Web Application Development with ArcGIS Server & Adobe Flex

City of Phoenix
Street Transportation Department

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Introduction

- Street Transportation's **EZ Map** went live February 2, 2009
  - ArcGIS Server & Adobe Flex
  - Replaces primary ArcIMS viewer application

- Stages of Development
  - User Needs Assessment
  - Authoring & Caching Map Services
  - Application Development with Flex

Migration to ArcGIS Server

- ArcIMS to ArcGIS Server 9.3

- Server Specs
  - Windows Server 2003 with IIS
  - 8-Core Intel 2.83GHz
  - 32GB RAM
  - 1.5TB storage

User Needs Assessment

- Surveyed ArcIMS app users
  - Why they use it and how often
  - What other mapping applications they use
    - Google Maps/Earth, Virtual Earth, etc.
  - What GIS data and functionality they need
    - Aerials, landbase, ROW assets, etc.
    - Printing, zooming to intersection/address, etc.
- Results guided Map Service authoring and application development

Authoring Map Services

- Multiple Map Services for various groupings of GIS data
  - Basemaps, ROW assets, current activities, etc.
  - 2 basemaps for use with & without aerials
- Optimal symbology & labeling in MXD
  - Performance

Caching Map Services

- Slowest performing and least-frequently updated Map Services
- Tiling scheme – 11 scales
  - Optimal symbology & labeling at each scale
- 10-14 hours for basemaps
  - Scheduled on weekends via Python script
  - Caching by updated quarter-sections (daily)

Application Development

- Selecting an ADF/API
  - Determines programming environment and UI
- Designing and creating UI
  - Intuitive, familiar, functional, good-looking
- Developing tools with GIS functionality
  - Task-oriented, intuitive

ArcGIS Server ADFs & APIs

- Finding the right tool for the job
  - .NET Web ADF
    - Out-of-the-box template
    - Too robust for our use
    - Customization cumbersome
    - ASP.NET, VB/C#.NET, HTML, JavaScript, CSS
  - JavaScript API
    - Performed well
    - Scalable
    - Spend too much time on web design
    - JavaScript, HTML, CSS

Adobe Flex

- Flex API
  - Fastest performing
  - Very scalable
  - Minimal time spent on web design
    - Flex apps are inherently beautiful
  - Ease of development
  - ActionScript, MXML
  - Flash Player (9+) required
  - FlexBuilder license = $250

User Interface Design

- Keep it simple
  - Docked toolbar
  - Categorized layers list
- Exploit Flexy look & feel
  - Drag-able & animated windows
  - Clean, sleek, smooth experience
- Intuitive & familiar
  - Keep user expectations in mind
    - Google Maps, etc.

GIS & Mapping Functionality

- Toggling layer visibility
- Only provide the necessary tools
  - Zoom to intersection, address, etc.
  - Identify features
  - Google Street View
  - Measure lines & areas
  - Add graphics & text
  - Export map to various formats
  - Bookmarks

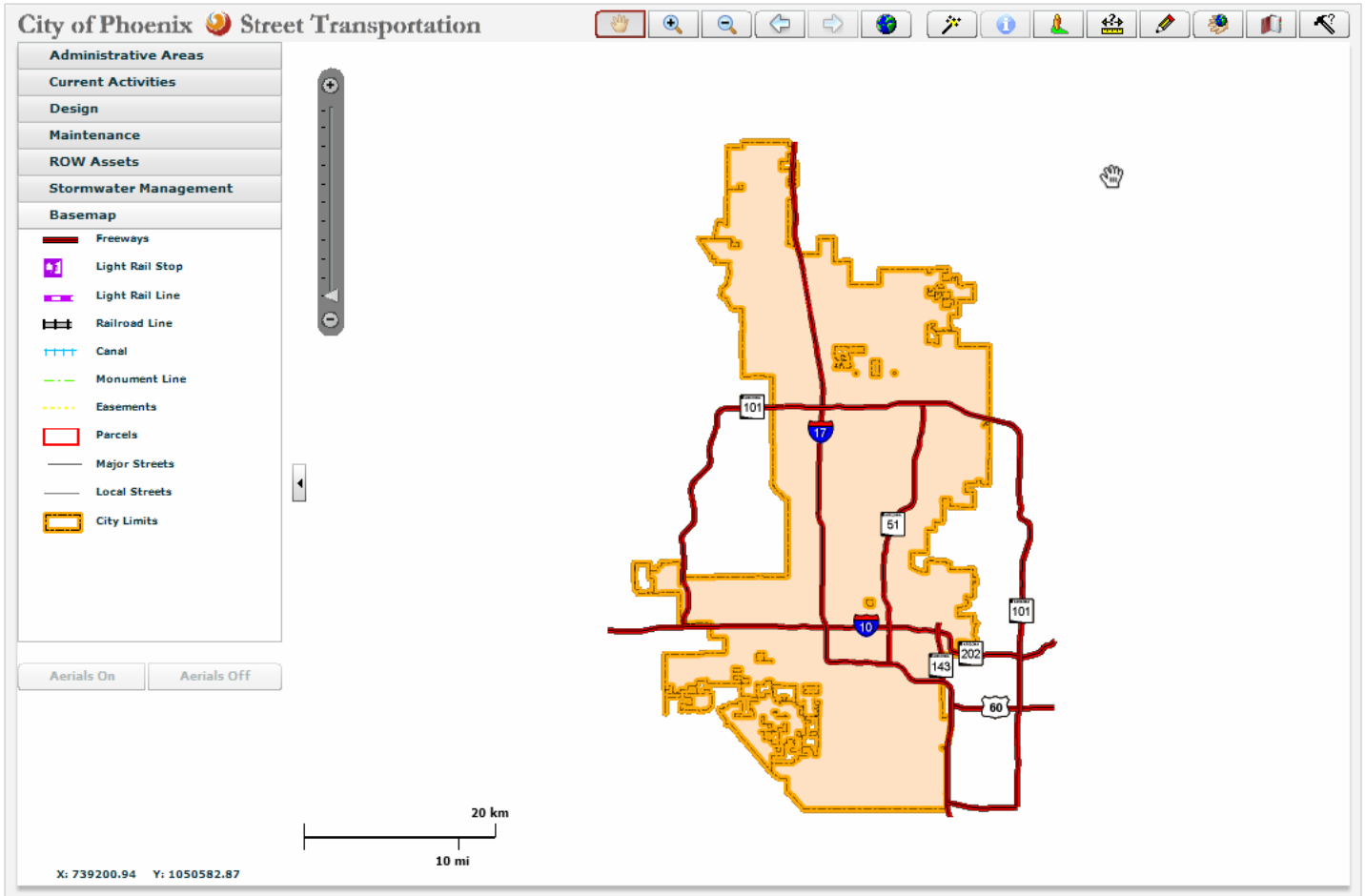
Deployment

- User Committee testing & feedback
  - Within the month prior to going live
- Hyperlink on Department's intranet webpage
- Replace hyperlinks in web reports
- Department-wide training
  - 2 sessions/week at various advertised locations

Results

- 220 unique visitors in first 3 weeks
  - About 44% of Department
- Averaging almost 70 visitors/day
  - More than 2x ArcIMS app visitors/day
- Positive user feedback
- Replaced ArcGIS Desktop installations

Demonstration



Thank You

Questions?

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