PennDOT’s E-GIS Upgrade
The Keystone of Planning and Operations

Frank Desendi
PennDOT, GID Manager

Nate Reck
GeoDecisions, Director
Agenda

• Background
• Facilitating Initiatives
• Outcomes
• Accomplishments
• Future Direction
• Questions
• 67 Counties
• 11 Engineering Districts
Background

- PennDOT’s Responsibility
  - 44,639 Miles of Roadway
  - 3,500 Local Fed Aid Miles
  - 27,165 Bridges & Structures
Background

• PennDOT’s GIS Database
  – ~50,530 Miles of Roadway
  β Adding 70,000 Miles of Local
  – ~38,316 Bridges & Structures

• Supports
  – Annual Program ~ $2B
  – Winter Services < $300M
**Background**

- PennDOT’s GIS Database
  - Roadway
  - Traffic
  - Bridge
  - Projects
  - Maintenance
  - Safety
  - ITS, Conditions
  - Boundaries
  - Environmental
  - Aviation
  - Rail
PennDOT’s GIS

• Modernizing
  – Tech Refresh / Expansion
  – Interviews
  – Needs Assessments
  – Prototypes
Redesign Needs

- Desires:
  - “Google”-like mapping experience
  - Disparate database integration
  - EZ visualization
  - Sharing of data/maps
  - Custom Layers
  - Tools!
Redesign Constraints

- Constraints:
  - PennDOT Base Map
  - Data Exposure
  - Database Architecture
  - Marketing
  - Training
  - Incomplete Road Network
Meeting Needs & Overcoming Constraints
PennBOTs

- Embeddable Tool Set
  - VideoLog
  - Street View
  - Document Management
  - Query Builder
  - PETL
PennBOT Services

• Some Services
  – Ad Hoc query
  – LRM by Lat/Lon
  – Document Management
  – Legislative Districts
  – Many Tools and Searches
PETL

- Spreadsheet Dyn Seg Engine for the Web
- Dynamically Show Data in Apps and ArcMap
GIS-IQ

- Custom Map Builder
- Exportable/Printable Map and Data Grid
- Custom Layer Management
- Google-Like Search
- Canned/Template Maps
- Save and Share Maps
- Import Spreadsheets
Template Maps

- Standard Operating Procedures in Visual GIS Form
- Best Practice of Visualization and Query
- Whole State On Same Page
- **Examples:** Traffic Volumes, Functional Class, NHS, Condition, etc.
Demonstration
PennDOT’s GIS – Future

- Common Codebases / Services
  - Wholesale and Retail Widgets (PennBOTS)
Technical Environment

- ASP.NET - Visual Studio 2012
- AngularJS
- Bootstrap
- Python
Technical Environment

- Oracle Spatial 11g
- ArcGIS for Server 10.2.2
- Business Objects – Crystal Reports
PennDOT’s GIS – Future

- Expanded GIS-IQ Functionality
- Data Warehouse Redesign
- GIS Integration with Legacy Systems
- Services for Consumption
- External Data Loading (PETL)
- Partnerships with IT
Benefits

• Expanded GIS On-line Functionality
• Greater Data Exposure
• Collaborative Environment
• Reusable Utilities – BOTs
Benefits

• Shared Upgrades & Enhancements
• Faster Development
• GIS Tools / Non-GIS Applications
• Adaptive Workflow
Questions

• Thank You!!
• Questions...
• Contacts:

  Frank Desendi, PennDOT
  fdesendi@pa.gov

  Nate Reck, GeoDecisions
  nreck@geodecisions.com