ISM 105/205 MOT I: Homework 6: Function Analysis/Conceptual Design

Reading: U&E, PD&D, 4th Edition, Chapters 16 (Project Planning), 6 (Concept Generation), 7 (Concept Selection), 8 (Concept Testing).

Homework Problems: (due Tuesday, 16 November 2010)

Important: Before starting on this homework create a time-phased schedule for completing this homework, and for keeping track of how well you follow your plan. Then, use the structured problem-solving approach to solve each problem.

1. Functional Decomposition of a Personal Computer:
   Perform a functional decomposition of a personal computer. First do a simple dissection of the product using the FAST technique; restrict this dissection to the major subsystems of the product. Then create a function structure (FS) for the product as follows. Start with a single block showing the overall function, inputs and outputs of the product. Then decompose this product into sub-functions, and draw the function structure (at least 3 levels deep) for the products. Clearly identify the material, energy, and information flows into and out of each subsystem or component.

2. Conceptual Design for an Indoor Mobile Robot
   Design a mobile robot capable of moving indoors, climbing stairs, and performing useful tasks like cleaning. Proceed as follows. First, using a structured process, develop 4-6 alternative design concepts. Then, using an appropriate utility function assess (compare) these designs to select the “best” alternative for further development.

3. Microsoft (continued from the midterm)
   - Go the ISM 101 (Management of Technology Seminar) website for Spring 2010, Winter 2010, and Fall 2010
   - Locate the following three Microsoft presentations: Roy Levin (Spring 2010); Debbie Janes (Winter 2010); and Jeffrey Murray (Fall 2010).
   - For each presentation, extract at least three key lessons which are relevant to (1) topics covered in ISM 105/205, and (2) your analysis of Microsoft in Problem 1 of the midterm. Present your results in the form of a suitable table (of your own design!).

Project: Phase II: Product Conceptual Design (due on Tuesday, 9 November 2010)

You are now well along your technology/product development process. Specifically, in this Phase you should be actively performing the following activities (note that some of these steps have to performed concurrently):

- Complete and refine all work done on Phase 1. Pay attention to the interconnection between the various parts of this Phase 1, e.g., the revenue business goal should be related to the market revenue map.
- Create and apply the appropriate decision analysis framework for risk management.
- Develop a project plan (include all ten weeks of the Fall 2010 quarter), with the appropriate tasks, activities, timing, and status for each activity.
- Attempt to create a financial model for your product development project.