Rural ITS Maintenance: State of the Practice

A Work in Progress

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Presented at:
ITS Rocky Mountain Annual Conference
Salt Lake City, Utah – Oct 3, 2002

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Outline

- Introduction
- Literature review / recent research
- California Oregon Advanced Transportation Systems (COATS) Showcase
- Project objectives and scope
- Methodology
- Case studies
- Discussion

Introduction
Rural ITS Maintenance

- Contracting gets expensive
- Long distances between field devices and maintenance offices
- Specialized training requirements
- Limited system redundancy
- Limited research to date on rural ITS maintenance

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Introduction
Motivation

- Research ITS maintenance in COATS study area
- Case studies to document the available data

Literature Review

- Review of other plans
  - Several metropolitan areas have developed models; no statewide plan was identified
  - No documented private sector plans
  - Some plans relate device deployment and the resources needed to maintain them
  - Most maintenance models are for a single, centralized organization

Logos provided courtesy of DOTs

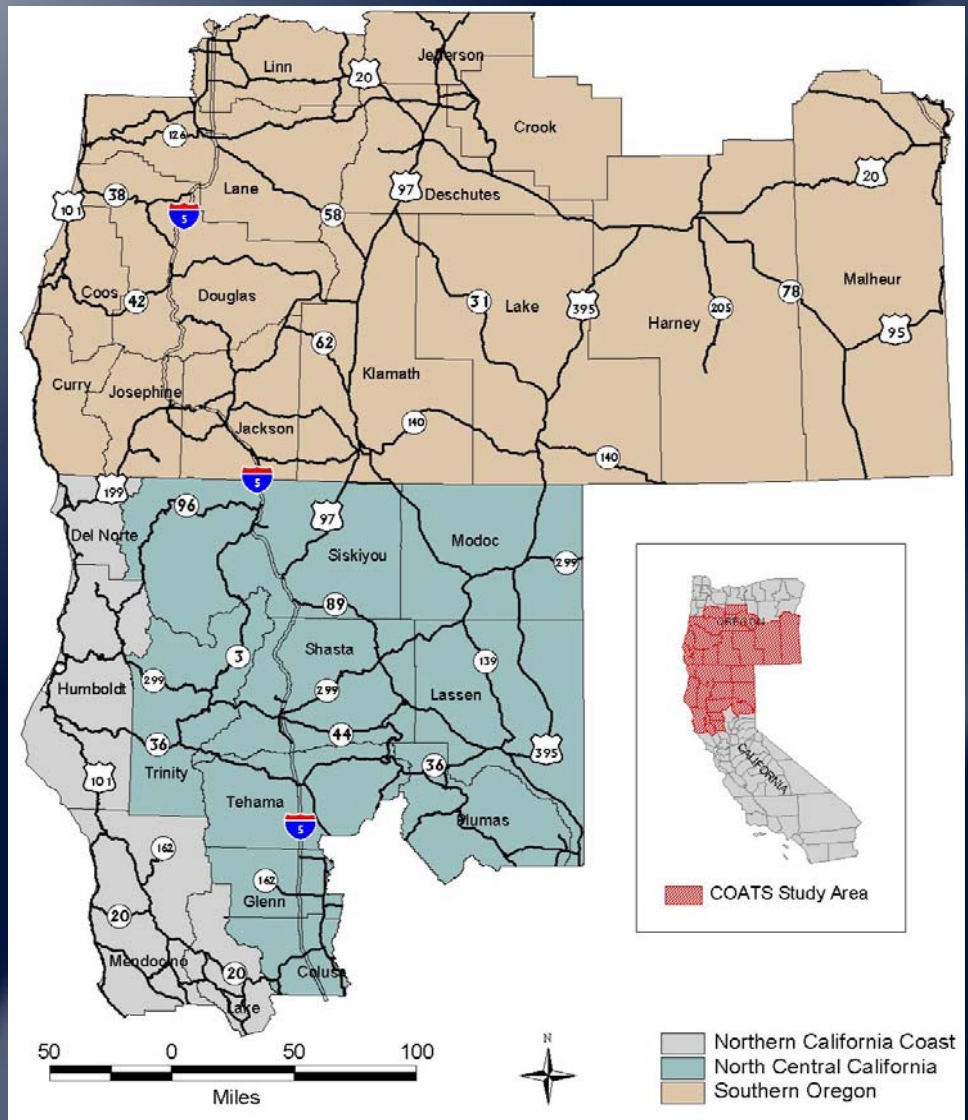
Recent Research

- ODOT ITS Maintenance Plan- December 1999
- COATS: Operations and Maintenance Technical Report- June 2000

ODOT ITS Maintenance Plan

- Model for Processing ITS Maintenance
  - e.g CMS Failure
- Schedule for prioritizing ITS Maintenance Activities
  - e.g Fulfilling legal Mandates, Safety critical devices
- Preventive maintenance schedule
- Assessment of training and contracting needs
- Comprehensive budget

COATS Overview



- California/ Oregon Advanced Transportation Systems (COATS)
- Bi-state, multi-jurisdictional ITS planning, demonstration and evaluation effort

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COATS: Operations and Maintenance Technical Report

RURAL COATS
CALIFORNIA OREGON ADVANCED TRANSPORTATION SYSTEMS

- Define each component's operations and maintenance needs based on similar systems
- Estimate personnel and skill requirements
- Estimate an operations and maintenance budget
- Recommend innovative measures for overcoming institutional issues

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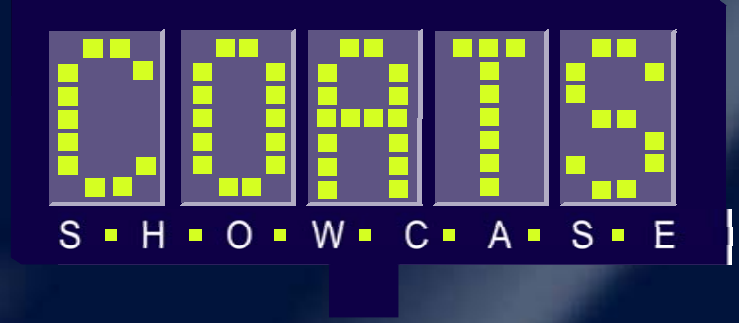
COATS Showcase



- A bi-state partnership to improve rural transportation through the demonstration and evaluation of advanced technologies
- Provide information to improve the performance of existing ITS elements
- Provide data to justify, support or direct future deployment of ITS in the COATS study area

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COATS Showcase Partners

- California Department of Transportation, Division of Research and Innovation
- Oregon Department of Transportation
- USDOT, Research and Special Programs Administration
- Western Transportation Institute
  Montana State University, Bozeman,MT

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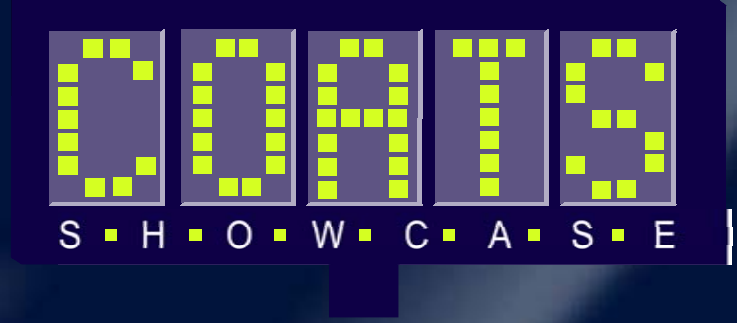
COATS Showcase Evaluations



- Siskiyou Pass
- Operational Impacts
- **Rural ITS Maintenance: Case Studies**
- Detection Evaluation
- Public Safety & Communications
- ODOT ITS Benefits & Performance
- Communications and Power Improvements
- Narrows
- Fredonyer Summit
- Wind Warning
- Trailers

– Work in Progress

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Project Objectives

- Develop case studies to provide lessons learned
  - To guide future ITS deployments in COATS study area
  - To improve maintainability of field devices in the design and procurement stages
  - To help get more accurate information on maintenance costs

Expected Benefits

Better

- Planning by including maintenance in planning
- Budgeting by more accurate information on maintenance costs
- Scheduling of maintenance staff
- Responsiveness to critical maintenance needs
- Estimation of reliability and life time of field devices

Project Scope

- Task 1: Project Management
- Task 2: Literature Review
- Task 3: Identify Case Studies
- Task 4: Data Collection
- Task 5: Documentation
- Task 6: Final Report

Methodology

- Identify key ITS systems / elements / field devices
- Data collection through an initial survey
- Additional personal interviews / review of maintenance records as needed
- Documenting as case studies of maintenance for the identified as above
- Recommendations

Principal COATS ITS Elements

1. Cameras
2. RWIS
3. CMS/VMS/DMS
4. HAR
5. TOC/TMC
6. Landslide detectors
7. AVL

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Case Study: Details

- Type / location, intended purpose, actual use
- Integration into the main system, vendor / contractor support, Maintenance costs, operations cost
- Maintenance history, travel distance, reporting system, ease of replacement

Next Steps

- Identification of case studies
- Data collection through personal interviews and surveys
- Data analysis and cost predictions
- Final report with recommendations (Dec 2003)

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