

Oregon Interoperability Service (OIS) Project

Oregon Department of Transportation

Category 1: Cross-Boundary Collaborations and Partnerships

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Sponsor

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Executive Summary

The management of highway traffic incidents that occur on Oregon state highways require the response of multiple state and local government organizations, using government provided communication systems. The Oregon Department of Transportation (ODOT) has four Transportation Operation Centers (TOCs) that provide monitor/dispatch services. The ODOT Transportation Operations Center System (TOCS) uses a customized and centralized hardware and software platform that provides a unified, statewide platform for around the clock coordination of transportation related services. The Oregon State Police (OSP) operates two dispatch centers in Oregon, with one in Salem and the other in Central Point, Oregon. ODOT, the State Police, and county officials all need to communicate with each other efficiently to support emergency and routine services provided to the public.

Emergency incidents can range from a vehicle crash to a landslide that has closed a highway. Cross boundary communication is needed to insure that the right responders are contacted and are responding. Prior to this project, the crossing of organizational boundaries for highway incident communications was done using systems that were not interconnected. As a result of this project, there is now an automated interconnected computer to computer message service used to communicate and request services among several organizations at the same time, and in near real time.

The new Oregon Interoperability Service (OIS) provided through this project automated text based information sharing of incident data and requests for aid, in coordination with incident response. Information is now transferred in a more efficient, accurate, and timely way providing cross agency communication. ODOT was responsible for the project planning, coordination, and oversight of vendor performance and worked in a financial/customer partnership with Deschutes County and the Oregon State Police (OSP). Deschutes County 911 secured grant money from the Department of Homeland Security to enhance the Central Oregon County 911 systems so that they could exchange information with state agency systems. As a result, incident message communications were improved between ODOT, OSP, and Deschutes County.

This project aligns with the NASCIO "2014 Top 10 Priorities" through consolidation and optimization, shared services, and mobility services. This is demonstrated through the automated message service crossing organizational boundaries to provide collaboration between agencies, and in an emergency, responder mobile radio dispatchers now have a centrally shared message passing connection service.

An independent review to measure the results of this project indicated that "immediate" notification and qualitative information benefits for dispatcher staff members was realized in several government organizations. The beneficiaries of this project are the citizens of Oregon when faced with the need for emergency response assistance, as well as the operations and 911 staff and management. The new system provides a more efficient, accurate, and effective manner in which to communicate critical incident information, and by exchanging data automatically in near real time.

Business Problem and Solution

Problem: Oregon 911 centers throughout the state provide call-taking services for emergencies and non-emergencies and also provide dispatching services for a number of agencies. The ODOT, OSP, and County 9-1-1 Centers relied on phone calls to exchange information about an incident, such as a motor vehicle crash. The phone call resulted in the same incident data being verbally passed from center to center and re-entered into the reporting system of each center. The new Oregon Interoperability Service (OIS) eliminates the need for multiple phone calls and multiple computer entries, and allows data to be entered once and then shared.

In general, when an incident occurs citizens at the scene do not know who to call—they just dial 9-1-1. Before the new OIS, their call may or may not have gotten to the appropriate responder, based on how the initial call was received and routed through the telephone network to the nearest 9-1-1 Center, and subsequent voice handling. Coordination was often needed with County and ODOT responders as 9-1-1 Dispatch and other phone calls were routed to OSP, who then dispatched OSP vehicles and resources.



Busy dispatch operations staff, while talking to the citizen, added the event data into their dispatch system and contacted their incident responders. In cases where multiple responders were needed, such as an injury motor vehicle crash with road blockage, dispatchers had to use the phone to request outside assistance from other agencies while addressing the incoming phone or radio calls. In general, the public is impacted when responders, whether from the State Police, County, or ODOT Transportation Operation Centers (TOC's) were not notified, or the wrong responders are notified. Other impacts came from delayed responses or sending a responder when one was not needed, thereby making them unavailable.

Solution: The central purpose of this project was to connect the Deschutes County 911 System to the **Oregon Interoperability Service (OIS)** and allow incident messages to be exchanged with ODOT and the Oregon State Police. The new OIS streamlined the information exchange between the 9-1-1 call center and multiple incident response agencies. It also allows all incident response agencies to access the same information

simultaneously (subject to agency preferences/settings), thereby saving staff time, minimizing possible mistakes in relaying information, and reducing resource misallocation. The OIS project team was comprised of state staff from OSP, ODOT, Deschutes County, and contractors. The solution was the deployment of the Oregon Interoperability Service (OIS), which is in operation and used daily. In September 2013, Deschutes County 911 Dispatch Center went live with a connection to the OIS, allowing the Deschutes Computer Aided Dispatch system to exchange incident messages with ODOT and Oregon State Police (OSP) systems. Each agency now receives near real time automatic updates regarding how and if the other agencies are responding to incidents. Oregon’s Interoperable and Emergency Communications Vision and Mission Statements for this project are provided below.

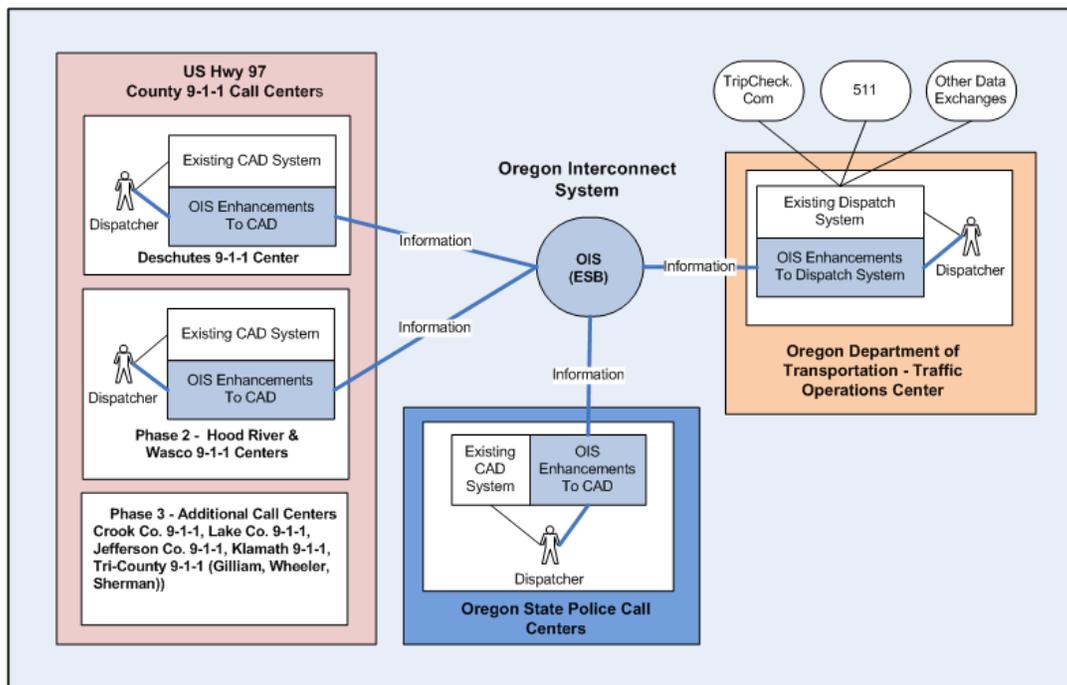
Vision Statement

The ability of public safety responders to share information via voice and data communications systems, on demand, in real time, when needed, and as authorized.

Mission Statement

Strengthen partnerships, while leveraging current resources and capital improvements, to maximize voice and data interoperability.

The illustration below provides an overview of the solution with a connection between the agencies, through the **Oregon Interoperability Service (OIS)** enhancement.



The architecture involved a centralized text message service between Oregon State police dispatch, ODOT Traffic Operation Centers, and county 911 call centers. This was the best solution because it leveraged and improved the existing systems. It

solved the problem of how to communicate accurately, and in a coordinated and timely way, between state and county agencies. With the new solution automatic message passing is being provided to all parties so that dispatchers and others can easily and quickly read the status and response requests in near real time.

Project Management: This project followed the Project Management Institute's PMBOK project management methods, and took a two phased approach. Phase One, described in this submission document, is complete and included OSP, ODOT and Deschutes County. Phase Two, which will consist of two additional counties, Hood River and Wasco County, will be added to the system in one or two years.

The larger overall strategy is to have all counties in the US Highway 97 transportation corridor through central Oregon, connected and exchanging near real time incident data. In the earlier pre-project planning phase in 2009-2010, the concept of operations and requirements were defined via a series of workshops with the Oregon 911 Centers, OSP, ODOT and a vendor hired to help in developing the new system.

This project lasted 12 months and formally started in December of 2012, and ended in November of 2013 when the new enhanced OIS system was released. The project cost was \$97,216 and came in under the original project cost estimates. The OIS project accomplished its original objectives, is now in operation, and serves as a model that other counties in Oregon are expected to follow.

Standards and Best Practices: In support of industry standards and best practices, an early decision was made to use the IEEE 1512 standard messaging processes and call types to classify an event. A "Call for Service" defines a message call type. The system processes require a response to this message from the other organization of "Will respond", "Will not respond", or "Will respond later." Another example of a call type is "Crash" or "Hazardous Debris." In addition to having a standard list of call types, the system allows each agency the flexibility to add local call type values. This ensures that incoming messages from other agencies translate into the correct local call type. Security standards were also followed to protect personal information (PI) and citizen confidentiality, and to ensure that the data exchange met FIPS-2 security encryption standards.

Significance of the Project

The OIS project has significantly improved cross boundary collaboration. The intergovernmental communications for incident related messages is now established through services between ODOT, OSP and Deschutes County. This project has significantly improved state agencies and the county's ability to provide critical incident response services to the public in a more effective manner. Now, accident reports more effectively communicate: location, type, severity, and responder status. The OIS also provides faster and more accurate alert notification coordination for: natural or man-made disasters, civil or other emergencies, child abduction, transportation status updates including the status of bridges, interchanges, and accident site locations. Communication is now more efficient in the areas of resource deployment, information for maintenance personnel, hazardous materials, road, and weather conditions.

Dispatch operators and traffic center communication staff now operate more efficiently and effectively in the geographic area shown below.



Deschutes County benefits from the automated text messages being passed to the state level, and the state agencies benefit from having a direct message link to the county level. Other counties are expected to be added to the OIS in the coming years.

Benefits and Results

The response from the member agencies is positive and the exchange of messages is going well. Kittelson & Associates, Inc. evaluated the effectiveness of the 9-1-1 Dispatch System in 2010 and the new 9-1-1 Dispatch OIS Interconnected system in 2013. The previous reporting system was analyzed for one month in December 2010 and the new reporting system was also analyzed for one month in December 2013, both numerically and through a series of user qualitative experience interviews. Kittelson found the following improvements in system notification, dispatch, and responder times.

Kittelson' Report Results Comparison		Old System Dec. 2010	New System Dec. 2013	Percentage Faster
Notification Time (seconds)	9-1-1 to ODOT	281	220	22%
Dispatch Time (ODOT Dispatchers – seconds)	ODOT Events: 9-1-1 Matches	211	157	26%
Responder Arrival Time (ODOT Dispatchers – seconds)	ODOT Events: 9-1-1 Matches	1736	1229	29%

The numerical evaluation showed a reduction of approximately 1 minute in notification time (20+% faster) from Deschutes County 911 to ODOT. If Deschutes County 911 chose to automatically push their data to ODOT, so that the notification time was immediate, it is expected that notification time would be 4 to 5 minutes faster than it is today.

The Kittelson Report included the following findings and quotations from users, dispatchers, and managers of the new system.

- **Reduced notification and response times between organizations**
Dispatchers and managers commented: “We almost instantaneously get the call information from 911. The call information is coming direct to us (ODOT) and we can see everything because we are interconnected. There is probably a 7-10 minute decrease in the response time for us because it’s gets here that much quicker from Deschutes County.”
- **Increased accuracy and productivity between outside agency staff**
Notification time from the 9-1-1 call center to the ODOT system improved by approximately one minute or 20+ percent, compared to the previous system. The notification time from the ODOT system to the 9-1-1 call center is almost instantaneous.

Dispatchers as the main users provided the following comments.
 - “We don’t have to pick up the phone and wait to connect with another busy dispatcher on the other line - phone calls went down by 70%.”
 - “Using dispatch to dispatch instant messaging is helpful to getting things right & quickly ... and easier to multi-task on calls.”
 - “We can see everything they (911) put into the call automatically.”
 - “Very valuable to getting the right response and resources on-scene.”
 - “The details of the crashes and vehicle information are a lot better.”
 - “We are getting more information than we ever got before.”
- **Government to government cross boundary communication improved**
Dispatchers now have better knowledge of what is “happening on the ground” due to the improved coordination and near real time visibility. The ODOT Transportation Operations Center (TOC) Manager for Central and Eastern Oregon, Jim Scholtes said “...the people (our staff) have the ability to be both the subscriber and publisher, with the ability to not publish what they don’t want and subscribe to what they do want. They get information in real time that’s a cleaner than a phone call.”
- **Expanded future cross boundary use expected** - Future benefits from this project are certain as work on phase two is now underway to connect with the Hood River County 911 System which will add several Oregon counties to the system. In addition, many Oregon counties that use the same vendor for Computer Aided Dispatch systems as Hood River. When the modifications to the system are complete, it is estimated that 8 to 10 additional counties will be able to connect to the Oregon Interoperability System at no significant additional cost.