ESD.71 / 1.146 / 3.56 / 16.861 Engineering Systems Analysis for Design
Fall 2008

Application Portfolio Assignment – Part 3 + 4 Combined

Congratulations! Reading your second assignments, you're keeping up the good work!!

Part 3 -- Defining System Designs to be analyzed

Define and describe the major system concepts you will be analyzing. There should be a maximum of 4 (to limit work). Most importantly, there should be a minimum of two types:

- A fixed design that intends to meet some specified mission and that it then not altered over time. This is the standard approach (In garage case, this is the standard practice of deciding on the number of levels in advance.)
- A flexible design that can be adjusted in significant ways over time, as uncertainties get resolved. (In garage case, this is the "fat-column" design, the one that permits addition of extra levels if and when demand justifies the investment.)

You will eventually analyze many variants of these two types, just as the garage case examined the merits of different numbers of levels for the fixed design.

Part 4 – Do 2-Stage Decision Analysis of Alternative Designs

Set up and carry out a 2-stage Decision Analysis of the Designs identified above. At the end of each stage include at least 3 chance outcomes (for example: forecast, high and low levels). Specifically, the decision analysis should be structured as follows:

- At first stage, you have all designs, followed by chance outcomes
- You calculate outcomes at end of first stage
- At second stage, you adjust flexible design as seems appropriate (but you cannot adjust fixed design, by definition). The second stage chance resolutions follow, and you can calculate the outcomes.
- Calculate Expected Value and define Optimal Strategy over 2 periods.

General Comments:

- Your numerical model does not have to be sophisticated. It should however be able to define the consequences of the various design and management decisions.
- Don't be too ambitious! Unless the work is part of research or another project, it is to be done in the context of a normal course. Be reasonable in defining your workload!

Turn-in Instructions

Subject line: Turn-in of Application Portfolio 3 – "your name"

Name your file: "last name – topic – ap34".   **Note difference -- this will help us keep track**