

# GIS Lane Closures Management Application



**GIS-T 2008**

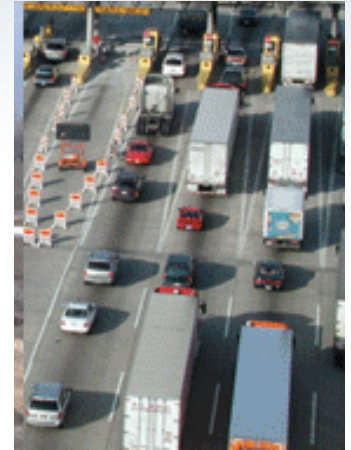
March 19, 2008

**PATRICK**  
ENGINEERING INC.

# Presentation Agenda

---

- Illinois Tollway
- Problem Definition
- Key Application Design Concepts
- Lane Closure Demonstration (**live!**)
- Cost Benefit
- Lessons Learned
- Questions, Ideas and Contact



# Illinois Tollway

---

- 286 Centerline Miles of Roadway
- 1.3 Million Vehicles per day
- 10-year, \$6.2 billion program
  - Rebuild/restore 90% of the system,
  - Widen/add lanes to many miles of existing roads
  - Convert 20 toll plazas to barrier-free Open Road Tolling (ORT)
- GIS Program Started 2004 (3 Full Time Staff, ~20 consultants)
- Over 10,000 closures per year (~27 a day)



# Problem Definition

---

- Extensive Road Construction Underway, Implement Quickly
- Create more efficient entry and approval for closure process
- Integrate with Traffic Incident Management System (TIMS)
- Distribute Approval Authority
- Provide more data for analysis - variables that impact traffic

# Problem Definition

---

- System must be flexible situation is very dynamic
- Handle Two Closure Types temp, long term
- Information Needs to be Distributed Both Internally & Externally multiple formats
- Role based users to request, approve and publish closures
- Various output formats for publication (.pdfs) and consumption (xml, kml, GeoRSS)

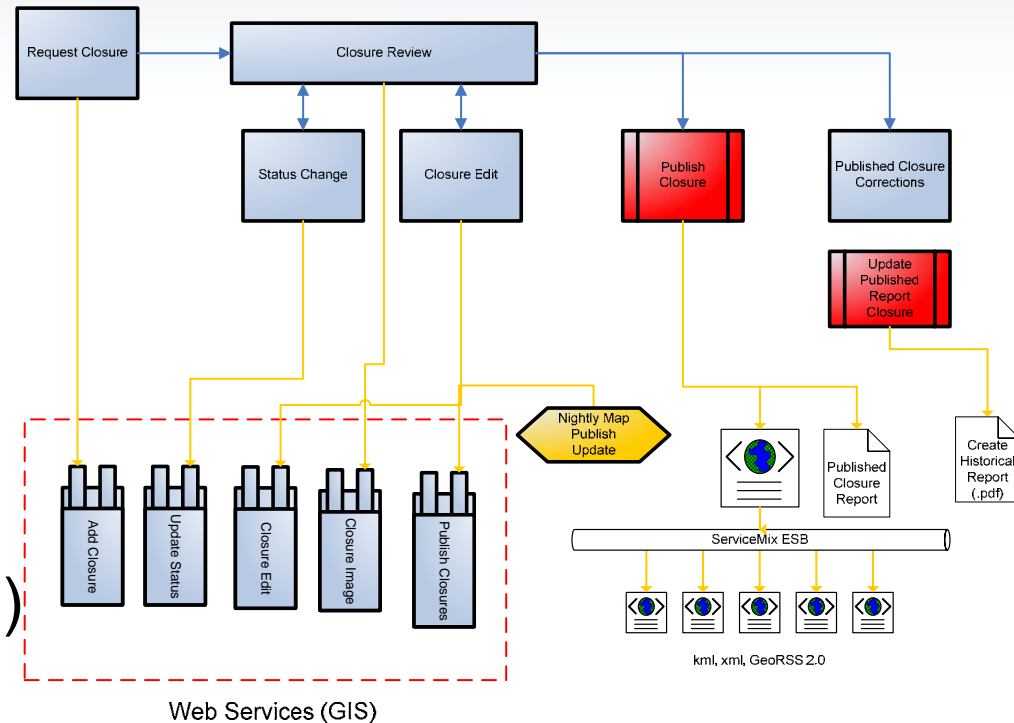
# Key Application Design Concepts

---

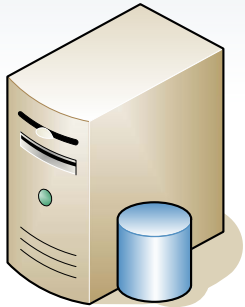
- Utilize the current GIS data in ArcSDE, especially the LRS and lane configurations
- Enterprise class solution – many different business functions utilizing the system
- Map depiction of lanes - convert to usable offset
  - 5 mile view of the Tollway
  - 1024x768 resolution, 17” monitor
  - Offset Multiplier Used (#)
- Maximize the use of feature layers vs. event layers
- Heavily leverage layer symbology categories
- Utilized ArcMap layer definitions vs. on-the-fly

# Key Application Design Concepts

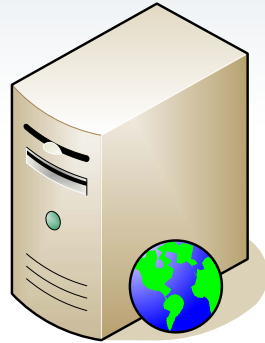
- Distribute ArcGIS Server© processing
- Create Reusable Services
- Distribute maintenance activities
- Generate and distribute various formats (eg. kml) of the published data using ServiceMix ESB.



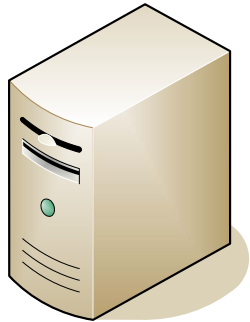
# Hardware / Software



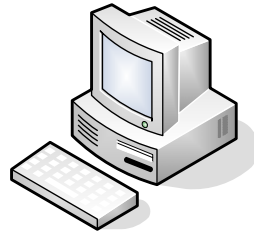
**ArcSDE / SQL 2005 Server  
Server**



**Internal Web Server**



**ArcGIS  
Server**



**Workstation 1**



**Tollway Lane Closure**



# Demonstration

Patrick Engineering GIS - Windows Internet Explorer

http://gistablet/patrickgis/demos.asp

Google

Patrick Engineering GIS

ArcGIS Server Development ...

Official Site of the Premier Le...

Home

Demonstrations


Projects


Services

Contact


**PATRICK** ENGINEERING INC. Geographic Information Systems


**Application Demonstrations**


 [Lane Closures GIS Application](#)

 [Budget Analysis - Illinois Tollway](#)

[ArcWeb Services - Geocoding \( ArcGIS Server Web Map\)](#)

 [Utility Program](#)

 [Radio Frequency Site Location Analysis - Basin Electric](#)

 [Site Location Maps - Basin Electric](#)

ESRI AUTHORIZED BUSINESS PARTNER

Site Location Map Application Is Only Available if VPN is established

Local intranet 100%

Partnering to Build Better Infrastructure

# Cost vs. Benefits

---

- Application Requirements \$20k
- Application Development, Testing, Deployment \$160k
- Application Support \$7500
- Indirect
  - GIS Data Creation \$25k
  - Base GIS Software (ArcMap, ArcGIS Server) \$40k
  - Base Hardware \$50k
- Staff Time Savings per year \$250,000 (3 f.t.e.)
- Better Analysis of Lane Closure
  - Travel Time Savings
  - Safety
- Publication, Public Relations
- Dynamic Messages
- Consumer Awareness
- GIS Lane Data

# Lessons Learned

---

- Developed new business process – standard definitions, rule base
- Significant roll out within the business – we went on tour
- Large demand to publish outside of the Tollway – to other real time systems
- Create map tag descriptions based on available consumers

# Questions, Ideas and Contact

---



Mike Pordes

Solutions Manager

Patrick Engineering, Inc

55 E. Monroe Street, Suite 3450

Chicago, IL 60603

312-201-7921

[mpordes@patrickengineering.com](mailto:mpordes@patrickengineering.com)

# Patrick Engineering, Inc Booth #

I \_\_\_\_\_ saw the Lane Closure Demonstration at GIS-T 2008

I would like more information

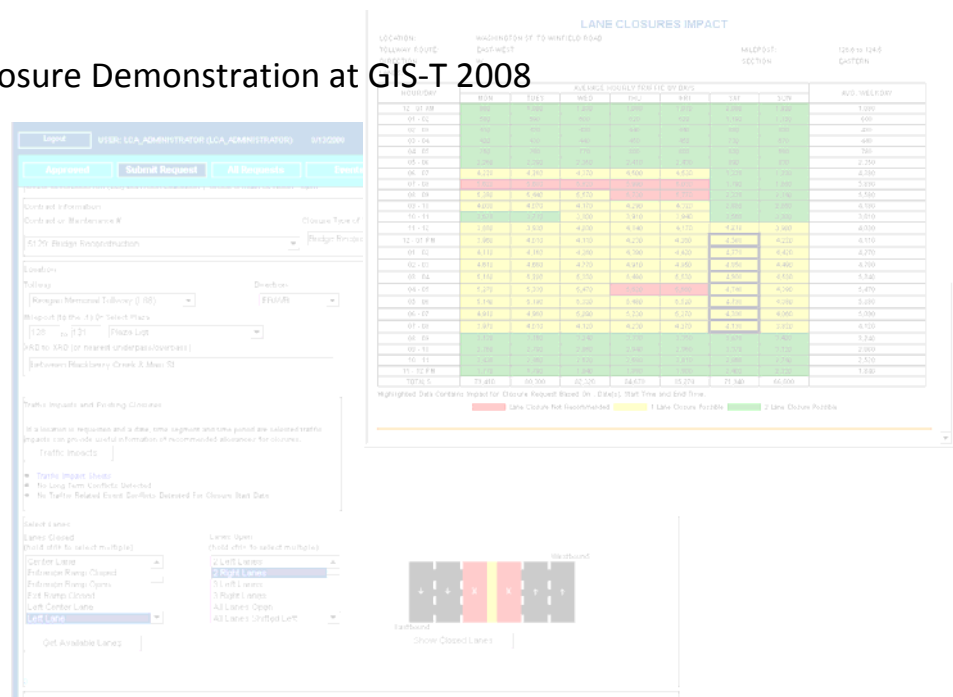
Name: \_\_\_\_\_

Company: \_\_\_\_\_

Position: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_



I would like to setup a personal demonstration

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Mike Pordes  
mpordes@patrickengineering.com  
Solutions Manager  
312-201-7921