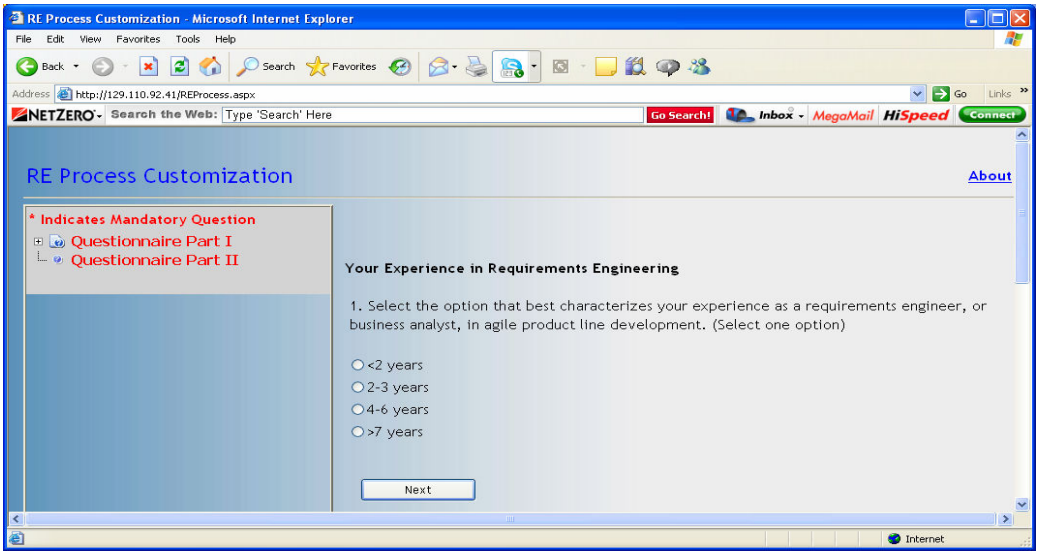
The Questionnaire in a Nutshell:

- A unique, on-line questionnaire is a key element in our Agile Product Line Requirements Engineering research project. This project is investigating the integration of agile and product line approaches, specifically in requirements engineering.
- The data collected from researchers and practitioners internationally are going to form the foundation of an expert system. It will be the first system to assist end users in the selection of a requirements engineering process (more agile ↔ less agile) for their single product or product line project.
- The questionnaire has two main parts. Part I asks questions about the expert's experience in agile requirements engineering, either for single product or product line development. Based on the responses to Part I, a brief project description is selected from a collection of over 250 and presented in Part II. Questions about the requirements engineering process the expert would use for the project description are presented in Part II. A sample screenshot is presented below:



- The questionnaire has been iteratively developed over the last 18 months. The specifications are available as technical reports; the questionnaire is at: http://129.110.92.41/Default.aspx
- People with substantial expertise in agile methods and/or product line engineering are being invited to respond to the questionnaire. The questionnaire has been designed to take less than 30 minutes to complete.
- By choice, respondents (individuals, organizations) will be acknowledged for their contributions.

Questionnaire website: http://129.110.92.41/Default.aspx

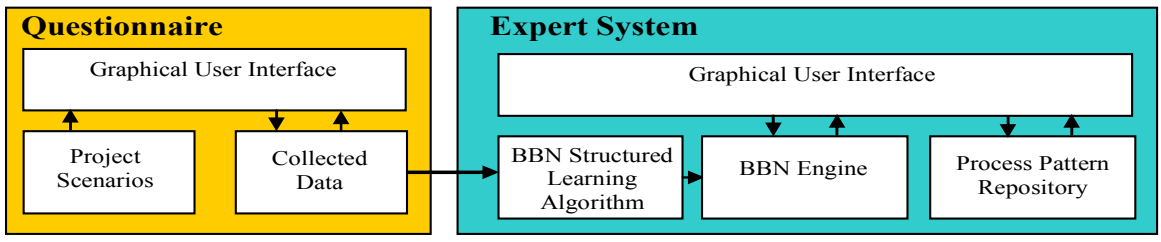
The Bigger Picture: Context of the Questionnaire

Motivation and Research Issues for the Agile Product Line RE Project:

- The rapid development of high quality software, either single product or product line, continues to be an important and challenging problem. Product line engineering (PLE) techniques support the "mass production" of related software applications by defining and tailoring re-usable core assets.
  - The proposed PLE techniques have been more plan-oriented, rather than agile.
  - An emerging research issue is how to effectively integrate agile development practices with PLE techniques in order to combine their advantages.
- Defining the requirements for a system, or what to build, has been described as the hardest single part of the conceptual work for building a software system[1]. Defects introduced in the requirements engineering activity can be very costly to correct later in development.
- Defining well suited software development processes is an established best practice, as a means to support the development of high quality software artifacts (e.g., requirements specifications).
- There is a substantial amount of expertise distributed across four main (independent) communities: agile; product line; requirements engineering; and process engineering. The experts include researchers and practitioners.
- The distributed knowledge is not readily accessible. It is difficult for an individual/organization to find out what has been successful on similar projects and re-use it. As a result, much effort is spent redefining/selecting processes; errors (a poor choice) can be time consuming and expensive to correct.
- The process definitions available in the literature are not presented in a consistent way. Some are tailored versions of standards based processes (e.g., Unified Process); others are not. This makes comparing and selecting among the processes more difficult.

Proposed Solution in the Agile Product Line RE Project:

- Develop an expert system to assist in the selection of a requirements engineering process that is suitable for a specific project. A high level overview of the system is illustrated below:



- The process pattern recommended from the repository:
  - Provides degree of agility, specific techniques, and work products (i.e., requirements engineering artifacts). The process can be further tailored for the project as needed.
  - Supports single or product line development (forward and reverse)
  - Process is standards based (process recommendations are tailored versions of the Unified Process)
  - Is founded on the expertise collected from a large number of researchers and practitioners; the data are collected using an on-line questionnaire.

[1] F.P. Brooks, Essence and accidents of software engineering, *IEEE Computer* April pp. 10–19. 1987.