511 Data Archiving
Alaska Dept. of Transportation

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Agenda

- Introductions
- What is CARS?
- What is the 511 Data Archiving System?
- Project Structure
- Technical Overview
- Lessons Learned – Future Enhancements?
Introductions

• Rick Pannell
  • Senior Consultant based in Juneau
  • Project Manager and Technical Consultant on 511 Archiving System

• Resource Data (RDI)
  • Software Development and GIS in Alaska since 1986
  • Branches in Alaska, Idaho and Texas
  • Various transportation project work over the years
What is CARS 511?

• **Condition Acquisition and Reporting System**
  • Multi-year and multi-state effort to provide up-to-date traveler information
  • Provides internet and non-internet users alike a method for assessing road conditions on major roadways in Alaska and northwestern Canada
  • For this project, it represents the public-facing data viewer for information ultimately destined for the archive.
Why a Data Archiving System?

• CARS 511 provides current data
  • However, at the time of the development of this project, it did not provide tools for data mining or other statistical analysis.
  • Accurate data on road conditions is valuable well beyond the occurrence of an event
Goals of the Archiving System

• Provide a vehicle for retrieval of 511 data...
  • Beyond current events

• Support analysis of historical data for...
  • Litigation
  • Researchers
Technical Ground Rules

- AK DOT Intranet Only
- Hosted service/application utilizing
  - Sun Solaris 2.9
  - Java 5
  - Oracle 10g database
Project Structure

• Fairly standard waterfall methodology

• Timeline:
  • Requirements Analysis summer of 2006
  • Detailed Design completed in early 2007
  • In development by mid 2007
  • In production late 2007
  • Support mode since late 2007
Archiver Technical Overview

DOT Data Entry
- DOT Data Entry Pages
- CARS 511 Database Server (CRC)

Public Access
- Public Access Pages: Current Road Conditions
- XML Direct Data Access
- CARS 511 Web Server (CRC)

DOT System Maintenance Staff
- 511 Archival Service
- Log File

DOT Data Analyst/Personnel
- Querying Tools and Reports
- Intranet Server (AK DOT)
- Intranet Web Server (AKDOT)
- Database Server (AKDOT)
DOT employees submit events to the monitoring system...
Technical Process Detail – Page 2 of 5

CRC server makes XML file available for download...
Archiving system pulls data from the hosted system...
Data validated and loaded; Staff notified via log file
Technical Process Detail – Page 5 of 5

Data available for internal users...

[Diagram showing data entry and access processes]
511 Data Archive Intranet Query Tool
Query Tool: Road Name Selection
Query Tool: Landmark Selection
## Query Tool: Query Results

A screenshot of a query tool interface is shown. The interface includes a search box labeled "To Landmark" and a list of results. Each result includes the type, date/time, location, submitted by, description, and history. Two results are displayed:

1. **Alert**
   - Date/Time: 12/18/2007 15:40
   - Location: Alaska, Canada, Washington
   - Submitted By: doe511
   - Description: Connection Error events not retrieved. Error Details: Unknown exception

2. **Alert**
   - Date/Time: 12/18/2007 09:18
   - Location: Glenn Highway Between landmarks 9th Avenue and 'Edeline Milepost 25.5
   - Submitted By: ingerhanz
   - Description: Winter Driving Icy pavement: conditions good

The tool allows users to view more information about each result.
### Event History

<table>
<thead>
<tr>
<th>Type</th>
<th>Date/Time</th>
<th>Location</th>
<th>Submitted By</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Alert | Start: 12/18/2007 09:18  
| Alert | Start: 12/18/2007 09:18  
Update: 01/11/2008 13:12  
## Query Tool: Report

### 511 Report

<table>
<thead>
<tr>
<th>Type</th>
<th>Date/Time</th>
<th>Location</th>
<th>Submitted By</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert</td>
<td>12/10/2007 9:19</td>
<td>Glenn Highway Between landmarks '6th Avenue' and 'Eklutna Milepost 06.5.'</td>
<td>ingehazz</td>
<td>Winter Driving Index, driving conditions: good, Pavement Condition: icy patches, Air Temp: -6.</td>
<td>None</td>
</tr>
<tr>
<td>Update</td>
<td>01/11/2008 13:12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stamp</td>
<td>01/11/2008 13:12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ended</td>
<td>01/11/2008 13:12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Alaska Department of Transportation & Public Facilities (ADOT & PF) does not guarantee information stored in the 511 Data Archive. Travel information is automatically stored in the 511 Data Archive and comes from information posted on the Internet Travel Information System (ITIS), the Condition Acquisition & Reporting System (CARS). Information in CARS is provided by ADOT & PF personnel and partner agencies and made available to the public via the 511 website and the 511 telephone. People who post the information in CARS do not necessarily reflect the decision made by the travel information service.

Winter Driving Index: Travel information related to winter driving conditions does not indicate that ADOT & PF personnel have surveyed, sampled or decided any of the locations for travel before or after the data was altered. The winter driving conditions data provided by the ADOT & PF only reflect conditions at the specific site and time. These observations can vary greatly within an area and weather conditions can change quickly. For example, road conditions a few miles away from the observation site could be completely different.

The 511 Data Archive only stores travel information from 12/13/2007 to present. Information prior to this date may be available by contacting ADOT & PF regional HAM offices.

The information that is provided by the 511 Data Archive is a property of the ADOT & PF. It is not to be sold, or used in any process for resale as a value-added product, or otherwise distributed for profit in any form without written consent from the ADOT & PF.

### Send Report

Enter Email addresses below, separated by commas. Then press “Send”.

![Email Input Field](image)
Limitations

• Lost data is possible
  • The CRC file upload contains only the latest events, if the download process fails, it could miss a file.

• Manual location mapping
  • The milepoint to landmark mapping table must be updated each time the CARS 511 system adds a new milepoint, road, etc. Currently a manual process.

• Command Line Administration
  • Administration of the service is currently executed through commands in the console.
Other Potential Enhancements

• Expand the datamart and available toolset
  • The XML file contains quite a bit more data than is presented in the query tool and results.

• Add a public-facing query tool
  • The query tool is currently only available to internal users at the DOT.

• Expanded toolset and usability enhancements
  • The toolset could be enhanced to include the ability to save reports/queries.
  • High ROI enhancements to the usability of the system such as a map for event locations, improved table formatting, sortability in the grid, etc.
Contact

• Jill Sullivan (AK Department of Transportation)
  • Jill was the DOT project lead for the development of the system and oversees the ongoing maintenance.
• Rick Pannell (Resource Data, Inc.)

Questions?