Web Based ArcGIS Solutions for Infrastructure Management

Roy Apostle, StreetScan Inc.
Objectives

• Importance of Infrastructure Management
• Infrastructure Management Trends + Problems
• NU Research Project
• Beverly, MA Case Study
• Live Demo
• Questions & Answers
1.3 million miles are in poor or mediocre condition
Importance of Infrastructure Management

- $3.6 Trillion will be needed over 7 years
- There will be more cars on the roads of the future
  - Greater Boston Area will see an increase of 80,000 vehicles over the next 15 years
- More traffic, more wear on roads, more potholes!
Infrastructure Management Trends

• Web-based GIS solutions are becoming more widespread in both public and private sector

• Companies and communities are developing easy to use, easy to customize software
  • Web-based “pothole trackers”, 311 systems
  • Analysis/visualizations softwares
  • Mobile work-order trackers connected to a GIS
  • Online parcel viewers
Infrastructure Management Problems

• How can data be collected quickly and objectively?
• How can this data be used to stretch road repair funds?
• How best to effectively communicate needs?
• Best way to incorporate other infrastructure data?
Northeastern University Research Project

- $18 Million + 7 year multidisciplinary research project
- Developed rapid-sensing technology for roadway health monitoring
- Developed web-based method to analyze complex sensor data
  - GIS web-portal solution gives non-technical users a way to visualize data
PaveMON: Web-based ArcGIS Infrastructure Asset Management System

Asset Management
Data Creation
Data Storage
Time Series Analysis
Data Analysis and Fusion
Reporting
Web-access
Visualization
Beverly, MA Case Study

- Partnership with StreetScan in 2014-15
- Utilized PaveMON for Pavement Management Asset Survey
  - Performed immediate pothole repairs
  - Created long term repair and maintenance plans, budgets
- Yearly surveys help developed better road deterioration models
  - How to best plan for future repairs
Citywide Pavement Condition Ratings
Pavement Distress Locations
Citywide Mosaic Raster Imagery
Advanced Deterioration Monitoring

Wilson St
Dropped from 61 to 49

Scenna Rd
Dropped from 56 to 48
Prioritization Matrix

• Functional Class / Traffic Counts
• Condition
• Benefit to Repair Cost Ratio
• Available Budget
• Customizable input
Citywide Repair & Maintenance Suggestions
Sample Projected Conditions
Questions + Answers

Roy Apostle: royapostle@streetscan.com
www.streetscan.com