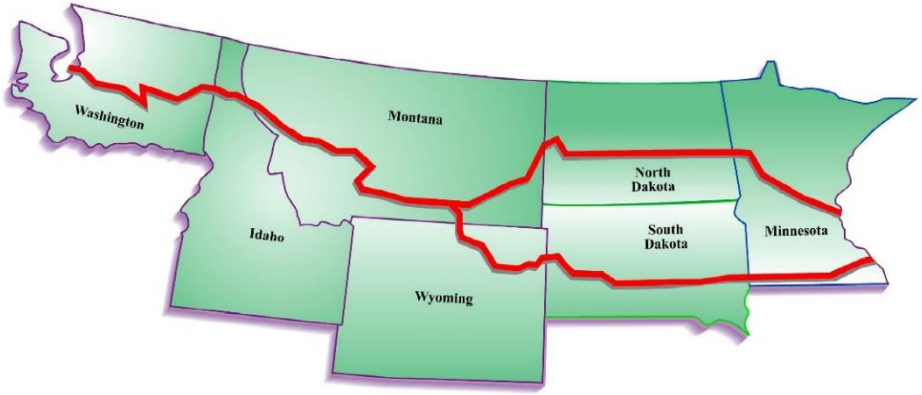
Experiences with IRIS Open Source Software



Webinar

July 17, 2019

This webinar will be recorded.

Agenda

- Experiences with IRIS Open Source Software
  - Minnesota DOT
    - Presenter: Garrett Schreiner
  - Wyoming DOT
    - Presenter: Gabe Gutierrez
- Questions and Answers
- Closing

IRIS ATMS Software

Garrett Schreiner | Freeway Operations Engineer

7/17/2019

DEPARTMENT OF TRANSPORTATION

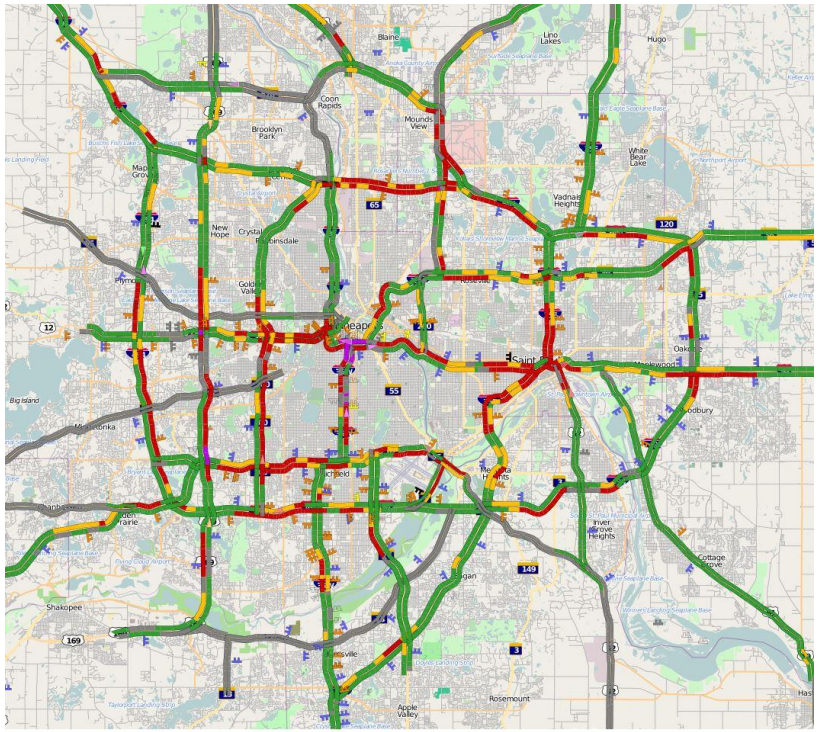
mndot.gov

History of IRIS

- IRIS development began with in-house staff starting in the late 1990s
- Developed system internally
  - Had internal programming staff already
  - Wanted to avoid significant initial and ongoing costs associated with commercial packages
  - Ability to add functionality based on user needs
  - Focused on open source OS (Linux) and ancillary programs to keep cost low
- Needed to support NTCIP compliance for DMS
- Started with DMS deployment capabilities and expanded from there

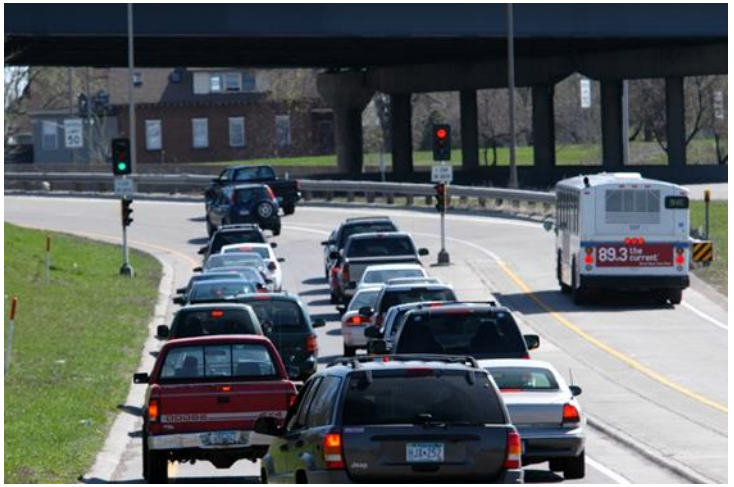
IRIS Capabilities

- Type of Equipment
  - Dynamic Message Signs (480)
  - Ramp Meters (493)
  - Lane Control Signals (300 removed)
  - Camera Viewing and Control (1165)
  - Traffic Sensors (7350)
  - Gate Arms (29)
  - MnPASS Toll Reader/Antennas (71)
  - RWIS (6)



IRIS Capabilities

- Algorithms
  - Ramp Metering
    - Simple Plan (Time-of-Day)
    - Real-time Density Adaptive Ramp Metering
  - Variable Speed Limits (former)
  - Queue Warning
  - Travel Times
  - MnPASS HOT Lane Pricing Algorithm
  - Automated Warning Systems (CALTRANS)
    - Speed
    - Visibility
    - Wind

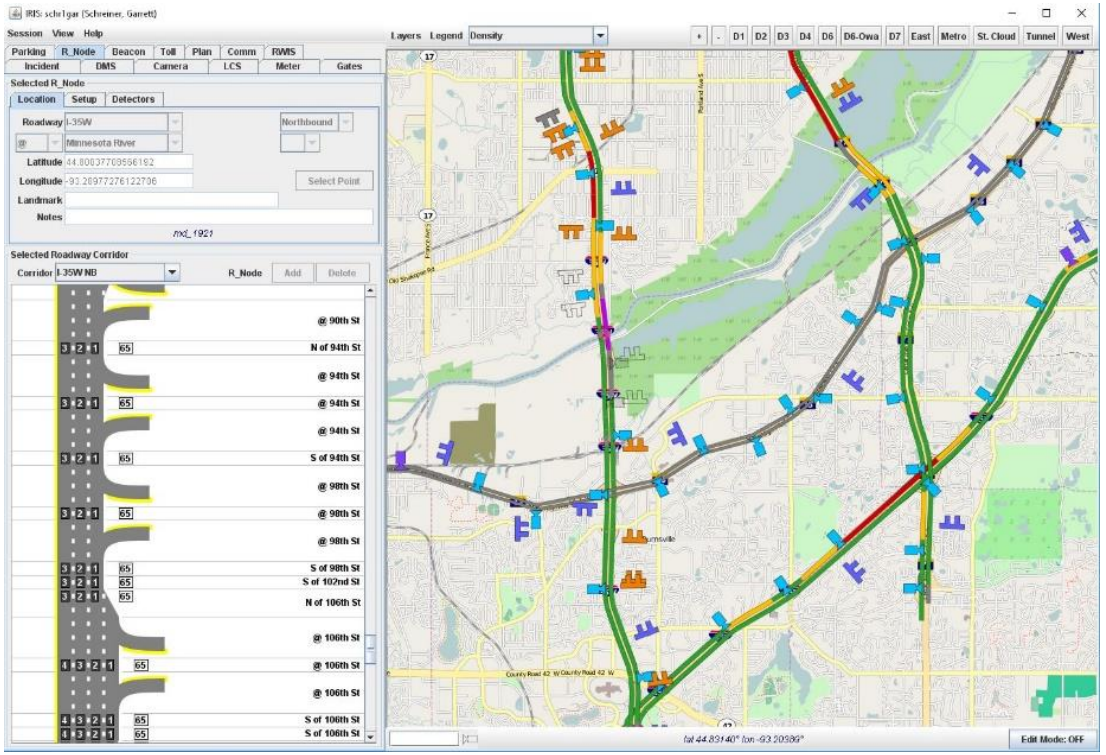


IRIS Capabilities

- Dynamic Message Signs
  - Sign Plans
    - Can develop plans that can be deployed manual or on a set schedule
    - Used for construction or PSA messages
  - Auto-Deployments
    - Used to auto-deploy ILCS messages based on incident location data
    - Current auto-deploy for DMS with future enhancements

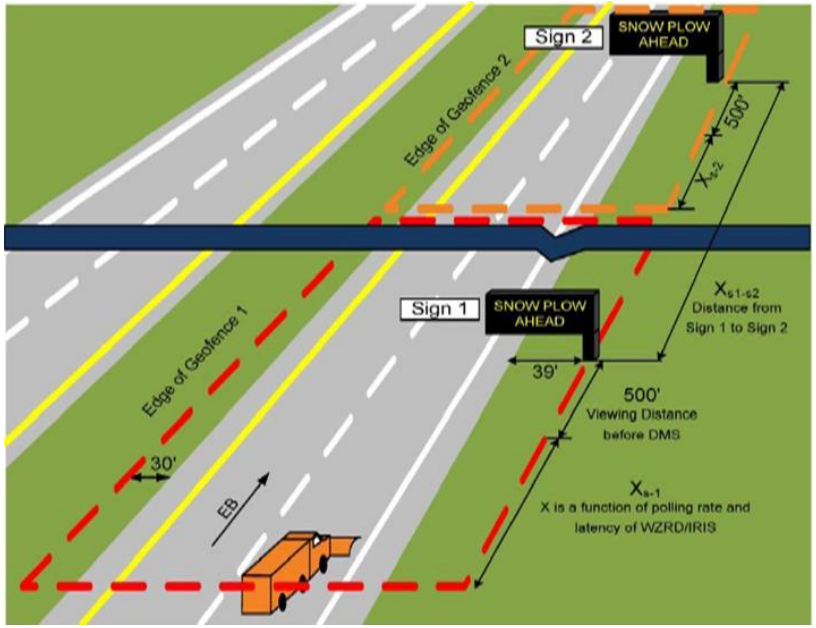
IRIS Capabilities

- Configurable
  - Can be done by user, does not require programmer
  - Modification of Roadway System for map
  - Internal configuration of devices



IRIS Capabilities

- Integration with other systems
  - DMS Activations
    - WZRD System – Automatic DMS activation for warning of active snow plowing ahead
    - Automated road weather messaging on DMS based on NWS CAP feed
    - ABC Parking Garage Status
    - Travel Time Messages (Chandler, AZ)
  - Incident Data
    - Imported from State Patrol Computer Aided Dispatch system
  - Traffic Sensor Data
    - Shared with MnPASS System
    - Shared via XML to external partners



Future Enhancements

- WYSIWYG DMS Message Composer (In Progress)
- Video Handling Improvements (In Progress)
- Web-based user interface (In Progress)
- Automated Road Weather Messages on DMS
- Integrated 3rd Party Probe Data

IRIS Capabilities

- Utilizes Open Source Software
  - Open Street Maps
  - PostgreSQL Database
  - Java

General Public License

- Other states have requested IRIS
- Do not have the necessary resources
- Need to have more backup support for IRIS that others using it can provide
- Gain from others experience and enhancements
- Not appropriate mission to sell IRIS to others

Other Deployments

- Wyoming
- Nebraska
- Indiana
- CALTRANS
- Chandler, AZ
- Bloomington, MN
- Scott County, MN
- Mall of America, Bloomington, MN

IRIS Resources

- Webpage
  - http://iris.dot.state.mn.us
- Contacts
  - Garrett Schreiner – garrett.schreiner@state.mn.us
  - Brian Kary – brian.kary@state.mn.us

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Thank you again!

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WYDOT & IRIS

NWP Presentation
7/17/2019

Brief History

- WYDOT TMC utilized TransCore ATMS system to control and monitor various ITS devices.
  - Why the switch?
    - Difficult to get timely updates and to make modifications.
    - System stability problems
- Why IRIS?
  - WYDOT State-wide IRIS Implementation (2014 – Present)
  - Previewed Minnesota IRIS and decided it would be a better fit to the overall vision of WYDOT's GIS/ITS program
    - Allows us to control our own destiny
  - We reached out to Michael Darter for the start-up and overall support
    - Michael has extensive experience working with IRIS in California.

IRIS From The Beginning to Now

- Started with Speed Sensors for VSL's
- Next step was IRIS control for VSL's, DMS, and most recently RWIS polling
- Modified speed sensing to produce individual data for analysis
- The greater granularity is better
  - Overall level of detail in a set of data
- IRIS pulling RWIS data
  - We will soon be able to QC RWIS data (ex. proximity and persistency for validation)
- Using IRIS as a backdoor to integrate with our information systems
  - VSL's were double entry, now they are single entry with IRIS acting as the engine

Sign Manufacturers used in IRIS

- SES America
- ADDCO
- Skyline
- Daktronics
- Various PDMS
  - Vermac and Wanco

Feedback

- Able to make updates and system changes much faster
- System is much more reliable
  - No unexpected outages
- Primary and Backup systems
  - Have procedures to through control to Laramie
- Able to integrate with other systems
- TMC Operators comfortable with the system
- Open source isn’t free but the support costs are reasonable

Demonstration

Questions

Closing

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  - Gabe Gutierrez
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