

CE474: Traffic Systems Design-Fall 2004

Class 02 – Introduction to Systems Engineering in traffic systems design
August 25, 2004

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Traffic Signal Systems

What Things are there? Why they are there?



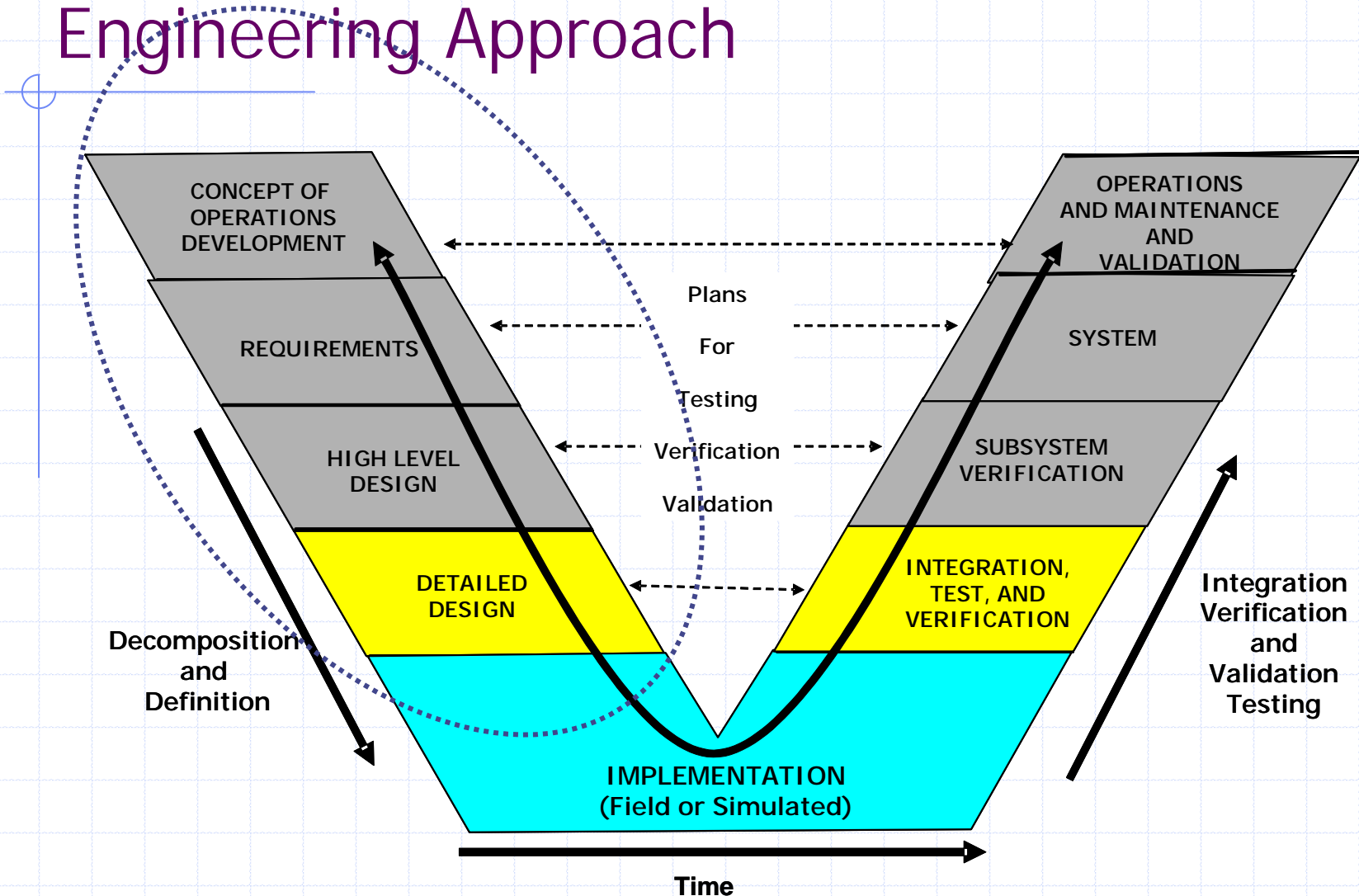
Traffic Systems Design – Systems Engineering Approach

- ◆ Systems engineering involves the transformation of an operational need into a description of system performance parameters and a preferred system configuration.
- ◆ This must be done through the use of an iterative process of functional analysis, synthesis, definition, design, testing, and evaluation.
- ◆ The systems engineering approach seeks to maximize efficiency and effectiveness through employing a continuous and iterative process that incorporates the feedback actions necessary to ensure convergence to the most optimal solution.
- ◆ Systems engineering approach should be used in this course

Traffic Systems Design – Systems Engineering Approach

- ◆ There are several systems engineering models that can be used.
- ◆ FHWA recommends the V⁺⁺ model,
- ◆ The V⁺⁺ model is a three-dimensional systems development model that includes decomposition, verification and resolution processes.

Traffic Systems Design – Systems Engineering Approach



Traffic Systems Design – Systems Engineering Approach

◆ Systems engineering in CE474 Design Projects:

- Assessment of project requirements.
- Document and assess the extent of available resources.
- Review and documentation of design options.
- Summary of design parameters.
- Plan for conducting analysis
- Detailed design
- Evaluation and testing --- Compare with requirements

Traffic Systems Design – Design Project 1

◆ Design fixed-time control plans for the intersection using 2008 volumes

- SH 8 and Farm Road St.
- SH 8 and Warbonnet St

◆ Requirement

- All approaches operate “C” or Better

◆ Traffic Impact Analysis [Trip Generation]

Traffic Systems Design – Design Project 1

Warbonnet St. & SH 8



Traffic Systems Design – Design Project 1

Farm Road St. & SH 8



Traffic Systems Design – Design Project 1

Student Assignment

1	Kebab, Mohammad Wassim	Farm Road and SH8
2	Reed, James Evan	Farm Road and SH8
3	Arellano, Lisa Jo	Farm Road and SH8
4	Luo, Min	Farm Road and SH8
5	Candia-Martinez, Mario Guillermo	Farm Road and SH8
6	Pakalapati, Srinivas Raju	Farm Road and SH8
7	Wu, Lei	Farm Road and SH8
8	Aeneni, Shravan Kumar	Warbonnet and SH8
9	McLenna, Patrick Michael	Warbonnet and SH8
10	Gangula, Sreenath Reddy	Warbonnet and SH8
11	Baden, Andrew Christopher	Warbonnet and SH8
12	Orton, Brent Lee	Warbonnet and SH8
13	Auch, Alisha Fern	Warbonnet and SH8
14	Carter, Steven Neil	Warbonnet and SH8

Traffic Systems Design – Design Project 1

Task 1– Existing Conditions “Inventory”

- ◆ Field visits -- Documentation

- ◆ Field data collection

- What to collect
- Who collects what [group ?]
- Data Collection Plan