

**SYST 495  
Senior Design II  
Spring 2006**

**Agenda**

- **What's different this semester?**
- **Schedule**
- **Tying everything together**

## What's different?

- **Dr. Loerch**
  - Room 119 in ST II
  - 703-993-1657
  - [aloerch@gmu.edu](mailto:aloerch@gmu.edu)
  - [classweb.gmu.edu/aloerch](http://classweb.gmu.edu/aloerch) and click on SYST 495
- **Grading**
  - 25% Team Individualized Mid Term Exam
  - 25% Final Project report (written)
  - 20% Faculty / Sponsor Evaluation of Team Presentation
  - 15% Attendance and participation
  - 10% Team Project productivity self evaluation
  - 5% Timesheets/Notebooks

## Schedule

- Feb 2 – Abstract to UVA (response by Feb 26)
- March 7 – Midterm in class
- April 2-4 – MORS Education Colloquium at USCGA
- April 6 – UVA registration
- April 9 – Submit paper to UVA
- April 17 – USMA abstract due
- April 27 – UVA conference (competition)
- April 30 – Final presentation to faculty
- May 2-4 – USMA Competition (Conference)
- May 9 – Final team evaluations, final meeting
  
- In between – team presentations on various topic

## **Team Presentations during Semester**

- **Information flow**
- **Modeling and analysis status**
- **Analysis results + sensitivity**
- **Dry runs**

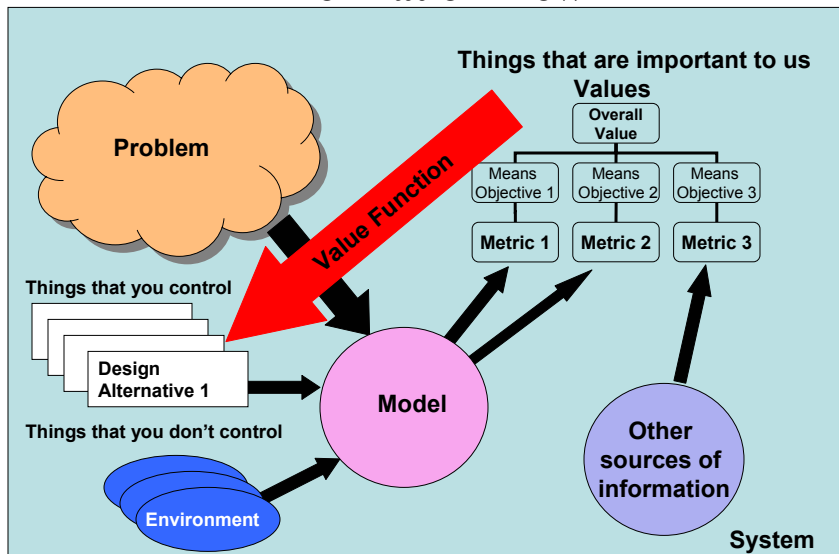
## **Tying everything together**

- **All the parts are in place to complete the projects**
  - **Problem statement**
  - **Requirements**
  - **Value Hierarchy**
  - **Initial modeling plan**
  - **Management**
- **Not clear that all these parts are well connected**
- **Information flow between the pieces holds it all together**

## Information Flow

- We all are in the process of building models
- Why modeling?
  - Represent system so we don't have to use the real thing
  - Help evaluate existing alternative designs
  - Help develop additional alternatives
  - Produce information to populate our value models
- What makes a good model?
  - Incorporates the things that are important
  - Leaves out things that are not important
  - Is efficient
  - Produces the information that is needed to support decision making

## Information Flow



## Your Presentation

- Describe the system
  - Discuss the parts of the system that cannot be controlled by the decision maker
- Give a problem statement
- Show your value hierarchy
  - Show your value model
  - Show your metrics based on the value hierarchy
- Describe your design alternatives
- Discuss your planned model
  - Input data from all sources
  - Output data that feeds the metrics for the value function
- Identify other sources of data to feed the metrics

## Cost Benefit Analysis

- Cost and Benefit shall be kept separate
- Remove cost from your quantitative value function
- Use value model to compute benefit of each design alternative
- Estimate the cost of each design alternative
- Choose the best - How?
  - Hold something constant
  - Pareto curve

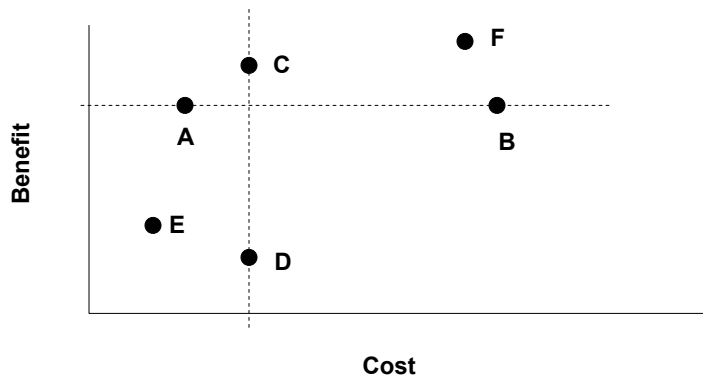
## Holding Something Constant

- Specify a satisfactory level of performance (benefit)
  - Same for all design alternatives
  - Different costs
  - Choose alternative with lowest cost
- Specify a feasible (affordable) cost
  - Same cost for all alternatives
  - Each alternative should have as much benefit as can be obtained for that cost
  - Choose the alternative with the most benefit

**Note:** This is usually not possible. Depends on the problem and nature of alternatives

## When you can't hold something constant

Which would you prefer?



## Build a Pareto Chart

