Oracle Spatial – A Unifying Framework at the Utah Department Of Transportation

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Today’s Goals

- UDOT background
- Asset Management at UDOT
- Role of Oracle Spatial
- Look at the road to the future
Utah Department of Transportation is responsible for:

- Over 6,000 miles of highways
- Snow removal, signage, bridges, repairs, building, and maintenance
- Traffic Operations – monitoring road conditions, accidents and safety
Organization’s Strategic Goals:

- Goal 1: Take Care of What We Have
- Goal 2: Make the System Work Better
- Goal 3: Improve Safety
- Goal 4: Increase Capacity
Measuring Performance

Signing and Striping

Goal: Signing and striping play an integral role in ensuring both mobility and safety on Utah’s roadways. By efficiently using its resources, UDOT can provide these high-value services to our customers at a minimal cost.

Measure: UDOT uses a computerized maintenance rating system known as MNSGA+. Maintenance stations across the state compile data which is then entered into MNSGA+. This system analyzes the data and assigns a letter-grade performance rating.

Performance Target: The target MNSGA+ grade for signing and striping during FY 2004 was A. A grade of A represents excellent daytime and nighttime visibility. A grade of B represents good daytime visibility and fair nighttime visibility. A grade of C represents fair daytime and nighttime visibility.

Results: In FY 2004, UDOT achieved a grade of B in signing and striping.

Performance Measures
Challenges facing UDOT:

- Effectively allocating increasingly limited resources to deal with:
  - Increased congestion
  - Increased user costs
  - Decreased economic growth and productivity
  - Faster deterioration of highways
Core Data

• Highway Routes
  ▪ LRS enabled
• Business data referenced to routes
  ▪ Assets
  ▪ Incidents
  ▪ Projects
# Technical Requirements and Business Drivers

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<thead>
<tr>
<th>Role</th>
<th>Technical Requirement</th>
<th>Business Purpose</th>
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<tbody>
<tr>
<td>Maintenance Managers and Field Operators</td>
<td>Need applications that provide advanced tools like maps, to improve operation and management of critical assets.</td>
<td>Provide compelling evidence of the value of assets at specific condition level and location to efficiently apply limited resources.</td>
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<tr>
<td>Application Developers</td>
<td>Integrate business and spatial data in the most efficient, scalable, and open way possible to flexibly deal with end user needs.</td>
<td>Efficiently and effectively deal with constituents needs utilizing existing applications, skill sets, technology.</td>
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The Technology Landscape was:

- **Oracle Developer Suite**: Forms, Reports, Designer
- **Oracle 9i/10g Database**
- **Client Applications**
- **ArcINFO**: Coverage files, Raster Images
- **ArcView**: Shape files
- **ArcINFO 7**: Coverage files, Raster Images
- **ArcINFO 8**: Shape files
- **ArcGIS 8**: Coverage files, Raster Images
- **ArcIMS 4**: Shape files, Raster Images
- **ArcSDE 8**: SQL Server

Enterprise Business Data and Applications

Mapping data
To visualize business data:

1. Take Database snapshot and extract to a file
2. Import into Arc/INFO or ArcView
3. Output resulting hard-copy map or shape file
4. Post to ArcIMS website as shape file
5. Manual Clean up resulting event data (if necessary)
6. Perform Table Join between shape files and extracted file
7. Inspection and condition information
End-user applications were:

- Dynamic Tabular Reports
- Queries
- Static Image Maps
The Issues

- The storage of business data in robust, scalable RDBMS and core spatial data in files resulted in inefficiencies in:
  - Resources
  - Time
  - Scalability
  - Security
  - Interoperability
  - Data Availability
Why Oracle Spatial?
Technical Drivers

• Flexible, open architecture
• Centralized enterprise data
• Scalability and security and other traditional benefits of Oracle
• Spatial business rules in the database
Why Oracle Spatial? Organizational Drivers

- Extensive investment in Oracle technology and resources
- Limited number of GIS experts
- Primarily interested in location based business data and applications not GIS data
Technology Landscape Now

Intranet/Internet Applications

Spatially-Enabled Enterprise Database (Oracle 9i/10g)

Oracle Application Server
- MapViewer
- HTML DB
- Web Services Framework
- Portal

Oracle Developer Suite
- Forms
- Reports
- Designer
- JDeveloper

Open API

A Single Storage Location for all UDOT critical business data INCLUDING Spatial Data
End-user applications are:

- Single, centralized, scalable robust data source.
- Dynamically generated map based on up-to-date asset Information. (taking advantage of LRS and Dynamic Segmentation)
- Dynamic query capabilities
- Dynamically generated map based on up-to-date asset Information.
The Road to the Future

- Solving collateral objectives
- Further integration of mainstream business data with spatial data
- Application development using MapViewer, HTML DB and others
Thank you for attending!

Q & A