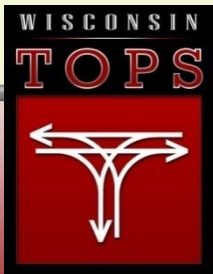


Wisconsin TOPS Lab ITS and Operations Program Overview

Peter C. Rafferty, PE, PTOE, AICP
TSM&O Program Manager, Wisconsin TOPS Lab

March 2015



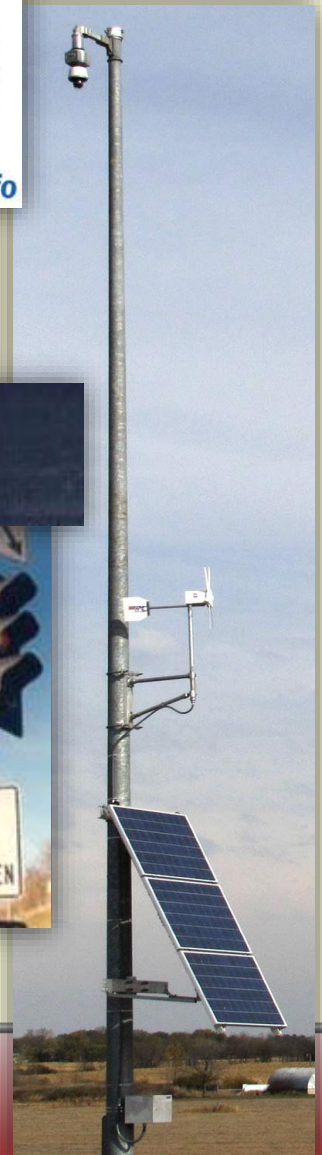
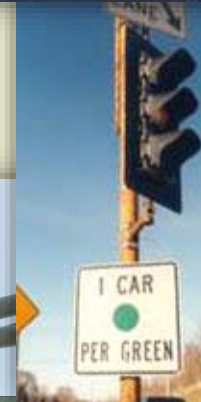
WISCONSIN TRAFFIC OPERATIONS AND SAFETY LABORATORY

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
UNIVERSITY OF WISCONSIN-MADISON

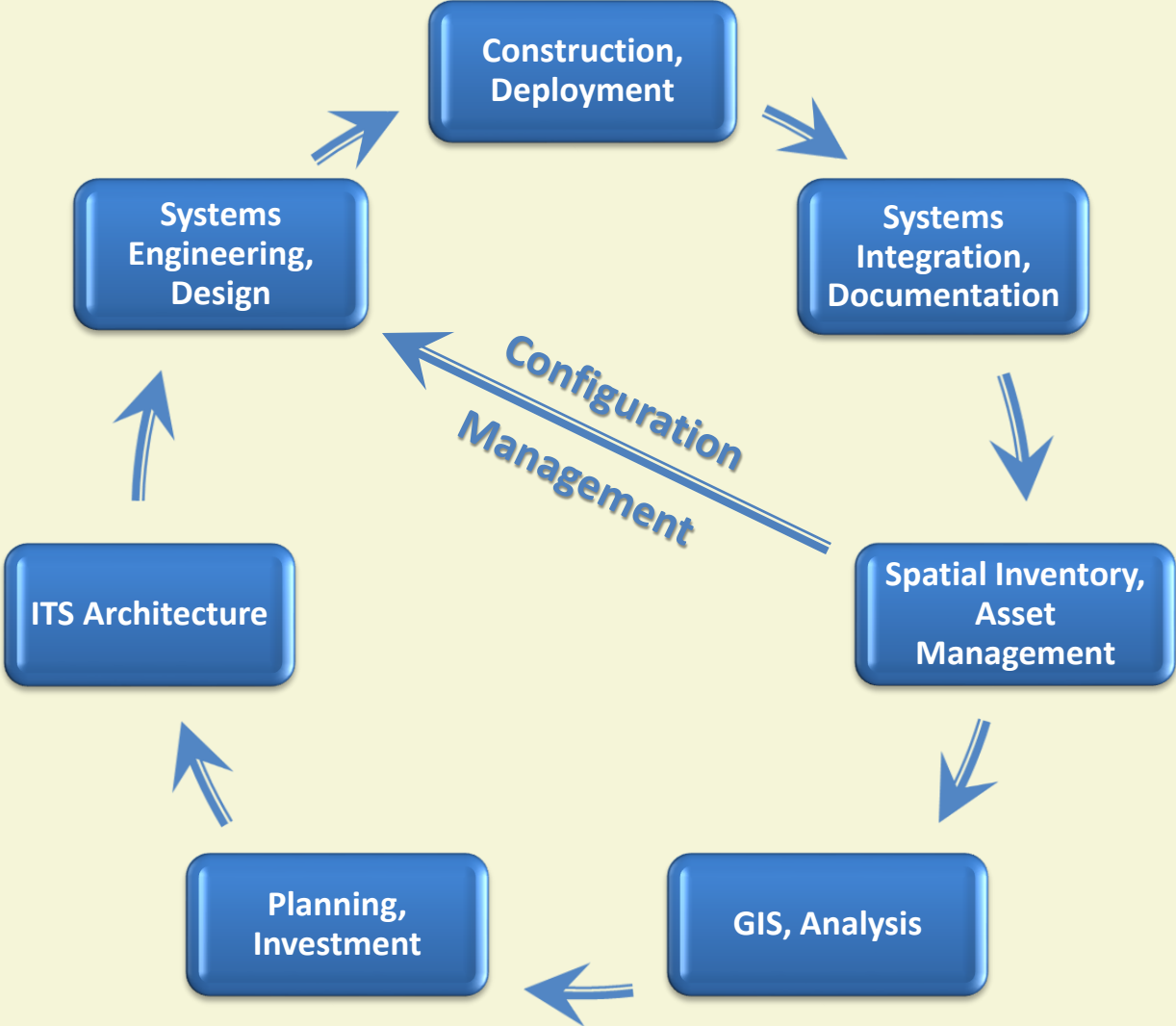


TOPS Lab Transportation Operations and ITS Services

- **System Development**
 - E.g., 511 Traveler Information
- **Planning for Operations**
 - E.g., TOIP, Probe Data
- **Systems Engineering**
 - E.g., ITS Architecture
- **ITS & ITS Net Inventory**
 - E.g., SpatialInfo
- **GIS**
 - E.g., Mapping Applications and Products
- **ITS Evaluations**
 - E.g., Ramp Metering, Bluetooth
- **Multistate Operations**
 - E.g., GLRTOC, LMIGA, NWP
- **Performance Management**
 - Mobility Performance Measures
- **Emerging R&D Initiatives**



The ITS Process Cycle



The ITS Process Cycle - Planning

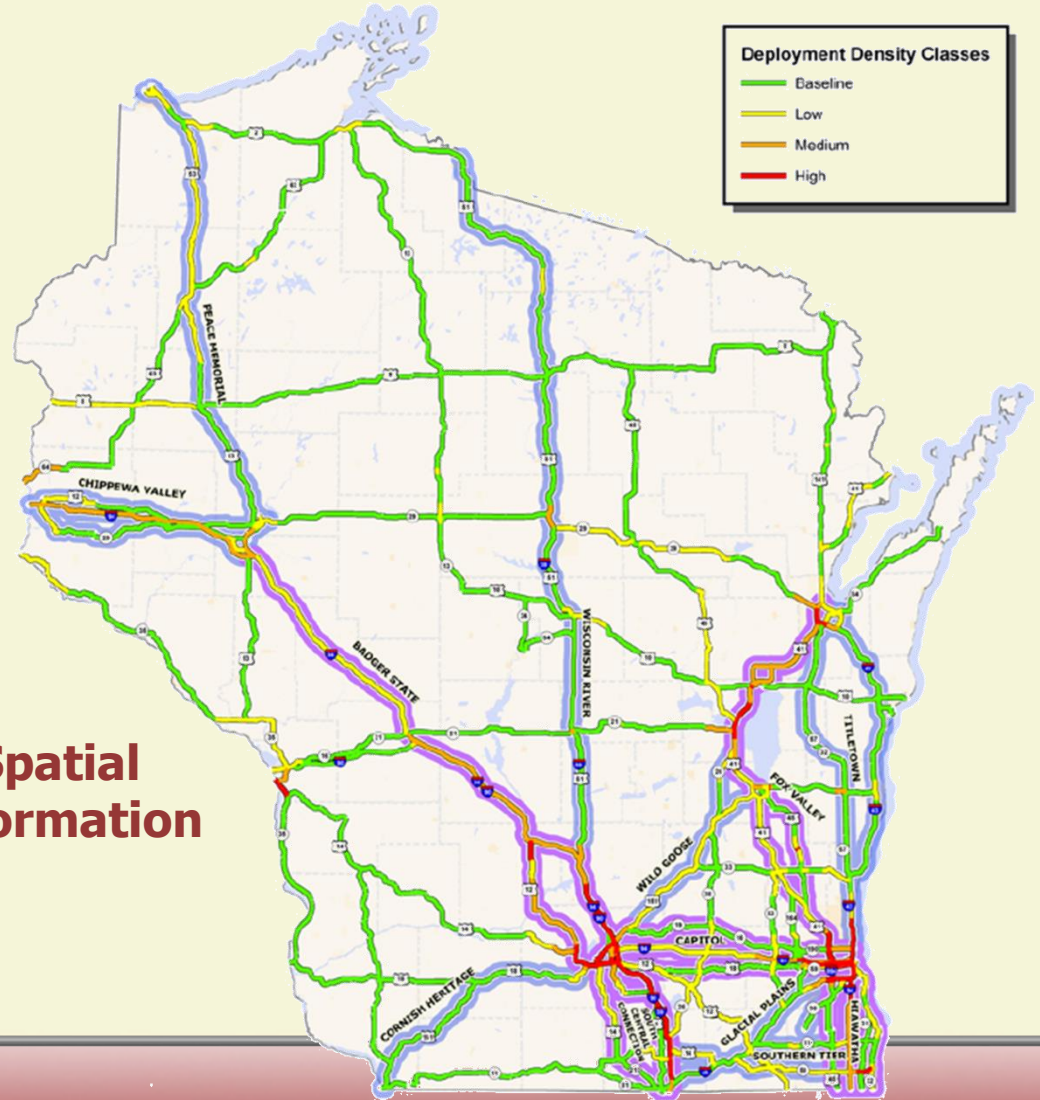
Recommendations,
Requests,
Investments



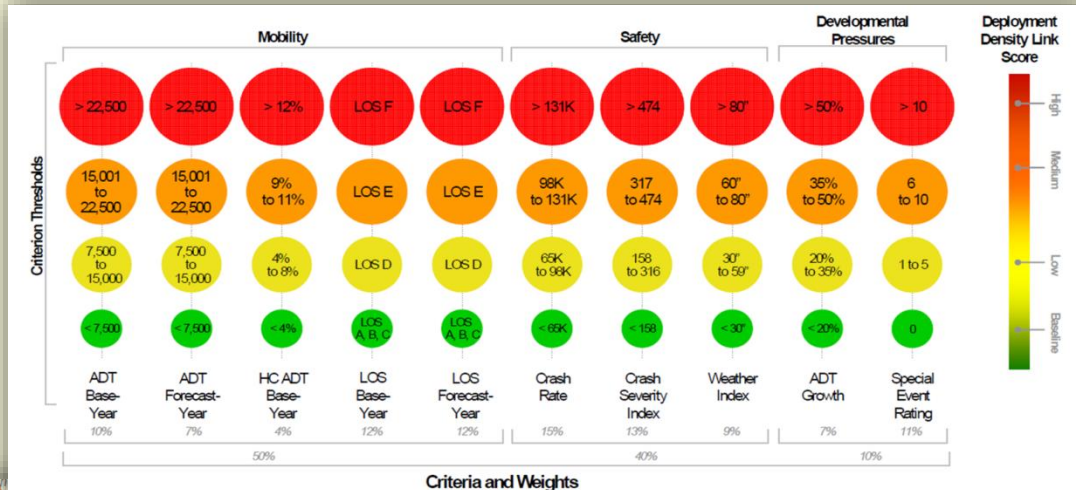
Planning,
Investment



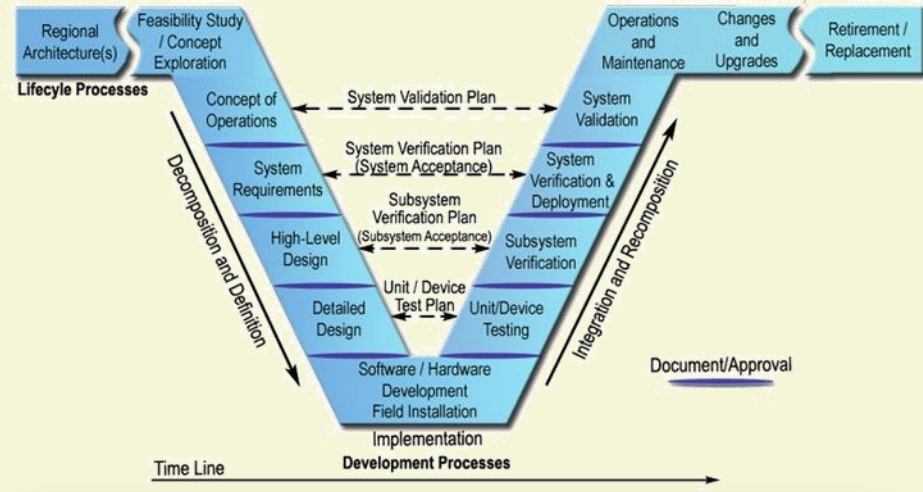
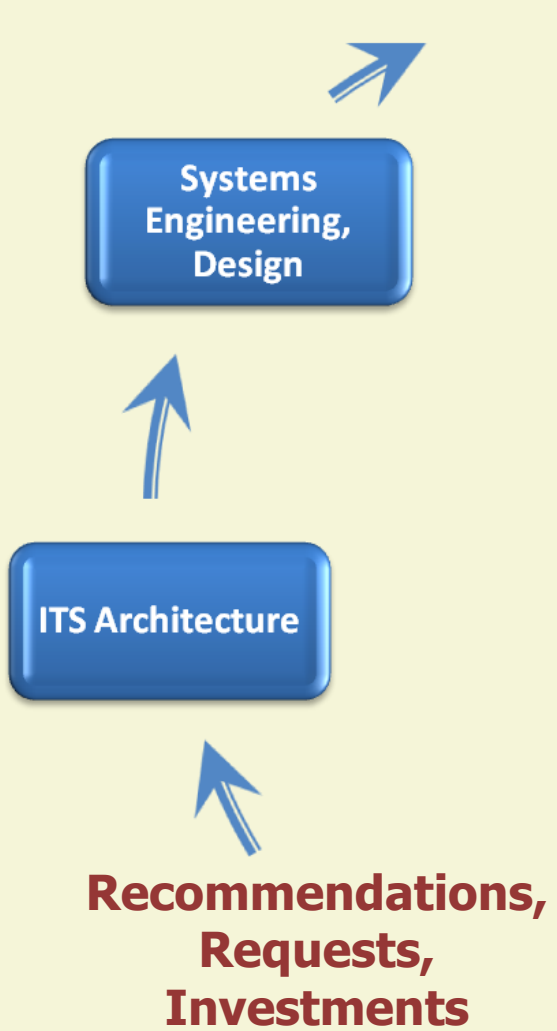
Spatial
Information



Wisconsin Traffic Operations Infrastructure Plan



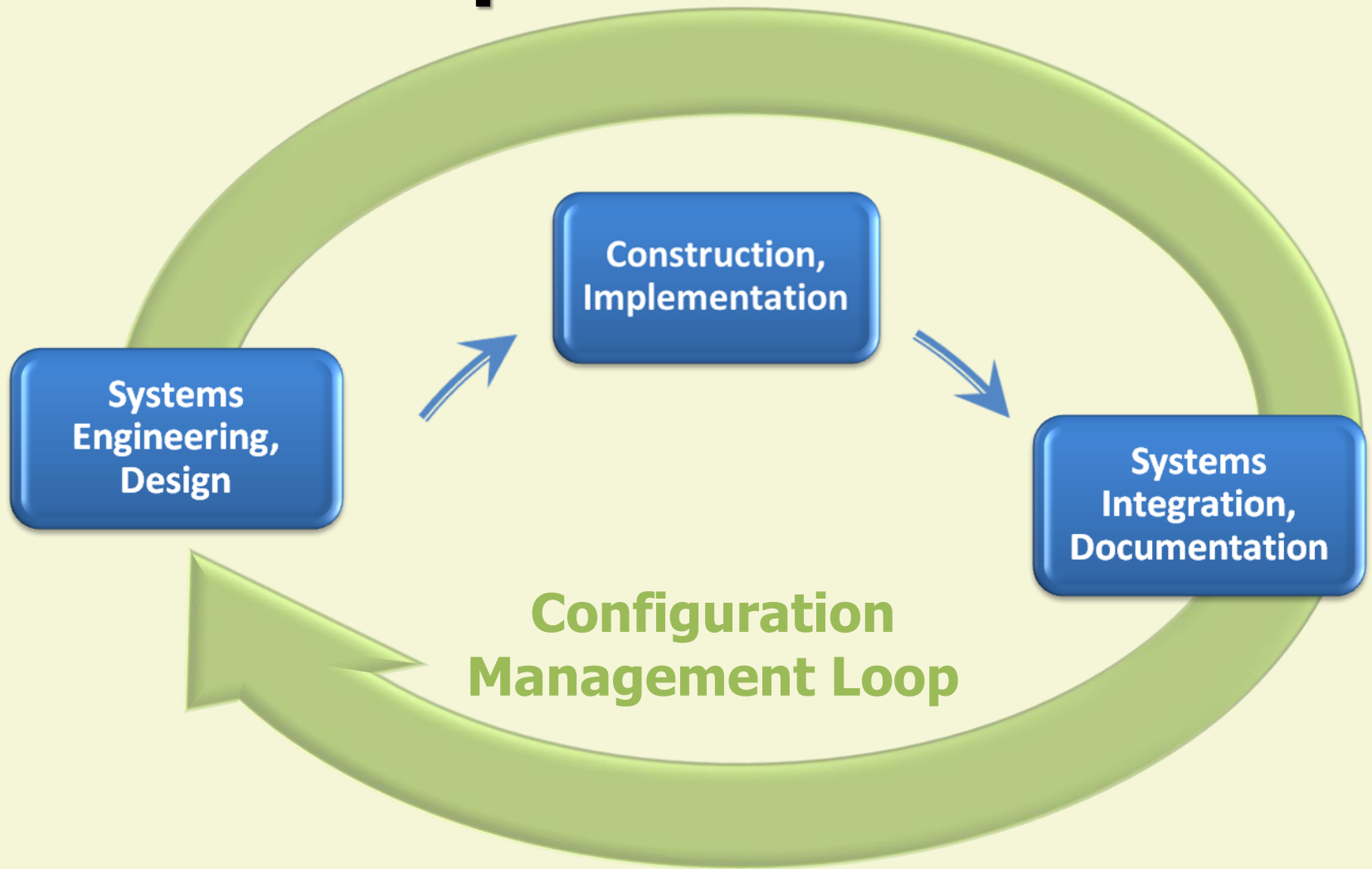
The ITS Process Cycle - ITS Architecture




The screenshot shows the website for the Wisconsin Traffic Operations and Safety Laboratory (TOPS). The header includes the Wisconsin TOPS logo and the text 'WISCONSIN TRAFFIC OPERATIONS AND SAFETY LABORATORY', 'DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING', and 'UNIVERSITY OF WISCONSIN-MADISON'. A navigation menu contains 'ABOUT TOPS', 'PEOPLE', 'PROJECTS', 'WORKGROUPS', 'PUBLICATIONS', and 'CONTACT US'. The main content area is titled 'Architecture Scope' and includes a 'Description' section. The description states: 'The Wisconsin Statewide ITS Architecture represents the existing and planned Intelligent Transportation Systems (ITS) deployed and their operations for the state of Wisconsin. Broad stakeholder involvement and cooperation allowed for the development of the architecture over many years. Many of the existing stakeholders are represented based on their involvement in the process along with how much information that is available on their systems and operations. This Statewide ITS Architecture can be used to inform how systems interact and function together to create a transportation system that is safer and more efficient.' It also mentions that the architecture was consolidated and updated from previous WisDOT District and Regional architectures in 2010. A 'Geographic Scope' section follows, stating that the architecture is the primary regional architecture for the State of Wisconsin, including all five WisDOT regions, many agencies, and interactions with neighboring states, agencies, and coalitions. A sidebar on the left contains a list of links: Home, Services, Resources, Calendar, News, Employment, Links, WisTransPortal, Wisconsin Transportation Data Hub, Road Safety Audit Resources, and ITS Program.



The ITS Process Cycle - Implementation



511 Traveler Information


WISCONSIN DEPARTMENT OF TRANSPORTATION
Travel Information
[Home](#) | [Traffic](#) | [Transit](#) | [Travel Services](#) | [My 511wi](#) | [511 Projects](#) | [Help/FAQ](#)

ALERTS: No current alerts [View All Alerts](#)

[Printer Friendly](#) [Low Bandwidth Map](#)

[Map](#) | [Winter Road Conditions](#) | [Traffic Events](#) | [Message Signs](#) | [Cameras](#) | [Travel Times](#)

Milwaukee Select a region on the dropdown list to re-center the map

Type: Disabled Vehicle

County: Milwaukee

Highway / Direction: I-94 Eastbound

At: IH 894 WB-ZOO INTERCHNG

Description / Location: Disabled vehicle On Shoulder Or Median

Updated: 9/10/12 1:00 PM

Check options below to see them on the map:

Winter Road Conditions

Traffic Speeds / Travel Times

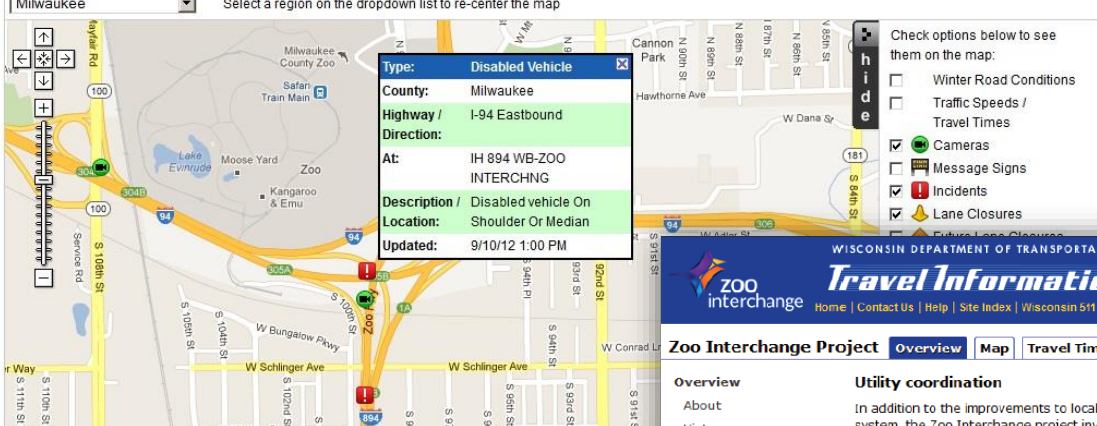
Cameras

Message Signs

Incidents

Lane Closures

Future Lane Closures




WISCONSIN DEPARTMENT OF TRANSPORTATION
Travel Information 
[Home](#) | [Contact Us](#) | [Help](#) | [Site Index](#) | [Wisconsin 511](#) | [My 511wi](#) | [Wisconsin DOT](#)

Zoo Interchange Project | [Overview](#) | [Map](#) | [Travel Times](#) | [Closures](#) | [Gallery](#) | [News](#) | [Resources](#) | [Schedule](#)

- Overview**
- [About](#)
 - [History](#)
- Project features**
- [Design](#)
 - [Bridges](#)
 - [Interchanges](#)
 - [Local roads](#)
- Utilities & RR**
- Project team**
- Environmental**
- Traffic handling**
- Espanol**

Utility coordination

In addition to the improvements to local roads and the freeway system, the Zoo Interchange project involves the relocation of many area utilities. The power corridor that shares geography with the Zoo freeway provides reliable power to the most populous areas of the state. WisDOT is working closely with local and regional government utility infrastructure, the American Transmission Company (ATC) regarding the impacts to the transmission lines, and WE Energies regarding their infrastructure.



The replacement of utility infrastructure will result in more modern, reliable equipment in the Zoo Interchange, serving the security of the region. ATC is replacing the lattice towers with poles resulting in a smaller footprint and cleaner look along the freeways.

Starting in 2012, drivers using the Zoo freeway system will see construction and relocation activity at the area substations and along the power corridors.

- Utilities at a glance
- Transmission Lines & Substations
 - We Energies - Tunnels, Electric, Gas, Steam, Power Plant
 - Local governments
 - MMSD
 - Communications - 13 Companies
 - Railroads, Petroleum Pipeline

Railroad coordination

WisDOT will reconstruct railroad bridges and a railroad tunnel underneath the intersection of Highway 100 and Bluemound Road. To close a railroad for a full weekend would add about \$3 million to the project cost. Instead, we are building the new segment parallel to the existing railroad so we can minimize impacts to the rail service to build the connections.

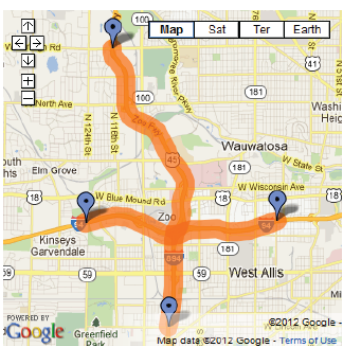


- Locations:
- Railroad bridge over I-94, built on offset alignment
 - Tunnel beneath WIS 100 and Bluemound Road intersection
 - US 45 railroad bridge near North Avenue

Search Zoo IC Project


[Recommend](#) 136 [Send](#)

[Tweet #zooic](#)



Map | Sat | Ter | Earth

POWERED BY Google
 Map data ©2012 Google - Terms of Use

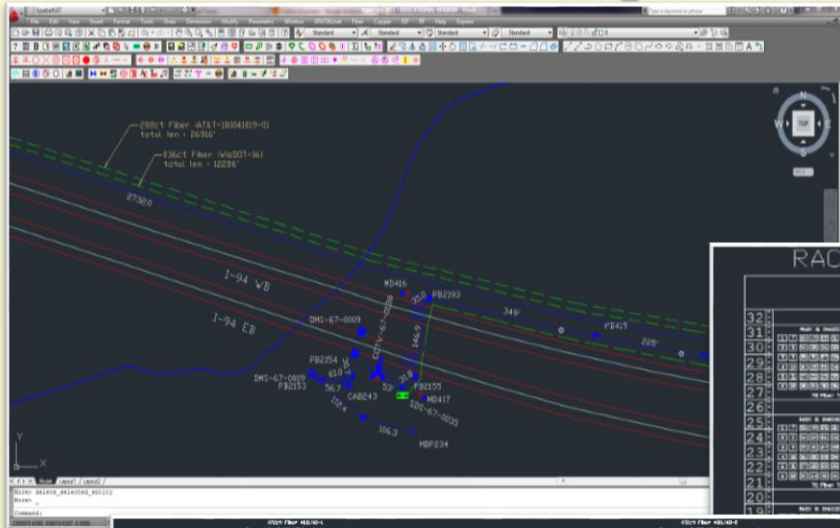

WI 511 SE Region
511WI Southeast

511WI_Southeast Brown Co: Avoid I-43 near the Leo Frigo Bridge over the Labor Day holiday, especially during peak travel times: noon - 8pm tomorrow & Monday
 2 hours ago · reply · newest · favorite

[511WI_Southeast Cleared](#) | [MILWAUKEE Co](#)



The ITS Process Cycle - Spatial Assets



Systems Integration, Documentation



Spatial Inventory, Asset Management



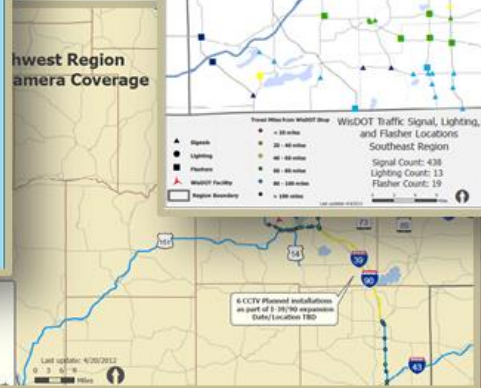
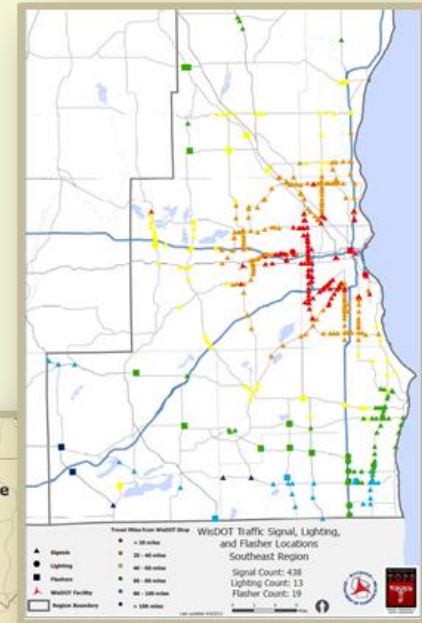
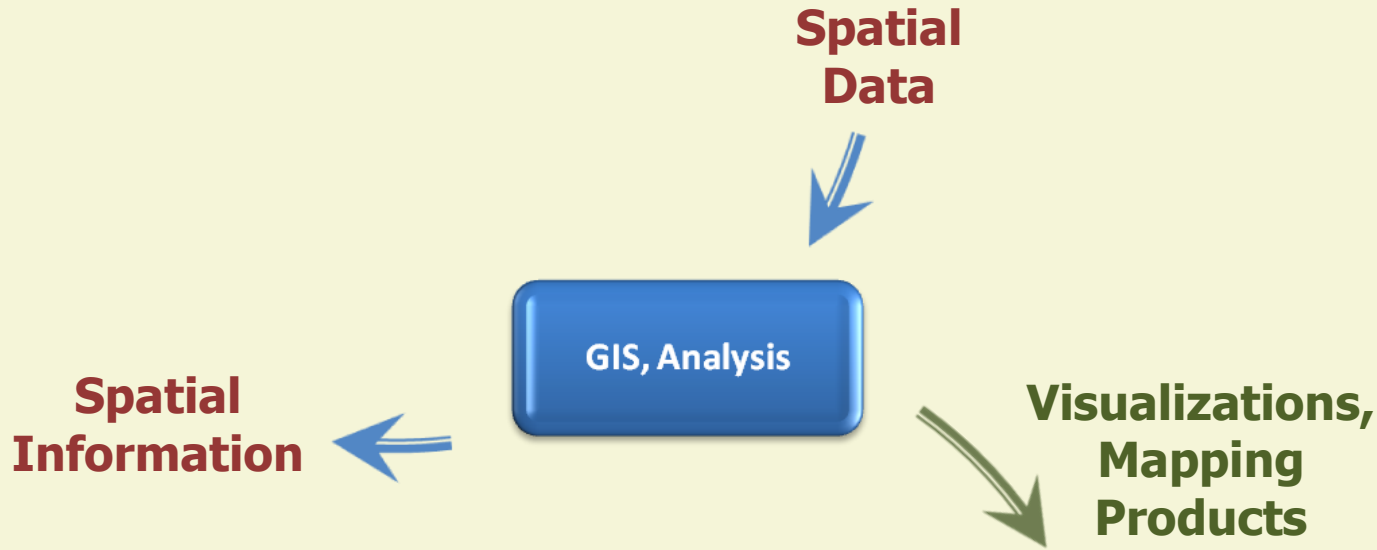
Spatial Data

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29	29	29	29
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26	26	26	26
25	25	25	25
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03	03	03	03
02	02	02	02
01	01	01	01

RACK 01		RACK 02	
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31	31	31	31
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05	05	05	05
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03	03	03	03
02	02	02	02
01	01	01	01



The ITS Process Cycle - GIS



The ITS Process Cycle - Planning Loop



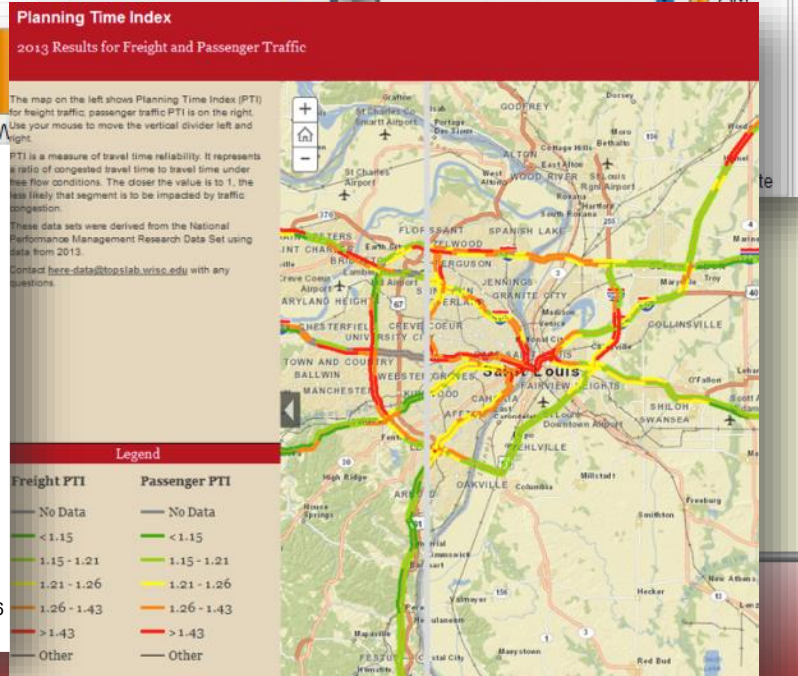
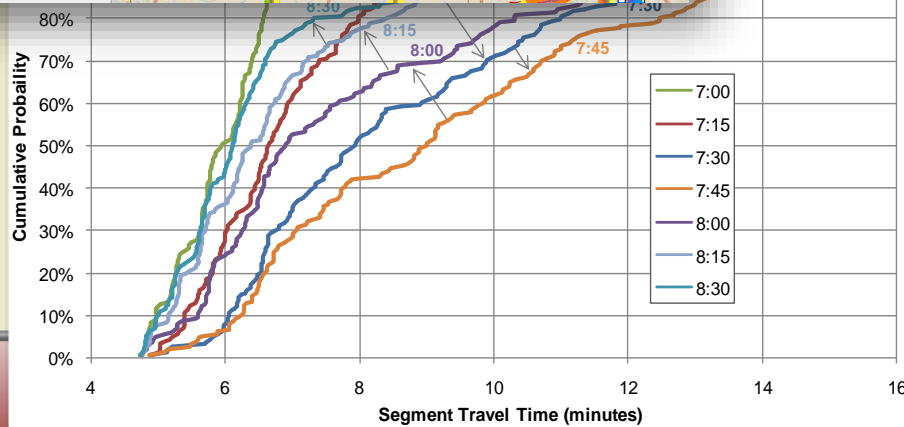
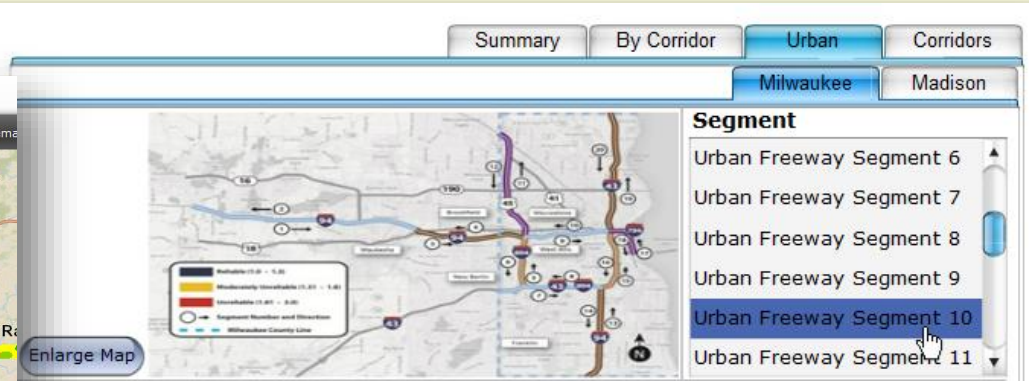
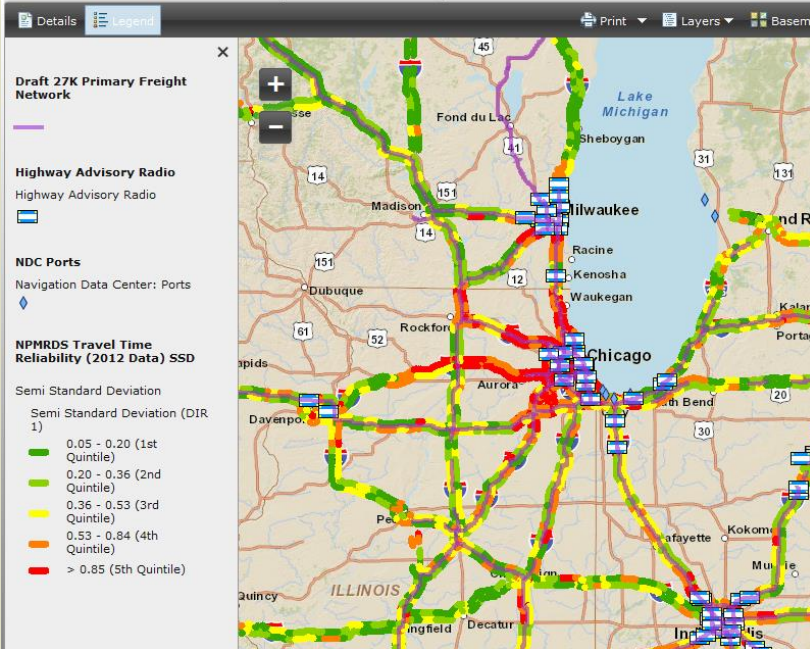
Multistate Coalition Support

- Great Lakes Regional Transportation Operations Coalition (GLRTOC)
- Lake Michigan Interstate Gateway Alliance (LMIGA)
- North/West Passage (NWP)



Performance Management

Mid-America Transportation Operations



Growing Operations Support

- Third Party and Private Partnerships
- Active Transportation and Demand Management
- Performance Monitoring and Management
- Connected Vehicle Initiative

