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July 13, 2010



Changes in user expectations
Google maps

Goal: Replace ArcIMS and desktop GIS applications with fast web mapping apps

Staff

- □ Analyst/Programmer II
- □ Analyst/Programmer I
- □ Senior GIS Tech & 2 GIS Techs



Introduction

Street Transportation's EZ Map
 ArcGIS Server & Adobe Flex
 Replaces primary ArcIMS viewer application

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





Caching Map Services

- Slowest performing and least-frequently updated Map Services
- Tiling scheme 11 scales
 Optimal symbology & labeling
 Design at each scale



10-14 hours for basemaps
 Scheduled on weekends via Python script
 Caching by updated quarter-sections (daily)

🥘 City of Phoenix

Planning for Caching

- Tiling Scheme □ Predefined scales where map is viewed 1:500.000 1:128,000 Design map at each scale 1:64,000 1:32.000□ Bottom scale uses 75% of storage 1:16,0001:8,000 □ If using Google/Bing Maps... 1:4,0001:2,000 Use their tiling scheme 1:1,5001:1.000Use web mercator projection 1:500□ Experiment with what works best
 - Tested on sample area



Caching Aerial Photography

- One layer in MXD
 - Raster source stored in SDE geodatabaseDisplayed when zoomed in beyond 1:8,200
- Cached as PNG24 image files
 Better quality, but larger file size than JPG
 No difference in quality & smaller than PNG32
 PNG24 transparency issues in IE6



Basemaps

Designed for use with Aerials



Displayed at all scales. City Limits filled above 1:8,000.

Designed for "Engineering" view



Displayed at 1:8,000 and below.



Basemaps

Layers
 Not grouped by scale
 Visible scale ranges
 Match tiling scheme scales + 200

Labels

Classes for each scale range
Visible scale range
Sizes/symbology
Used Maplex engine

Cannot utilize MSD files (until 9.4)

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Basemaps

Anti-aliasing

Background color of Data Frame must be considered

□Used average RGB pixel values of Aerials





Stormwater Management

- Storm Drain System & Floodplain data
 - □ Good candidates for caching
 - Storm Drain data is static
 - Annual reload of Floodplain data
 - Complex geometries



Documentation

Documented all layers and properties for each Map Service The followy splace philos star of the sprain a lot of the lot of the مقصله الالتركيب فستعتز الالد And the second s □ Data sources 100.0 ---at the last state Trans and the party of the second sec Adda to a list with the second □ Visible scale ranges Calification and Landson and the second second second Particular Constructions (In Star 2011 - 174) (11) Instrument Construction Constructions (In Star Coll tax, sum Constructions (Institute on Constructions (Internet)) □ Feature symbology ARC TO BUILDER where he was in a second to have been been in the second A 10 March - Suspensition in the owner with a state for the second of the LLBC - Just when a love frames, pringer a liter will be -ALSO (19) - 46 (19) - 470 (19) - 40 □ Label styles 1.1 Manual Andrews 12 distant when the little includes a loss how in laws A contract of -----8 mm □ Definition queries -- -

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Caching Methods at 9.2

Recreate All Tiles using Geoprocessing tool

Update	e Mode	
Recre	eate All Tiles	
Numbe	r of MapServer In	nstances (optional)
Numbe	er of MapServer In	nstances (optional)

Windows Scheduler using Python script







Caching Methods at 9.2





Caching by Quarter Section

 Update cache from feature extents at 9.3
 Recreate cache tiles only in areas with landbase updates using QS as reference



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Storage Requirements

Cached Service	Size on Disk	# of Files	# of Folders
Aerials	236 GB	5,673,813	3,911
Basemap (Aerials)	25.1 GB	6,034,197	4,256
Basemap (No Aerials)	24.2 GB	6,175,944	4,215
Stormwater Mgmt	24 GB	6,180,959	4,257



Application Development

- 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 on client □ Adobe FlexBuilder IDE or 3rd-party



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/Bing Maps, etc.



GIS & Mapping Functionality

Toggling layer visibility

Only provide the necessary tools \Box Zoom to intersection, address, etc. □ Identify features □ Google Street View □ Measure lines & areas □ Add graphics & text □ Export map to various formats □ Bookmarks □ Report Issues





- 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 90 visitors/day
 More than 3x ArcIMS app visitors/day

Positive user feedback

Replaced ArcGIS Desktop installations



If It Ain't Broke...

- Redesigned for Aviation Department
- "Bypass" ArcGIS Server for database calls





Questions?

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