Overview of MOST: A Hands On Approach to Signal Timing Training

Federal Highway Administration
Webinar
15 April 2009

Michael Kyte, MOST Principal Investigator

MOST

University of Idaho
Purdue University
University of Tennessee
Pline Engineering

Federal Highway Administration
PTV America
Econolite Control Products

Overview of MOST: a hands-on approach to signal timing training: Michael Kyte, University of Idaho

Demonstration of MOST simulation tools: Kiel Ova, PTV America

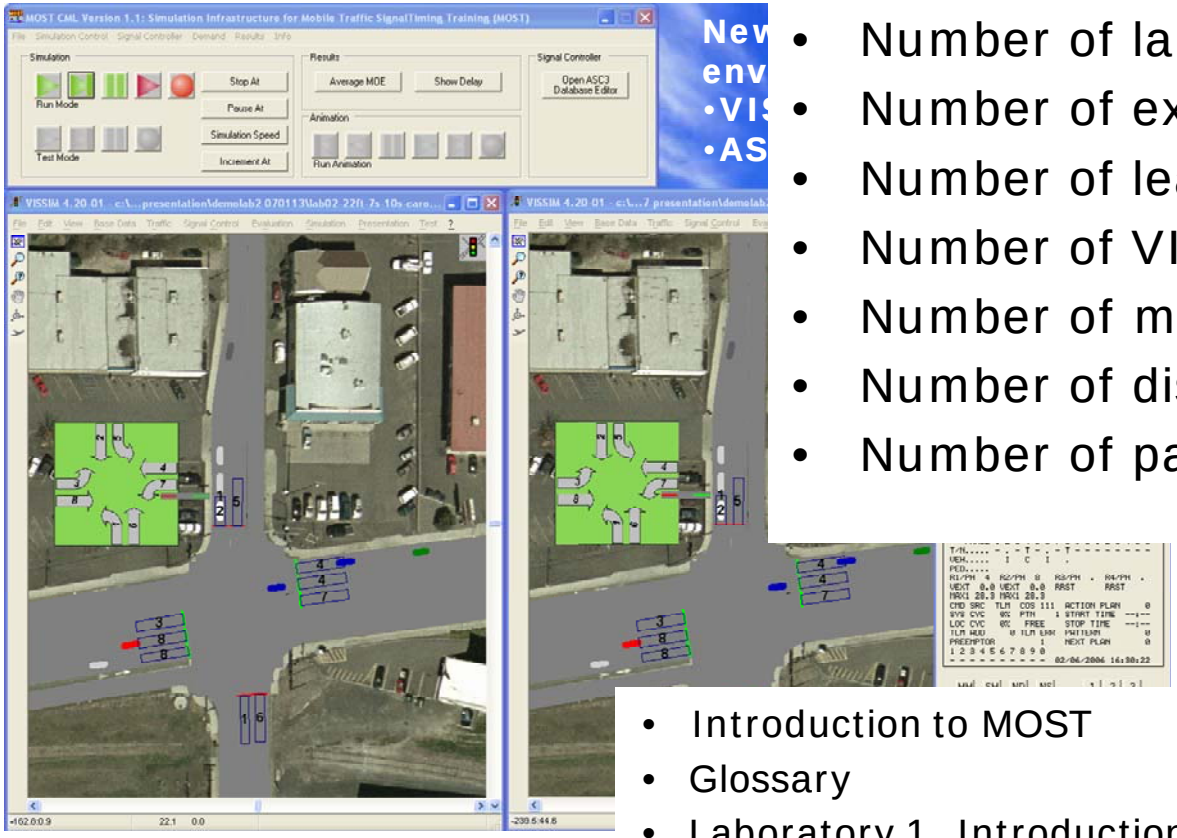
Demonstration of experiments relating to isolated intersections: Michael Kyte, University of Idaho

Demonstration of experiments relating to coordinated systems: Darcy Bullock, Purdue University

Future of software-in-the-loop simulation training and research: Thomas Urbanik, University of Tennessee, Knoxville

- Introduction to MOST
- Glossary
- Laboratory 1. Introduction to the Simulation Tools
- Laboratory 2. Effect Of Detector And Timing Parameters On The Operation Of The Cross Street of An Isolated Intersection
- Laboratory 3. Developing Timing Plans for Efficient Intersection Operations During Moderate Traffic Volume Conditions
- Laboratory 4. Impact of Detector and Timing Parameters on Arterial Street Operations at Isolated Intersection
- Laboratory 5. Selecting Left Turn Phasing for Various Volume Conditions
- Laboratory 6. Actuated Traffic Signal Coordination Concepts
- Laboratory 7. Actuated Traffic Signal Coordination Implementation

What is MOST?



- Number of laboratories: 7
- Number of experiments: 37
- Number of learning objectives: 70
- Number of VISSIM simulations: 47
- Number of movie files: 37
- Number of discussion questions: 110
- Number of pages in MOST book: 456

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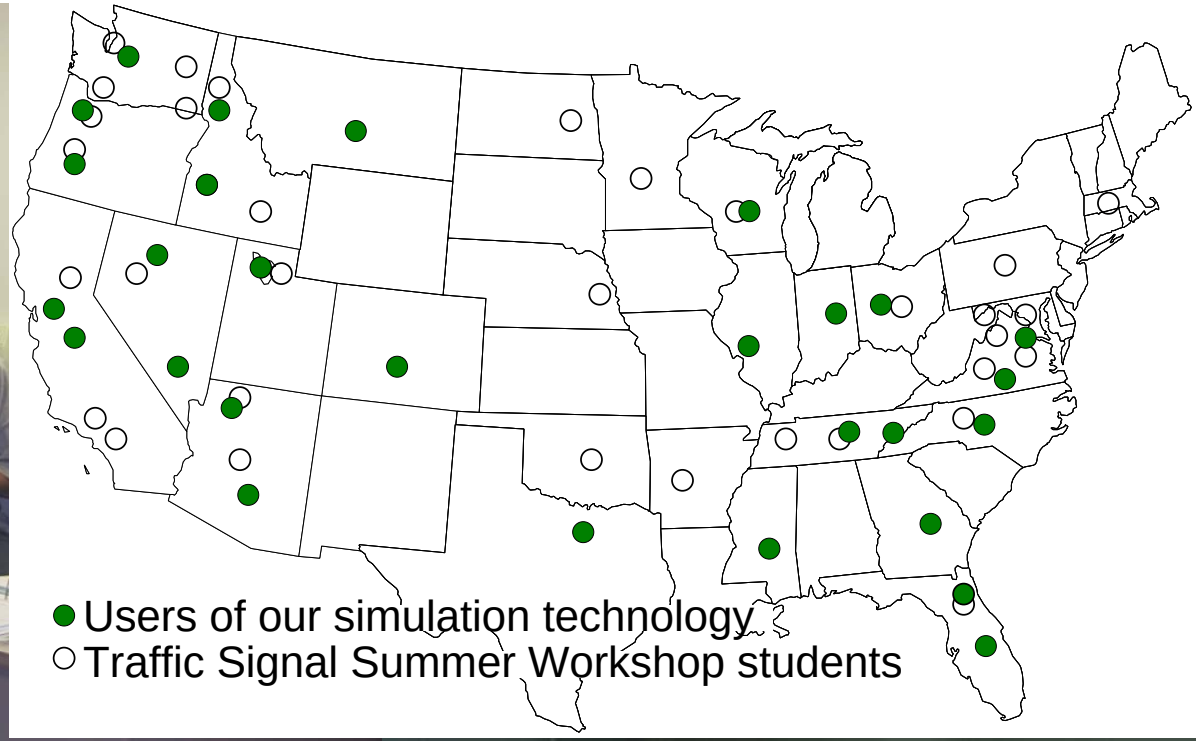
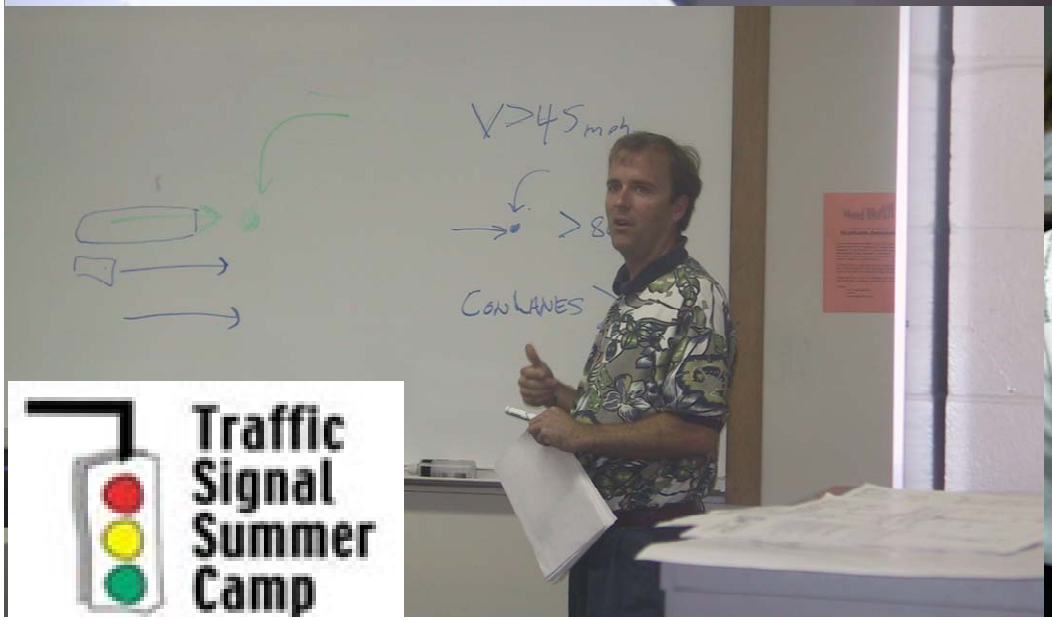




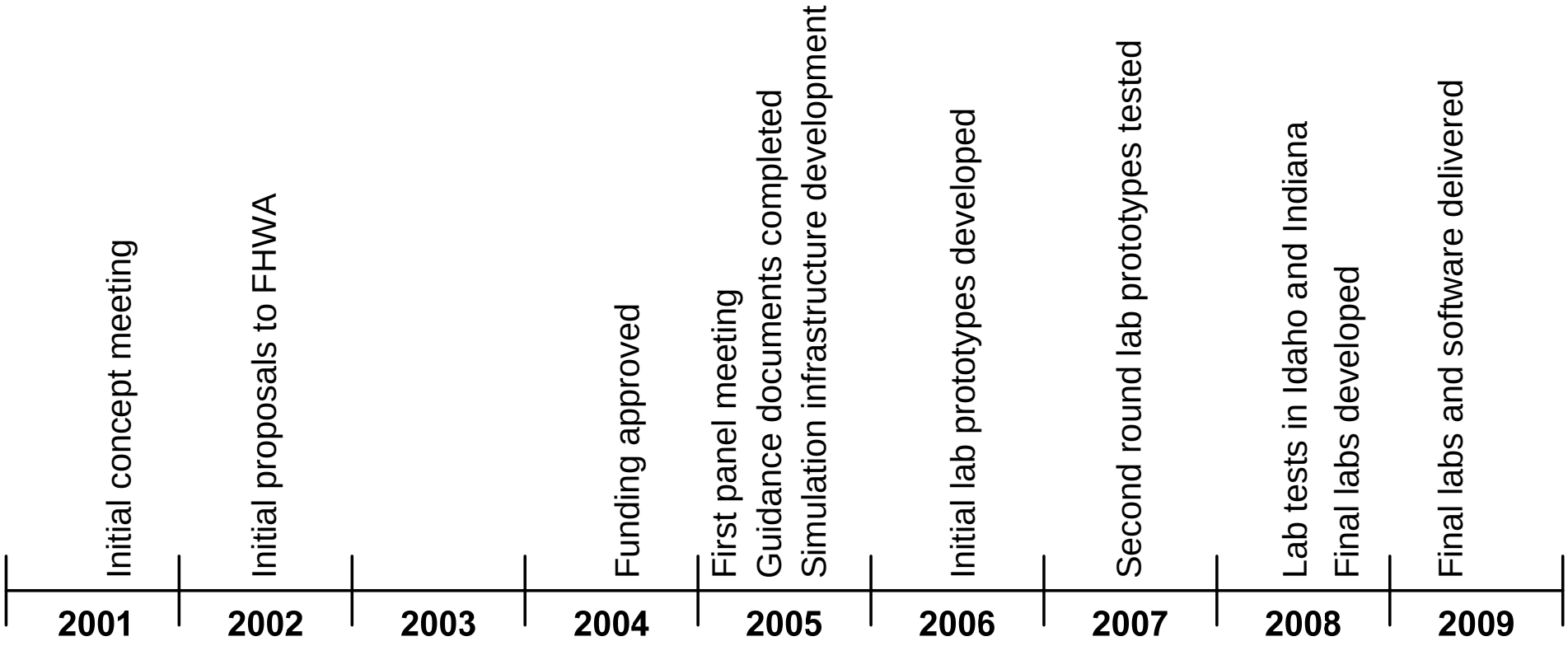
Traffic Signal Summer Camp

“The hands-on experiences were what I liked most about the week’s activities.”

“The best parts of the week were the hands-on work and introductory lectures to the more advanced technologies of video detection and hardware-in-the-loop simulation. Exposure to this technology was worth the trip alone.”

“I think the valuable part is that students don’t just look at pictures or mathematical equations. They get a chance to tinker, make mistakes, and ultimately get various components up and running… much like they will have to in the real world. This means when they are on their first job and things don’t work exactly as expected during a [system] turn-on, they will have their wits about them and know how to debug the system and get it running.

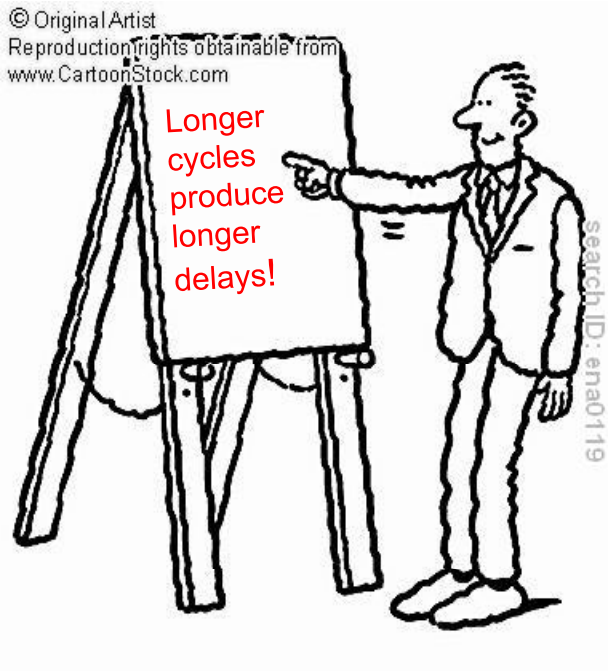
Traffic Signal Summer Camp



MOST project timeline

- Process Education: using processes and tools to create new types of learning environments in which students take center stage and discover how to improve their learning and self-assessment skills within a discipline.
- Learning outcomes must drive the instructional design process.

Our approach: grounded in educational theory…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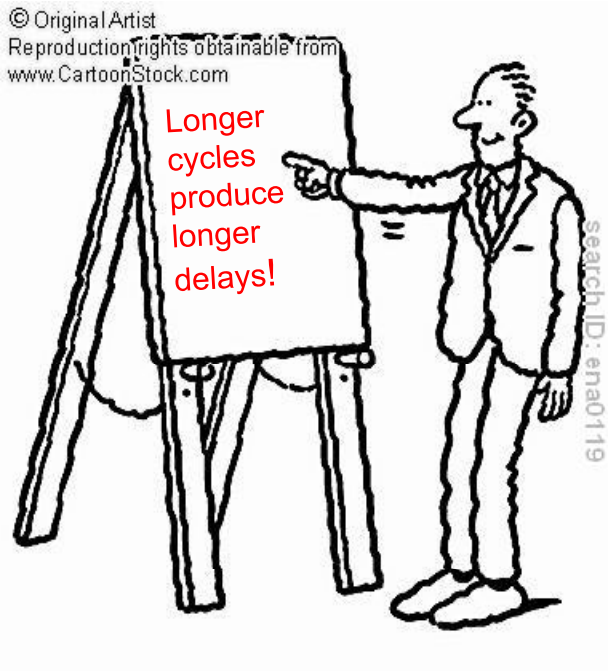
Listen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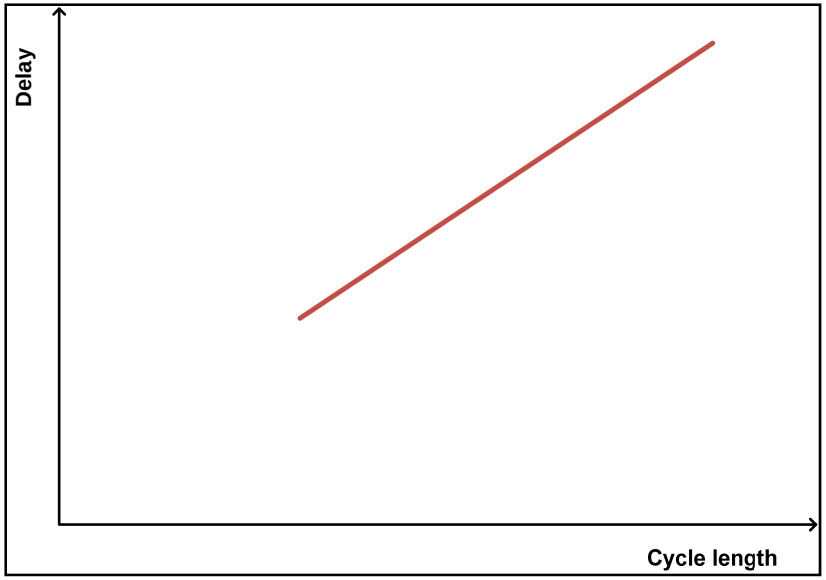
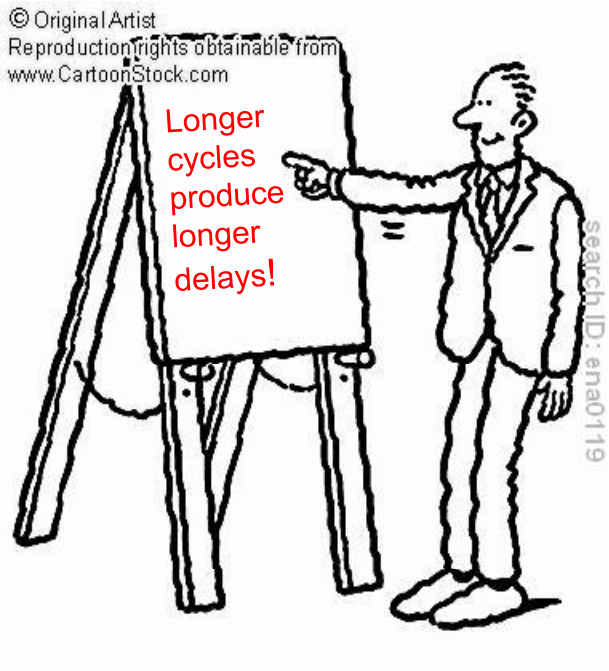

Delay
Cycle length

Visualize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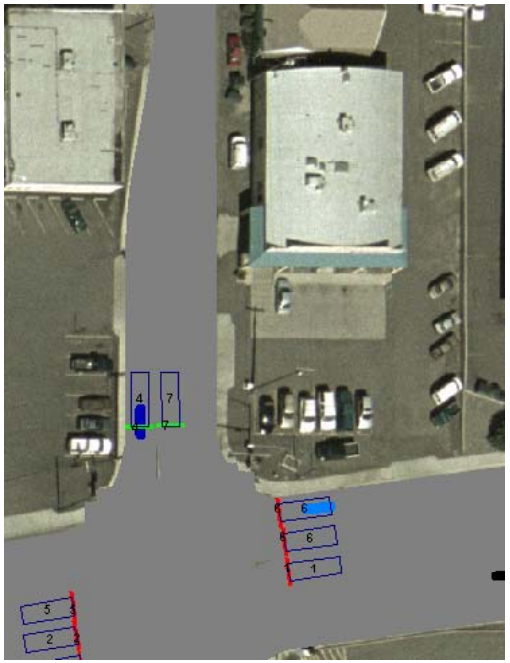
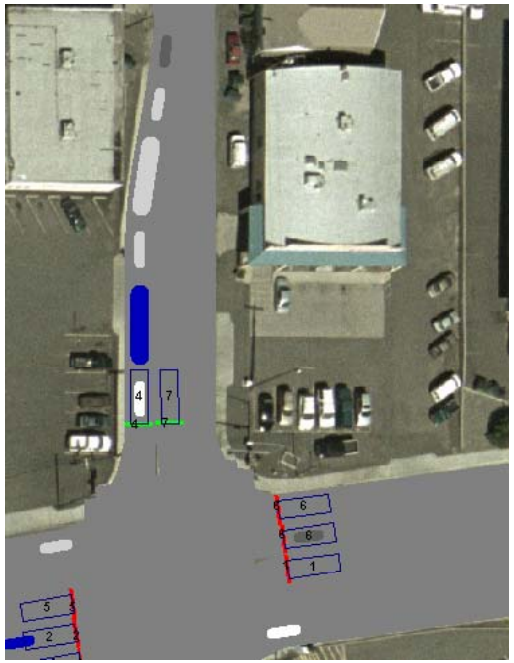
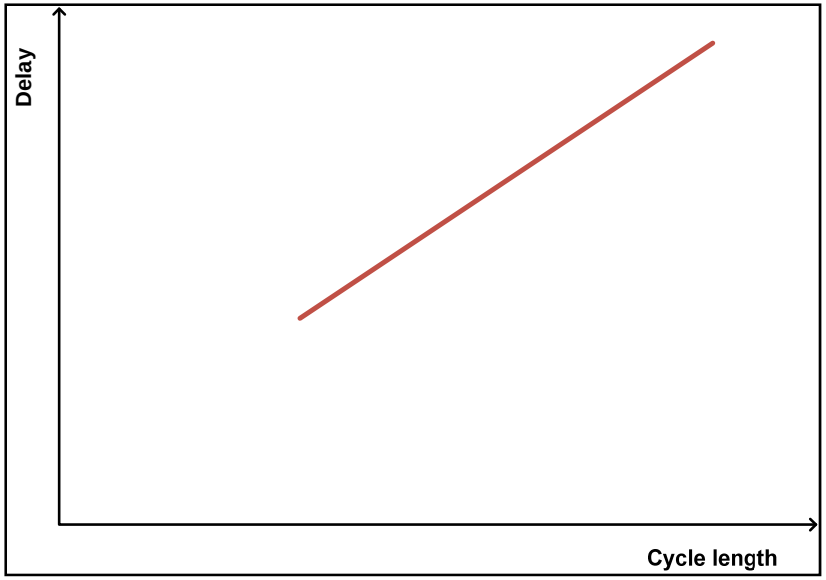




Observe


Delay
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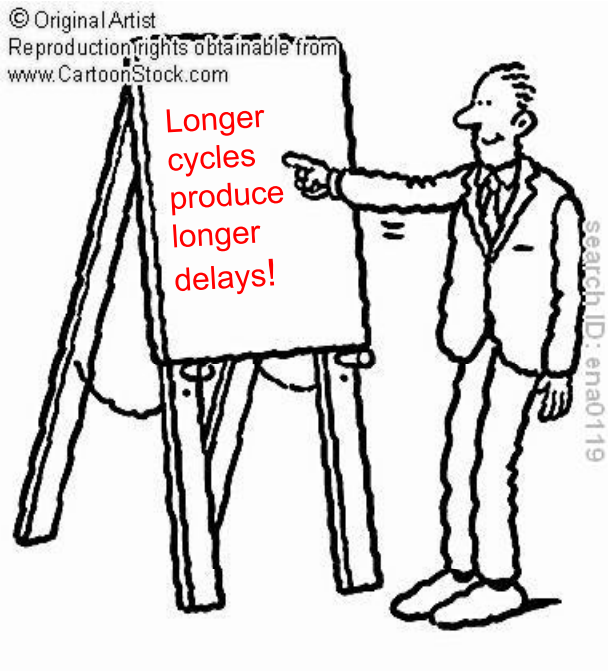

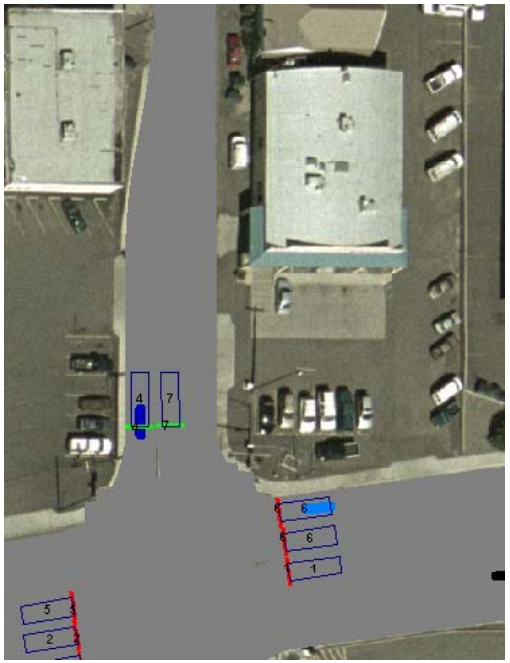

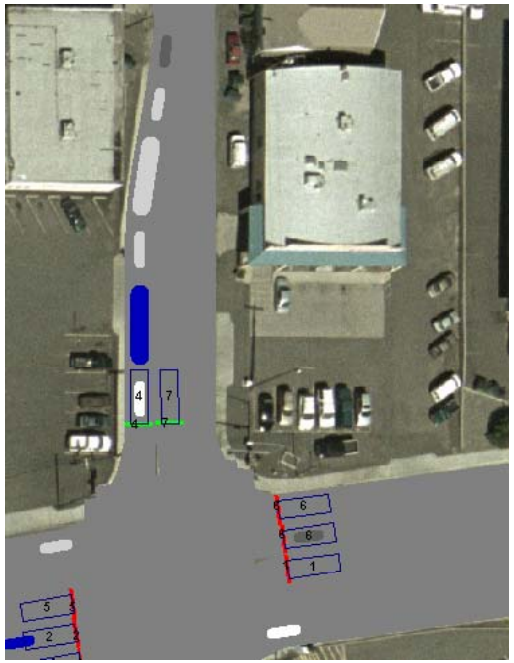

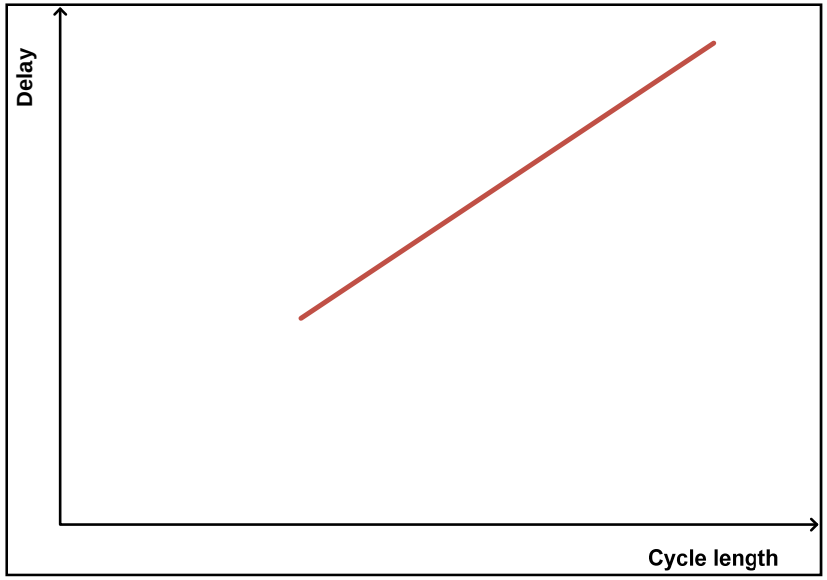

Synthesize/Discuss

What MOST is not:

- Not about learning how to use a specific simulation model, though the experiments that you will complete are conducted using the VISSIM microsimulation model.
- Nor is it about a specific traffic signal controller, even though you will use Econolite's ASC/3 controller emulator.
- We will not present you with guidelines or standards that you should follow.

What MOST is:

- You will use the MOST simulation environment to directly see the results of the phasing plans and timing parameters that you select.
- Using VISSIM's animation and movie files, you will visualize the duration of a green interval, the length of a queue, or the delay experienced by vehicles traveling through a signalized intersection with the phasing and timing plan that you design.
- You will use this information to make judgments about the quality of intersection performance, and whether you need to make further adjustments to the signal timing to improve intersection operations.
- It is almost as good as standing out at an intersection, with one eye on the traffic and the other on what is happening in the controller cabinet.

Our approach…

Simulation tools

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Topics: laboratories

Laboratory:
Introduction
Terms
Experiments

→

Experiments:
Learning objectives
Overview
Questions to consider
List of steps
Running the experiment
Discussion

→

Design problem

Laboratory structure

- Michael Kyte, University of Idaho, Principle Investigator
- Michael Dixon, University of Idaho (1, 3, 5)
- Ahmed Abdel-Rahim, University of Idaho (4)
- Tom Urbanik, University of Tennessee (2, 6, 7)
- Darcy Bullock, Purdue University (6, 7)
- Enas Amin, University of Idaho (2, 3, 4, 5)
- Milan Sekulic, University of Idaho (1, 2, 3, 5)
- Hua Wang, University of Idaho (2)
- Azizur Rahman, University of Idaho (3)
- Anuj Sharma, Purdue University (6, 7)
- Matt Wiesenfeld, Purdue University (6, 7)
- Mike Inerowicz, Purdue University (6, 7)
- Chris Day, Purdue University (6)
- Jim Pline, Pline Engineering
- Kiel Ova, and others from PTV America
- Gary Duncan, and others from Econolite

MOST team

- Eddie Curtis, FHWA
- Paul Olson, FHWA
- Bill Kloos, City of Portland
- Pam Crenshaw, FHWA (now with the FAA)
- Mike Schauer, FHWA
- Raj Ghaman, FHWA
- Scott Frey, FHWA
- Shelley Rowe, ITE (now with the FHWA)
- Jim Sturdevant, Indiana Department of Transportation
- Zong Tian, University of Nevada
- Ed Seymour, Texas Transportation Institute
- Ken Courage, University of Florida
- Peter Koonce, Kittelson and Associates

MOST Technical Oversight Committee

www.webs1.uidaho.edu/MOST

MOST web site

Demonstration: Laboratory 1, Experiment #4

Movie File

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