CS6362 — Software Architecture and Design
Project 3: Macro-scopic System/Software Architectural Design
in the distributed cooperative computing paradigm
Due: 7:00pm Thursday December 2 (in class)

"... All the other arts were obedient and submitted to the discipline of architecture." Victor Hugo

— "The Art of Systems Architecting".

I. Summary

Recent studies indicate that electronic commerce has started to change the way we live and may exceed \$1trillion in total amount in the next three to four years. Your team's task is to build a system/software architecture for an Electronic Commerce System for the next centry (hereafter, *ecs.com*) which will make the variety of commerce activities faster, more accurate, more convenient, more flexible, more mobile, more nomadic, cheaper, etc. The *ECLOPS* which you've built thusfar can be considered as an important part of the ecs.com you will be building.

For the project, you are to consider *four* architectural design alternatives, carry out a trade-off analysis, and propose a particular architectural design as your final selection. Here, at least two (2) of the architectures should be extensions of the architecture you chose for the second part of the course project.

II. ecs.com — Electronic Commerce System for the next millenium

ecs.com will extend ECLOPS in the following ways:

- ecs.com will maintain catalogues of goods and services and display them before a customer places an order (e.g., software/book/pizza/movie-on-demand). Those catalogues that come from different vendors may be integrated and maintained by ecs.com (for instance, for easier price comparison) or separately maintained by the individual vendors.

- ecs.com will make it possible for the customer to have a list of purchase options which can include, for example, an immediate delivery of high-quality goods or services at a higher cost, a poor-quality goods or services at a cheaper price whose delivery date may be uncertain, and with a one-year warranty plan, a five-year free upgrade plan, etc.

- ecs.com shall offer a software agent which will make it possible for the customers and the suppliers to have negotiations concerning the price and the delivery.

N.B: Your team can restrict the type of ecs.com to either B2B (Business to Business), B2C (Business to Consumer), etc.

III. The Deliverable

Your description should be elegant and comprehensible.

1. **The Process Architecture — Methodology for Your Team Work** Describe briefly how your team members were divided up in carrying out your own design tasks, and why each took the particular roles. In other words, describe the essential tasks/team-members as components of your own process architecture, their essential relationships as interactions, while taking into consideration other architectural concerns.

2. **Architectural Design Alternatives** Describe **four** different architectural design alternatives you have considered. As described earlier, at least two (2) of the architectures should be extensions of the architecture you chose for the first part of the course project. This means you are required to submit the diagram of the previously chosen architecture along with the corresponding tradeoff analysis (i.e., of ECLOPS). For each of the alternatives, explain its architectural style, components/elements, interactions/connections between them, and any constraints on the components and their interactions.

3. **Trade-off Analysis** Discuss what types of NFRs you used as the criteria and why. Discuss relative advantages and disadvantages of the architectural design alternatives in **2**. It is recommended, although not mandatory, that you also consider scenarios.

4. **The Selected Architectural Design** Give a concise summary of justification as to why you have made the particular selection.

5. **Outsourcing** Briefly discuss what kind of changes will need to be made if parts of ecs.com are to be outsourced (e.g., through ASPs (application service providers)).

   Thank you for the great team work. Best wishes with your career!