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

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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
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