Implementing Rural ITS in a Maintenance Environment

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These things happen

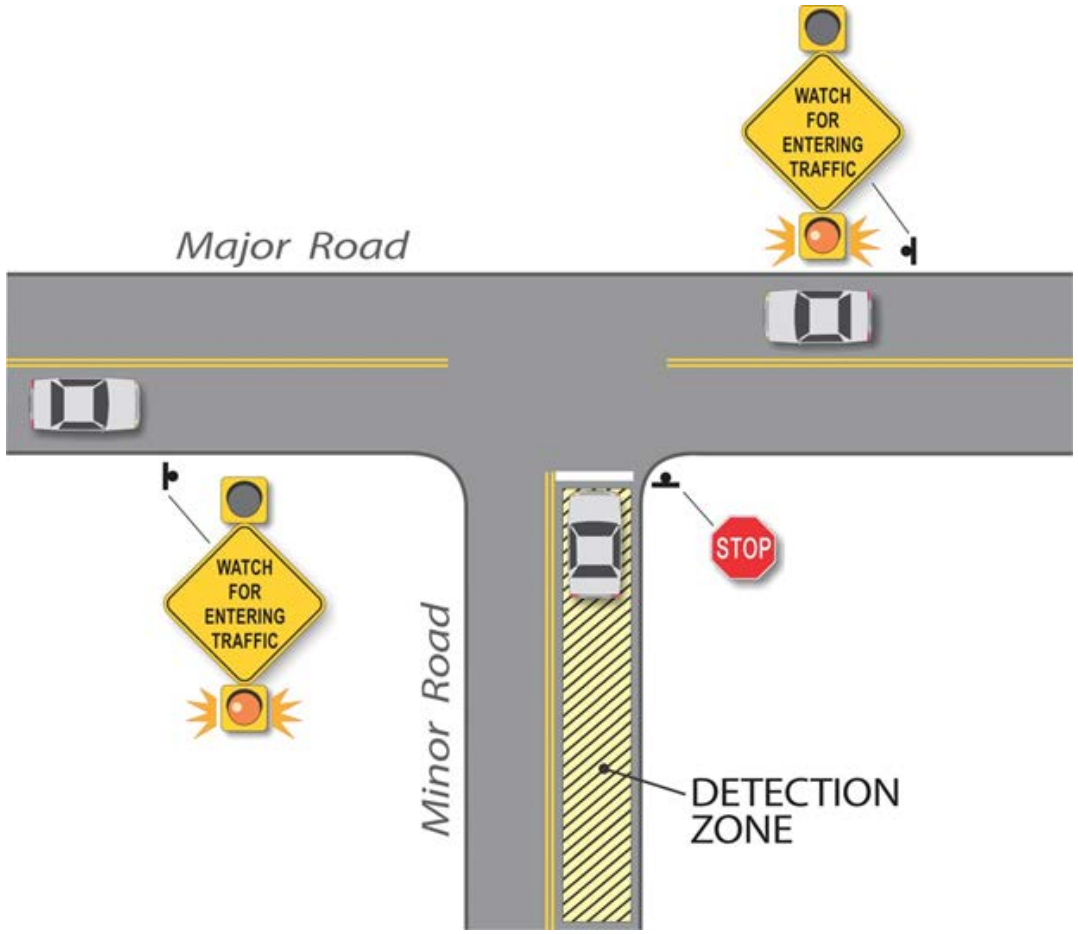
- Crashes and weather-related events
- Effects in urban and rural locations differ greatly
- Solutions can vary from simple to very expensive
- Remote locations – power and communications
- Low frequency may limit justification

Improvement Program

- Planning Process
  - Categorize needs
  - Focus on types of problems to address
- Develop consistent solutions
  - Develop toolbox
  - Identify project locations
- Project development process
  - Develop high level design
  - Example project

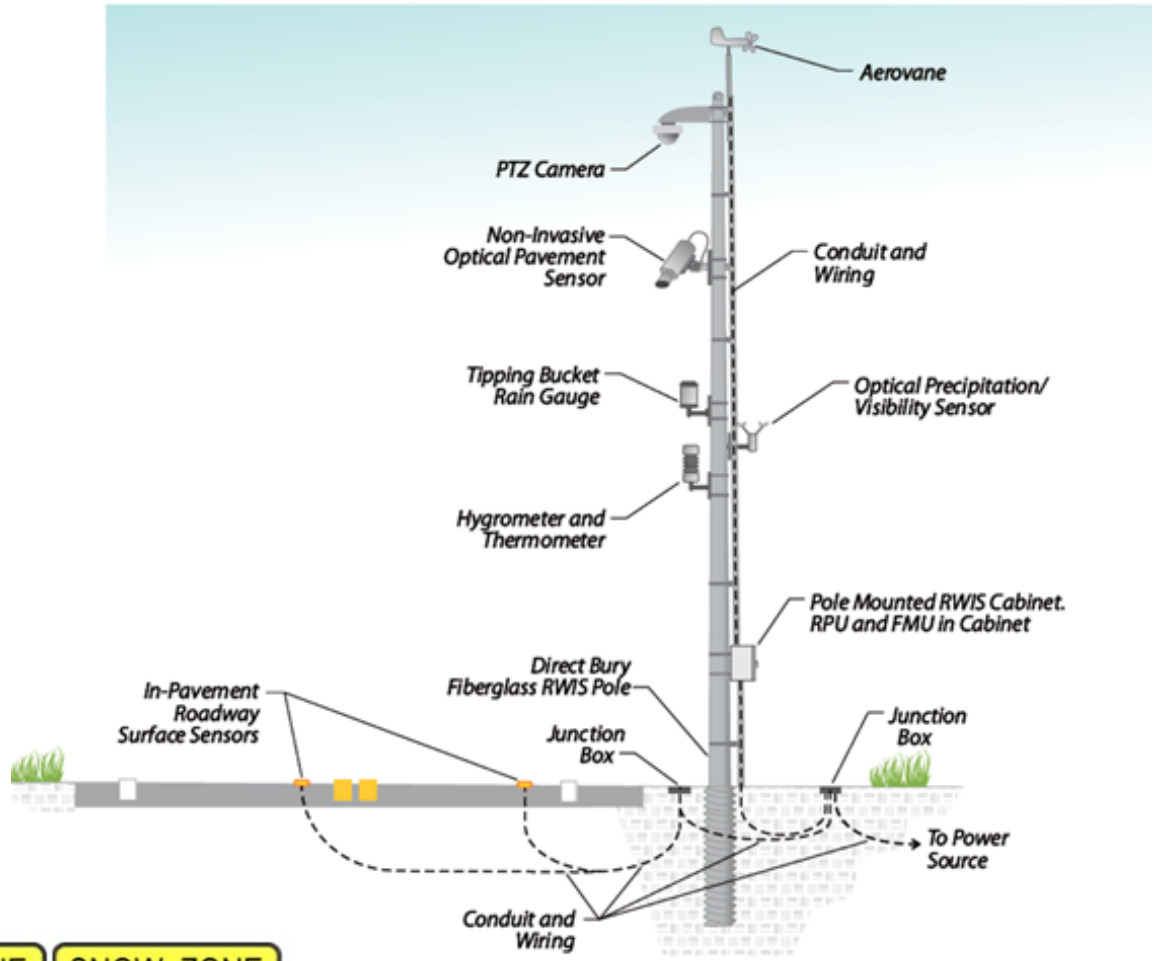
Rural ITS Solutions Toolbox

- Flood Gate Systems
- Intersection Conflict Warning Systems (ICWS)
- Variable Speed Limits (VSL)
- Camera Surveillance



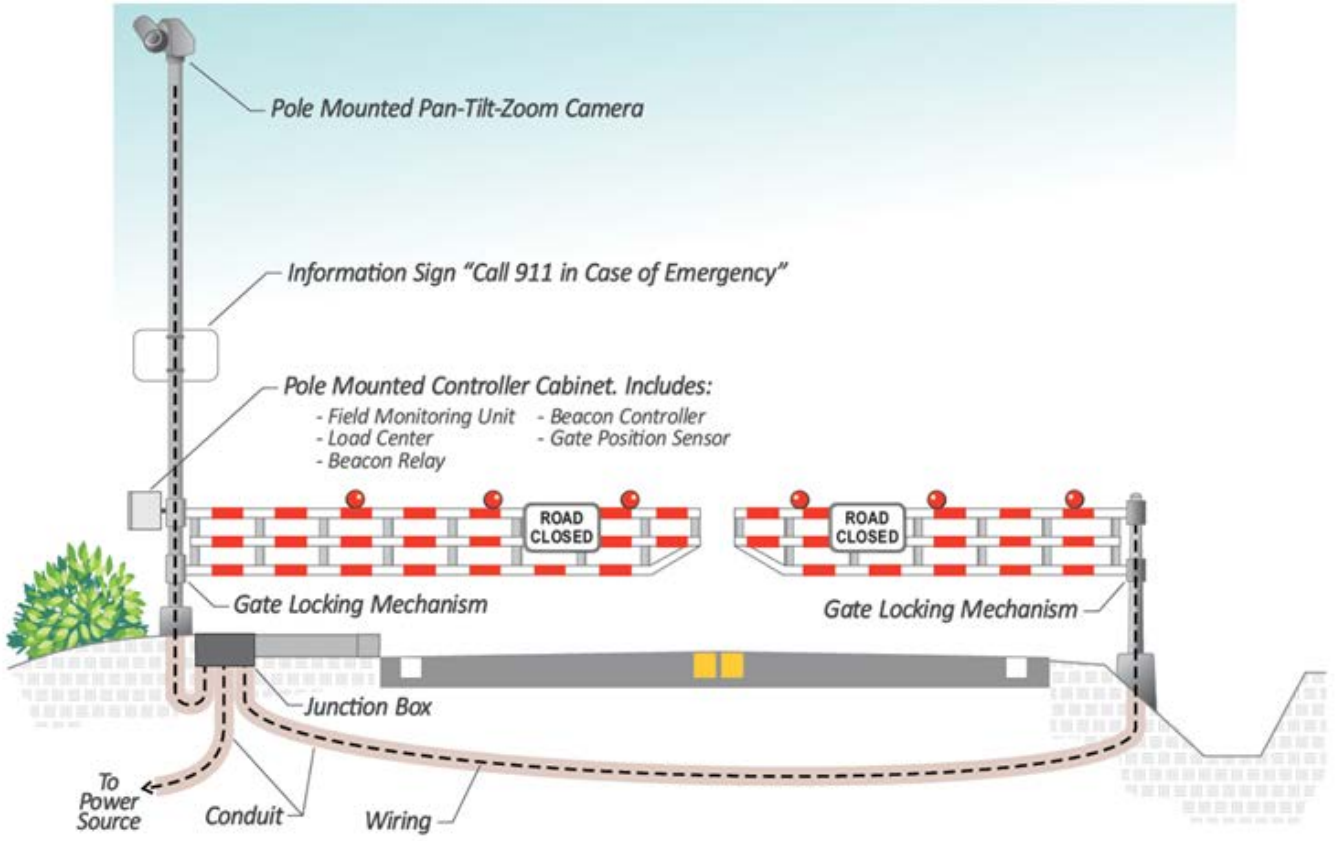
Rural ITS Solutions Toolbox

- Road Weather Information Systems (RWIS)
- Speed Feedback Systems
- Dynamic Warning Signs



Project Development

- Use available toolbox
- Identify low cost solutions to existing system locations
- Goal was to fully automate
  - Reduce burden on maintenance operations and IT staff
- Demonstrate process using example project
  - Automated Flood Gate System



Project Development

- Discussed current operations
- How do they monitor rising water levels?
- How do they close and open road?
- Focused on key decision point
  - What data fed decisions
  - What are the critical locations

Project Development

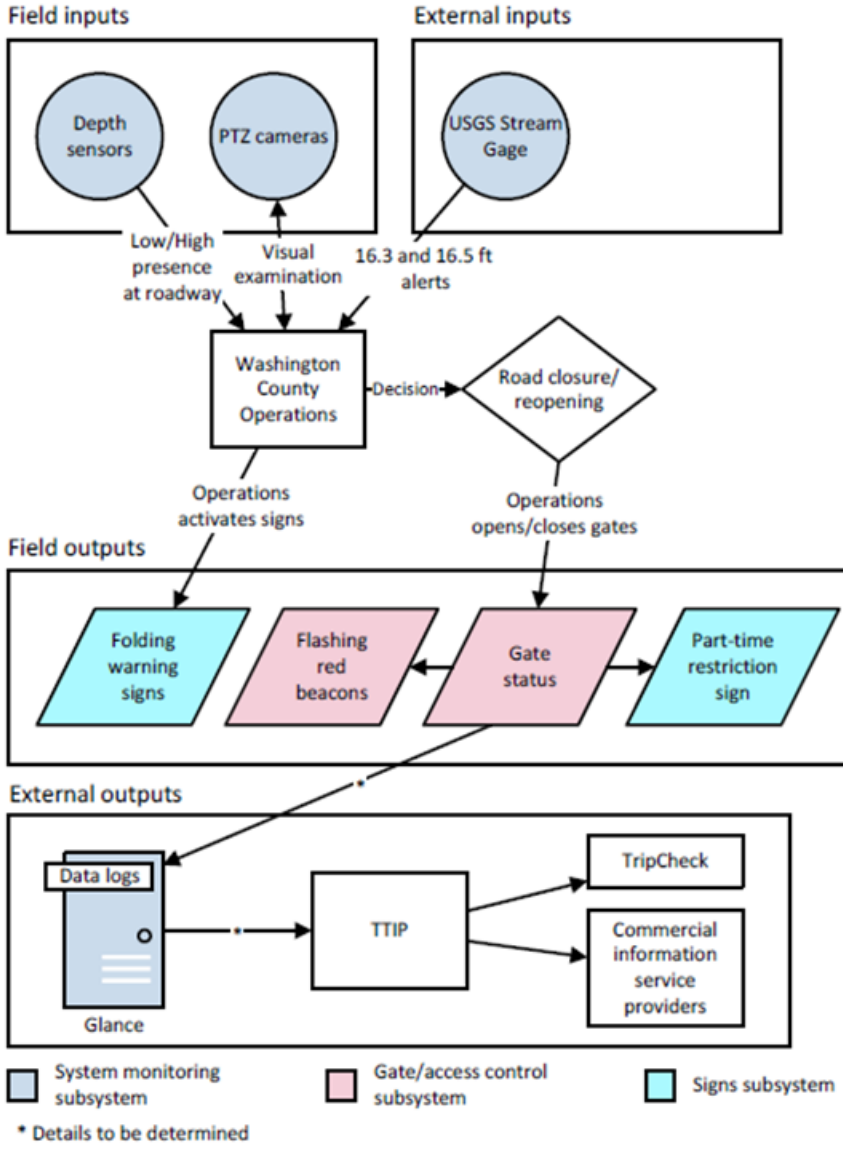
- Operators used a nearby rain gauge
- Previous water level data used to predict when flood levels would occur
- Field personnel would physically check status
- What did other EMS staff do?
  - Fire and sheriff's office put out barricades

October 22, 2018

NRITS

Stakeholder Input

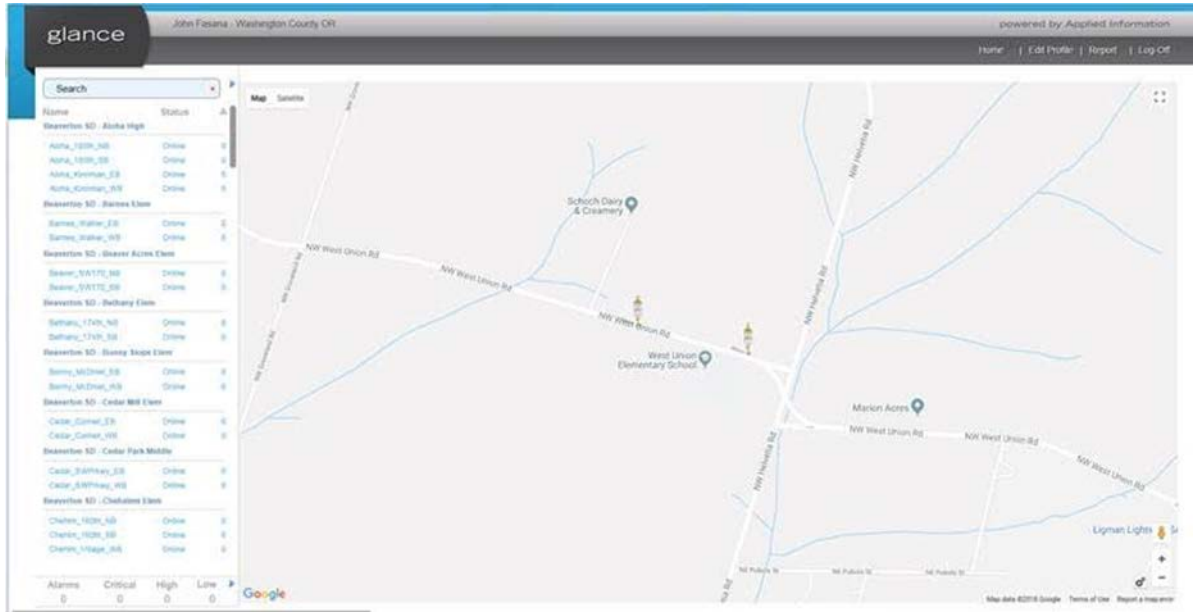
- Understanding work flow
- Concerns for automation
- Field visits for constructability
- Power and Communications



Refinement / Collaboration

- Automation- make task easier, quicker, more efficient
- Adding electronics and instrumentation requires maintenance

- Equipment needs to be reliable and durable
- Integrating field systems requires networks and IT support
- Subscription service for monitoring and operating can reduce burden on IT staff



Implementation

- Maintenance suggested gate design based on manual gate previously designed and used

- Maintenance crew built or installed part of system (saving cost)

System Project Benefits

- Safety
  - Reduction in crashes
  - Less exposure of staff
- Staff time
  - Save travel time to distant locations like snow zone signs
- Service
  - Providing information to users that normally would not have

Lessons Learned

- Project designed for full automation and functionality but implemented in phases
- Coordinate with resources and gain input from stakeholders
- Obtain buy in from maintenance and operational personnel
  - They will come up with ideas on how to do it better or less costly
  - They will possess information that can make the project successful