Agenda

- Business Problem
- Project Background and Goals
- High-Level Needs
- Project Approach
- Expected Benefits
- Solution Overview
- Status of Project
Business Problem

- Experienced exponential growth in OS/OW truck traffic
  - Agriculture, Oil, and Gas Industries power the Oklahoma Economy
  - Issues more than 200,000 permits per year (~800 per day)
  - Limited resources to fill the requests

- Increased pressure by the trucking industry
  - Carriers were waiting three days to a week for a permit

- Economic issues were prevalent
  - Delay in permits encouraged carriers to operate without a permit
Project Background and Goals

- In 2008 the Oklahoma Legislature met with ODOT and established improvement to the OS/OW permitting and routing process as a priority

- Goals
  - Improve public safety
  - Improve the permitting process to foster economic development
  - Ensure trucking companies have confidence in receiving a permit in a timely manner
High-Level Needs

- Innovative and Modern design
- Account for the Commercial Trucking Interests
  - Provide permit within minutes rather than days
  - Reduce dun-permitted travel
  - Reduced idle time
- Fully accessible via the internet
  - Automate permit issuance for standard OS/OW moves
  - Automate the routing to account for road and bridge constraints
- Live Load Analysis of bridge structures
- Utilize existing GIS, LRS, Roadway, and Bridge data
- Timely turnaround of permit requests
- Account for real-time roadway restrictions
Project Approach

- 2009 – ODOT and ODPS issued an RFP for an Automated OS/OW Solution for Permitting and Routing
  - Key Stakeholder: Legislature, DOT, DPS, Commercial Trucking Industry, Vendors and the general public

- Intergraph / Cambridge team selected to deliver the solution
  - Intergraph
    - Leader in GeoSpatial Technologies
    - Leader in Routing Technology
  - Cambridge Systematics
    - Industry leader in freight operations and commercial trucking policies
    - Leader in truck permitting
Expected Benefits

- Keep pace with increase in demand for OS/OW permits
- Preserve the state’s roadway infrastructure
- Ensure public safety
- Improve customer service
  - Reduced permit turnaround time
  - Streamline permit issuance process
- Log the permitted route for monitoring and analysis of:
  - Movement of OS/OW traffic over the state’s highways
  - Impact of these movements on the state’s structures
- Reduced human errors
- Robust and more accurate reporting
- Reduced training time for permit staff
- Accurate tracking of financials
OKiePROS

Oklahoma Permitting and Routing Optimization System
Four Primary Solution Components

- **Permitting**
  - Web interface for entering permit request

- **Routing**
  - Web interface for analyzing route

- **Restriction Management**
  - Web interface for managing roadway and bridge restrictions

- **Solution Architecture**
  - Centralized solution database in Oracle
  - Cambridge Permit\(_{cs}\) For Permitting
  - Intergraph’s Routing Web Service
  - NAVTEQ Routing Network Data
  - Oklahoma DOT bridge and roadway data
Permitting

- Support on-line application submission and retrieval of permits
- Screen incoming permit applications
- Manage workflow across different sections within the agency (Permits, Bridge Evaluation, etc.)
- Handles a variety of payment methods
- Customer can print approved permit and associated documents
- Accessible to roadside enforcement personnel
Routing

- Roadway and bridge data for network constraints
- Create detailed driving directions
- Ability to Save and recall commonly used routes for later use
- Integrate with bridge analysis software (VIRTIS)
- “Place on hold” a route request for review by engineering or permitting
- Ability to capture notes or instructions to the carrier (i.e. Drive 10 MPH in the left lane between points A and B)
- Ability to produce robust administrative and operational reports
Restriction Management

- Map Based Restriction Management
- Temporal management for restrictions
- Override existing roadway and bridge constraints
- On-the-fly entry of temporary restrictions (network constraints)
  - Crash event
  - Construction projects (lane closure, reduction in roadway capacity)
  - Road segment closure
  - Bridge postings or vertical / horizontal clearances
- Entry of route notifications such as traffic delays.
- Identify active permits affected by temporary restrictions
Development Plan

**Project Kickoff**
- **Action:** Initial Requirements and Gap/Fit Analysis
- **Result:** Initial High Level Requirements, Initial Functionality for Review

**Iterations 1...N**
- **Action:** Joint Application Development (JAD) Sessions
- **Result:** Incremental Delivery and Evolution of Functionality and Documentation

**Implementation**
- **Action:** Final Installation
- **Result:** System Operational Requirements, Design and Use Documentation Complete
Automated Routing

Enterprise Roadway Data (Bridge, Traffic, etc)

Restricted Route Network

Roadway Network

Temp. Restrictions
Automated Routing

1. Road Network
2. Apply Roadway Restriction
3. Enter Vehicle and Load Information
4. Enter Origin and Destination
5. Submit Route Request

Automated Routing Application Creates the Safe Route

Update the Permit with A Map & Driving Directions
Automated Permitting and Routing for Oversized and Overweight Vehicles
Intergraph’s Transportation Solution

Securing, managing, and maintaining your transportation network

Requestor Information
Permit Type
Permit Information
Vehicle Information
Weight Information

Gross vehicle weight: 135000 lbs
# of axles: 11
# of axle groups: 4
Total axle spacing: 127-10 ft-in

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Adx Groups

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Dimension Information
Route Information
Route Calculation
Request Submittal
Intergraph’s Transportation Solution
Securing, managing, and maintaining your transportation network
Intergraph’s Transportation Solution
Securing, managing, and maintaining your transportation network
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Requestor Information
Permit Type
Permit Information
Vehicle Information
Weight Information
Dimension Information
Route Information
Route Calculation
Shortest Valid Route

Get Route using: Interstates and States only

Request Submittal
Find Location

Select a route segment (edge) in the Map view to edit its properties. Click Done when finished editing this edge.

- Average Speed: 50
- One Way: One way-incr.
- # of Lanes: One way-incr.
- Min Lane Width: 11
- Max Allow Weight: 16
- Max Allow Height: 16
- Max Allow Length: 16

Done

Submit Edits

Temporary Closures

Test Network

Dashboard

Intergraph’s Transportation Solution
Securing, managing, and maintaining your transportation network
Select the 2 edges that define the turn. Click Done when finished editing this turn.

Restricted:

Max Turn Radius:  

Restriction Type:  

From: 

To: 

Done

Temporary Closures

Test Network

Submit Edits
Click the From and To points for the closure.

- **Type:** Maintenance
- **Curb to curb width:** 48 ft.
- **Restriction Dates:** From: 8/3/09 To: 8/6/09
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Securing, managing, and maintaining your transportation network

- Turn Maintenance
- Temporary Closures
- Test Network

Test vehicle: Super-load

Select a predefined route
Category: Test Routes
Route: I35 – I44

Select route points using the map
Add: Click on the Add button, then select a location by clicking on the map

Select route points by description
Key in a street address, intersection, or business name and click on the Add button

Get Route using: Interstates and States only

Submit Edits
Your edits have been posted successfully.

Select which edits to accept and then click Submit.
Discard to delete all edits.

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<th>Edit Type</th>
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Project Status

- Iterative project delivery methodology
- **Iteration 2 Delivered**
  - Basic Permitting Application form complete
  - Some business rules and data constraints accounted for
  - Initial administrative functions
    - Customer Account Management
    - User Management
  - Basic Routing (Point to Point)
- **Iteration 3 Planned for May – Further enhanced functionality**
- Project completion scheduled for April 2011
Thank You!

Questions?