

# Appendix K: Deployment Plan Workshop

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Deployment Plan Workshop Invitation  
Deployment Plan Workshop Agenda  
Deployment Plan Workshop Minutes  
Deployment Plan Workshop Power Point Presentation  
Deployment Plan Workshop Handout

# Salem-Keizer Metropolitan Area Intelligent Transportation Systems Expanded Stakeholder Workshop: Deployment Plan

Intelligent Transportation Systems (ITS) bring technology to transportation. If you are interested or affected by the Salem-Keizer transportation system or you could benefit from:

- ▶ A traveler information website that shows real-time traffic information about what routes are congested
- ▶ Changeable message signs that provide real-time information about accidents, construction, or weather related delays that are on your route
- ▶ Quicker response and clearance of traffic incidents
- ▶ Real-time transit arrival and departure information



## Please Join Us!

**Date:** June 28, 2005  
**Time:** 9:00 am – Noon  
**Location:** Marion County Senator Hearing Room  
**Address:** 555 Court Street, NE  
Salem, OR 97301

Please R.S.V.P by June 22, 2005 to Brandy Sularz at [bms@dksassociates.com](mailto:bms@dksassociates.com) or by calling (503)243-3500

An Intelligent Transportation System Plan is currently being developed to address the regional transportation needs in the Salem-Keizer Metropolitan Area. Over the past several months, regional needs have been established and a list of ITS projects has been developed that is aimed at improving the operational efficiency and safety of the transportation system through the use of technology and a coordinated management approach.

Approximately 50 projects have been selected for the region related to Traffic Management, Traveler Information, Emergency Management, Public Transportation Services, Maintenance and Construction Management and Archived Data Management. These projects will:

- ▶ Reduce congestion by detecting incidents quickly and responding with a coordinated, efficient response
- ▶ Alert motorists, commercial vehicles, and transit operators of congestion by collecting, processing, and disseminating real-time information (construction/incidents/weather)
- ▶ Improve safety by deploying technologies that increase awareness of potential safety hazards such as work zones, floods, slides and sharp curves

This workshop is an excellent opportunity for you to learn about the proposed plan and the technologies that will be deployed in your region over the next 20 years. Your input is important to this plan and your comments and suggestions will affect the final phasing and selection of the projects.

## Meeting Agenda

- 9:00 am: Welcome & Introductions**
- 9:05 am: Project Background**
- What is ITS?
  - Description of plan process
- 9:20 am: Bob Hart, *Southwest Washington Regional Transportation Council***
- 9:40 am: Presentation by DKS Associates**
- Update of project status
  - Summary of proposed ITS deployment plan
- 10:00 am: Group Discussion**
- 11:55 am: Next Steps**



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TRANSPORTATION SOLUTIONS



Mid Willamette Valley  
Council of Governments

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SALEM AREA TRANSIT

# Agenda

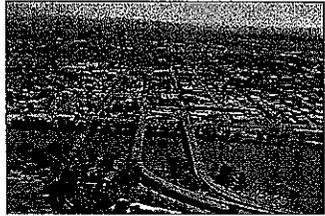
## **Regional ITS Operations & Implementation Plan For Salem-Keizer Metropolitan Area Deployment Plan Workshop**

**Tuesday June 28<sup>th</sup>, 2005  
Marion County Senator Hearing Room  
555 Court Street, NE Salem, OR 97301  
9:00 a.m. to Noon**

9:00 a.m.	Welcome and Introductions	5 Minutes
9:05 a.m.	Project Background	15 Minutes
9:25 a.m.	Bob Hart, Southwest Washington Regional Transportation Council Vancouver Area ITS Program	20 Minutes
9:55 a.m.	Deployment Plan Summary	20 Minutes
	A. Summary of Needs	
	B. Summary of Proposed Projects	
10:15 a.m.	BREAK	15 minutes
10:30 a.m.	Breakout Groups	60 minutes
11:30 a.m.	Group Discussion	20 minutes
11:50 a.m.	Next Steps	5 minutes

## Salem-Keizer Metropolitan Area ITS Plan

Regional ITS Operations & Implementation Plan For The Salem-Keizer Metropolitan Area



### Deployment Plan Workshop

*DKS Associates*  
June 28, 2005

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## Meeting Agenda

- 9:00 am Welcome, Introductions & Workshop Goals
- 9:05 am Project Background
- 9:25 am Vancouver Area ITS Program
- 9:55 am Deployment Plan Summary
  - ✓ Summary of Needs
  - ✓ Summary of Proposed ITS Projects
- 10:15 am BREAK
- 10:30 am Breakout Groups
- 11:30 am Group Discussion
- 11:50 pm Next Steps



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## Project Background Outline

- What
- When
- Where
- Who
- Why
- Why are we here? Why are you here?

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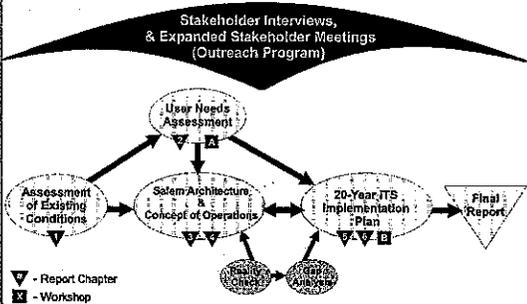
## What is this Plan?

- Regional ITS Operations & Implementation Plan for the Salem-Keizer Metropolitan Area



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## What Does the Plan Include?



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## Salem-Keizer Metropolitan Area Mission Statement



To enhance economic productivity by improving the safety, efficiency and reliability of our existing and future transportation system using enhanced operations, advanced technologies, coordinated management techniques and real-time information

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## Salem-Keizer Metropolitan Area Goals

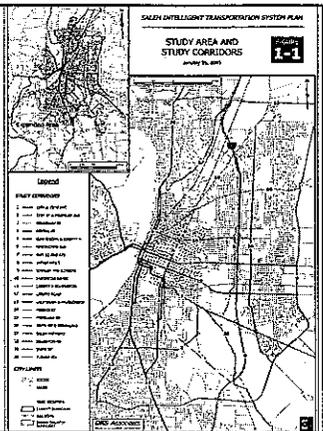


- Improve the safety, efficiency and reliability of the transportation system
- Enhance management of the transportation system to improve maintenance and operations efficiencies
- Improve traveler mobility
- Provide improved traveler information
- Secure/develop a continuing commitment to ITS deployment by utilizing public-public and public-private partnerships

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## Where?

- 20-Year Plan



SALEM INTELLIGENT TRANSPORTATION SYSTEM PLAN  
STUDY AREA AND STUDY CORRIDORS  
June 28, 2005

Legend:  
 Major Freeway  
 Major Arterial  
 Minor Arterial  
 Collector  
 Local  
 Interstate  
 State  
 County  
 City  
 Local  
 Other

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## Who Is Involved?

- ODOT
- City of Salem
- City of Keizer
- Mid Willamette Valley COG
- Marion County
- Polk County
- Cherriots
- Mid Willamette Valley 911
- Oregon State Police
- FHWA
- DKS Associates

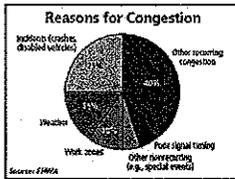


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## ITS Plan – Why is it Needed for Salem-Keizer Metropolitan Area?

Over half of traffic delay is non recurring, attributable to:

- ✓Traffic incidents
- ✓Weather
- ✓Work zones
- ✓Special events
- ✓Poor signal timing



Reasons for Congestion

Reason	Percentage
Incidents (crashes, disabled vehicles)	20%
Weather	15%
Work zones	10%
Other recurring congestion	15%
Other nonrecurring (e.g., special events)	35%
Poor signal timing	5%

Source: FHWA

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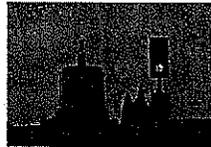
## ITS Plan – Why is it Needed for Salem-Keizer Metropolitan Area?

- Maximize efficiencies and improve safety of existing infrastructure
- Demand from public for better information about traffic delays
- IT'S the LAW!
  - ✓FHWA issued a rule on ITS Architecture that requires ITS projects funded by the Highway Trust Fund to conform to the National ITS Architecture, and to USDOT adopted ITS Standards. Each region must have a regional architecture by April 8, 2005

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## Why Are We Here Today?

To receive feedback on the Salem-Keizer ITS Plan specifically related to the **20-year project list**



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### Why Are You Here?

Operators/ Planners	What tools do you need to manage the transportation network? To plan for future improvements?
Maintenance	What tools do you need to maintain the transportation infrastructure effectively?
Emergency	What tools do you need to manage incidents, reduce response times and arrive better prepared?
Users	What tools do you need to plan your trip? What does your business need to move your goods?

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### Workshop Goals

- Obtain stakeholder input
- Identify any additions/modifications to the deployment plan projects and schedule
- Finalize Salem-Keizer deployment plan




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## What is ITS?

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### What is ITS?

Intelligent Transportation Systems apply technological solutions including computer hardware and software, communications, electronics and safety systems to improve safety and transportation system performance.




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### Focus on Improving Operations

- Recognize adding lanes is not the only solution
- Can improve safety and quality of life with improved operations





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### ITS Solutions Include:

- Traffic Signal Control
- Freeway Management
- Incident Management
- Traveler Information
- Transit Management
- Work Zone Safety
- Emergency Response
- In-Vehicle Systems





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### Real World Example #1



- What: Weather stations with video and pavement sensor
- Why: Provide weather data, pvmt temp, camera image
- Benefit: Info for maintenance, travelers, 911, Fire, planners – save time, know road conditions

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### Real World Example #2

- What: Distribution of current traffic conditions and camera images to 911 Center
- Why: Provide dispatchers with more info for better dispatching
- Benefit: Quicker response, time savings – may save a life



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### Real World Example #3

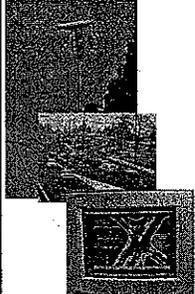
- What: Incident response with highway patrols
- Why: Respond and clear incidents, stalled vehicles, etc. quicker
- Benefit: Reduce secondary crashes, improve customer service, save lives



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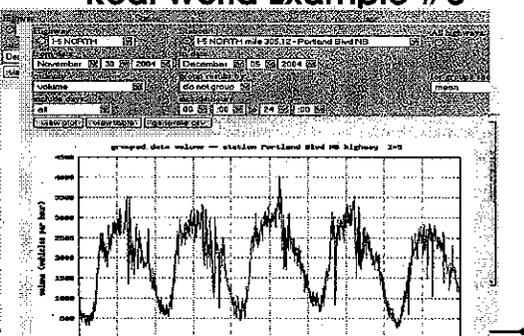
### Real World Example #4

- What: Video & traffic responsive signal timing strategies
- Why: 1) provide timing plans that respond to changing traffic volumes; and 2) using cameras, we can monitor and change signal timing from the office
- Benefit: Maximize arterial efficiency, efficient for staff, provide images for travelers



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### Real World Example #5



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### A Glimpse Into the Future

Travelers - Vehicle infrastructure integration, Dynamic route guidance, Mayday systems

- ✓ Collision avoidance systems
- ✓ Vehicle to vehicle communications
- ✓ Vehicle to roadside communications



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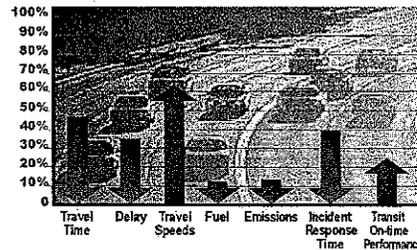
## ITS Provides Regional Transportation Management Opportunities

- Opportunity to manage our (existing and future) infrastructure on the metropolitan area scale to improve safety and efficiency
  - ✓ ODOT Transportation Operations Center
  - ✓ ODOT Incident Response Team
  - ✓ ODOT TripCheck, 511
  - ✓ Salem Central Signal System and Communication Infrastructure

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## How are ITS Benefits Measured?

- Safety
- Delay/Time
- Quality of Life
- Cost Savings
- Environment



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## Benefits of ITS

- Coordinated Traffic Signals
  - ✓ 10 to 40 percent reduction in stops
  - ✓ Up to 15 percent reduction in fuel consumption
  - ✓ 5 to 25 percent reduction in travel time
  - ✓ 15 to 45 percent reduction in delay
- Transit Management
  - ✓ 10 percent reduction in travel time



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## Salem-Keizer ITS Plan Expanded Stakeholder Meeting

*Vancouver Area SmartTrek:  
A Multi-Agency Approach to  
Transportation Management*

Bob Hart, Southwest Regional Transportation Council

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**RTC**

## Vancouver Area Smart Trek Program Overview

*Salem-Keizer Deployment Plan  
Workshop*

*June 28, 2005*

www.rtc.wa.gov

**RTC**

## VAST Program

- Background
- Developing the Program
- Current Activities
- Lessons Learned

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## Background

- Initiated in 1999 by the City of Vancouver
- VAST Regional Architecture
- Six Key ITS Initiatives
- 20-year Implementation Plan
- RTC management of VAST program since January 2001

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## VAST Regional Architecture

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## VAST ITS Initiatives

- Traveler Information
- Communications System
- Traffic Signal System
- Freeway and Arterial Operations
- Incident Management
- Transit Management

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## 20-Year Implementation Plan

- List of phased projects for VAST
- \$45 million over twenty years

Category	Value
Traveler Information	\$12,450,000
Transit Management	\$2,750,000
Communication	\$4,500,000
Advanced Vehicle Safety System	\$14,000,000
Arterial Operations	\$9,300,000
Freeway Operations	\$2,000,000

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## Program Management



- RTC lead and role
- Partnerships, Agreements and Committees
- Funding for VAST

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## RTC as Lead Agency



- Element of success
- Doesn't have to be MPO, but the framework is there
- Already plays regional role in transportation
- VAST/ITS agencies are essentially the same as the MPO members

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## RTC Management of VAST Program



- Develop Agreements
- Institutionalize ITS
- Joint funding applications
- Implement projects in the 20-year plan
- Review and tracking of ITS projects
- Coordination between ITS and road projects and between agencies
- Insuring technologies work together

[www.rtc.wa.gov](http://www.rtc.wa.gov)

## VAST Steering Committee



- Participation by:
  - RTC
  - WSDOT
  - C-TRAN
  - City of Vancouver
  - City of Camas
  - Clark County
  - ODOT
- Executed MOU that defines how SC will work together to develop, fund, and deploy ITS projects in the 20-year plan

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## VAST Communications Infrastructure Committee



- Participation by the same partner agencies
- Focus is on technical elements of communications infrastructure and devices
- Multidisciplinary: includes transportation, information technology, and public safety communication staff from each agency
- Cooperative effort to address the use, sharing, maintenance, and allocation of communications assets

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## VAST Funding Strategy



- Joint funding applications for federal CMAQ
- Participation by partners
- Guided by the 20-year plan
- Reviewed by everyone
- Consensus on priorities and what's next

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## CMAQ VAST Funding History

- VAST I                 \$ 2.3m
- VAST II                \$ 1.1m
- VAST III              \$ 1.6m
- VAST IV??            \$ 1.1m
- Earmarks             \$ 5.0m
- **TOTAL**               **\$11.1m**

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## Current Activities

- Traveler Information Improvements
- Maintenance and Repair of Infrastructure
- Management of ITS/Communications Assets

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## Traveler Information

- WSDOT act as the host for improved traveler information
- Expand website for Vancouver and Portland camera information
- Add camera images on local arterials
- Show construction information for local agencies
- Traffic flow information for Clark County and Portland metro area

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### VANCOUVER AREA

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### VANCOUVER-PORTLAND AREA

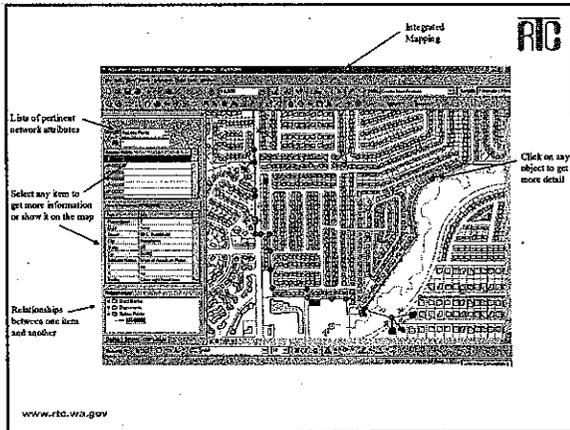
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### VANCOUVER-PORTLAND AREA

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## Lessons Learned

- Partnerships
- Projects and ....
- \$\$\$

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## Partnerships

- Select a lead agency
- Develop cooperative structure
- Stay at the table
- Sign the MOUs
- Have resources to manage the program
- Get agreement on needs and priorities

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## Projects

- You still need the foundation (fiber, cameras, detectors, controllers, etc), but they're not visible
- Look for visible projects and successes
- Policy makers want to see the benefits
- It will help sell the program

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## \$\$\$\$

- Commit funding to manage the program
- Identify funding sources
- Develop a cooperative funding approach
- Take advantage of criteria

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## Questions?

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## Salem-Keizer ITS Plan Expanded Stakeholder Workshop

Summary of Proposed  
Deployment Plan & the  
Needs Addressed



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## Salem-Keizer ITS Plan Project Categories

1. Traffic Management
2. Traveler Information
3. Communications
4. Emergency Management
5. Archived Data Management
6. Public Transportation Services
7. Maintenance & Construction Management

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## Traffic Management Needs

- Real-time traffic condition information
- Automated vehicle collection counts with classification
- Integrate systems between emergency management and transportation agencies

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## Traffic Management Needs

- Parking Management (downtown, convention center)
- Railroad Crossing Occupation
- Flood and Slide Monitoring



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## Incident Management Needs

- Improved detour route management
- Incident detection/classification
- Enhance incident management program
- Provide advanced information to travelers



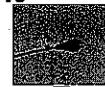
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## Traffic/Incident Management Projects

- Metropolitan Wide Video Deployment
- Traffic Data Collection System
- Arterial Congestion Mapping
- Downtown Parking Management



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### Traffic/Incident Management Projects

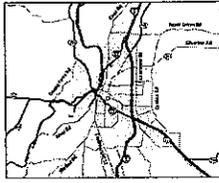
- Incident Management
  - ✓GPS Equipped Incident Response Vehicles
  - ✓West Salem Bridge Plan
  - ✓Interstate 5 Detour Route (Cordon/Kuebler)




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### Traveler Information Needs

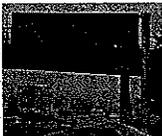
- Real-time, accessible traveler information
  - ✓ Parking Information
  - ✓ Construction Information
  - ✓ Weather Information
- Information prior to decision points
- Camera images




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### Traveler Information Projects

- En-route Traveler Information
- Cable TV Traveler Information Channel
- Wheatland and Buena Vista Traveler Information System

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### Emergency Management Needs

- Shared incident information between emergency management agencies, 911 center and transportation
- Real-time information at 911 centers and in vehicles
- Enhance transportation management during evacuations (hazardous materials, Capitol building, terrorism)



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### Emergency Management Needs

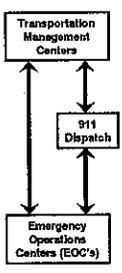
- Preemption by vehicle ID
- Reduce emergency response times
- Advanced information about incident conditions
- Enhance operations during major emergencies



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### Emergency Management Projects

- Intra-Agency Information Sharing
  - ✓ 911, Transportation Operations Centers, and Emergency Operation Centers
- Provide Real-Time Information to Mobile Data Terminals (MDTs)
- 911 Computer Aided Dispatch Interface
- Hazardous Materials Management



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## Archived Data Management Needs

- Automated data collection (volumes, speed, occupancy, vehicle classification, incidents)
- Communication between the City of Salem and NWTOC
- Improved information for transportation planning



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## Archived Data Management Projects

- Regional Data Management System
  - ✓ Collection and archiving of operational and performance data
  - ✓ Historical counts



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## Maintenance & Construction Management Needs

- In-vehicle geo-coding of maintenance items (potholes, tree-limbs, signs)
- Central source for construction information
- Construction zone management to improve safety



Source: International Road Dynamics

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## Maintenance & Construction Management Projects

- Work Zone Safety Systems and Monitoring
- Maintenance and Construction Coordination System
- Roadway Weather Info Systems
- Construction Zone Traveler Information Systems



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## Public Transportation Management Needs

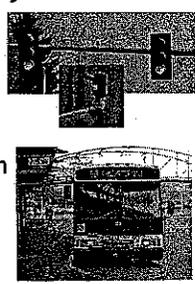
- Automatic vehicle location (AVL)
- Transit signal priority
- Real-time transit arrival information
- Uniform CAD interface for paratransit vehicles



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## Public Transportation Services Projects

- Transit Signal Priority
- Real-Time Transit Arrival Information
- Maintenance Management System
- Automated Vehicle Location System (AVL)
- CAD Transit Management System



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## Deployment Plan Phasing Criteria

- # of Collisions
- Corridor Volumes
- Key Decision Point
- Address User Needs
- Part of an Improvement Project
- Project Dependencies
- Technical & Institutional Feasibility
- Operation and Maintenance Costs



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## Salem-Keizer ITS Plan Expanded Stakeholder Workshop

Breakout Session:  
Deployment Plan  
Projects



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## Goals of Breakout Session

- Review Needs
- Review Proposed Deployment Plan Projects
  - ✓ Identify additions/deletions/modifications
  - ✓ Review for completeness/level of detail
- Review Proposed Deployment Schedule
  - ✓ Determine if these projects meet your current needs
  - ✓ Determine if these projects fit with other regional plans

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## Breakout Groups



Group	Moderator
1) Traffic Management, Traveler Information, Public Transportation	Jim Peters
2) Emergency Management, Maintenance & Construction, Archived Data Management	Peter Coffey/ Brandy Sularz

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## Salem-Keizer ITS Plan Expanded Stakeholder Meeting

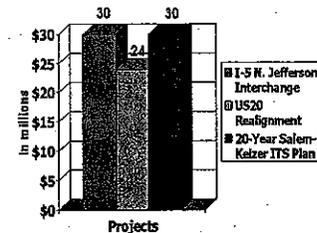
Group  
Discussion



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## Project Cost Comparison

- 20-Year Plan
  - ✓ 49 Projects
  - ✓ Approximately \$30M for 20-Year Plan



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## Keys to Implementation

- Partner and Coordinate for Funding
- Deploy Projects With Big "Bang for the Buck"
- Do Not Forget Maintenance and Operations
- Learn From Your Peers



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# Thank You!!

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# Regional ITS Operations & Implementation Plan for the Salem-Keizer Metropolitan Area

## Expanded Stakeholder Workshop Deployment Plan June 28, 2005

### Project Mission Statement:

To enhance economic productivity by improving the safety, efficiency, and reliability of our existing and future transportation system using enhanced operations, advanced technologies, coordinated management techniques and real-time information

### Project Goals:

- 1) Improve the safety, efficiency and reliability of our transportation system
- 2) Enhance management of the transportation system to improve maintenance and operation efficiencies
- 3) Improve traveler mobility
- 4) Provide improved traveler information and access to the information
- 5) Secure/develop a continuing commitment to ITS deployment by utilizing public-public and public-private partnerships



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Mid Willamette Valley  
Council of Governments

Salem 9-1-1 Dispatch Center



# SALEM-KEIZER METROPOLITAN AREA ITS Deployment Plan

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## **DEPLOYMENT PLAN INTRODUCTION**

The projects included in the Deployment Plan were developed based on collaboration from the project Steering Committee and input received at the expanded stakeholder workshop. Project rankings were established by scoring each project based on the following criteria:

- ✦ Safety/Collision Prevention
- ✦ Traffic Volumes/Congestion
- ✦ Key Decision Point
- ✦ User Needs
- ✦ State-Wide Consistency
- ✦ Part of an Improvement Project
- ✦ Operation and Maintenance Costs

The resulting project rankings were used to create a prioritized 0-5 Year Plan, 6-10 Year Plan, and 11-20 Year Plan. In addition to specific project rankings, corridors in the study area were prioritized based on future traffic volumes and number of collisions. These corridor rankings also contributed to the phased implementation of deployment plan projects in the region.

<u><b>Study Area Corridors</b></u>	<u><b>Corridor Priority Phasing</b></u>
Highway 22	0-5 Year Plan
Lancaster Drive	0-5 Year Plan
Commercial Street	0-5 Year Plan
Kuebler Blvd/Cordon Rd	0-5 Year Plan
Salem Parkway	0-5 Year Plan
Interstate 5	6-10 Year Plan
N. River Road	6-10 Year Plan
Hawthorne Ave	6-10 Year Plan
Center Street	6-10 Year Plan
Portland Rd	6-10 Year Plan
Wallace Rd	11-20 Year Plan
Chemawa Rd	11-20 Year Plan
Silverton Rd	11-20 Year Plan
Market St	11-20 Year Plan
Broadway St	11-20 Year Plan
25th St	11-20 Year Plan
State St	11-20 Year Plan
12th/13th St SE	11-20 Year Plan
Turner Rd	11-20 Year Plan
Liberty Road SE	11-20 Year Plan

The following sections discuss each ITS program area, including summaries of each project. Some significant projects phased for implementation in 0-5 years have detailed project summaries included in the corresponding program area section.

## TRAFFIC MANAGEMENT



Projects within this program area are focused on improving the safety and efficiency of the existing roadway system by providing tools to better manage the existing infrastructure and to coordinate with regional partners. The purpose of most of these projects is to

improve travel time, reduce crashes and the effects of crashes, and provide incident response. The plan projects are summarized in the following tables.

<b>0-5 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Metropolitan Area Wide Video Deployment	Deploy video monitoring cameras (pan/tilt/zoom) to monitor traffic conditions, emergency events, optimize signal timings, view high accident locations, monitor flood and slide zones, and provide roadway condition information to travelers.
Incident Management Plan for West Salem Bridges	This project will provide reversible lane controls and a specific plan outlining roles, responsibilities and procedures for handling an emergency bridge closure on Marion/Center Street bridges.
Incident Response Program Enhancements	This project will equip incident response vehicles with GPS to enhance dispatch and provide additional incident response vehicles and personnel.
Detour Route Management	This project will improve the existing I-5 detour route plans by mapping routes in GIS, implementing signal timing plans, electronic message sign, communications to field devices and congestion monitoring to support incident responders and traffic management.
Traffic Data Collection Map	Deploy vehicle detection equipment around the metropolitan area to automate the collection of vehicle count, speed and classification information
Advanced Vehicle System-Mayday to TOCS	Provide for information flow from vehicle Mayday systems to the TOC (notification of airbag deployment).

<b>6-10 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Railroad Crossing Traveler Information and Safety System	Deploy railroad crossing train detection/warnings and provide crossing occupation information to the 911 center and the NWTOC.
Coordinated Emergency Management System	Provide a common electronic interface for emergency managers to coordinate response to a major emergency event across jurisdictions.
Center to Center Integration (ODOT, Salem, Keizer, Marion County and Polk County)	Implement center-to-center communications between the ODOT NWTOC and other traffic management centers at the City of Salem, City of Keizer, Marion County and Polk County.
Salem Traffic Management Center Upgrade	Upgrade equipment and expand the existing City of Salem traffic management center.
Downtown Salem Parking Management	This project will deploy DMS and HAR messages to direct motorists to facilities with available parking in downtown Salem.
Central Signal System Upgrade	This project will define and procure a new central signal system to provide additional functionality including: <ul style="list-style-type: none"> <li>* Advanced signal control</li> <li>* Support for camera control</li> <li>* Automated incident response signal timing plans</li> <li>* Signal status integration with the operations centers</li> <li>* Arterial Congestion Mapping</li> </ul>

**11-20 Year Plan Projects**

<b>Name</b>	<b>Description</b>
Adaptive Signal Timing Project	Deploy adaptive signal timing on select signalized corridors in the region with the highest levels of congestion and the most fluctuation in volumes
Railroad Crossing Traveler Information and Safety System	Deploy railroad crossing train detection and warning and provide crossing occupation information to 911 center and the NWTOC. Transmit data to in-vehicle systems.
Flood Warning System	This project will deploy a system to monitor rising water on the roadway and alert transportation managers of high water and will include cameras and dynamic message signs to provide advanced notification to motorists.
Slide Monitoring System	This project will deploy a system to monitor frequent slide zones to identify landslides onto the roadway and will include cameras, dynamic message signs and road closure systems to manage traffic.
Isolated Intersection Safety Warning System	This project would deploy devices at high crash locations to warn drivers of changing conditions such as "tee" intersections or sharp horizontal curves
Weigh-in-Motion	This project will deploy weigh stations in Marion County
Advanced Vehicle System - Vehicle navigation system.	Develop a system to transmit traveler information to in-vehicle navigation systems.

# METROPOLITAN AREA WIDE VIDEO DEPLOYMENT

HIGH PRIORITY PROJECT: SK-TM-01

## Purpose

To provide continuous video coverage of congested locations to motorists and assist incident detection and data collection efforts



## Existing Problems

- ▶ Recurrent traffic congestion
- ▶ High incident locations at specific intersections
- ▶ Limited monitoring capabilities
- ▶ Lack of traveler information

## Stakeholders

- Primary:
- ▶ City of Salem
  - ▶ ODOT

## Description

This project will post existing City of Salem camera images on ODOT's TripCheck traveler information website. The City of Salem currently has many cameras throughout the study area that are used at the traffic management center to monitor traffic conditions. The first phase of this project will involve modifying the images so they can be posted for public viewing and includes the deployment of new pan-tilt-zoom cameras on the specified 0-5 year corridors. Future phases of this project will deploy more cameras at other key intersections in the City of Salem, the City of Keizer and Marion County. The cameras will be used to monitor the roadway for congestion, trouble spots, incidents, equipment failures, traffic signal operations and to provide roadway condition information to travelers.

## Project Dependencies

Existing cameras images have marked vehicle detection zones (lines) that affect the image that would potentially be posted on TripCheck. One option involves building a separate communication link to each camera to send the image back to the City of Salem traffic operation center on a different channel. This image could then be posted on TripCheck without the detection zones. This option adds a significant cost to the deployment of the project.

## Relevant ITS Standards

- ▶ ITE TM 1.03, TM 2.01
- ▶ NTCIP 1101, 1102, 1103, 1201, 1205, 1209, 1210, 1211

## METROPOLITAN AREA WIDE VIDEO DEPLOYMENT

SK-TM-01

Page 2 of 2

### Communication Requirements

High speed communications are required between the cameras, the City of Salem Traffic Management Center and the ODOT NWTOC.

### Goals Supported

- ▶ Improve the safety, efficiency, and reliability of the transportation system.
- ▶ Deploy systems with a high benefit-to-cost ratio and maximize the use of existing infrastructure
- ▶ Improve traveler mobility
- ▶ Provide improved traveler information and access to the information

### Benefits

- ▶ Ability to monitor and control traffic control systems in real-time from a remote location.
- ▶ Reduced incident detection times
- ▶ Improved safety and efficiency
- ▶ Increased traveler information

### Cost

\$1,365,000	Project Deployment
\$46,000	Annual Ops & Maintenance

### Phased Plan

0 – 5 Years: Project Deployment

### Associated Market Packages

- ▶ ATMS1 Network Surveillance
- ▶ ATMS6 Traffic Information Dissemination

## DETOUR ROUTE MANAGEMENT

HIGH PRIORITY PROJECT: SK-TM-04

### Purpose

To support incident management in the Salem-Keizer Metropolitan Area



### Existing Problems

- ▶ Lack of traffic management resources when travelers are diverted from I-5
- ▶ Limited infrastructure to notify the public of the detour/use of alternative route.
- ▶ Need for improved inter-agency coordination

### Stakeholders

- |            |  |
|------------|--|
| Primary:   | <ul style="list-style-type: none"> <li>▶ ODOT</li> <li>▶ City of Salem</li> <li>▶ Marion County</li> </ul> |
| Secondary: | <ul style="list-style-type: none"> <li>▶ City of Keizer</li> <li>▶ Emergency Management</li> </ul>         |

### Description

This project includes improvements to the existing detour plan for Cordon Road including: GIS mapping of the detour route, incident signal timing plans, electronic message signs, CCTV cameras for congestion monitoring and interagency communications and coordination to support incident responders and management of the roadway network during incidents. An operational plan discussing specific roles and responsibilities of each agency and their control of the associated field devices will also be developed.

The priority corridor is Kuebler Boulevard/Cordon Road. Another corridor that may be used as an alternate route is Salem Parkway/Commercial/Mission Street.

### Project Dependencies

An incident management operational plan must be developed for each corridor to clearly establish roles and responsibilities of each agency prior to the occurrence of an incident.

### Relevant ITS Standards

- ▶ IEEE IM
- ▶ ITE TM 1.03, TM 2.01
- ▶ NTCIP 1101, 1102, 1103, 1201, 1203, 1204, 1205, 1206, 1209, 1301, 2001, 2101, 2102, 2103, 2104, 2201, 2202

## DETOUR ROUTE MANAGEMENT

SK-TM-04

Page 2 of 2

### Communication Requirements

Communications are required between the field devices and City of Salem traffic management center and the ODOT NWTOC.

### Goals Supported

- ▶ Improve the safety, efficiency, and reliability of the transportation system.
- ▶ Improve emergency response times
- ▶ Improve traveler mobility
- ▶ Provide improved traveler information and access to the information

### Benefits

- ▶ Reduction in congestion and delay due to incidents.
- ▶ Increased capacity and throughput during incident conditions.

### Cost

\$1,800,000	Project Deployment
\$30,000	Annual Ops & Maintenance

### Phased Plan

0 – 5 Years: Project Deployment

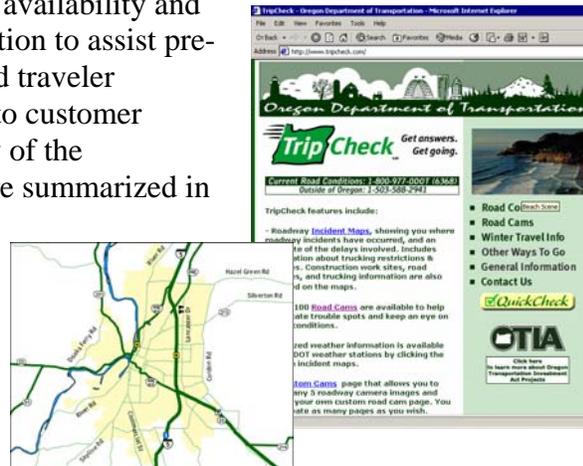
### Associated Market Packages

- ▶ ATMS06 Traffic Information Dissemination
- ▶ ATMS08 Traffic Incident Management System



## TRAVELER INFORMATION

These projects are designed to improve the availability and dissemination of real-time traveler information to assist pre-trip and en-route travel decisions. Enhanced traveler information contributes to benefits related to customer satisfaction, improved safety and reliability of the transportation system. The plan projects are summarized in the tables below.



<b>0-5 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
En-Route Traveler Information System	Deploy dynamic message signs, highway advisory radio (HAR) and provide enhanced traveler information to ODOT's TripCheck and 511 systems.
Cable TV Traveler Information Channel	This project will provide camera images and other traveler information to cable TV companies to display on a dedicated traffic channel

<b>6-10 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Broadcast Traveler Information	A dedicated traffic condition radio channel will be provided in the Salem-Keizer metropolitan area

<b>11-20 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Wheatland and Buena Vista Ferry Traveler Information System	This project will provide the operational status of the ferries via arterial message signs that are located at key traveler decision points and highway advisory radio (HAR) messages.
Interactive Traveler Information	This project will allow the motorist to request specific traveler information, utilize dynamic ridesharing, and provide yellow page and reservation services prior to a trip or en-route using wide area wireless connections.

## EN-ROUTE TRAVELER INFORMATION

HIGH PRIORITY PROJECT: SK-TI-01

### Purpose

To provide a source of integrated traveler information for travelers en-route throughout the Salem-Keizer Metropolitan area.



### Existing Problems

- ▶ Limited availability of accessible, pre-trip and en-route real-time traveler information.

### Stakeholders

- |            |   |
|------------|---|
| Primary:   | <ul style="list-style-type: none"> <li>▶ ODOT</li> <li>▶ City of Salem</li> </ul>   |
| Secondary: | <ul style="list-style-type: none"> <li>▶ Cherriots</li> <li>▶ City of Keizer</li> <li>▶ Marion County</li> <li>▶ Polk County</li> </ul> |

### Description

This project will include the deployment of dynamic message signs (DMS), enhanced Salem-Keizer area traveler information on the TripCheck website and 511 and highway advisory radio (HAR) in the Salem-Keizer Metropolitan Area to notify motorists of incidents, detour routes, construction, weather or other traveler information. In addition to these deployments, traveler information will be coordinated/sent to TripCheck and 511 and will be downloadable to mobile phones and personal digital assistants (PDA's).

### Project Dependencies

This project depends on the deployment of appropriate field devices to collect real-time traveler information and the ability to provide up to date information to the dissemination sources.

### Relevant ITS Standards

- ▶ ITE TM 1.03, TM 2.01
- ▶ IEEE IM
- ▶ NTCIP 1101, 1102, 1103, 1201, 1205, 1209, 1210, 1211, 2101, 2102, 2103, 2104, 2201

## EN-ROUTE TRAVELER INFORMATION

SK-TI-01

Page 2 of 2

### Communication Requirements

Each agency that has traveler information to disseminate will need to support communications between the field devices and the traffic management centers. Center-to-center network connections will support the exchange of traveler information between the transportation agencies and dissemination sources.

Additional communications will be needed for the deployment of field devices (DMS and HAR) and will depend upon the location.

### Goals Supported

- ▶ Improve the safety, efficiency, and reliability of the transportation system.
- ▶ Improve traveler mobility
- ▶ Provide improved traveler information and access to the information

### Benefits

- ▶ Real-time and static traveler information.
- ▶ Pre-trip planning capabilities and en-route information that allow travelers to make informed travel decisions.
- ▶ Reduced congestion and delay.
- ▶ Customer satisfaction

### Cost

\$2,250,000	Project Deployment
\$43,000	Annual Ops & Maintenance

### Phased Plan

0 – 5 Years: Project Deployment will include HAR and the deployment of DMS on the following corridors at key decision points:

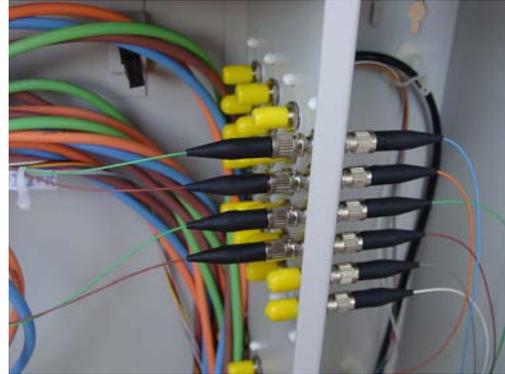
- ▶ Highway 22
- ▶ Lancaster Drive
- ▶ Commercial Street
- ▶ Kuebler/Cordon Road
- ▶ Salem Parkway
- ▶ Interstate 5

### Associated Market Packages

- ▶ ATMS6 Traffic Information Dissemination
- ▶ EM10 Disaster Traveler Information

## COMMUNICATIONS

The communication system provides the backbone for deployment of projects in the other five program areas by providing a network for exchanging information to and from field devices and stakeholder agencies. For the most part, the communication network will be deployed on a project-by-project basis throughout the next 20 years to support the ITS Plan as needed.



<b>0-5 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Communication Network	Expand the communication network to support additional field devices and connect operations centers to the regional communications network as needed. The following corridors support 0-5 year projects: <ul style="list-style-type: none"> <li>▶ Highway 22</li> <li>▶ Lancaster Drive</li> <li>▶ Commercial Street</li> <li>▶ Kuebler Blvd/Cordon Rd</li> <li>▶ Interstate 5</li> </ul>

<b>6-10 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Communication Network	Expand the communication network to support additional field devices and connect operations centers to the regional communications network as needed. The following corridors support 6-10 year projects: <ul style="list-style-type: none"> <li>▶ North River Road</li> <li>▶ State Street</li> <li>▶ Portland Road</li> <li>▶ Salem Parkway</li> </ul>
Communications to Isolated Signalized Intersections	This project will provide communications to all signalized intersections in the metropolitan area that are currently isolated from the central signal system computer.

**11-20 Year Plan Projects**

<b>Name</b>	<b>Description</b>
Communication Network	Expand the communication network to support additional field devices and connect operations centers to the regional communications network as needed. The following corridors support 11-20 year corridor projects: <ul style="list-style-type: none"><li>▶ Chemewa Road</li><li>▶ Silverton Road</li><li>▶ Market Street</li><li>▶ State Street</li></ul>

## PUBLIC TRANSPORTATION SERVICES



Public transportation services technologies address two major aspects of transit operations: (1) transit agency operations and management and (2) transit traveler information systems. The projects in this program area are intended to enhance the service of Cherriots fixed route service and other demand-responsive paratransit

services that serve the Salem-Keizer area and to improve the availability of real-time transit traveler information.

<b>0-5 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Paratransit Mobile Data Devices	This project will deploy mobile data devices that will provide the capability to monitor fuel usage, mileage, passengers, and trips. This project will also include AVL on paratransit vehicles for enhanced dispatch.
Automated Vehicle Location (AVL)	Install an automated vehicle location (AVL) system on the Cherriots fleet and install a computer aided dispatch (CAD) system at the Cherriots dispatch center. Integrate the CAD system with the AVL system so that dispatchers may track the fleet in real-time and monitor on-time performance.
Real-Time Transit Arrival Information	Deploy real-time dynamic message signs at key locations such as transit centers and bus stops where multiple routes pass through.
Transit Signal Priority	Install transit signal priority equipment and software at key intersections on transit routes and on transit vehicles
Maintenance Management System	This system will support electronic tracking of equipment inventory, and automatic scheduling of transit maintenance.
Transit Management and Maintenance Center Integration	Project would provide communications between the transit management center in downtown Salem and the maintenance management center on Del Webb Avenue.

### 6-10 Year Plan Projects

<b>Name</b>	<b>Description</b>
Transit Computer Aided Dispatch (CAD) Integration Project	This project will integrate the various CAD systems used today by transit providers in the Salem-Keizer metropolitan area.
Real-Time Customer Information Displays	Deploy real-time dynamic message signs at key locations such as transit centers and bus stops where multiple routes pass through.
Transit Security System	Cherriots has two new transit centers planned for the future; one in Keizer and one in South Salem. This project will provide security camera images at both sites and communications infrastructure for remote monitoring of the images.
Transit Signal Priority	Install transit signal priority equipment and software at key intersections on transit routes and on transit vehicles

## TRANSIT SIGNAL PRIORITY

Page 1 of 2

HIGH PRIORITY PROJECT: SK-PT-03

### Purpose

To improve transit travel time reliability on corridors with traffic signals



### Existing Problems

- ▶ Corridors experience changing levels of congestion that affects bus travel arrival time reliability
- ▶ Transit vehicles may not fully benefit from coordinated signal corridors because they service bus stops between intersections

### Stakeholders

- Primary:
- ▶ Cherriots
  - ▶ City of Salem
  - ▶ ODOT
  - ▶ City of Keizer
  - ▶ Marion County

### Description

The project will include the installation of transit priority emitters on select coaches and traffic signal controller software upgrades along the selected corridors to support transit signal priority. The first phase will include the High Priority Transportation Corridor (Broadway/River Road). Future phases of this project will expand transit signal priority capabilities to other corridors in the region that have been selected based on levels of current traffic congestion and transit ridership.

### Project Dependencies

This project depends on the installation of transit detectors on the transit fleet and traffic signal software that supports transit signal priority.

### Relevant ITS Standards

- ▶ IEEE 1455 – 1999
- ▶ ITE TM 1.03, TM 2.01
- ▶ NTCIP 1202, 1206, 1209, 1211, 1401, 1405

## TRANSIT SIGNAL PRIORITY

SK-PT-03

Page 2 of 2

### Communication Requirements

A communications interface will be needed between each transit vehicle and each traffic signal along a transit priority corridor. Potential interfaces include preemption equipment used by emergency response, loops embedded in the pavement that detect bus presence, radio frequency tags and readers or a central management system that requests priority based on vehicle locations.

### Goals Supported

- ▶ Enhance management of transportation system to improve maintenance and operations efficiencies
- ▶ Improve the reliability of the transportation system

### Cost

\$130,000	Project Deployment
\$1,000	Annual Ops & Maintenance

### Benefits

- ▶ Reduced transit delay.
- ▶ Improved schedule adherence and reliability.
- ▶ Reduced operational costs.
- ▶ Enhanced transit service.
- ▶ Increased ridership

### Phased Plan

0 –5 Years: High Priority Transportation Corridor; Broadway/N River Road  
Lancaster Drive  
South Commercial Street

6-10 Years: Portland Road  
12<sup>th</sup>/13<sup>th</sup> Couplet  
Market Street  
Liberty/Commercial Couplet  
Silverton Road

11-20 Years: Salem Parkway  
Wallace Road  
Center Street  
Liberty Road

### Associated Market Packages

- ▶ ATMS03 Surface Street Control

## REAL-TIME TRANSIT ARRIVAL INFORMATION

Page 1 of 2

HIGH PRIORITY PROJECT: SK-PT-05

### Purpose

To enhance the service of public transportation and provide real-time transit traveler information at transit centers and bus stops in the Salem-Keizer Metropolitan Area.



### Existing Problems

- ▶ Need to provide transit arrival/location information to travelers
- ▶ Variable transit travel times due to congestion
- ▶ Need accessible, real-time transit information

### Stakeholders

- Primary: ▶ Cherriots

### Description

This project will provide real-time transit arrival and departure information to riders via an updated Cherriots website, integration with the Regional Trip Planner, electronic message signs at selected stops, cell-phones and PDA's.

### Project Dependencies

Automated vehicle location (AVL) must be installed on the transit fleet in order to provide real-time schedule information.

### Relevant ITS Standards

- ▶ SAE J2353, J2354, J2369
- ▶ NTCIP 1401, 1403, 1404, 1405, 1406, 1407

## REAL-TIME TRANSIT ARRIVAL INFORMATION

SK-PT-05

Page 2 of 2

### Communication Requirements

Communications will be required between each real-time information display and the Cherriot's dispatch center. A wireless connection will provide the most cost-effective method of establishing communications.

Communications will be required between the transit vehicles and the transit management center to transmit vehicle location information.

### Cost

\$290,000	Project Deployment
\$38,500	Annual Ops & Maintenance

### Phased Plan

0 – 5 Years:	Deploy electronic message signs at six locations along the High Priority Transportation Corridor (Broadway/N River Road)
-----------------	--

### Goals Supported

- ▶ Improve traveler mobility
- ▶ Provide improved traveler information and access to the information
- ▶ Provide multi-modal transportation information to travelers

### Benefits

- ▶ Real-time transit information to aid riders with en-route planning
- ▶ Improved customer satisfaction

### Associated Market Packages

- ▶ APTS08: Transit Traveler Information

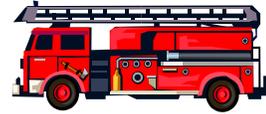
Ref. No.	Project Title	Years	5-Year Plan					10-Year Plan					20-Year Plan								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Communications</b>																					
SK-CO-01	Metropolitan Area Communications																				
SK-CO-02	Communications to Isolated Signalized Intersections																				
<b>Public Transportation Management</b>																					
SK-PT-01	Paratransit Mobile Data Devices																				
SK-PT-02	Maintenance Management System																				
SK-PT-03	Transit Signal Priority																				
SK-PT-04	Automatic Vehicle Location (AVL) System																				
SK-PT-05	Real-Time Transit Arrival Information																				
SK-PT-06	Transit Center Security																				
SK-PT-07	Transit Computer Aided Dispatch (CAD) Integration Project																				
SK-PT-08	Transit Management and Maintenance Center Integration																				

Proposed Implementation

## EMERGENCY MANAGEMENT



The main purpose of projects included in this program area is to reduce emergency response times and to integrate emergency management with transportation management.



<b>0-5 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Real-Time Transit Information to Mobile Data Terminals	Provide real-time traffic information to emergency responder's mobile data devices.
Intra-Agency Information Sharing	This project will provide a two-way information flow (video images from the roadway cameras, related weather and construction information) between traffic management, 911 center, police, fire and Emergency Operations Centers.
911 Computer Aided Dispatch Interface	This project will provide a direct interface with the 911 Computer Aided Dispatch systems to automatically post traffic-related incidents and to provide traffic congestion and video information.
Traffic Signal Preemption by Vehicle ID	Implement preemption equipment to provide traffic signal preemption by specific vehicle ID.

<b>6-10 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Hazardous Materials Management	This project will detect and classify security sensitive hazardous material information in trains and commercial vehicles traveling through the Salem-Keizer metropolitan area to coordinate emergency response availability.
Responder Video System	Provide emergency/incident responders with video cell phones and develop a link to the TOC to link video to other agencies.

<b>11-20 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Dynamic Routing of Emergency Vehicles	This project will automatically calculate the ideal route between two points based on real-time roadway congestion, construction, and incident information.

## INTRA-AGENCY INFORMATION SHARING

Page 1 of 2

HIGH PRIORITY PROJECT: SK-EM-02

### Purpose

To enhance communications and coordination between traffic management and emergency management agencies



### Existing Problems

- ▶ Need for improved coordination and communication between traffic agencies and emergency management agencies
- ▶ Lack of transportation related information (incident status, construction status, etc.) available to emergency responders
- ▶ Continuing need to maintain and/or reduce emergency response times



### Stakeholders

- Primary:
- ▶ ODOT
  - ▶ Cities of Salem and Keizer
  - ▶ Marion and Polk Counties
  - ▶ Emergency Management

### Description

This project will provide a two-way information flow (video images from the roadway cameras, related congestion, incident, weather and construction information) between traffic management, 911 center, police, fire and Emergency Operations Centers. This project will support dynamically routing emergency vehicles based on real-time transportation conditions.

### Project Dependencies

New software enhancements will be required at the 911 center, emergency management center and traffic management centers to integrate transportation related information (congestion, incidents, work zones, etc) with the computer aided dispatch (CAD) software. Dynamic emergency vehicle routing depends on the availability of vehicle location information.

### Relevant ITS Standards

- ▶ NTCIP 1201, 1209
- ▶ ITE TM 1.03, TM 2.01

## INTRA-AGENCY INFORMATION SHARING

SK-EM-02

Page 2 of 2

### Communication Requirements

High speed center-to-center communications are required between emergency management centers and transportation management centers to support the exchange of real time transportation and emergency related information.

### Goals Supported

- ▶ Improve the safety, efficiency, and reliability of the transportation system.
- ▶ Improve traveler mobility
- ▶ Share infrastructure and operations resources between local and regional agencies

### Cost

\$600,000	Project Deployment
\$5,600	Annual Ops & Maintenance

### Benefits

- ▶ Reduced emergency response times
- ▶ More efficient allocation of emergency response resources
- ▶ Improved real-time traffic conditions
- ▶ Enhance interagency communication and coordination

### Phased Plan

0 – 5 Years: Project Deployment

### Associated Market Packages

- ▶ EM02 Emergency Routing
- ▶ ATMS06 Traffic Information Dissemination

## ARCHIVED DATA MANAGEMENT

Collecting, archiving, and managing various types of transportation-related data is an integral part of this ITS Plan. Prior to deploying a regional data management system, field devices and systems to collect data must be deployed. Therefore, the information management project is included in the 6-10 year plan following device deployment.

The screenshot shown below is a sample of the PORTAL data archiving system run by Portland State University (<http://portal.its.pdx.edu>), which archives data for the Portland metropolitan area. This provides a useful example of collecting system data and providing an on-line user interface.

**PORTAL: Portland Transportation Archive Listing**

<p><b>Info</b></p> <p><b>Welcome</b></p> <p><a href="#">People</a></p> <p><a href="#">Project Summary</a></p> <p><a href="#">Our Server</a></p> <p><a href="#">Links</a></p> <p><a href="#">Login</a></p> <p><a href="#">Request Account</a></p> <p><a href="#">Comments</a></p>	<p>Welcome to the Portland Transportation Archive Listing (PORTAL). The purpose of this project is to implement the U.S. National ITS Architecture's Archived Data User Service for the Portland metropolitan region. This system is being developed at Portland State University by students and faculty in the Intelligent Transportation Systems Laboratory under the direction of Dr. Robert Bertini. We are working in close cooperation with the Oregon Department of Transportation, Metro, the City of Portland, TriMet and other regional partners. This work is supported by the National Science Foundation.*</p> <p>We welcome your participation in our project. The current PORTAL system archives the Portland metropolitan region's freeway loop detector data at its most detailed level and also archives area weather data. We plan to expand the capabilities of our system and to include multimodal data sources from both Oregon and Washington. We provide access to the system by password. To request access to the system click on the Request Account link to the left.</p> <p style="text-align: center;"><a href="#">Portland State University - ITS Lab - Oregon DOT - National Science Foundation</a></p> <p style="font-size: small; margin-top: 10px;">*This material is based upon work supported by the National Science Foundation under Grant No. 0236667. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.</p>
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<b>6-10 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Regional Data Management System	Create a data management system for archiving data, collecting real-time data, and accessing data. The system should have geospatial capabilities and data should include at a minimum traffic counts, speed data, crashes (vehicles, pedestrians, and bicycles), incident information, and transit information.

## MAINTENANCE AND CONSTRUCTION MANAGEMENT

These projects are aimed at improving the safety of motorists and workers in construction zones, improving the efficiency of construction management and control, enhancing construction scheduling, and improving maintenance efficiency.



<b>0-5 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Work Zone Management and Safety Monitoring Systems	This project will provide portable cameras, variable speed limit signs and speed detection devices to monitor and control traffic conditions in construction work zones. It will also deploy technology within work zones that will reduce motor vehicle conflicts with workers by warning workers of vehicles entering work zones.
Maintenance and Construction, Coordination System	Develop an information management system that contains details about region-wide maintenance and construction activities by public agencies, utility companies, and private contractors, as well as special event information including location and event duration.
Construction Traveler Information	This project will provide travel time information through work zones using electronic message signs, the Internet, and highway advisory radio (HAR).

<b>6-10 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Roadway Weather Information Systems (RWIS)	Weather stations with roadway temperature, wind speed, humidity, and precipitation sensors will be installed at the following locations:

<b>11-20 Year Plan Projects</b>	
<b>Name</b>	<b>Description</b>
Maintenance Vehicle Tracking	This project will implement AVL/GPS for tracking maintenance vehicles to enhance dispatch of personnel/equipment to daily events and for management of the transportation network during winter storms
Automated Maintenance Logging System	Log maintenance requirements through an automated system to record items that require maintenance as personnel identify them daily.

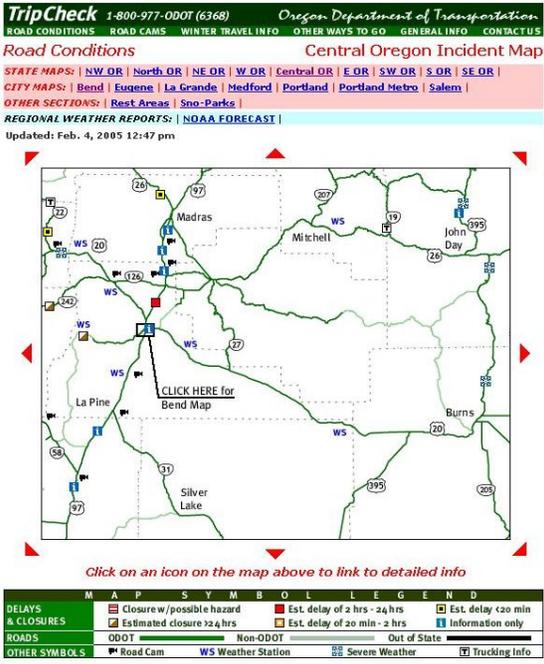
# MAINTENANCE AND CONSTRUCTION COORDINATION SYSTEM

HIGH PRIORITY PROJECT: SK-MC-02

**Purpose**

The purpose of this project is to improve traffic mobility throughout the State of Oregon by providing a central source for all current and planned maintenance and construction activity.

- Existing Problems**
- ▶ Lack of centralized source for current and planned maintenance and construction activity information
  - ▶ Many construction projects restrict heavy, wide or tall commercial vehicles resulting in detours for commercial vehicles
  - ▶ No ability to identify active construction projects on potential detour routes



- Stakeholders**
- Primary:** ▶ ODOT
- Secondary:** ▶ Marion County  
 ▶ City of Salem  
 ▶ City of Keizer  
 ▶ Utilities  
 ▶ Trucking Industry  
 ▶ Other Statewide public agencies and utilities.

**Description**

Develop a construction activity information site that contains details about region-wide/statewide maintenance and construction activities by public agencies and utility companies. The system will include active construction, planned construction, weight and width restrictions, travel times in work zones and other information necessary to manage traffic mobility in Oregon. This central database of construction and maintenance activity will provide transportation managers with the ability to monitor construction activity and schedules and ensure there is always an east-west and north-south route into and out of the State of Oregon for goods movement.

**Communication Requirements**

Interface to make entries to this system will be provided through a standard web browser.

**MAINTENANCE AND CONSTRUCTION COORDINATION SYSTEM**

SK-MC-02

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<b>Project Dependencies</b>
None

<b>Goals Supported</b>
<ul style="list-style-type: none"> <li>▶ Improve the safety and efficiency of our transportation system</li> <li>▶ Provide improved traveler information and access to the information</li> <li>▶ Integrate regional ITS projects with local and regional partners</li> <li>▶ Monitor transportation performance measures</li> </ul>

<b>Benefits</b>
<ul style="list-style-type: none"> <li>▶ Improved traffic mobility</li> <li>▶ Improved freight mobility</li> <li>▶ Information sharing between agencies</li> <li>▶ More efficient allocation of maintenance resources</li> <li>▶ Real-time information to travelers</li> <li>▶ Reduced delay</li> </ul>

<b>Relevant ITS Standards</b>
<ul style="list-style-type: none"> <li>▶ ASTM E2259-03</li> <li>▶ SAEJ2353, J2354, J2529</li> <li>▶ ITE TM1.03, TM2.01</li> </ul>

<b>Associated Market Packages</b>
<ul style="list-style-type: none"> <li>▶ ATIS02: Interactive Traveler Information</li> <li>▶ MC07: Roadway Maintenance and Construction</li> <li>▶ MC10: Maintenance and Construction Activity Coordination</li> </ul>

<b>Phased Plan</b>
0 – 5 Years:    Project Deployment

<b>Cost</b>
\$100,000    Project Deployment
\$1,000      Annual Ops & Maintenance

Ref. No.	Project Title	Years	5-Year Plan					10-Year Plan					20-Year Plan									
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Emergency Management</b>																						
SK-EM-01	Real-Time Transit Information to mobile data terminals																					
SK-EM-02	Intra-Agency Information Sharing																					
SK-EM-03	911 Computer Aided Dispatch Interface																					
SK-EM-04	Hazardous Materials Management																					
SK-EM-05	Responder Video System																					
SK-EM-06	Dynamic Routing of Emergency Vehicles																					
SK-EM-07	Traffic Signal Preemption by Vehicle ID																					
<b>Archived Data Management</b>																						
SK-AD-01	Archived Data Management System																					
<b>Maintenance and Construction Management</b>																						
SK-MC-01	Maintenance and Construction Coordination System																					
SK-MC-02	Work Zone Management and Safety Monitoring Systems																					
SK-MC-03	Construction Traveler Information																					
SK-MC-04	Roadway Weather Information Systems (RWIS)																					
SK-MC-05	Maintenance Vehicle Tracking																					
SK-MC-06	Automated Maintenance Logging System																					

 Proposed Implementation