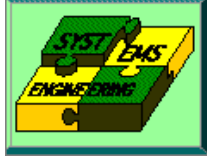
George Mason University



SYST 101: Intro to Systems

Lecture 8

Feb. 13, 2003

C. Wells, SEOR Dept.

Announcements

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Agenda

- Pop Quiz 1
- Life Cycles
- System Engineering Processes

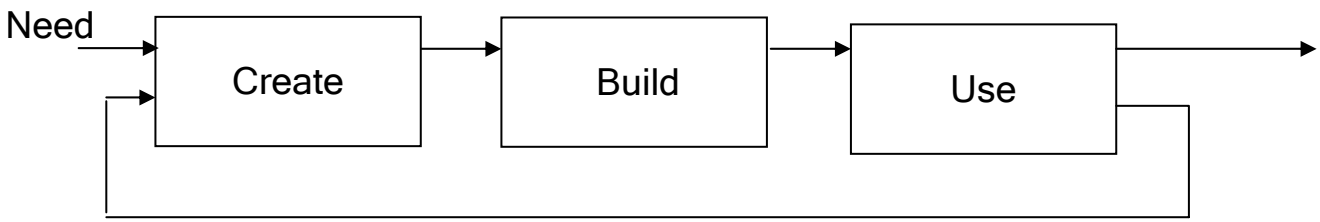
Life Cycles

- A beginning to end view of a system
- Starts with the need
- Proceeds through design and development
- Through build and deployment
- Continues through use and improvements
- Ends with decommissioning

The System Engineering Process

- Another way to view the life cycle
- Focus on the steps a system engineer must do
  - Already seen the simplest SE Process
  - There are many other ways to slice the problem
  - As always there is no one best way
    - It depends on the problem

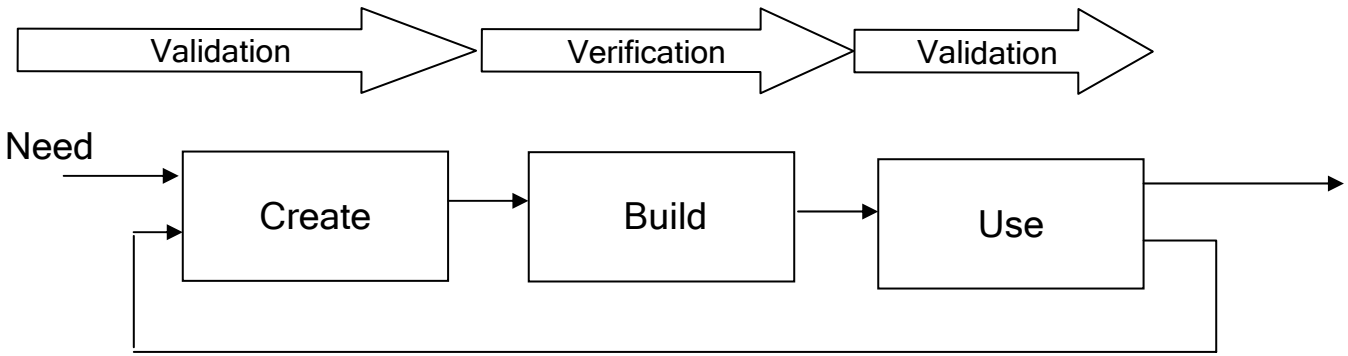
A Three Step Method



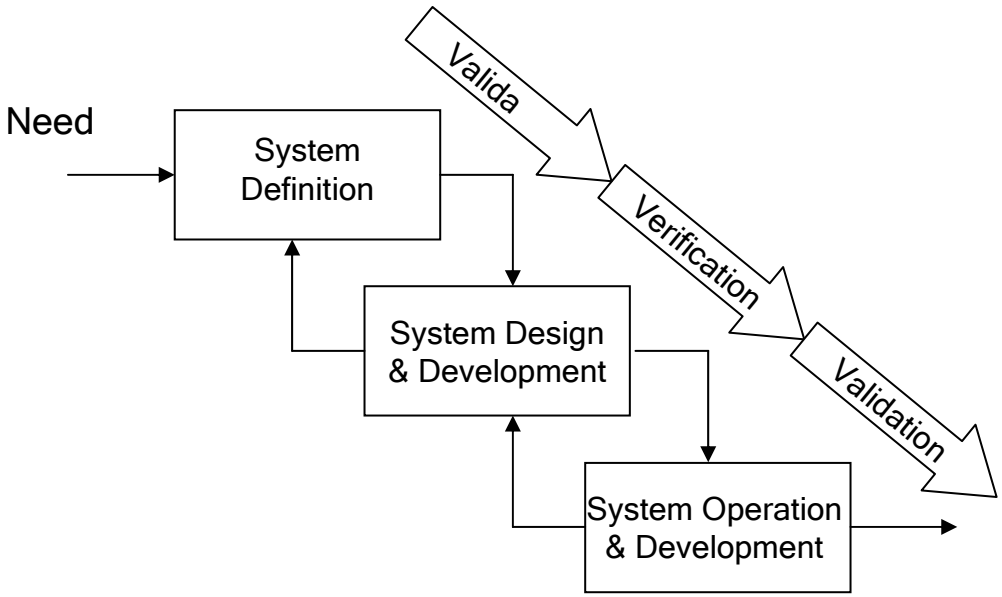
Validation and Verification

- Validation is insuring what you are building satisfies the needs
  - Associated with establishing requirements
  - Associated with the use of the system
- Verification is insuring that what you built is what you thought you build
  - Associated with building and testing the system

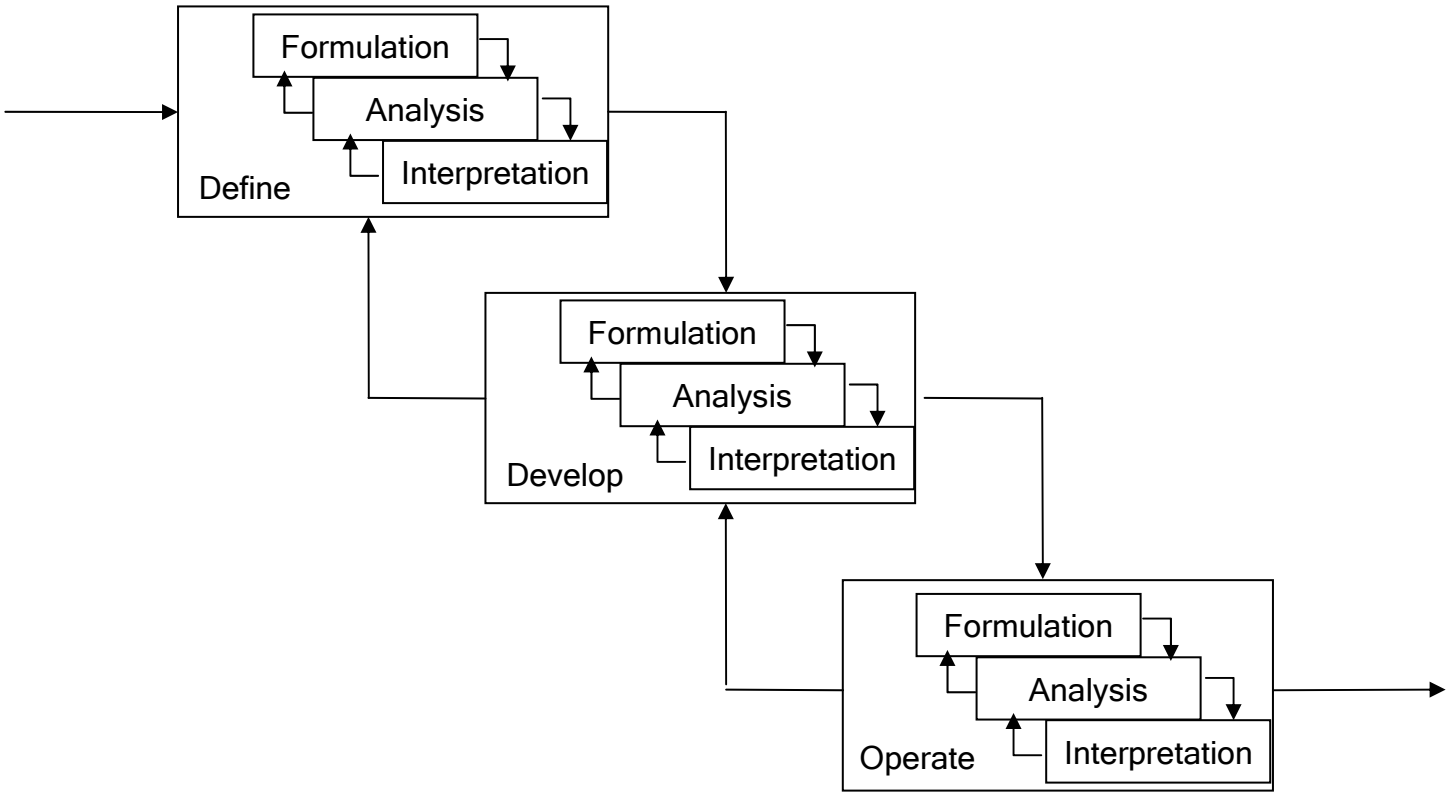
A Three Step Method with Validation & Verification



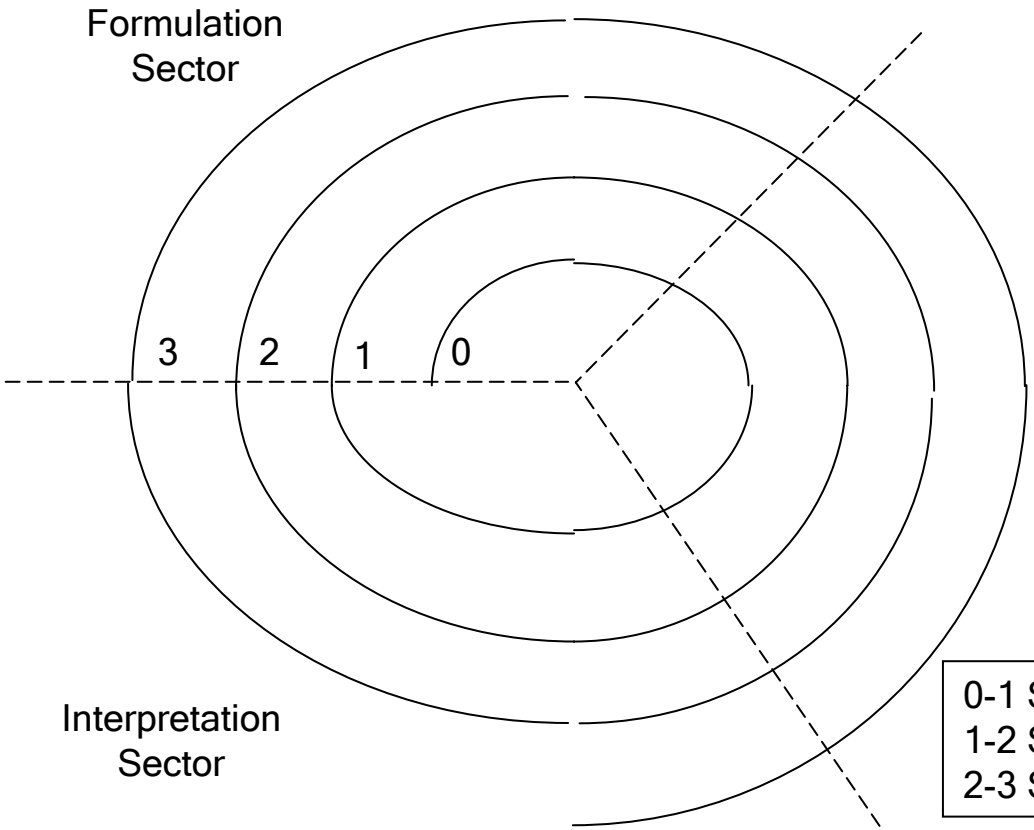
Same Method, Different Words



Expanded 3 Element Model

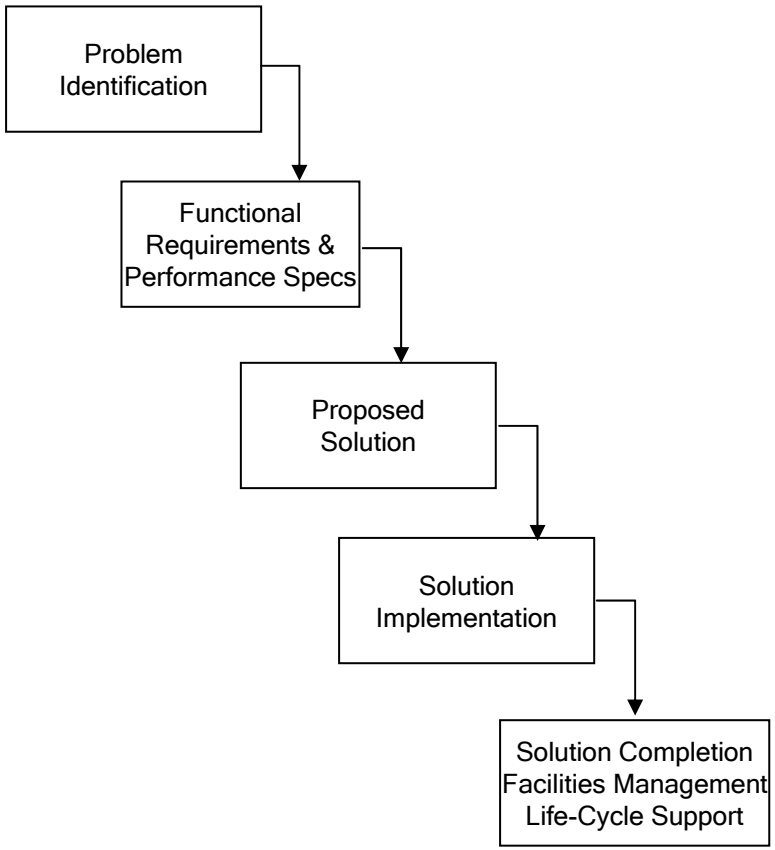


Spiral Model

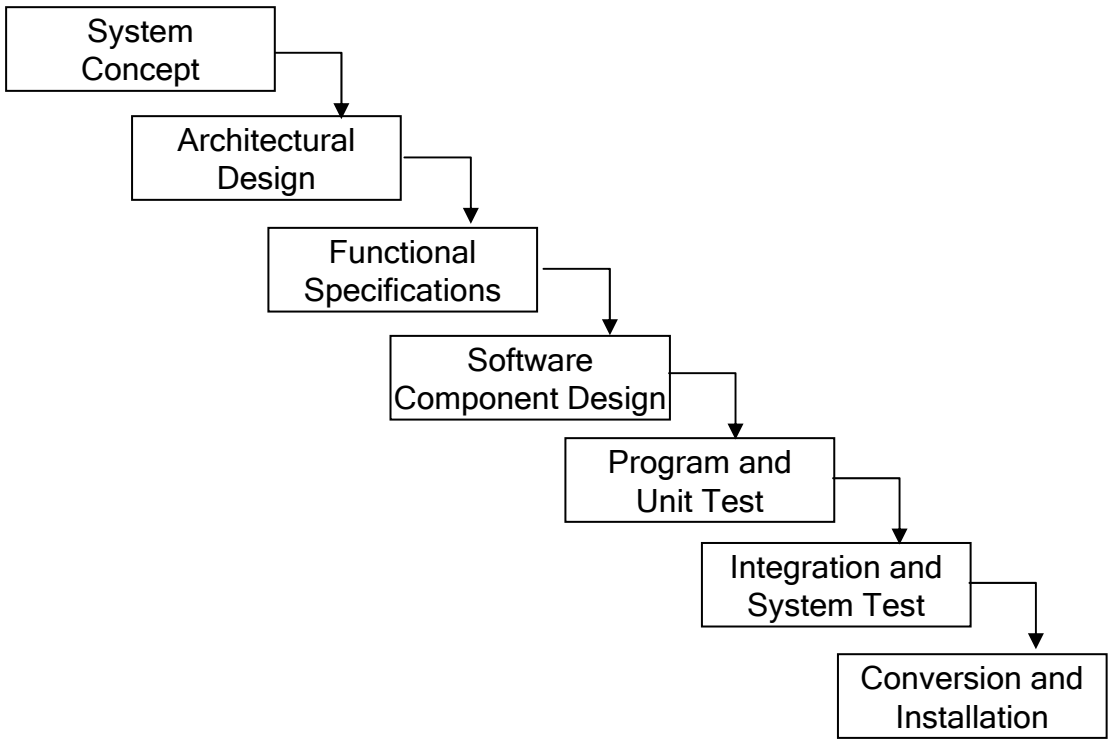


0-1 System Definition
1-2 System Design & Development
2-3 System Operation & Development

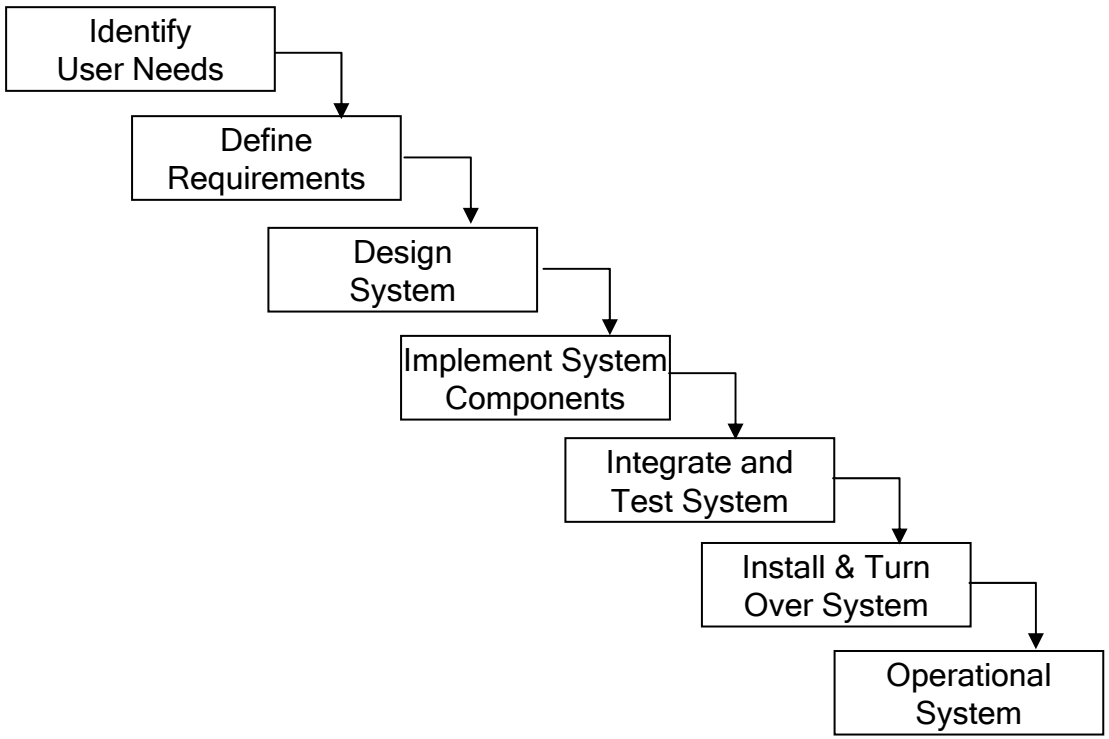
5 Phase Method (IDC)



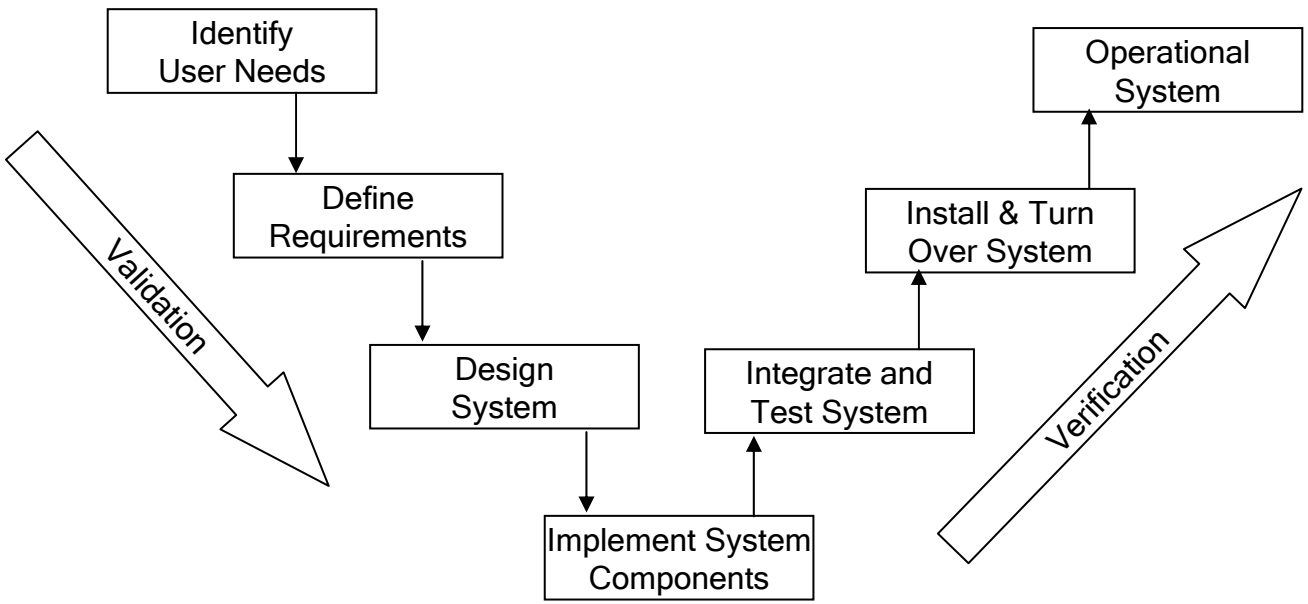
7 Phase Life Cycle (AMS)



Digital System Development Methodology (CSC)



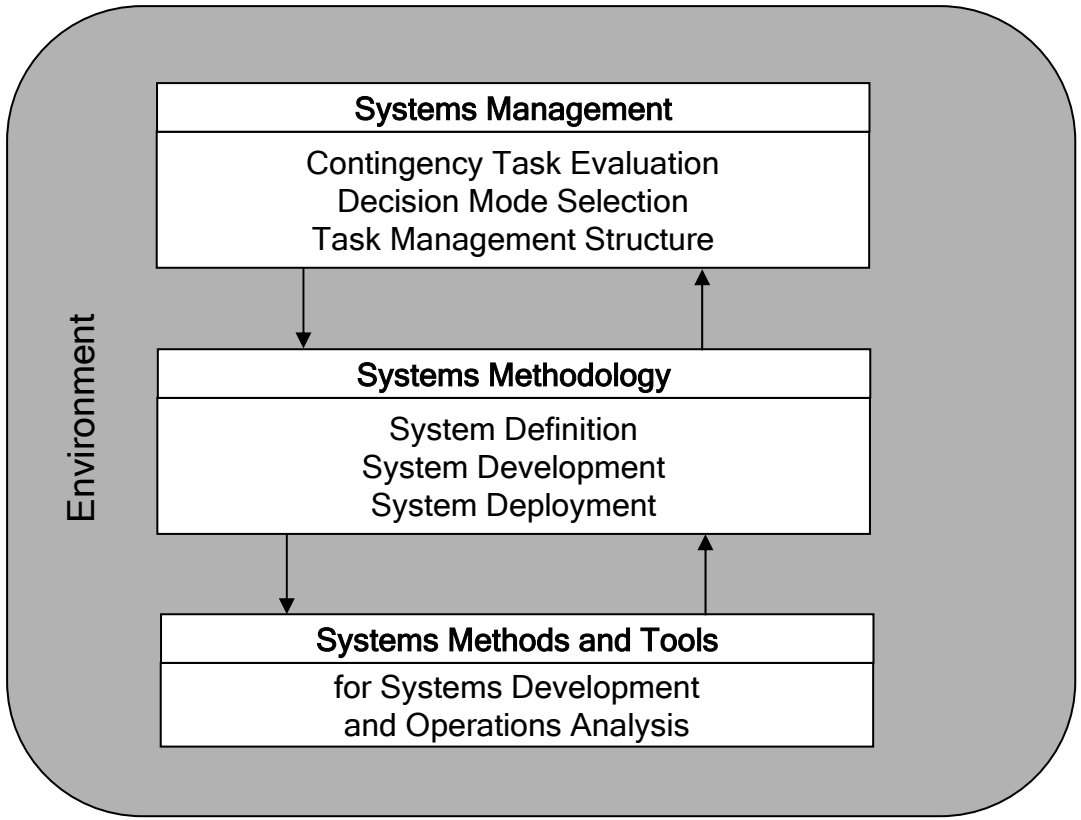
The V System Engineering Methodology



Observation

- They all say about the same thing
  - Different nuances for different situations
  - NIH syndrome between companies?
- Represent common sense approach
- Provides gates to ensure work is done
- Framework for documentation

Model SE Process



Assignments

- Reading
  - Petroski, To Engineer Is Human
    - Chapter 7, Design as Revision
    - Chapter 8, Accidents Waiting to Happen
- Homework
  - Work on Project 1