

Chapter Two

USER NEEDS

ASSESSMENT

INTRODUCTION

This chapter includes a summary of the transportation system user needs (ITS and non-ITS) identified by project stakeholders through a series of in-person interviews, mail-out questionnaires, and a user needs workshop. The purpose of the user needs assessment is to determine what existing and future transportation needs in Clackamas County should be addressed in the evaluation of potential ITS projects.

Details of the stakeholder selection process, in-person interviews, mail-out questionnaires, and user needs workshop can be found under the Stakeholders and System Users section. The Summary of User Needs section includes a breakdown of the user needs heard from stakeholders by the following categories:

- Traffic Management
- Traveler Information
- Public Transportation
- Emergency Management and Incident Response
- Commercial Vehicle Operations
- Maintenance and Construction
- Information Management
- General Findings

STAKEHOLDERS AND SYSTEM USERS

A coalition of public and private stakeholders was established to gather input, build consensus, and ensure the success of the Clackamas ITS program. Key stakeholders include those directly involved with the project, including several departments at Clackamas County, several larger municipalities within the County, and the Oregon Department of Transportation (ODOT). Expanded stakeholders consist of those indirectly involved in the project such as smaller municipalities, large employers in the County, major trucking companies in the area, the public at large, and anyone else with an interest in the project.

Key stakeholders were interviewed in person to obtain information on many subjects, while expanded stakeholders received a shorter questionnaire via e-mail or mail. After the completion of the interview process and the questionnaire deadline, a workshop was held with all project stakeholders to discuss the transportation needs identified in the interviews and questionnaires and to determine any additional needs. This section describes the personal interviews,

mail-out questionnaires, and user needs workshop.

Personal Interviews

Personal interviews approximately 30 to 60 minutes in length were conducted with key stakeholders who have decision-making authority in matters regarding ITS implementation and required institutional coordination. The purpose of the interviews was to draw out needs, problems, institutional issues, and obstacles to ITS implementation.



Interviews were conducted with one or more people from the following Clackamas County departments:

- County Administrator
- Department of Transportation & Development- Executive Director, Engineers, Planners, and Maintenance
- Information/Electronic Services
- Communications/911 (C-COM)
- Sheriff's Office
- Fire District #1

Other key stakeholders in the project area that were interviewed include:

- City of Milwaukie
- City of Oregon City
- City of Wilsonville
- Oregon Department of Transportation (ODOT)

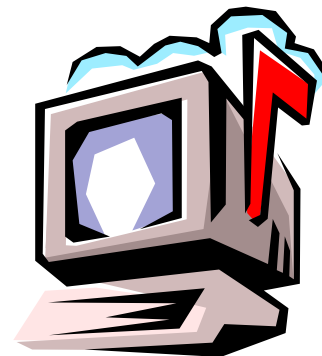
Twelve interviews were conducted in all and notes from the interviews can be found in Appendix E.

Mail-Out Questionnaires

Questionnaires were e-mailed or mailed to the project's expanded stakeholder coalition to determine needs and problems of the transportation system. The questionnaire was sent to public agencies indirectly involved with the project, private companies in the study area, and the general public (community planning organizations). The questionnaire recipients include the following:

- City of Canby
- City of Happy Valley
- City of Lake Oswego
- City of West Linn
- Tri-County Metropolitan Transportation District of Oregon (TriMet)
- 19 Community Planning Organizations (CPO's)
- School Districts in Clackamas County
- Large Employers in Clackamas County
- Major Area Trucking Companies

Of the approximately 50 questionnaires sent out, 15 were completed and returned and can be found in Appendix F.



User Needs Workshop

On June 27, 2002, a user needs workshop was held with stakeholders and all other interested parties to discuss needs for the Clackamas County transportation system relating to ITS. Needs heard from the stakeholder interviews and questionnaires were discussed and additional needs were identified. The purpose of the workshop was to reach consensus from stakeholders and transportation users about the regional transportation needs.

During the workshop, background information was provided about the project, the plan process, ITS in general, ITS applications currently in use in Clackamas County, and the stakeholder interviews and questionnaires. Workshop participants split up into the following three groups to discuss specific transportation needs:

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

After meeting in small groups, a representative from each breakout session reported back to all workshop participants and additional group discussion was conducted. The workshop invitation, schedule, presentations, and meeting minutes can be found in Appendix G.

SUMMARY OF USER NEEDS

This section contains paraphrased statements from project stakeholders taken from the personal interviews, the mail-out questionnaires, or the user needs workshop. This chapter outlines all of the

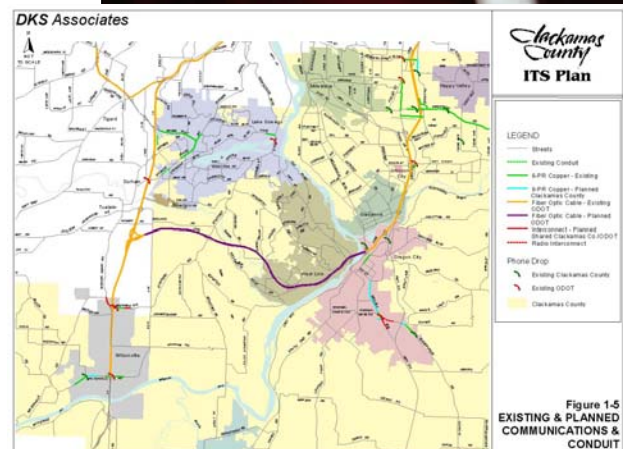
ITS and non-ITS related needs that were identified. These needs are filtered later in the project so that only ITS related needs are evaluated for potential projects. The needs are separated into the following categories of interest: traffic management, traveler information, public transportation, emergency management and incident response, commercial vehicle operations, maintenance and construction, information management, and general needs. Any similar user need statements are likely the result of comments from separate stakeholders. Also, some needs may fall under multiple categories. The user needs outlined in this section will be mapped to the national ITS architecture user services before determining applicable ITS projects for implementation in Clackamas County.

TRAFFIC MANAGEMENT

User needs pertaining to traffic management include communications, traffic control and operations, highway rail intersections, and information

Communications Network

- Need to develop a regional transportation communications network.
- Need a better way to share data
- Need access to information on desktops from the ODOT Traffic Management Operations Center (TMOC).
- Need to connect the County's Red Soils campus to the regional network.
- Need a minimum of 12 fiber optic cables for the County-wide area network (to connect county buildings).
- Need up-to-date websites.
- Need a GIS System.



- Need a back-up system in case of disaster.
- Need to install conduit with roadway improvement projects.
- Need to identify high-speed data locations for communications: Where are these needed? At which public agencies/public facilities are these needed (i.e. libraries, schools)?
- Radio bandwidth needs must be identified.
- Need a secure system to ensure that only authorized personnel can access the system (ie. posting messages on VMS).

TRAFFIC MANAGEMENT

Traffic Control and Operations

- Need back-up batteries for power outages.
- Need signal progression, especially on arterials.
- Need remote video and traffic signal status/access to respond to complaints.
- Need cameras and vehicle detection on arterial corridors.
- Need video detection on major arterials.
- Need to connect video detection, controllers, and other equipment to County offices.
- Need less delay on arterials.
- Need to balance ramp meter needs with surface street impacts- avoid traffic backing up from the ramps onto the arterials.



- Need to optimize signals at interchanges to control queues on off-ramps.
- Need ramp meters at Sunnyside Rd/ I-205
- Need to update closed loop signal systems to a central signal system.
- Need system detectors to supplement bus probes on State Highways.
- Need real-time traffic counts.



- Need better detection at traffic signals so that traffic is not stopped on a red light when the rest of the intersection is clear.
- Need emphasis on ORE 99E, ORE 213, Molalla Corridor, Washington Street, Beaver Creek Road.
- Need to monitor/enforce high occupancy vehicle (HOV) lanes.
- Need to manage park and ride lots (i.e. parking availability).
- Need to consider entire roadway system.
- Need more bicycle and pedestrian facilities.
- ODOT needs to put in the Sunrise Corridor.
- Need to consider homeland security (evacuations, hazardous materials tracking, terrorists)- federal government has a \$10 million request for proposal (RFP) for an ITS security model deployment site.



TRAFFIC MANAGEMENT

Highway-Rail Intersections

- Need railroad train activity information.
- Need traveler information near Linwood/Harmony to identify trains.
- Need safety enhancements at Linwood/Harmony/Railroad.



Information

- Need video feed, including access to existing ODOT cameras.
- Need video capabilities at key intersections on major arterials.
- Need video capabilities on Highway 26
- Need traffic conditions information (i.e., congestion, hazards).
- Need construction activity, including day-to-day activities in addition to major work.



- Need weather/road conditions monitors in rural areas (i.e., Marmot Road, Lolo Pass Road, Mt. Hood at Lolo Pass, ZigZag, Mt. Scott, Wilsonville at Ladd Hill, Highway 26).
- Need weather/road conditions information for steep arterials (i.e., 15th Street, Center Street, Singer, South End Road).
- Need to know railroad activity (i.e., near Linwood/Harmony).



Automated Road and Weather Station Zoo Bridge	
Temp: 78.9F	Dew Point: 55F
Precipitation:	
Relative Humidity: 44%	
Visibility:	
Wind Speed(Avg): 5 mph	
Wind Speed(Gusts): 8 mph	
Wind Direction: E	
Last Updated: 7/16/2002 2:20 pm	

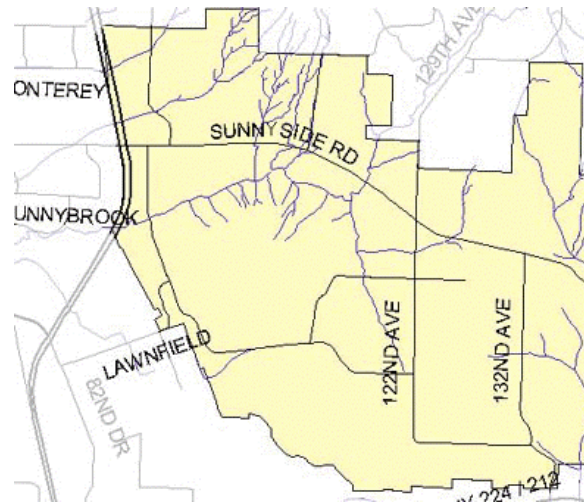
- Need to know Incident Response (COMET) Activity.
- Need to know real-time information for arterials to manage the system.
- Need to know construction areas/schedules.
- All agencies need access to “weather stations”, including TriMet.

TRAFFIC MANAGEMENT

Agency Coordination

- Need to coordinate future projects to reduce scheduling conflicts.
- Need to keep ODOT involved, especially for ORE 99E and ORE 224.
- Need to alert CPO's during transportation planning.
- Local agencies need to know if other agencies are aware of problems. (Example- How does Oregon City know whether or not the County is aware of a traffic signal lens burnt out at a particular location?)

Sunnyside United Neighbors



- Users need to know who to call with transportation problems (often users call 911 and this ties up the emergency response system):
 - Citizens need to know who to call.
 - Public agencies need to know who to call.



TRAVELER INFORMATION

The user needs in this section include needs associated with traveler information type and dissemination. This section is broken into the following categories: information locations, real-time information, traffic conditions, construction, weather and road conditions, railroad, transit, parking, information sharing, and information dissemination.



- Need traveler information on these corridors: Sunnyside, ORE 212, ORE 224, 82nd Avenue/ORE 212, 82nd Avenue, I-5/I-205, northbound I-205 to Glen Jackson Bridge at Oregon-Washington border, southbound I-5 prior to Wilsonville.
- Need information posted on VMS in Woodburn:
 - Existing northbound VMS sign works well in Wilsonville, but the only place to exit when faced with congestion on I-5 is Stafford.
 - If information could be posted in Woodburn, this would give drivers options to exit the freeway earlier at less congested locations.
- Need message signs in the I-205/Sunnyside area.
- Need VMS on Sunnyside at I-205- after seeing congestion while on the overpass, many people try to get out of left turn lane to avoid I-205.
- Need variable message signs on McLoughlin Blvd.



Information Locations

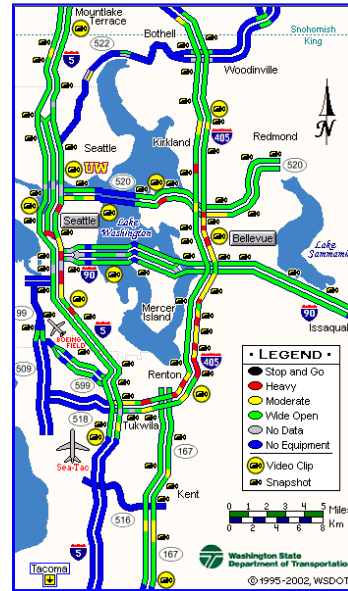
- Need message signs approaching freeways.
- Need VMS information near/before freeway on-ramps to decide whether or not to get on the freeway- information could be simple (ie. crash on northbound I-205).



TRAVELER INFORMATION

Real-Time Information

- Need consistent and quality real-time information:
 - Once a system is launched, the public will come to expect a certain quality of service/information.
 - Need to have the funding and resources to keep the system running and current.
 - Need incentives to maintain system.
- Need real-time information:
 - Video of traffic conditions.
 - Traffic conditions (i.e., congestion, hazards).
 - Construction activity, including advance notification in newspaper and on local signs.
 - Weather and road conditions.
 - Railroad activity (i.e., near Linwood/Harmony).
 - Localized information (i.e., more than just freeway information).
- Need to provide information on message signs that allow the user to make a choice about mode (i.e. travel time = X min., spaces available at parking and ride lot = X, time until next bus or train = X min.).
- Need in-vehicle crash safety/vehicle mayday systems.



Traffic Conditions Information

- Need color-coded congestion information similar to Smart Trek's web site: this would be a quicker way to find out how fast traffic is moving rather than clicking on numerous camera images.
- Camera images on ODOT's website need a better description of what the camera is focused on because it is often hard to tell what you are looking at.
- Need notification of specific detour alternatives, not just to take an alternative route.
- Need to give better directions to travelers on VMS.
- Need uniform messages on variable message signs (ie. regarding alternate routes).
- Need to limit VMS messages to traveler information only.
- Need to provide information to users not familiar with system (ie. trailblazer signs).
- Need special events information (ie. sporting event, holiday congestion at Town Center).

TRAVELER INFORMATION

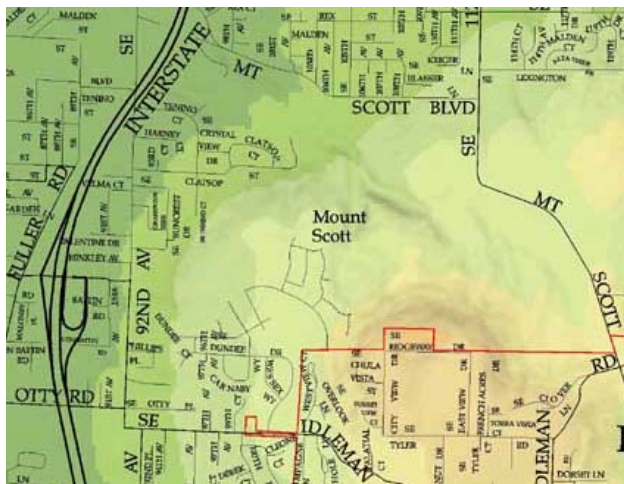
Construction Information

- Need to provide public with construction information.
- Need more construction/maintenance information on arterials.
- Need a central place to store information about construction projects.
- Need weather/road conditions monitors in rural areas (i.e., Marmot Road, Lolo Pass Road, Mt. Hood at Lolo Pass, ZigZag, Mt. Scott, Wilsonville at Ladd Hill, Highway 26).
- Need weather/road conditions information for steep arterials (i.e., 15th Street, Center Street, Singer, South End Road).
- May be useful to use indicators that turn blue when it's freezing (ie. these are used in the Clackamas Community College parking lots).



Weather and Road Conditions Information

- Locations where weather information is needed:
 - On I-205 between I-5 and Willamette River- can get icy, numerous collisions tend to occur here, especially after it rains.
 - Mt. Scott- often freezes.
 - Hilltop in Oregon City- ORE 213 Area.



Railroad Information

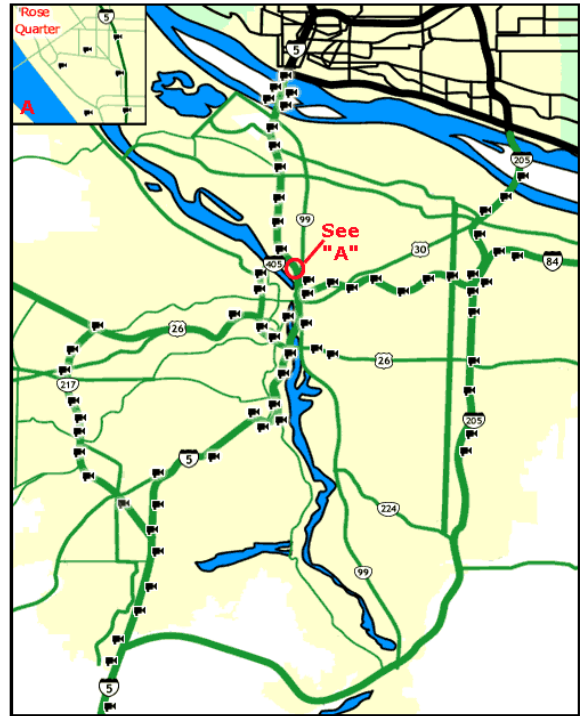
- Need railroad crossing information: when trains are coming and alternate routes to take.



TRAVELER INFORMATION

Information Dissemination

- Need to identify methods for disseminating information to users.
- Need to make information easier to find.
- Need public education to inform the public of what type of information is available (ie. TripCheck website).
- Need information dissemination through all media, not just computers:
 - Internet (up-to-date web sites).
 - Radio (exclusive AM radio station).
 - Television.
 - Newspaper.
- Need audio information in vehicles because it's easier to access while driving than computers or PDA's.
- Need en-route trip guidance- this is where there is a large need for audio information.



- Need information dissemination:
 - Wireless PDA's.
 - Dedicated Radio Station- especially for people who do not have access to computers, PDA's, mobile phones.
 - Highway Advisory Radio.
 - Phone trees- phone number you can dial and obtain traffic information about specific locations.
 - Information kiosks- maybe one could be put at Clackamas Town Center.
 - Static signs on roadways letting travelers know phone number or web site where they can access traffic information.
- Need to plan for quick growth in use of any type of information that is provided (ie. palm pilots).

PUBLIC TRANSPORTATION

The user needs in the public transportation category include those associated with bus and train service within Clackamas County.



- Need to improve public transportation.
- Need additional bus service during off-peak hours.
- Need more exclusive bus and carpool lanes.
- Need to monitor/enforce HOV lanes.
- Need to improve bus service on McLoughlin Blvd.
- Need to make traffic system work (more reliable) to help transit:
 - Buses do not necessarily need to get to places faster.
 - Buses need to arrive at places consistently so they stay on a somewhat set schedule.
- Need to improve bus service on Molalla Ave.
- Need to coordinate signal system/roadway improvements with transit service improvements.
- Need to get information to customers.
- Need more public relations for bus schedules/routes.

- Need to update bus stop schedules because these often get outdated:
 - Maybe use electronic schedules instead of paper schedules.
 - Need accurate information.
- Need priority for signals to help buses, but buses only need the priority when it is available- do not want to cause major delays to the system.
- Need coordination with TriMet.
- Need more cooperation between TriMet and other agencies because TriMet has many resources that can be shared.
- Need to determine good locations for transit VMS signs because TriMet has funding to install 50 VMS signs in the region in the next year and their strategic plan calls for installing 50 more the next year and so forth.
- Need freight and Amtrak improvements.

Tri-Met 33 McLoughlin -- Weekdays -- to Oregon City TC or Clackamas Community College

<u>Connections</u>	<u>Notes-></u>	<u><-earlier</u>			
		---	---	---	---
NW 5th & Hoyt		==	==	==	
SW 5th & Oak		5:32P	5:47P	6:03P	6:18P
McLoughlin & 17th		5:47P	6:01P	6:16P	6:31P
Milwaukie TC		5:55P	6:09P	6:24P	6:39P
McLoughlin & Oak Grove		6:06P	6:20P	6:35P	6:50P
McLoughlin & Jennings		6:13P	6:27P	6:42P	6:57P
Arlington & Portland		6:20P	==	==	7:05P
McLoughlin & Gloucester		==	6:30P	6:45P	7:00P
Oregon City Transit Center		6:25P	6:34P	6:49P	7:04P
Clackamas Community College		6:43P	6:52P	7:06P	

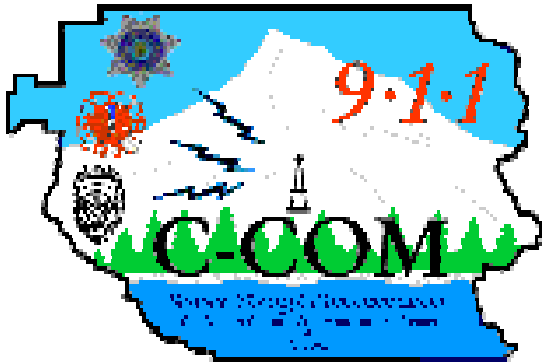


EMERGENCY MANAGEMENT AND INCIDENT RESPONSE

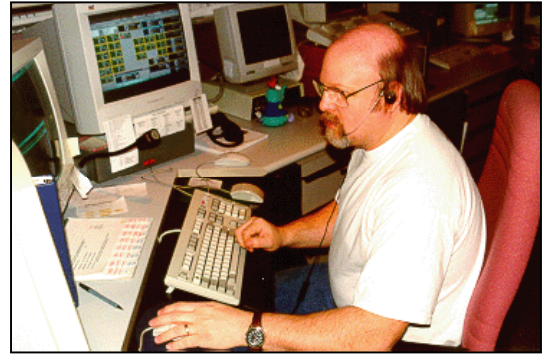
The user needs associated with emergency management and incident response include medical, fire, and police emergency services. The needs in this section are split into three categories: communications, emergency management operations, and incident response.

Communications

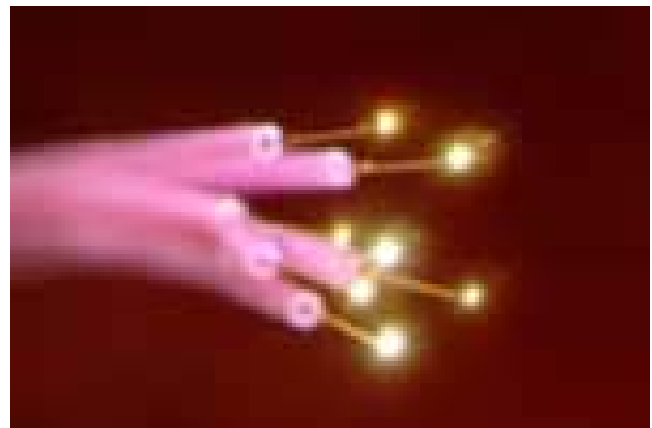
- Need to maintain communications to C-COM at all times.



- Need to connect 911/C-Com to the regional fiber network.
- Need to improve communications in remote rural areas.
- Need to link dispatch centers: Clackamas County (C-COM, LOCOM, Gladstone, Milwaukie), Multnomah County, Washington County, AMR; they can be used as back-up systems for one another.
- Need to link LOCOM (Lake Oswego Communications) and C-COM Dispatch Centers.
- Need to link to TriMet dispatch- the emergency management dispatch and the TriMet dispatch could act as back-up systems for one another.
- Need an interagency communication network to distribute emergency information immediately- for example, the CAD system within emergency management.



- Need to share or provide a communications interface between CAD systems within the Portland region.
- Need to provide information at Emergency Operations Center- the EOC needs to receive information, not have to look for it.
- Need real-time information at C-COM Dispatch such as video, hazards, COMET.
- Need real-time COMET information to aid emergency management.
- Need to provide incident information to mobile data terminals.
- Need secure networks.
- Need mapping/communications at Dispatch to help identify location of caller or to help direct emergency vehicles.



EMERGENCY MANAGEMENT AND INCIDENT RESPONSE

Emergency Management Operations

- Need increased capabilities.
- Need reduced response times.
- Need to have knowledge of road information to pre-plan and make best use of resources.
- Need automatic vehicle locators (AVL) on emergency response vehicles.
- Need to rapidly improve traffic flow after fire pre-emption is triggered at a traffic signal.
- Need an inventory and periodic checks of opticom detectors.
- Need feedback/indicator to fire district that opticom at a particular traffic signal is functional.
- Need red-light photo enforcement.
- Need action in legislature for red-light photo enforcement.
- Need red-light photo enforcement at ORE 213/Beavercreek.
- Need to use TriMet fleet and resources for emergency management purposes:
 - Radios on buses can be used in emergencies.
 - Buses could be dispatched and used during an evacuation.



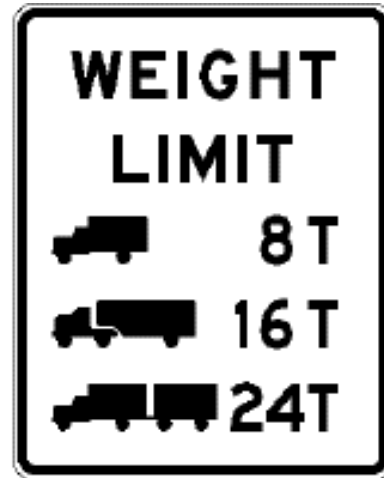
Incident Response

- Need to better manage incidents.
- Need mobile data terminals for incident managers.
- Need to clear incidents faster.
- Need to reduce secondary incidents/incident congestion.
- Need to plan alternate corridors for incident response.
- Need incident timing plans.
- Need message signs for incident control.
- Need to improve incident information provided to the public.
- Need to divert traffic instead of leaving it on the freeway for several hours during a complete freeway closure.
- Need automatic vehicle locators (AVL) on incident management/emergency vehicles.

COMMERCIAL VEHICLE OPERATIONS

The user needs in this section address needs associated with commercial vehicle operations or trucking operations in Clackamas County.

- Need freight and Amtrak improvements.
- Need to improve truck circulation.
- Need varied time schedules for truck traffic on highways.
- Need to improve ORE 212/224.



- Need a better east-west truck route.
- Need to prevent truck traffic from bypassing weigh stations.
- Need to get real-time information to commercial vehicle operators for better communications.
- Need construction work coordination with commercial vehicle operators for all times of the day (especially at night), not just for the peak hours.



MAINTENANCE AND CONSTRUCTION

Maintenance and construction user needs are split into a maintenance category and a construction category and include needs associated with the maintenance of existing transportation systems and new construction.

Maintenance

- Need to improve road maintenance.
- “On-call” maintenance staff need real-time information with a high-speed connection.
- Need information at Maintenance Shop: video, signal data.
- Need to maintain signal communications during maintenance/construction work.
- Need training for maintenance and operators.
- Need spare parts in stock.
- Need adequate tools and test equipment.
- Need adequate manpower.
- Need a pavement management system.
- Need an inventory and periodic checks of opticom detectors.
- Need automatic vehicle locators (AVL) on maintenance vehicles.
- Need access to weather information and pavement conditions.



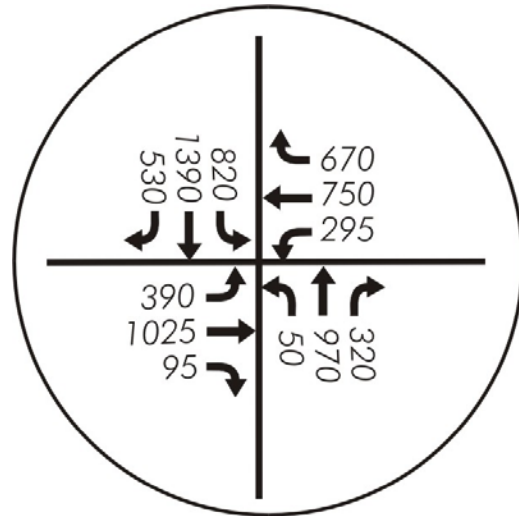
Construction

- Need interagency coordination of construction projects.
- Need construction information (major work, day-to-day activities)- database, real-time, notification in paper and on local signs.
- Need a database of construction information (including utility work) with schedule.
- Need information for construction coordination- needs to be pro-active and should include utility construction/maintenance as well as transportation.
- Need no construction during rush hour.
- Need to install conduit with roadway improvement projects.
- Need to consider future construction when planning for the communication network.
- Need standards for new construction.
- Need to maintain signal communications during maintenance/construction work.
- Need to improve traffic management in work zones (ie. portable VMS).
- Need to provide public with construction information.

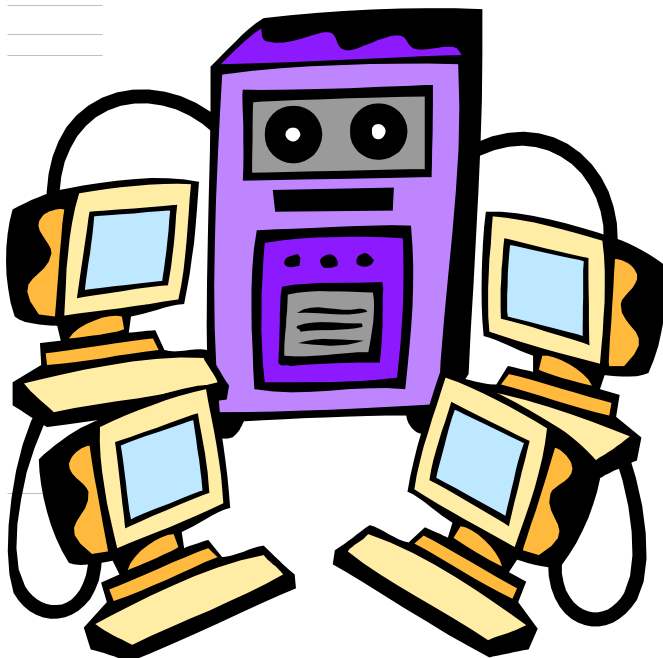
INFORMATION MANAGEMENT

The information management category includes needs associated with archiving information from the past and as it is collected.

- Need a user-definable database that can be searched with queries.
- Need turn-movement count data and traffic count data.
- Need to store traffic count data.
- Need up-to-date traffic counts and historical counts for planning and development.
- Need accident data, including high accident location list.



Oregon Department of Transportation												Statewide	
2001, Top 10% SPIS Groups - By Highway, Prefix, Milepoint													
Reg.	Route	Pfx	BMP	EMP	Lgth	99ADT*	Crsh*	Fatal*	Cul*	City	County	Connection in Group*	SPIS *
3 OSWEGO													
1	OR-43	0	5.67	5.83	0.16	25,400	19	2	R		Clackamas	S. TERWILLIGER BLVD.	69.35
1	OR-43	0	6.04	6.23	0.19	36,300	31	0	U	Lake Oswego	Clackamas	LEG, FROM "A" AVE.	74.2
1	OR-43	0	6.62	6.8	0.18	32,200	26	0	U	Lake Oswego	Clackamas	MCVEY AVE.	73.78
1	OR-43	0	8.75	8.91	0.16	20,400	28	0	U	West Linn	Clackamas	S. WALLING CIRCLE	56.88



- Need to coordinate with ODOT because they currently collect the following information, which is available at ODOT, but the long-term goal is to make this information publicly available:
 - 15 minute, hourly, 24-hour counts on ramps- collected in real time.
 - Incident data.
 - Equipment failure.
- Need to feed all data to one common server to create a regional data archive once the Regional Transportation Network is set up (in progress now).
- County needs to continue participation in the TransPort group and continue regional coordination.

GENERAL FINDINGS

The general needs expressed by stakeholders include user needs that apply to all categories.

- Need increased funding.
- Need to find a stable funding source.
- Need to meet with Senator Smith to discuss TEA-21 funding.
- Need to be able to show the ITS benefits to the public.
- Need resource sharing.
- Need tailored end products (ie. products for engineers, products for public).

