



Chapter 2: USER NEEDS ASSESSMENT

2.1 INTRODUCTION

This chapter includes an overview of transportation system needs in the Eugene-Springfield metropolitan area identified by project stakeholders through a series of in-person interviews with key stakeholders and a workshop-style meeting with both key and expanded stakeholders. This chapter also provides a summary of information obtained from in-person interviews and an expanded stakeholder meeting including an analysis of strengths, weaknesses, opportunities and challenges. The user needs assessment serves the purpose of determining what current and future transportation needs in the Eugene-Springfield metropolitan area should be addressed in the evaluation of potential ITS projects.

The Stakeholders and System Users section contains details of the in-person interviews and the expanded stakeholder meeting. In the Summary of User Needs section, the transportation user needs identified by the stakeholders are described by the following categories:



- Travel and Traffic Management
- Public Transportation Management
- Emergency Management
- Information Management
- Maintenance and Construction Management
- General Findings

2.2 STAKEHOLDERS AND SYSTEM USERS

A coalition of stakeholders was established to gather input, build consensus, and ensure the success of the *Regional ITS Operations & Implementation Plan for the Eugene-Springfield Metropolitan Area*. Key stakeholders were interviewed in person to obtain information on numerous subjects. A copy of the interview questionnaire is included in Appendix H. After the completion of the interview process, a meeting was held with both key and expanded stakeholders to discuss the transportation needs identified in the interviews, verify these needs, and to determine any additional needs.

2.2.1 Personal Interviews

Personal interviews were conducted with key stakeholders who have decision-making authority in matters regarding ITS implementation and required institutional coordination.

The interviews were designed to identify needs, problems, institutional issues, and obstacles to ITS implementation. Eleven interviews, each lasting approximately one hour, were conducted and Appendix H contains the interview notes. One or more persons from the following agencies were interviewed:

- Oregon Department of Transportation (ODOT): ITS Unit and Region 2
- Oregon Department of Transportation (ODOT): District 5
- City of Eugene: Public Works
- City of Springfield: Public Works
- Lane County: Public Works
- Lane Council of Governments (LCOG)
- Public Agency Network (PAN)
- Lane Transit District (LTD)
- Central Lane Communications
- Oregon State Police
- University of Oregon (UO): Athletic Department



2.2.2 Expanded Stakeholder Meeting

An expanded stakeholder meeting was held with key and expanded stakeholders on June 25, 2003 to discuss user needs related to ITS for the Eugene-Springfield metropolitan area transportation system. Discussions were held regarding the user needs documented during the stakeholder interviews and additional needs were identified. The purpose of the meeting was to reach consensus from all stakeholders regarding the regional transportation user needs.

A short presentation was given at the beginning of the meeting to provide project background information, an overview of the plan process, general ITS uses, and a summary of the stakeholder interviews. Three poster sessions were set up for participants to provide input regarding the following topic areas:



- Travel and Traffic Management/Emergency Management
- Traveler Information/Information Management
- Public Transportation Management/Maintenance and Construction Management

A representative from each poster session reported back to all participants at the end of the meeting and additional group discussion was held to finalize the user needs. Appendix I contains the meeting invitation, presentations, handout, and meeting minutes.

2.3 PROJECT MISSION, GOALS AND OBJECTIVES

The key project stakeholders developed a mission statement to guide the deployment of intelligent transportation systems in the Eugene-Springfield metropolitan area. This mission statement is accompanied by a set of goals and objectives aimed at guiding the development and ultimate deployment of intelligent transportation system projects.

2.3.1 Mission Statement

The Eugene-Springfield area strives to enhance the safety and efficiency of multi-modal travel through the use of advanced technologies, transportation management techniques, agency coordination, and partnerships.

Goals

1) Build consensus and improve coordination among project stakeholders.

Objectives

- Build consensus among the Steering Committee members.
- Build a coalition among all ITS stakeholders in the Eugene-Springfield metropolitan area.
- Share resources between local and regional agencies.
- Coordinate and integrate projects with other agencies within and outside of the Eugene-Springfield metropolitan area.
- Promote public and private partnerships for ITS deployment, operations, and maintenance.
- Develop a concept of operations with a seamless interface between agencies.

2) Improve and maintain a safe transportation system.

Objectives

- Reduce frequency, duration, and effects of incidents.
- Reduce emergency response times.
- Reduce recurrent congestion.
- Coordinate incident response with other local and regional agencies.

3) Improve the efficiency of the transportation system.

Objectives

- Improve travel time for vehicles, including transit vehicles.
- Reduce travel time variability.
- Reduce fuel consumption and environmental impacts.
- Improve transit service reliability.
- Improve maintenance and operations efficiencies.

4) Deploy functional and cost efficient ITS infrastructure.

Objectives

- Deploy systems that fit in with future improvements.
- Deploy systems with a high benefit-to-cost ratio.
- Deploy systems that maximize the use of existing infrastructure.
- Deploy systems with minimal use of maintenance and operational support.
- Integrate deployments with other local and regional projects.

5) Develop a commitment to ITS deployment in the Eugene-Springfield area.

Objectives

- Create a regional architecture that complements the statewide architecture.
- Develop a phased implementation process based on a prioritized project list.
- Identify unique funding in addition to utilizing traditional funding sources.
- Develop a process that ensures program continuation.
- Integrate the ITS Plan with the Central Lane Transportation Management Area (TMA) regional transportation plan and other transportation plans in the region.

2.4 SUMMARY OF USER NEEDS

This section includes paraphrased statements regarding user needs taken from the personal interviews or the expanded stakeholder meeting. The needs are divided into the following categories of interest: travel and traffic management, public transportation management, emergency management, information management, maintenance and construction management, and general needs. Some user needs may fall under multiple categories. Any similar user need statements are likely the result of comments from separate stakeholders. Before determining applicable ITS projects for deployment in the Eugene-Springfield metropolitan area, the user needs outlined in this section will be mapped to the national ITS architecture user services.

Additionally, ODOT District 5 has a list they compiled that includes existing deficiencies within the District and associated ITS projects to address these deficiencies. Appendix J contains this list.



2.4.1 Travel and Traffic Management

Traffic operations and management, incident management, parking management, special events, communications, and traveler information describe travel and traffic management user needs and deficiencies.

2.4.1.1 Traffic Operations and Management

- Need to develop some type of Traffic Operations Center (TOC) to aid with traffic operation tasks.
- Need a distributed/virtual TOC.
- Need to investigate utilizing the existing Region 2 Traffic Operations Center in Salem.
- Need to determine control responsibilities amongst agencies.
- Need to utilize existing software systems.
- Need real-time information about traffic congestion.
- Need real-time traffic congestion monitoring.
- Need to manage congestion better by using current data to quickly respond to problem areas.
- Need to address traffic congestion at:
 - I-5/Coburg northbound off-ramp in the AM peak.
 - I-5/Beltline Highway
 - I-5/I-105
 - I-5/Glenwood Interchange
 - Southbound traffic at I-5/30th Avenue interchange related to Lane Community College (MP 189)
 - Beltline Highway/Delta Highway interchange
 - 28th Street/Main Street railroad crossing
- Need congestion warnings on Beltline Highway because of rear-end crashes on westbound Beltline Highway, particularly at the ORE 99 interchange.



- Need an advance queue warning system at 6th Avenue/7th Avenue/Jefferson Street.
- Need controlled access on freeway ramps and criteria for applying control techniques, particularly on I-5 and Beltline Highway.
- Need to consider automatic implementation of alternative signal timing plans.
- Need to implement responsive signal timing or coordinated signal timing where appropriate.
- Need ability to make traffic signal progression changes when needed.
- Need to integrate City of Coburg and Lane County traffic signals.
- Need bicycle detection.
- Need cameras for surveillance and real-time visual information for numerous reasons, including the ability to quickly respond to citizen complaints.



Source for Aerial (1999): ODOT

- Need camera surveillance at:
 - I-5 interchanges
 - Beltline Highway interchanges (including the River Road interchange)
 - Delta Highway interchanges
- Need more bandwidth for cameras.
- Need to share the City of Eugene's camera images from the Ferry Street Bridge with other agencies.
- Need to bring video detection images back to transportation agency offices and to share these images with other agencies.
- Need agency access and media link to camera images.
- Need to monitor heavy truck traffic on I-5 bridges and other routes with heavy trucks.
- Need an automated system for collection of average daily traffic volumes, occupancy, and speed data. The output must be easy to retrieve and use and also have real-time capabilities.
- Need to address hazardous curves from Glenwood interchange to Willamette River (MP 191 to MP 192).
- Need to monitor heavy trucks that take the I-5 curves too fast.
- Need real-time weather related information.
- Need to address black ice on bridges.
- Need to monitor icy conditions on the I-5 curves.

2.4.1.2 Incident Management

- Need to clear incidents faster.
- Need better traffic management resources when vehicles are diverted from the freeway.
- Need better ability to coordinate resources between ODOT and local jurisdictions during incidents.
- Need access to a central information system via laptop for incident responders en route.
- Need real-time visual information to verify incidents.



Source: ODOT Region 2 Incident Response

- Need the capabilities to monitor and control video information.
- Need to track ODOT incident response vehicles in real-time to know when they arrive at an incident and when they leave.
- Need to explore using a GIS program for incident response plans similar to the test project EWEB has developed for responding to hazardous material spills in the McKenzie River watershed.
- Need to identify alternate routes for major incidents for corridors other than I-5, since those have already been developed. (i.e. Q St detour for OR 126, Camp Creek Road detour for OR 126).
- Need congestion information on alternate routes prior to diverting traffic to those routes.



- Need to inform drivers about alternate routes.
- Need electronic signage for evacuation routes due to HAZMAT incidents.
- Need to enhance alternate routes used for incident diversions with fixed route guide signs or dynamic message signs.
- Need portable equipment for diversion routes.
- Need more portable dynamic message signs for use near major incidents.
- Need information in advance of incidents.
- Need advance information regarding frequent closures on Hwy 58 due to incidents.
- Need public/private partnerships to share incident information (i.e. on-star media).
- Need to address the recurrent backlog of traffic held at incidents with no information.
- Need to monitor critical infrastructure.
- Need to replace incident response vehicles frequently due to high mileage.
- Need a two-way link to commercial vehicle operators:
 - ODOT, etc... to provide incident information to commercial vehicle operators.
 - Commercial vehicle operators to provide ODOT, etc... with incident information.

2.4.1.3 Parking Management

- Need a parking management system at Lane Community College (LCC).
- Need a parking management system at the University of Oregon (UO) near Autzen stadium.



2.4.1.4 Special Events



- Need special event traffic management that utilizes camera surveillance.
- Need better radio and cellular coverage near Lane County Fair.
- Need to evaluate the use of special signal timing plans for special events.
- Need real-time transit passenger information at special event locations.
- Need dynamic lane use control on Centennial Boulevard for UO football games.
- Need communications and information connection to Stadium Operations and Security (SOS) room (i.e. link to QuicNet at City of Eugene, link to camera images).
- Need to plan for the proposed Oregon Special Events Arena, which will generate approximately 5,000 extra trips per event.



2.4.1.5 Communications

- Need to consider utilizing/leasing the existing shared fiber network managed by PAN.
- Need extended radio coverage due to “dead” spots throughout the region, such as the radio “dead” spot on I-5 at the McKenzie River.
- Need to install conduit for future use as a part of new construction projects.
- Need remote access to transportation systems (i.e. pull up video detection and CCTV camera images from a laptop).
- Need communications to the City of Coburg.
- Need to build on the existing PAN network and establish communication paths for transportation related video and data between the regional transportation agencies: ODOT District 5, City of Eugene Public Works, City of Springfield Public Works, Lane County Public Works, City of Coburg, LCOG, University of Oregon, Central Lane 911, emergency management agencies, etc...

2.4.1.6 Traveler Information

- Need a method for disseminating more information to travelers than can be provided on a dynamic message sign.
- Need a single source for information.
- Need to integrate transportation related information in Eugene-Springfield with the 511 traveler information system.
- Need a link within the 511 traveler information system for drivers to report hazards.
- Need to display traveler information on ODOT’s TripCheck web site.
- Need to link the TripCheck web site with all transportation modes, including carpool, vanpool, and paratransit.
- Need to explore private/public partnerships with local television stations to broadcast camera images.
- Need to explore private/public partnerships with all media, including cable television.
- Need an automated system to alert media of incidents, weather conditions, etc...
- Need to alert motorists of problem areas.
- Need to provide users with travel time information.
- Need fixed dynamic message signs at critical decision-making points on area freeways.
- Need information displays at rest areas in advance of the metropolitan area: Milepost 206 (north of Coburg) and MP 177 (south of metro area).
- Need real-time roadside information along Beltline Highway.
- Need a way to divert traffic prior to a congested corridor due to accidents/construction.
- Need a method for alerting drivers of icy roadway conditions.
- Need weather information at rest areas, for the I-5 corridor (for long distance trips), and on ORE 58 and US 97 passes.
- Need real-time transit information since increasing congestion causes problems with transit schedule adherence.
- Need transit trip planning project implementation.
- Provide information relevant to the Eugene and Portland Airports such as arrival/departure information, parking availability, and road conditions to the airport.
- Need to provide commercial vehicle operators with traffic information (potential use of “Qualcom” system).



2.4.2 Public Transportation Management

Lane Transit District already has plans for numerous ITS projects to address transit user needs. Additional transit needs that have been identified include:



- Need to encourage LTD ridership as the population grows.
- Need expanded radio and cellular coverage.
- Need expanded radio and cellular coverage near the County Fair.
- Need queue jumps for transit vehicles at appropriate locations.
- Need more reliable transit travel times.
- Need ability to transmit real-time automated vehicle location (AVL) data to a regional traffic center for transit signal priority.
- Once LTD's planned automated vehicle location (AVL) system is in place:
 - Need transit boarding information by route segment.
 - Need automated ADA and stop announcements.
 - Need route adherence notification for drivers.
- Need real-time information displays at key transit stations and stops.
- Need transit travel time averages/predictions in comparison to personal vehicle travel time averages.
- Need bus arrival information.
- Need passenger notification of bus choice at routes with multiple stops.
- Need improved information distribution via the LTD or ODOT transit web site. Current web site contains mostly static information.
- Need ability to better manage and set bus schedules. Historical data including travel times and passenger counts would all be useful.
- Need to provide more real-time information to the transit user.
- Need to coordinate distribution of transit information with the ODOT Transit Trip Planning project.



- Need portable real-time transit information for transit stops during special events.
- Need real-time transit tracking information from the Laidlaw buses, which are used during special events.
- Need to coordinate transit going to the County Fair with traffic managers.
- Need traffic congestion information near the County Fair.
- Need better transit routes in and out of the County Fair and possibly a dedicated transit lane.
- Need coordination of time transfers from the bus rapid transit (BRT) routes to the feeder routes and vice versa once the BRT is implemented.
- Need to use transit vehicles as traffic probes to collect speed data.
- Need transit coordination with school districts.
- Need park and ride lots on the outskirts of the metropolitan area: Coburg, Goshen, West Eugene.

2.4.3 Emergency Management

Emergency management user needs include both communications and emergency management operational needs.

2.4.3.1 Communications

- Need a common frequency or radio channel that can be shared by emergency management agencies, emergency operations centers, incident response teams, and transit agencies.



2.4.3.2 Emergency Management Operations

- Need interoperability.
- ODOT needs updates from emergency management responders: location, type of incident, incident duration.
- Need to estimate incident duration quickly.
- Need video images at 911 centers and dispatch centers to aid with dispatch.
- Emergency services need railroad crossing information (i.e. 28th Street/Main Street).
- Need to integrate transportation information with mobile data terminals housed in emergency response vehicles.
 - Need mobile data devices in police vehicles and Eugene-Springfield fire/medic units.
 - Need vehicle fleet tracking capabilities for emergency vehicles at the dispatch center.
 - Need to place cameras at high accident locations (i.e. intersections, major arterials).
 - Need portable incident/detour signs to replace flares.



2.4.4 Information Management

In the area of information management, the following user needs were identified in regards to handling the numerous amounts of existing data:



- Need an automated way to share data and information.
- Need a data warehouse.
- Need to share information in a GIS format via a message broker.
- Need statewide or regional GIS standards for ease of use and easy accessibility.
- Need to use standard, non-proprietary software.
- Need a concept for systems interface between agencies (message broker concept, standards based, open-architecture).
- Need an information system geared toward operations instead of just analysis.
- Need standard formats and common code-naming system for incidents (i.e. ORE 126 vs. Hwy. 126).
- Need to link information sharing through regional ATIS web site. (ATIS is currently looking at message broker technology).
- Need to determine how to integrate automatic traffic recorders and count stations into Transportation Operations Center (TOC) software.
- From a planning perspective, need data from controllers, current count information (in 15-minute intervals), vehicle classification information, current speed data, and transit passenger count data (boardings by stop).

- Need data for system performance monitoring and checking reliability.
- Need frequent sampling (traffic counts, speed, density) by time of day and day of week.
- Need link travel time data.
- Need to track origin-destination (O-D) information for personal trips, potentially at rest areas.
- Need transit passenger counts by route and location.
- Need to record incidents using GPS data.

2.4.5 Maintenance and Construction Management

User needs pertaining to maintenance and construction management include the following:

- Need to deploy automated systems that do not require extensive maintenance and operations since resources are scarce.
- Need to allow for future system expansion (i.e. conduit for future use, 48-fiber instead of 24, etc...).
- Need standardization of any new devices, including communications protocol, to ensure interoperability, ease of training/maintenance, and stockpiles.
- Need sufficient access (i.e. vehicle pullout) for maintenance personnel at roadside devices.
- Need to track maintenance vehicles in real-time.
- Need weather information, particularly when it is icy in the south hills or foggy in Coburg.
- Need ice sensors to determine icy patches of roadway, particularly on the bridges.
- Need funding for maintenance and operations.
- Need to reduce crashes in work zones.
- Need vehicle following distance information in work zones.
- Need variable speed limits in work zones.
- Need speed monitoring in work zones.
- Need construction traffic control for reconstruction of I-5 bridges.
- Need multiple agency review/coordination prior to and during construction, such as identifying allowable work hours and lane closure times.
- Need more coordination with utility companies regarding their construction activities.



2.4.6 General Findings

The following general user needs were identified:



- Need funding and additional resources.
- Need tools that show ITS benefits to help convince others in the Eugene-Springfield metropolitan area that ITS can be beneficial.
- Need to identify who will maintain the ITS Plan once it is completed.
- Deployment of new technology should be compatible throughout the region.
- Need more promotion of ITS benefits.
- Need to foster interagency partnerships and need willingness from all agencies in the region to share resources.

2.5 STRENGTHS, WEAKNESSES, OPPORTUNITIES AND CHALLENGES

Strengths, weaknesses, opportunities and challenges that may affect the deployment of ITS technologies were identified during in-person interviews with key stakeholders and the expanded stakeholder meeting. For each item a suggestion has been made for how a corresponding strength, weakness, opportunity or challenge could be capitalized on or addressed as shown in Tables 2-1 through 2-4, respectively.

Table 2-1. Strengths

Strength	Suggestion(s) on How to Capitalize on Strength
<ul style="list-style-type: none"> ■ Compatible central signal systems at City of Eugene and City of Springfield. 	<ul style="list-style-type: none"> ■ Promote interagency coordination and share knowledge of system operation and maintenance. Provides opportunities for cross-jurisdictional coordination.
<ul style="list-style-type: none"> ■ Conduit included in new construction (Eugene). 	<ul style="list-style-type: none"> ■ Continue installation of conduit with new construction projects. Develop infrastructure standards to ensure new conduit installed is “fiber-ready”.
<ul style="list-style-type: none"> ■ Extensive traffic signal interconnect in Eugene and Springfield. 	<ul style="list-style-type: none"> ■ Utilize existing conduit to accelerate deployment of ITS field equipment.
<ul style="list-style-type: none"> ■ Extensive regional fiber network that can be leased. 	<ul style="list-style-type: none"> ■ Coordinate installation of new communications infrastructure with the Public Agency Network and consider access points to the regional fiber network for ITS related communications.
<ul style="list-style-type: none"> ■ Monthly traffic coordination meeting. 	<ul style="list-style-type: none"> ■ Use this meeting to coordinate ITS projects with other transportation improvements and to educate others about the benefits of ITS.

Table 2-2. Weaknesses

Weakness	Suggested Improvement Plan
<ul style="list-style-type: none"> ■ Lack of resources (time and staff) (Springfield). ■ Lack of staff resources due to recent retirements (Eugene). ■ Information sharing is sometimes difficult. 	<ul style="list-style-type: none"> ■ Deploy ITS technologies that are easy to operate and maintain. Deploy equipment that meets ITS Standards. ■ Deploy ITS technologies that are easy to operate and maintain. Deploy equipment that meets ITS Standards. ■ Establish interagency transportation network for information sharing. Consider a common GIS mapping system and a data warehouse for storing data collected from ITS field devices.

Table 2-3. Challenges

Challenge	Suggested Preventative Measures
<ul style="list-style-type: none"> ■ Consumer acceptance of technologies including privacy issues with video (Springfield). ■ Updating the ITS plan after it is developed. ■ Lack of funding- capital and maintenance & operations. ■ Capacity constraints at river crossings. 	<ul style="list-style-type: none"> ■ Clearly demonstrate the benefits of ITS in an outreach and education program. ■ Transition the group of key stakeholders from this ITS plan development into a formal ITS implementation group to initiate the steps outlined in this plan, secure funding, coordinate and plan new ITS projects, maintain the Architecture, monitor/report progress and promote ITS. This group should meet regularly. ■ Identify other non-traditional funding sources such as grants from non-profit agencies. ■ Utilize ITS technologies to manage traffic during incidents and provide alternate routes.

Table 2-4. Opportunities

Opportunity	Suggested Action Plan
<ul style="list-style-type: none"> ■ LTD's BRT System. ■ LTD and Central Lane Communications are planning expansions to their existing radio systems. ■ New ODOT facility in Glenwood. ■ I-5/Beltline improvements. ■ West Eugene Parkway. ■ Homeland security funding. ■ Region 2 Traffic Operations Center in Salem. ■ Statewide 511 traveler information system. ■ ODOT's TripCheck web site. 	<ul style="list-style-type: none"> ■ Utilize this high profile project to promote ITS in the Eugene-Springfield area. Collect before-after data to demonstrate the benefits. ■ Consider opportunities to share radio towers and infrastructure with LTD and other agencies. ■ Consider space for communications equipment and an operations center/workstation. ■ Capitalize on this new construction project and install communications conduit and ITS equipment defined in this ITS plan. ■ Capitalize on this new construction project and install communications conduit and ITS equipment defined in this ITS plan. ■ Coordinate with emergency management personnel and look for opportunities to fund transportation security projects with homeland security dollars. ■ Consider utilizing the existing Traffic Operations Center in Salem as the central point for managing incidents and information sharing on the region's facilities. ■ Deploy ITS field devices to collect traffic congestion and incident information that can be distributed via the 511 telephone number. ■ Display camera images, incident information, construction information, etc... for the Eugene-Springfield metropolitan area on ODOT's award winning TripCheck web site.