

# Adapting to Changing ArcGIS for Server Technology - A City's Vision

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# About the City

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# Enterprise-Wide Geographic Information Systems (EGIS)

- Enterprise GIS Governance Model
  - EGIS Policy Board
  - Functional Teams
- CGIS and select departments - Support city's geospatial data and needs
  - Key departments: Public Utilities, Public Works, Planning, Real Estate Assessor, etc.
- CGIS provides web mapping data/applications for the City
- Web Team – Supports public-facing applications
- Mobile Team – Supports mobile applications



# GIS – Changing Architecture to Web Mapping

- Production
  - GeoMedia
  - ArcGIS Server 9.3.1, 10.2.2...
- Web Maps
  - Map Guide (Previously)
  - ArcGIS Server, ArcGIS Online... (Currently)
- Database Environments
  - Oracle – transactional DB – maintained by GIS production team
  - SQL Server – publication DB for web applications



# Current and Future ArcGIS Products

- **ArcGIS Server**
  - 9.3.1, 10.2.2
  - ArcGIS Online for Organizations
  - Community Analyst
  
- **Future...**
  - Image Server, Geoevent processor, Business Analyst Online...



# Web Mapping Applications

- **VBgov Maps** – Public facing
  - SharePoint, Google Maps, ArcGIS API for Javascript
- **City Map** – Intranet Enterprise
  - ArcGIS 9.3.1, ArcGIS 10.2.2, ArcGIS Viewer for Silverlight 3.2
- **Mobile Apps**
  - ArcGIS Online
  - SeeClickFix
  - Future - Xamarin and ArcGIS Runtime SDKs

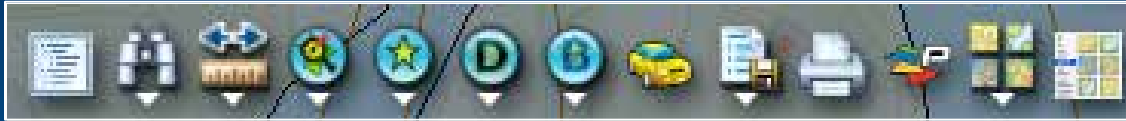


# Web Application Releases...

- **ComIT** (Applications Support) - IT
  - VBgov - Internet (Public Facing Application)
  - ArcGIS Server 9.3.1, SharePoint, Javascript, Google Map, VS 2010, C#
- **ArcGIS.com** - GIS
  - City Maps, Census 2010
- **CGIS** (Web Team) - **GIS**
  - City Map - Intranet (City Wide Applications)
  - ArcGIS Server 9.3.1, ArcGIS Viewer for Silverlight 2.4, Expression Blend, VS 2010, C#



# City Map Tools



### Find Map Features

Text Search    Spatial Search  
 Planning    Other  
 Sewer    Water    Raw Water  
 Stumpy Lake    Lake    Other IIR  
 Lake    Canyon

**Sewer**

Bend    Mainline  
 Check Valve    Manhole  
 Clean Out (Mainline)    Pump Stations  
 Clean Out (Lateral)    Pump Station Service Area  
 Emer Pump Conn    Relief Valve  
 Fittings    Vacuum Facilities  
 Isolation Valve  
 Leak Detector

Enter Search

Sanitary Sewer

Pictometry    Bing/Google Imagery

Clear Results

### Identify Map Features

Select a layer group  
Property Information

Click the point tool and map to identify feature(s)

Select a sublayer  
Address Point

Select a feature to view attributes  
2405 COURTHOUSE DR STE 200

Field	Value
OBJECTID	93701
GPIN	14948149580000
STREET NUMBER	2405
STREET NAME	COURTHOUSE
STR_TYPE	DR
STREET DIRECTION	Null
STREET UNIT / SUITE	200
FULL ADDRESS	2405 COURTHOUSE
ZIP CODE	23456
ZIP CODE EXT	9041

Excel Pdf Html

### Layer Buffer

Select layer  
Property Information

Select a sublayer:  
Address Point  
Property Easements  
Recorded Parcel Li  
Parcels  
Neighborhoods  
City Property  
City Park Property  
Federal Military Property  
State Military Property  
Condos

Select units and enter a value:  
Units  
Miles  
Feet  
1000

Click on the Pencil tool, then click on the map:





# City Map Transformation... Applications

- Real Estate Assessor - Market Areas
- Public Safety – Shelters, Storm Surge...
- Public Utilities - Street Paving Status
- Public Utilities - Station Status...
- Other...



# City Map Provides...

- All map layers are available for departments to view data
- View maps with business data, document management systems
- Ability to create prototypes and review within functional teams to create new applications
- Customization is achieved through AddIns created in Visual Studio using C# and are distributed using ArcGIS Viewer for Silverlight to the respective interfaces
- Ability to zoom at 1' resolution is a requirement for Public Utilities

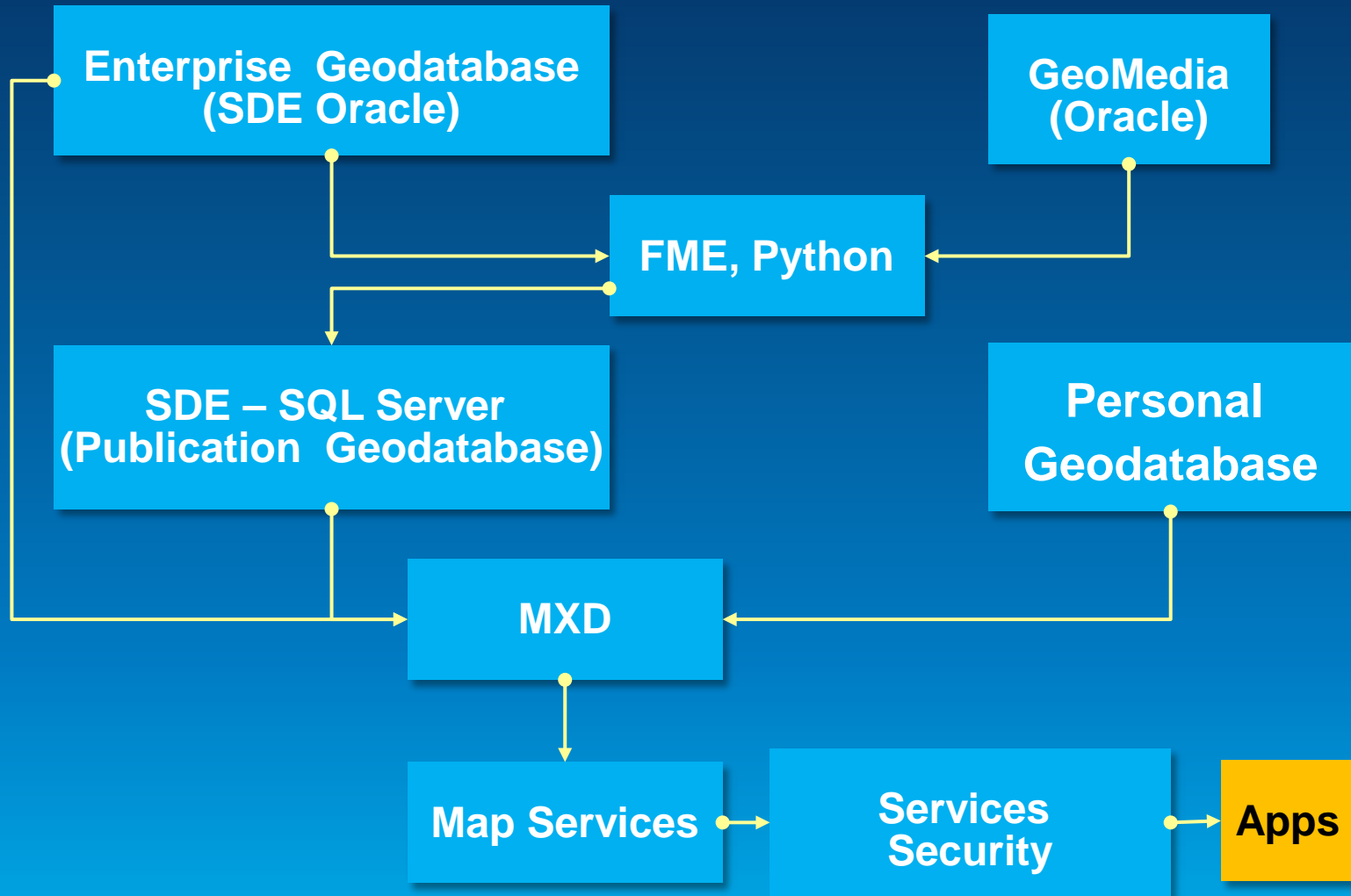


# City Map Data Source...

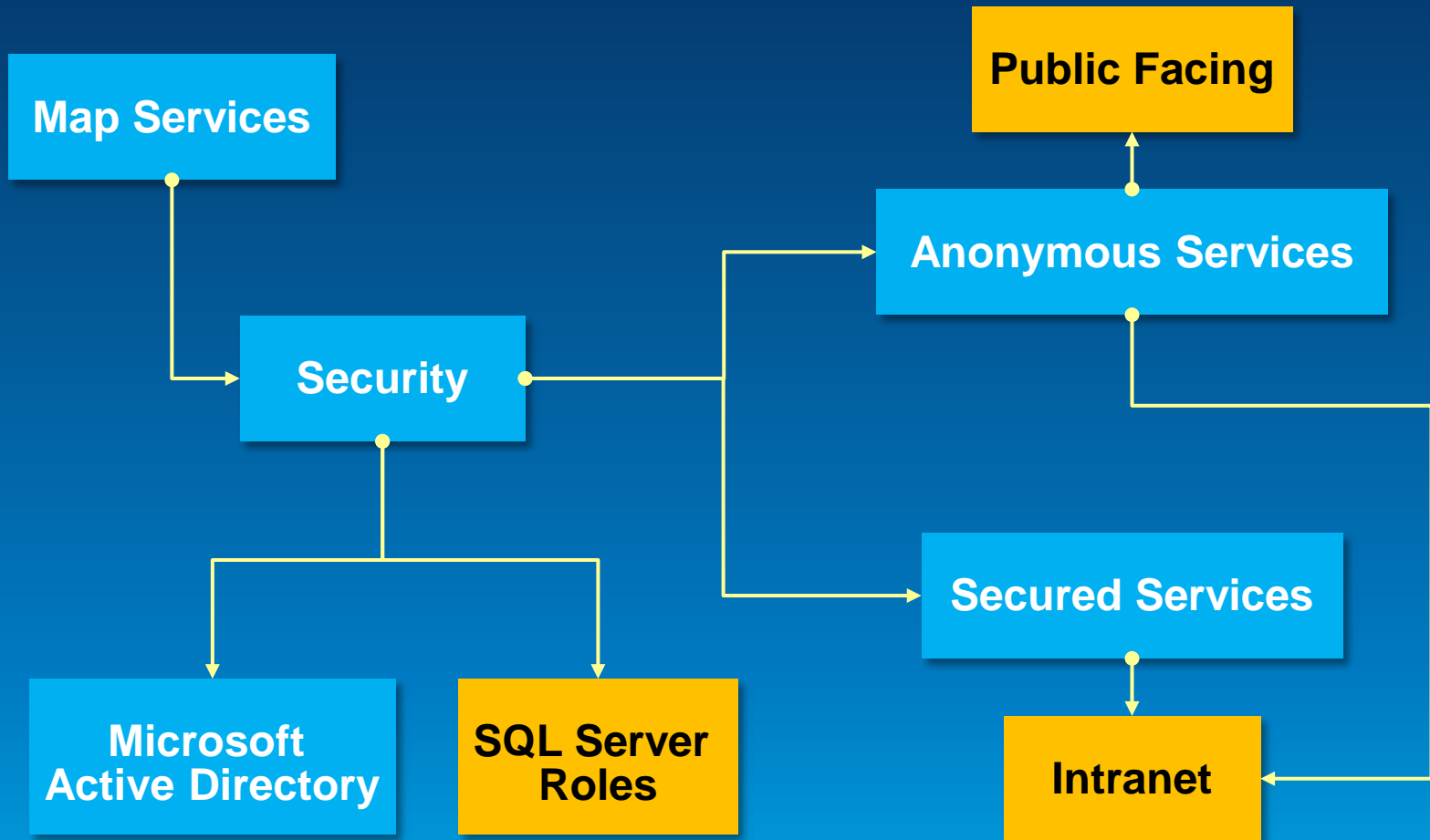
- All map data is served using a publication database
- All source data is consistent across all platforms
- Data updates are usually weekly and instant updates can be done as ad hoc requests or using data refresh tool in some cases using an Add-In
- All map services metadata can be accessed in pdf format



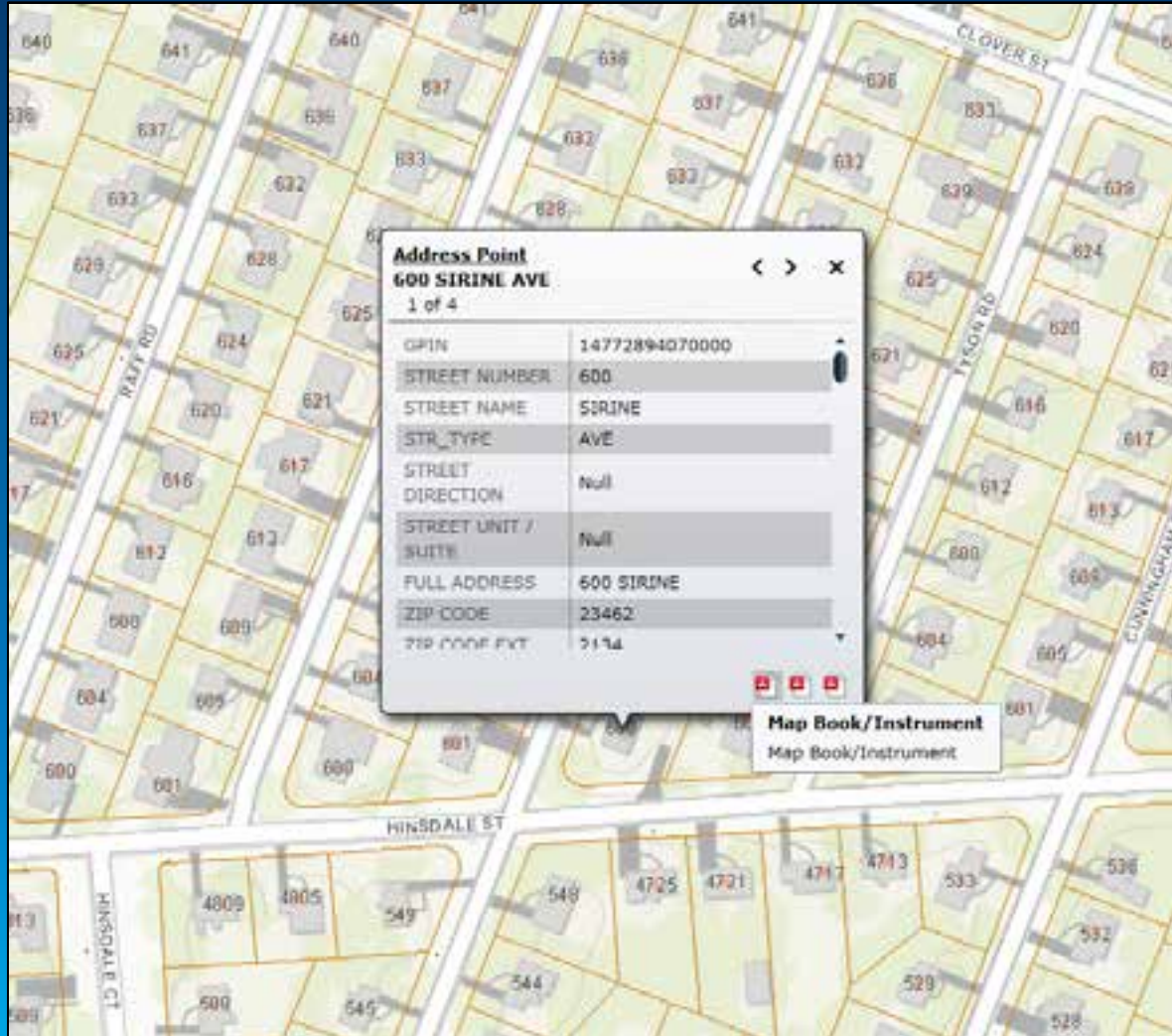
# Layers to Map Service



# Security Model



# Report/Document Access



# Prototyping to Operational...

- Public Utilities ad hoc maps such as Paving Status and Others...
- Real Estate Assessor's Market Area Access
- Reports and Document Access
- Combination of City Data with Web Maps
- Access to Capital Improvement Program templates
- Developed AddIns as needed for different applications and are reused as needed



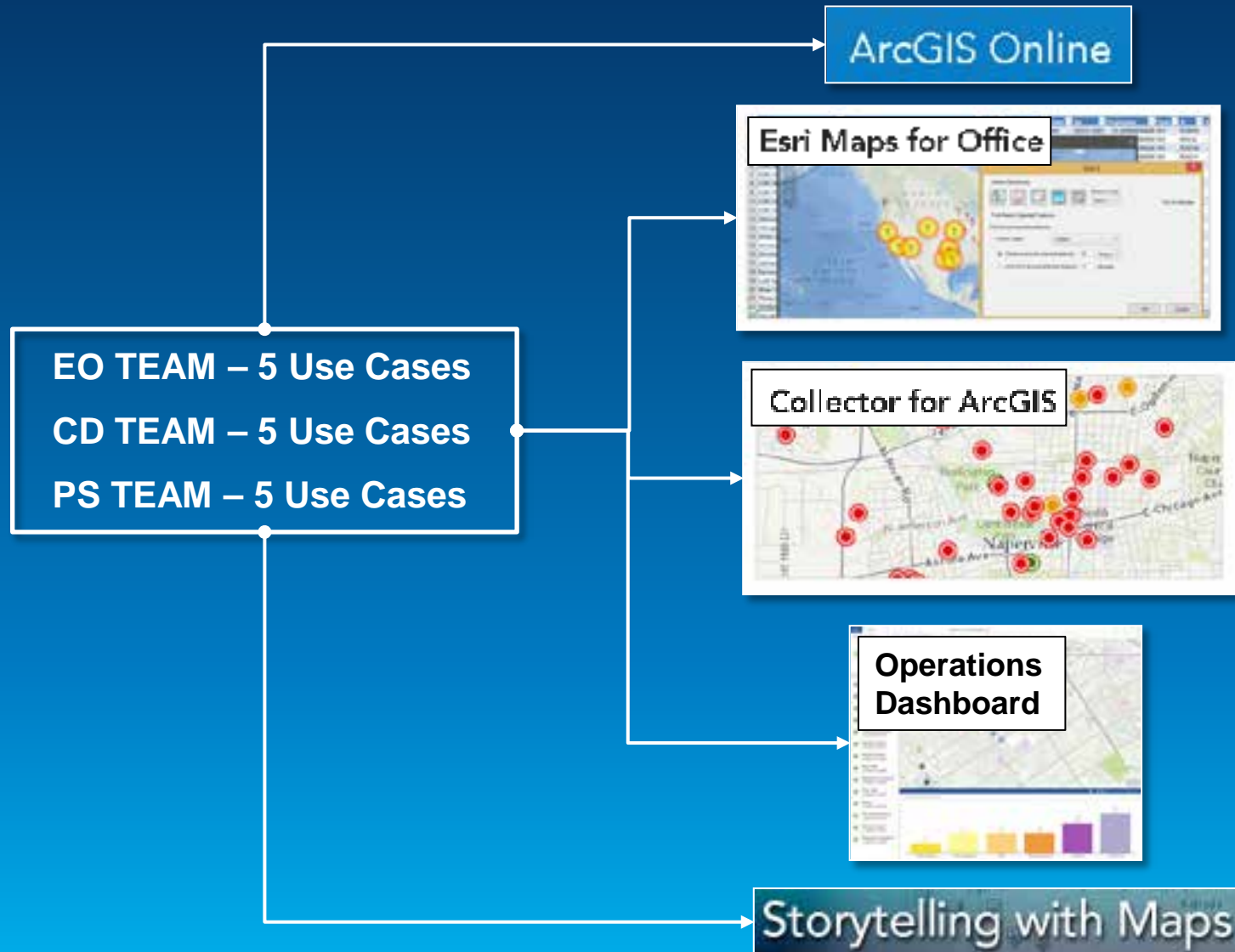
# ArcGIS Online Initial Review...

- Determine the limitations of ESRI technology and find issues upfront (Geocoding etc.)
- Determine the service credit usage and thus plan for future guidelines and use (Use cases and service credits used etc.)
- Determine what type of applications we can help our teams to be able to implement, use and train (Document for training teams etc.)
- Determine the use of the technology for CGIS and train CGIS in supporting the teams (Documentation, training teams etc.)
- Determine the different aspect of use for desktop and/or mobile devices and their limitations
- In enabling data sharing with the public (Transparency - Shape files for distribution etc.)
- In organizational use of the technology such as secured access limitations etc.. (REA, Police, Fire, EMS etc..)





# ArcGIS Online Organizational Accounts...

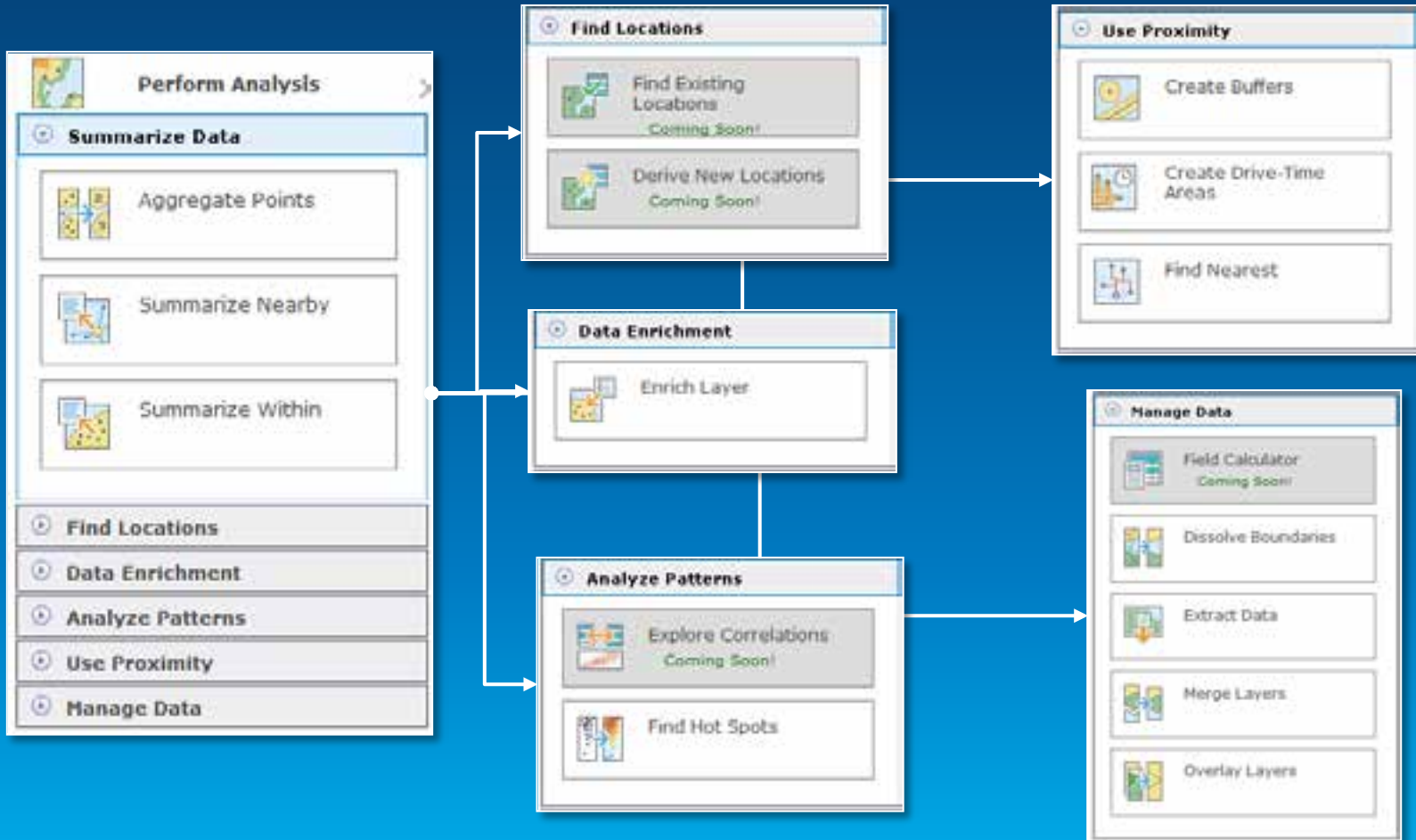


# ArcGIS Online/Web APIs/Desktop?

- ArcGIS Online
  - Simulate environments to test Service Credits usage
  - Limited functionality, Limited Printing
  - Feature limitation (1000 features...)
- Web APIs
  - Can be customized and rich functionality
  - Feature limitation (1000 features...), Limited Printing
- Desktop
  - Rich functionality, Full Printing
  - No feature limitation



# Analytics/GeoEnrichment and Service Credits (Use as needed)



# Service Credits Usage Matrix (Cloud vs. Intranet)

Services	Type	Quantity	Service Credits
Feature Services			
Storage	Services	512	→ 1475
Geocoding Services	Geocodes	50000	→ 2000
GeoEnrichment	Requests + Views + Records	5000	→ 350
	Views	30000	
	Records	215000	
	Requests + Views + Records + Attributes	300000 + 5 Attributes	→ 15,350
Spatial Analysis	Features	100,000	→ 100
Network Analysis	Simple Routes	8000	→ 320
	Optimized Routes	8,000	→ 4000
	Areas	500	→ 250
	Routes	5000	10000
	Vehicles + Route Solves		→ 20
	Route Solves	10,400	1
Data Storage	GB	100	→ 1440



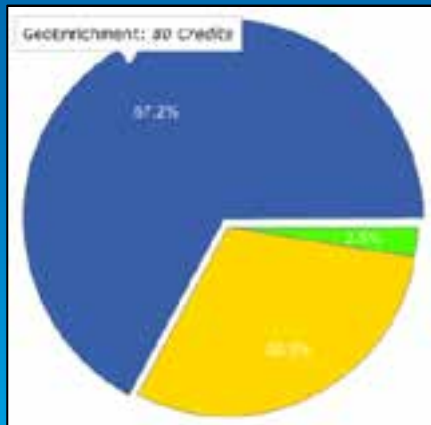
# Service Credits Review...

Map Tile Generation	1 credit per 1,000 tiles generated
Feature Services Storage	2.4 credits per 10 MB stored per month
Tile and Data Storage	1.2 credits per 1 GB stored per month
Geocoding	40 credits per 1,000 geocodes
Simple Routes	0.04 credits per simple route
Optimized Routes	0.5 credits per optimized route
Drive-Times (Service Areas)	0.5 credits per drive-time
Closest Facilities	0.5 credits per closest facilities route
Multi-Vehicle Routes (VRP)	2 credits per multi-vehicle route
Demographic and Lifestyle Maps	10 credits per 1,000 map requests
Data Enrichment	10 credits per 1,000 data variables (attributes)
Infographics	10 credits per 1,000 views
Reports	10 credits per report
Spatial Analysis	1 credit per 1,000 features

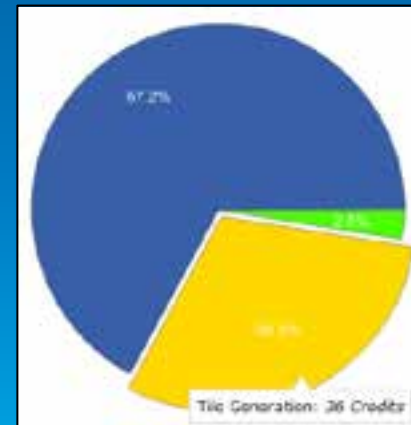


# Service Credit Review...

- Tile caching in the Cloud consumed large amount of credits
- Feature services storage consumes credits monthly
- GeoEnrichment (Community Analyst...)



GeoEnrichment



Tiles



# Operations Dashboards...

- Initial prototype of dashboards are being considered for Network Fleet Data
- Several other applications that can be of great use for management in different departments and emergency management are being considered



# Changing landscape of GIS and IT...

- Business Intelligence has been making great strides recently
- This will enhance the ability to integrate spatial systems with business systems within the City in an efficient manner
- GIS provides robust spatial data and business systems provide data from various departments throughout the enterprise
- The advantages are numerous as all business data doesn't need to be present within the enterprise GIS





# Future...

- Migrating to ArcGIS 10.2.2...
- Working on establishing governance plans for ArcGIS Online, Community Analyst...
- Implement ArcGIS Online across the enterprise dependent on licensing
- Implement operations dashboards for management, native mobile applications
- Review Web APIs and consider changes if needed
- Integration of ArcGIS with Power BI for Office 365



# Questions?

Thanks for attending the presentation

I hope some of the ideas presented are helpful

Your feedback is much appreciated and may offer some new insights for me to consider

