

CIS 8020 Systems Integration Fall 2009

System Integration Design Project

Overview

For this group project, students are required to identify a particular integration problem and design a solution to address the problem. A report will be produced to summarize the project, and a short presentation will be delivered in class based on the report.

Submission

This is a group project. Every group needs to submit one copy of the report and presentation file through email by the due date (Dec 7th 2009). The written report should be in PDF format; the presentation should be in PowerPoint format, PDF format, or any online format that can be exported as PowerPoint or PDF format (such as the Google Presentation).

Report

The report should consist of the following parts. You can also use them to guide your project.

1. Cover page:

The cover page should list the title (and sub-title), team name, members, affiliation, course, and date.

2. Executive summary:

An executive summary provides a quick overview of the main report. It usually contains the purpose of a report, a brief statement of the background, concise problem analysis, key issues and conclusions. It contains enough information for a reader to get familiarized with what is discussed in the full report without having to read it. Limit this section to one page. Do not explain the structure of your report.

See the following webpage for some writing guideline: http://www.ehow.com/how_16566_write-executive-summary.html

3. Background:

This is any relevant background that helps in understanding the context and problem you are modeling. The context needs to as specific as possible, scoped to a single organization and/or its related organizations (can be real or hypothetical). This usually includes business background and technical background. Some examples are:

1. Description of the organization and its major activities.
2. Brief introduction of the industry if relevant.
3. Description of technology environment, products and technologies currently implemented in the organization.

4. Problem description and analysis:

This provides a detailed description and analysis of the current problem in the organization. Each group needs to identify a specific problem within the organization you have introduced in the background

section. It could be a real problem for a real organization, or it can be an envisioned scenario that likely exists for an organization; such envisions must be reasonable.

Problem identification is a start. The problem should have a certain level of complexity that is worth your design effort. It should not be trivial, and should not be solved by a single product or program. The problem also needs to be specific within a certain scope. Do not just talk generally and try to address a large scale problem (like a national problem or an industry wide problem). The problem needs to be situated in a very specific business setting for your selected organization (can be real or hypothetical). You may discuss the situation/problem with the instructor before you go on to design the solution.

Overall, a reasonably good problem for this project has the following characteristics:

- It should be properly scoped for a particular organization (company, hotel, hospital, university, local government, non-profit association, etc.) and/or its related organizations. These organizations can be real or hypothetical. Describe such an organization in the “Background” section.
- Having one or more of the following characteristics:
 - Autonomous organizations, functional units, departments, or systems.
 - Distributed applications, systems, user interfaces or databases.
 - Heterogeneous data formats, application frameworks, processes, system platforms, or commercial products.
- It can be solved with existing technologies and methods.

You may address existing problems as well as potential challenges. If there is a current solution but not satisfying, then discuss its limitations and weaknesses. Then lay out some general or meta-requirements for potential good solutions. Explain why these requirements are important.

5. System design:

This part is a detailed description and documentation of the proposed solution. Note that although system development and deployment are not required in this project, you should include as much technical details as possible in this documentation that is ready to be used by system developers.

The solution usually starts with a conceptual architecture design, depicting different components and interactions among these components. You may use diagrams to illustrate this. Then you should describe each component and interaction; this may include application modules, services, interfaces, messages, documents, processes, protocols, user interfaces, data formats, standards, application layers, etc. Besides a static description of the solution, you may also want to use example scenarios or use cases to demonstrate the actual usage of your solution.

A few design oriented articles are provided to you as examples of describing systems and solutions. Not all of them are about integration solutions. Note these articles are trying to address general problems and solutions, which is NOT the purpose of this project. Use these articles just as examples for describing your solution/design. You can see some architectural diagrams in them, too. You should not follow them exactly but you surely can learn something from them.

6. Design discussion and justification:

This section should discuss and justify the solution you designed. Here are some ways you can follow:

- Discuss some assumptions you have made in your problem analysis and solution design, and the impact of these assumptions.
- Evaluate the major features of your solution. Related them to the concepts learnt in this class.
- Discuss any alternative components or configurations in your solution. Compare them with the one you have chosen. Justify why you made such decisions and why they make sense.
- Discuss the feasibility or practicability of your solution. Discuss any relevant and practical implementation considerations. Recommend existing system products if possible.
- Review your solution and discuss what could be improved, if the solution is not the optimal one.

Presentation

A presentation will be delivered in the last class session. You will have 10 to 15 minutes to briefly describe the context, problem and solution design, followed by brief discussions of your work. Try to interact with the audience and get some feedback from them. You may edit the report based on these feedbacks.