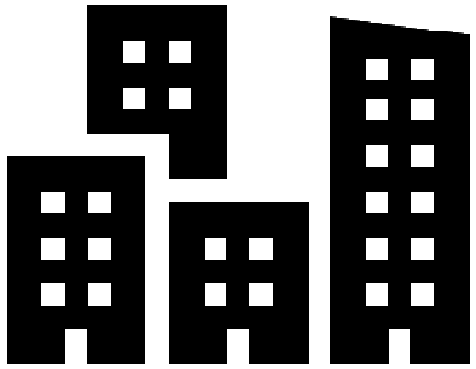
GIS and Governing Anchorage

- GIS Critical for Efficient, Transparent Government
- How is GIS Program Doing
- Where can GIS Program Take us



Municipality of Anchorage
Office of Economic And Community Development
Geographic Data and Information Center

Tina Miller, P.E.
Geographic Information Officer
Municipality of Anchorage

An Informed & Transparent Approach

- Smart City
- What Works City
- Asset Management

Smart City

A smart city is an urban development vision to integrate information and communication technology and Internet of things technology in a secure fashion to manage a city's assets. These assets include local departments' information systems, schools, libraries, transportation systems, hospitals, power plants, water supply networks, waste management, law enforcement, and other community services.

What Works Cities

- "….reflects a set of aspirations and activities that create a strong foundation for the effective use of data and evidence within city governments.

PORTLAND ASSET MANAGEMENT

Asset management framework

PBOT uses an asset management framework recommended by the International Infrastructure Management Manual, which is also used by the Federal Highway Administration and Environmental Protection Agency. The framework includes five core questions for infrastructure managers.

This continuous cycle of inventory, condition, value, performance, risk and cost assessment provides data and information that asset managers use to develop and implement an asset management plan for each asset group (e.g., streets, bridges, signals and so on). The asset management plan is the tactical plan for managing an asset group. It describes the maintenance, rehabilitation and replacement strategies and includes a project list that includes the project type, location, estimated costs and estimated start and finish dates. The plans and lists inform the Bureau's budget development process.

Simply stated, we're assessing what we have, then assessing what condition it's in and then assessing the financial costs to maintain it at a targeted condition. This approach is effective in maximizing the value of our capital, operations and maintenance expenditures within current revenues, while continuously delivering levels of service that the public desires and decision makers require, at an acceptable level of risk to the Bureau.

The following terms and definitions are used in PBOT's asset management strategy:

Status is how critical an asset is to the overall system based on its costs and impacts on organizational objectives.

Condition is the physical state of an asset (e.g., fair, good or very good).

Level of service describes what an asset is intended to deliver to its users matching expectations with willingness to pay (i.e. what the organization pledges to deliver to its customers). It is a qualitative or quantitative measure of how well an asset is delivering a needed service.

Unmet need is the minimum cost to maintain an asset at a targeted level of service and condition.

Best practices

WHAT IS THE CURRENT STATE OF OUR SYSTEM'S ASSETS?	WHAT IS OUR TARGETED LEVEL OF SERVICE?	WHICH ASSETS ARE CRITICAL TO SUSTAINED PERFORMANCE?	WHAT ARE OUR MINIMUM LIFE CYCLE COSTS?	WHAT IS OUR BEST LONG-TERM FUNDING STRATEGY?
1	2	3	4	5
Prepare an asset inventory and system map that includes what we own, its location, its condition, its useful life and its replacement value.	**Determine targeted levels of service and performance measures, and track progress towards achieving those targets.**	**Rank assets from most to least critical based on analysis of the risk of failure.**	**Determine minimum life cycle costs for maintaining, rehabilitating and replacing assets to provide the highest levels of service over time.**	**Establish a long-term funding strategy to maintain assets at targeted sustainable levels of service.**
Example: GIS map of asset locations	*Example:* Condition target: 80% of arterial and collector streets in fair or better condition	*Example:* Risk of failure is higher for arterial and collector streets with freight and transit	*Example:* Preventive maintenance: Apply the right fix at the right location at the right time	*Example:* Identify new transportation funding


Implementing GIS
Requires More Than Technology
Vision, Leadership, and Involvement
Strong Business Case
Value and Impact
Cost, IT, Risk Assessment
Realistic Timeline
Ongoing Governance
(Business, IT, Security, and GIS)
Good People
Shared
Location
Understanding
. . . and a Culture of Sharing and Engagement
UC
Esri User Conference
Applying The Science of Where
July 10 - 14, 2017 | San Diego Convention Center
San Diego, California

Leveraging GIS Program – Cost Effective

- High ROI – some as high as 14 to 1 in early stages like MOA
- Fast and Agile
- Creates Culture of Sharing

We can’t afford not to have mature GIS program

Anchorage's GIS Challenge ESRI – October 2016

Observations | Weaknesses / Challenges / Risks

- Users lack self-service access to authoritative data, maps and apps
- GIS perceived as underutilized with unknown potential
- GIS exists in multiple silos across municipal departments
- Inconsistent adoption and adherence to best practices
- Employees feel inadequately trained
- Funding and staffing constraints are negatively impacting innovation
- Antiquated paper-based processes seen as wasteful, inefficient, and high-risk
- Inconsistent understanding of vision across departments
- Minimal IT support and governance for GIS due to competing priorities

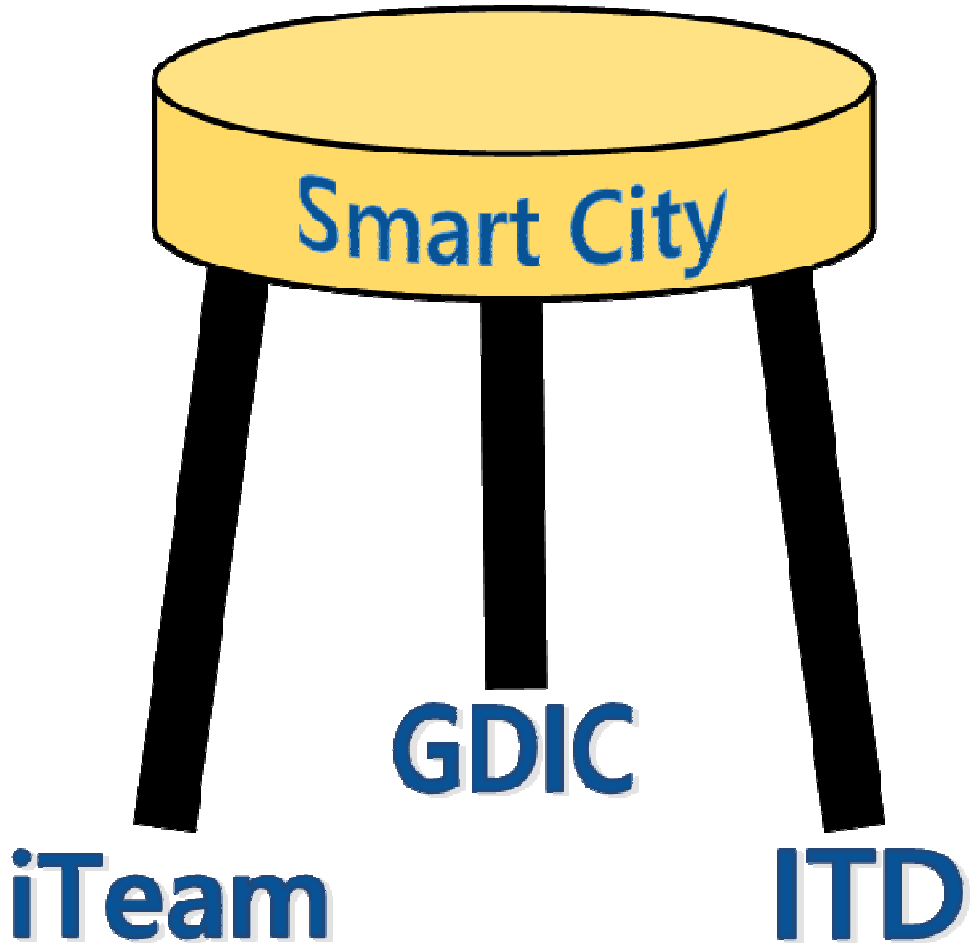
GIS - The Science of Where

GIS – Efficient, Accessible Data Management

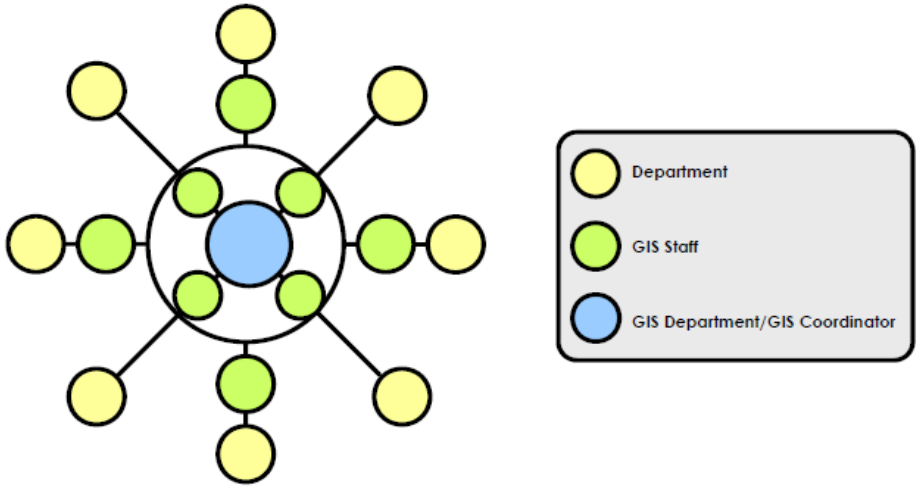
The Approach

- Governance
- People
- Infrastructure
- Data

The Approach: Governance



The Approach
Governance



Hybrid GIS Organizational Structure

Definitions Summary of Organizational Structures

Centralized Organizational Structure:
All GIS tasks except data viewing and analysis are handled by a central GIS department or division. All GIS staff are located within the central GIS department or division.

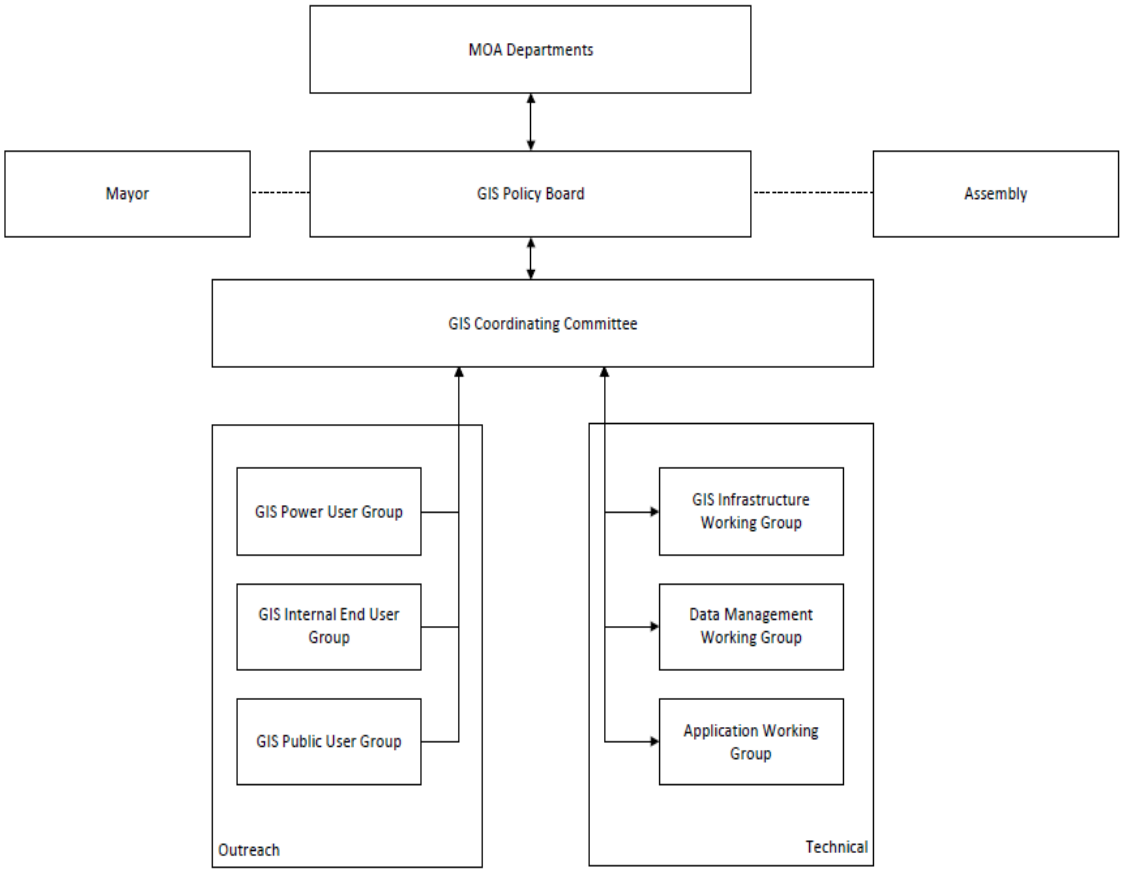
Decentralized Organizational Structure:
GIS data updating and maintenance responsibilities are assigned to individual GIS-participating departments. Departments have their own GIS staff members.

Hybrid Organizational Structure:
GIS tasks may be handled centrally or at department level, depending on needs and available GIS staff at individual departments.

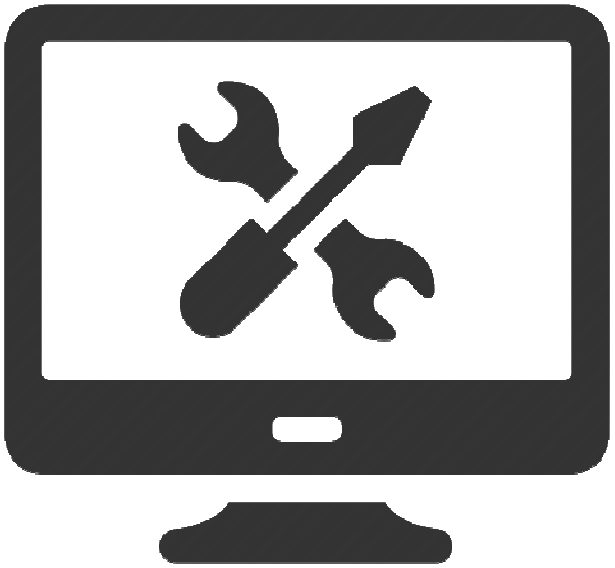
The Approach: Governance

Municipality of Anchorage
Geographic Information Systems

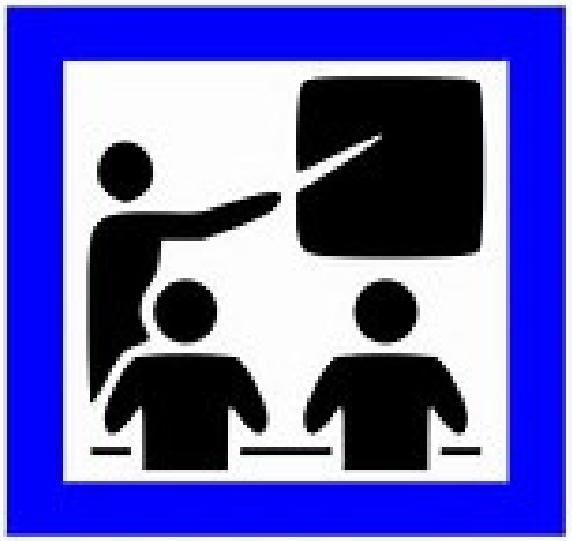
2016 GIS Organizational and Operating Plan



The Approach: People

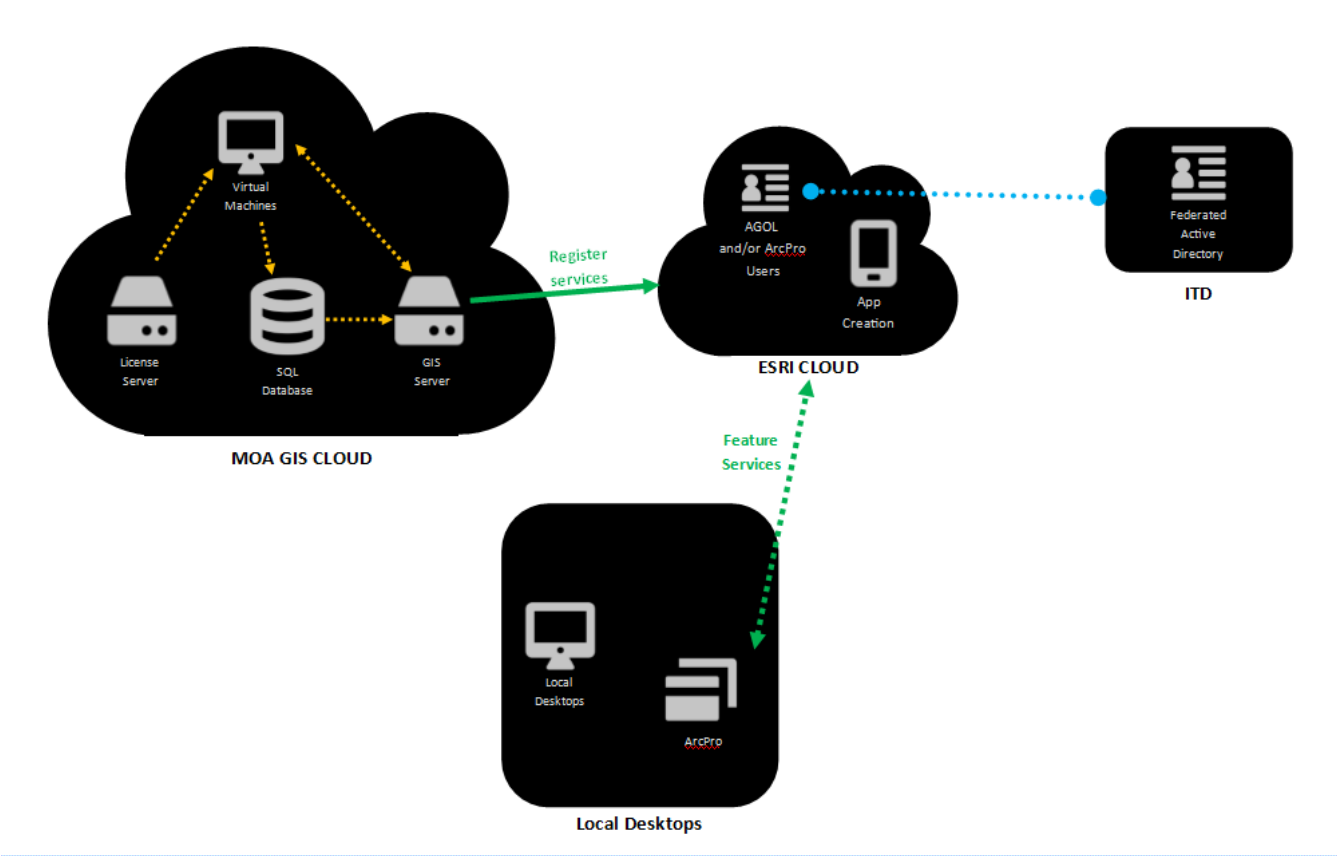


Access to Current Tools!



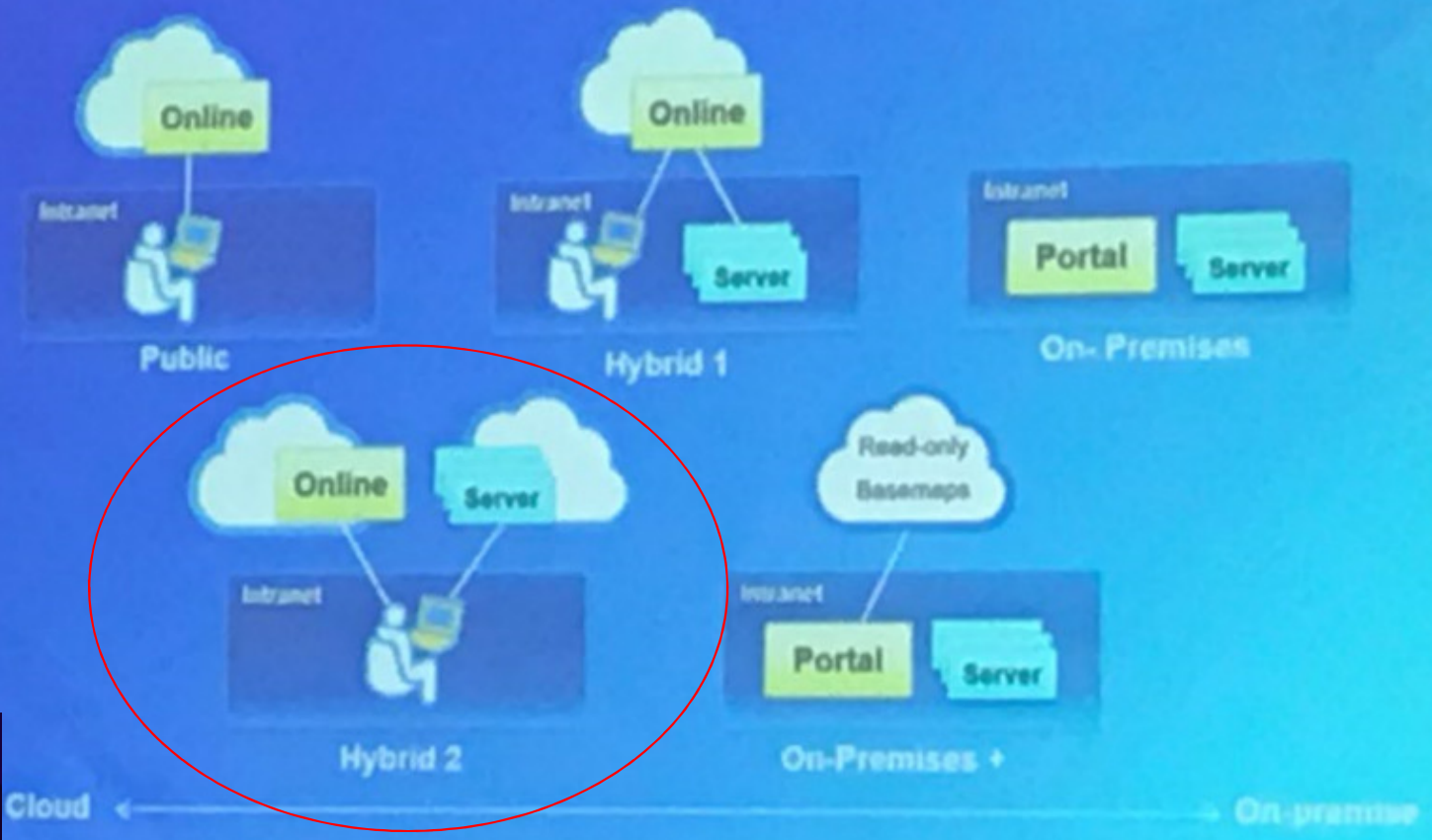
Training, Mentoring!

The Approach: Infrastructure

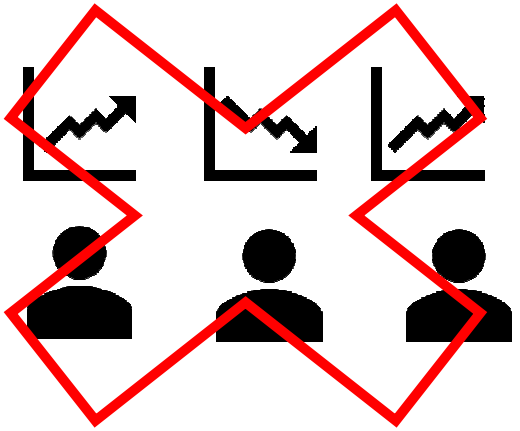


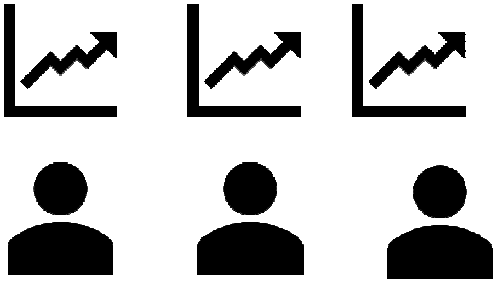
Cloud

Deployment Models



The Approach: Data

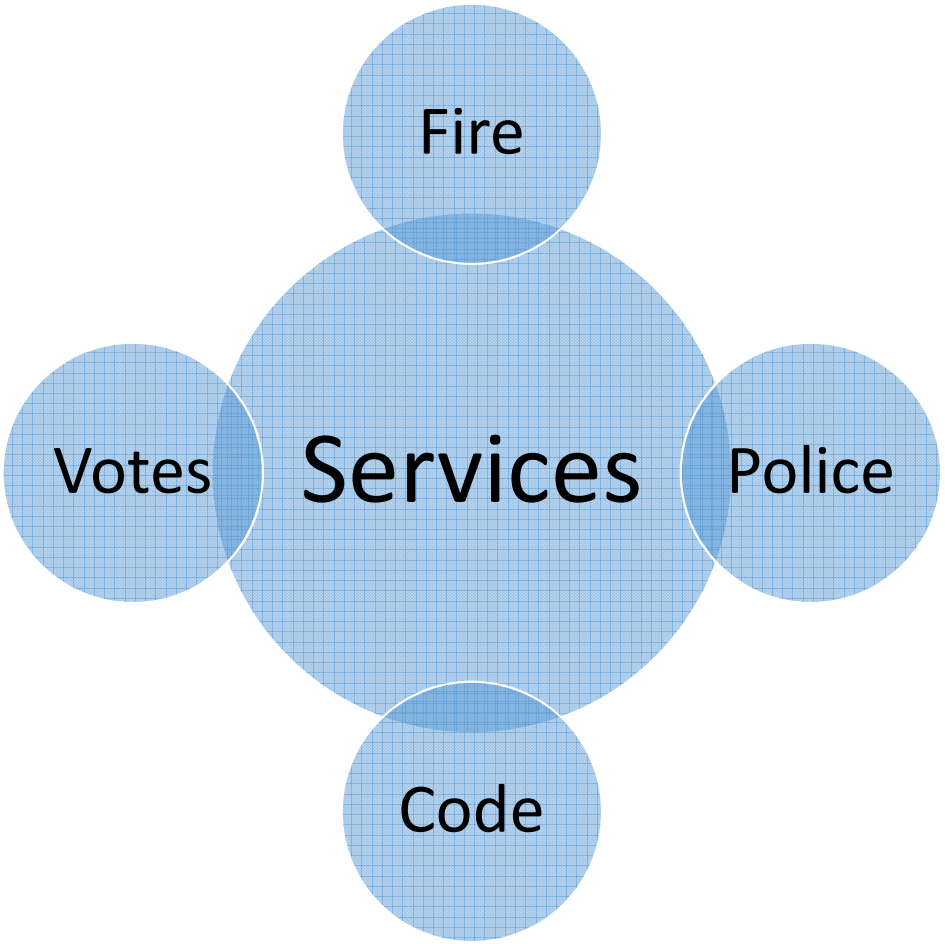




Authoritative Data Source

GIS & Local Government –Data is an Asset

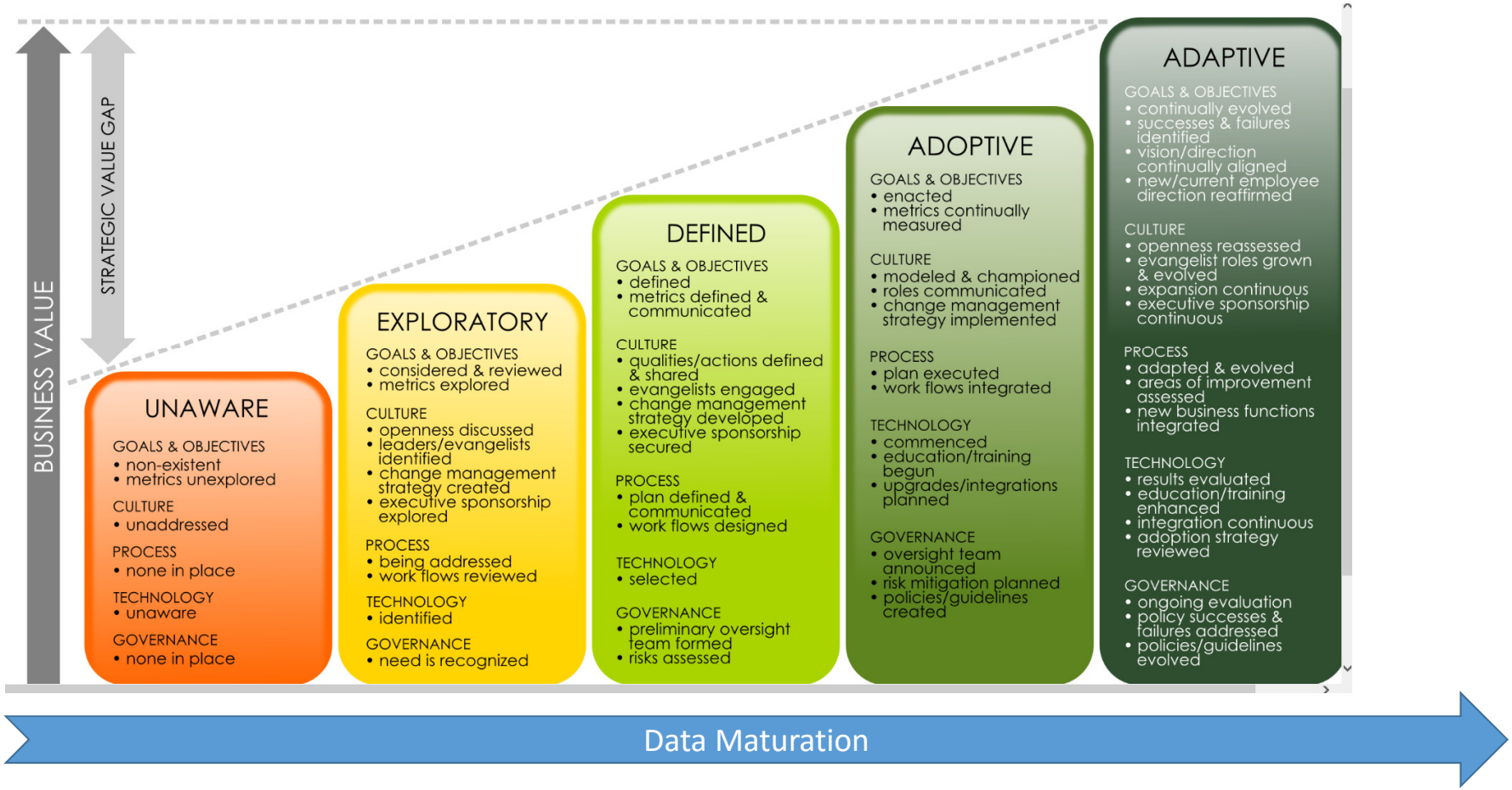
GIS & Local Government – Lots of Data



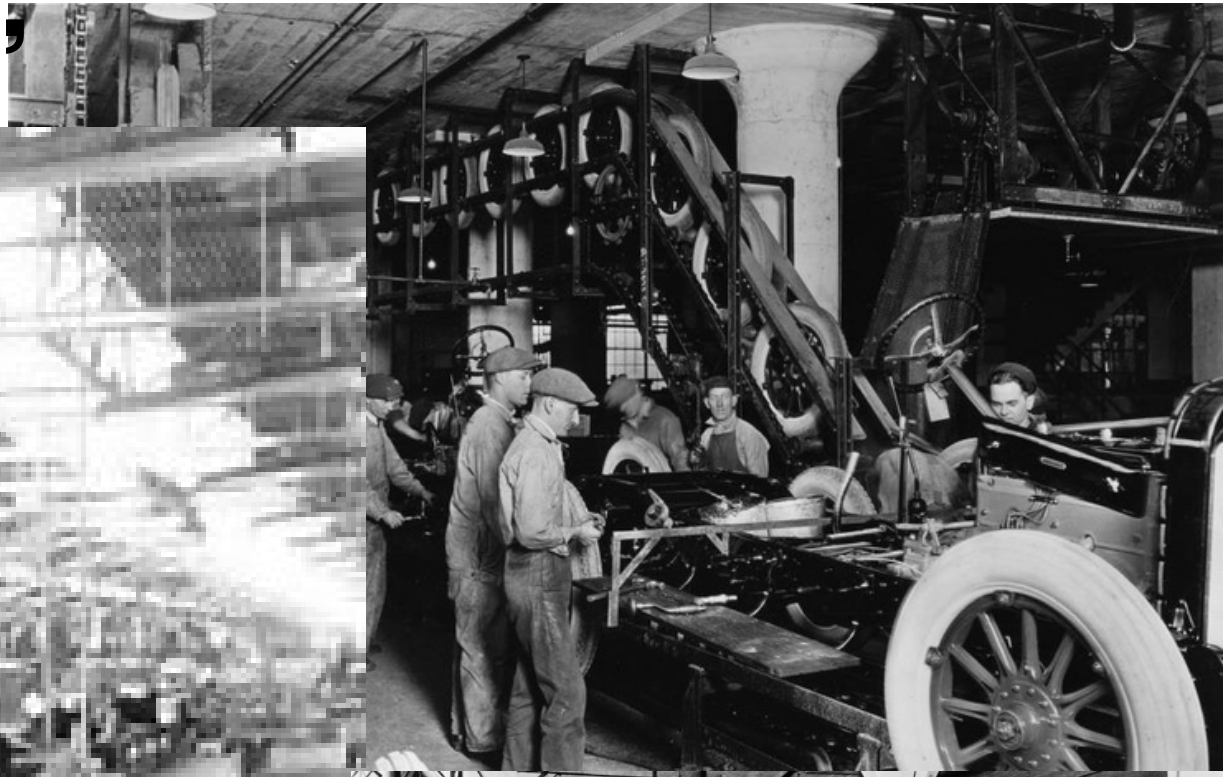
The Approach – Authoritative Data

- Data Owner for Each “Restricted” Dataset
- Open Data Policy – to public by default
- Rebuild Trust – It is “Your Data”
- Department Authority and Business Knowledge Leads – Central GIS is service not authority
- GDIC Home Page

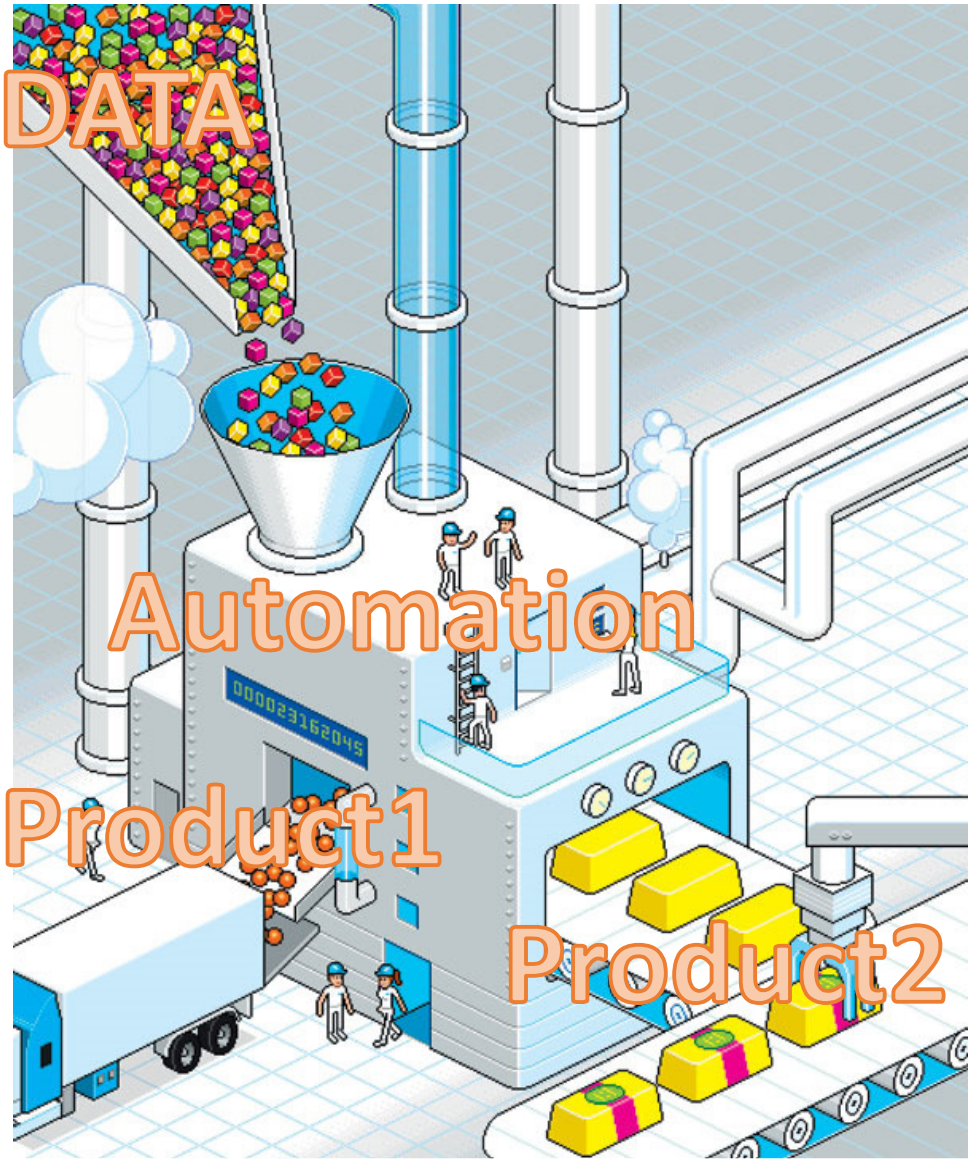
Data Maturation



“Auto-mation”



Authoritative Data



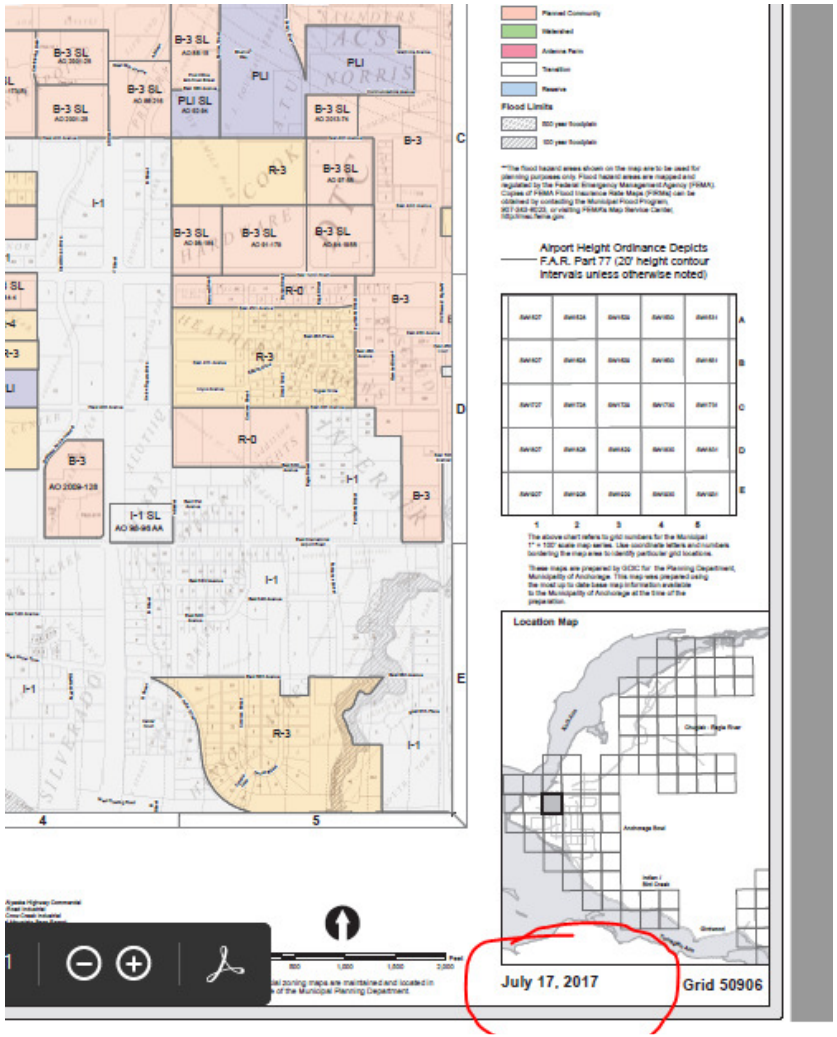
The Approach – Self Serve Print Maps

- 8,720 individual map pdfs public
- 165 map pdfs for emergency services

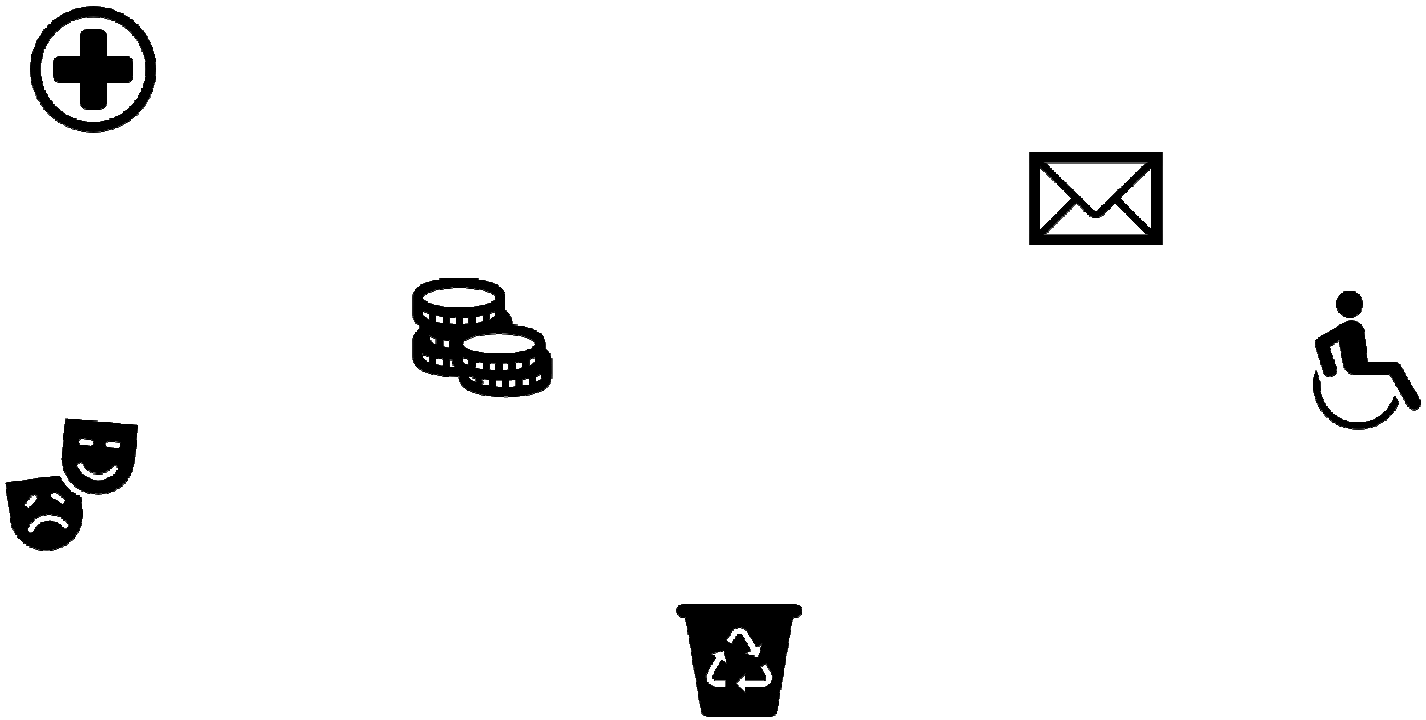
PREVIOUS	NOW
MANUAL AD-HOC	AUTOMATED
AD-HOC	SCHEDULED
INVALID DATA	AUTHORITATIVE DATA

Many had not been updated since 2001!

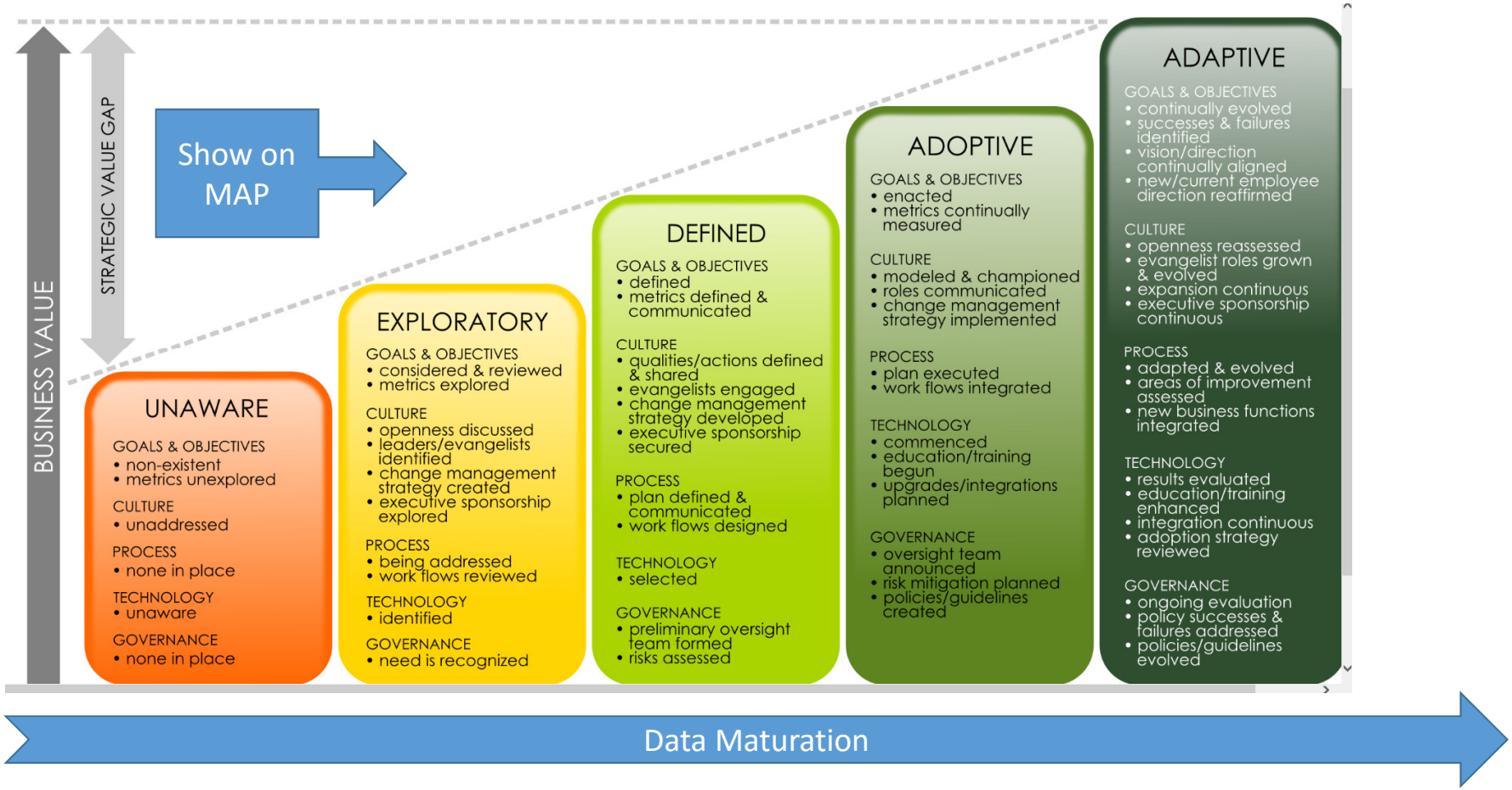
[Grid Maps]



The Approach – Start from the Problem



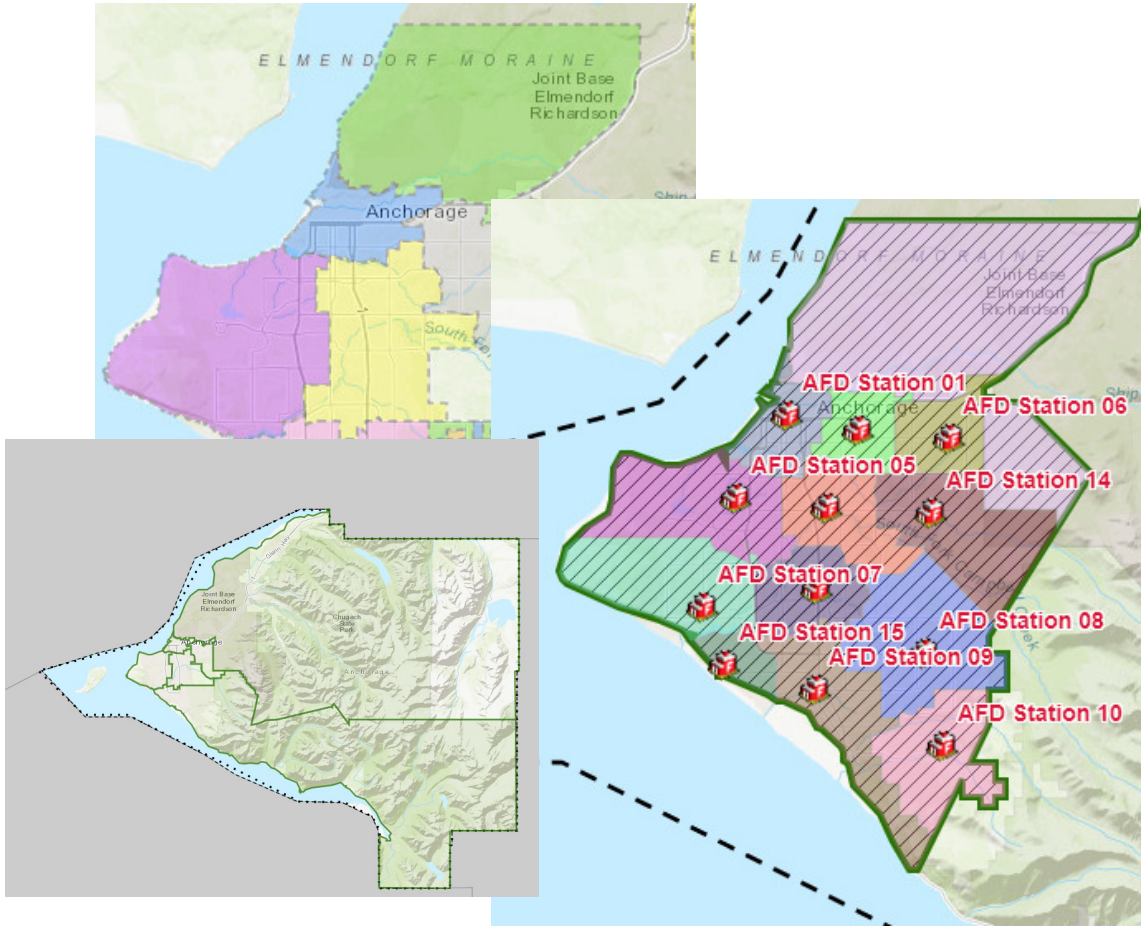
GIS & MOA– Data Case Studies



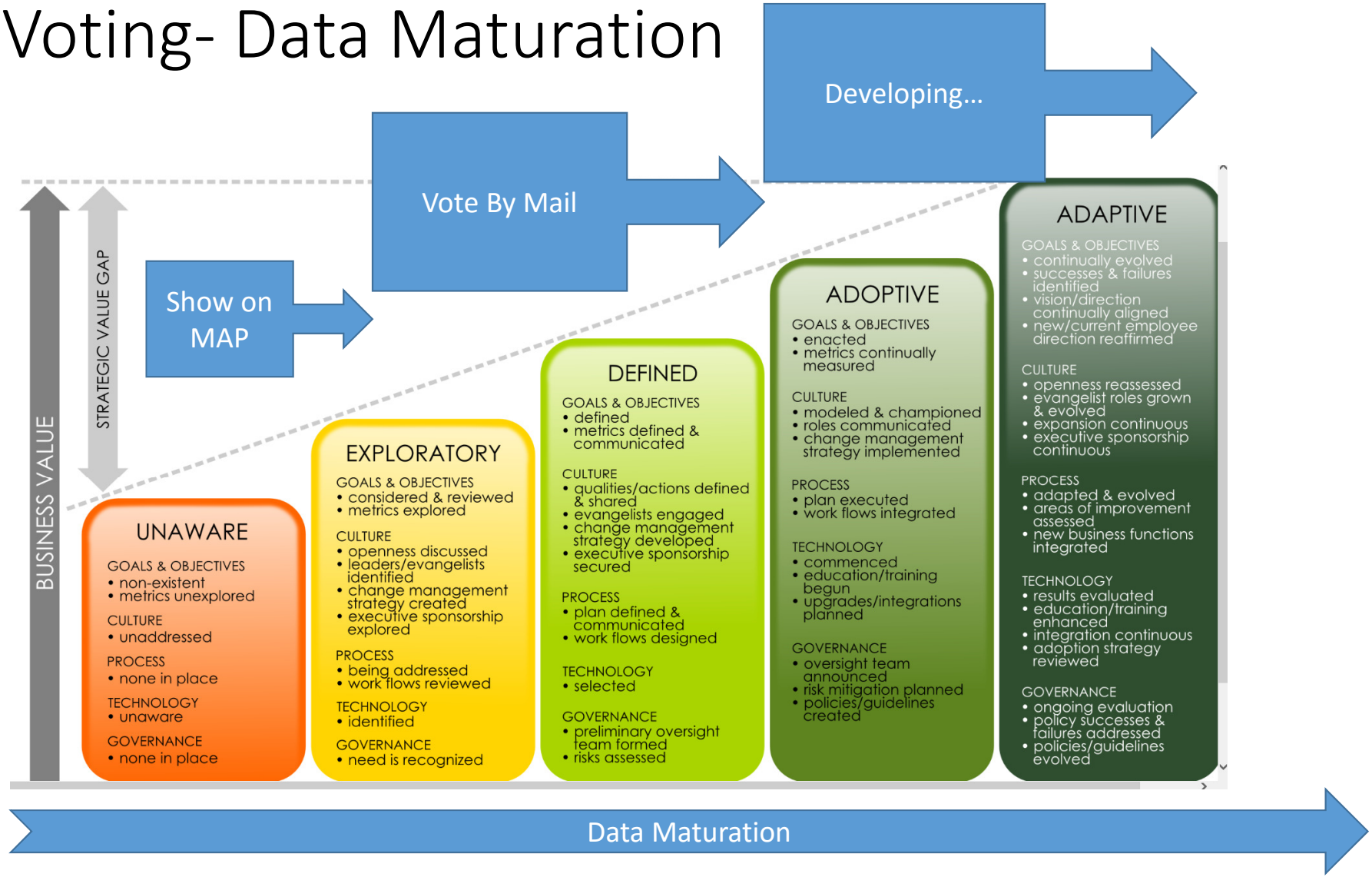
Anchorage Governed by Where - Voting

- What is a Municipality?
- How do we Vote?

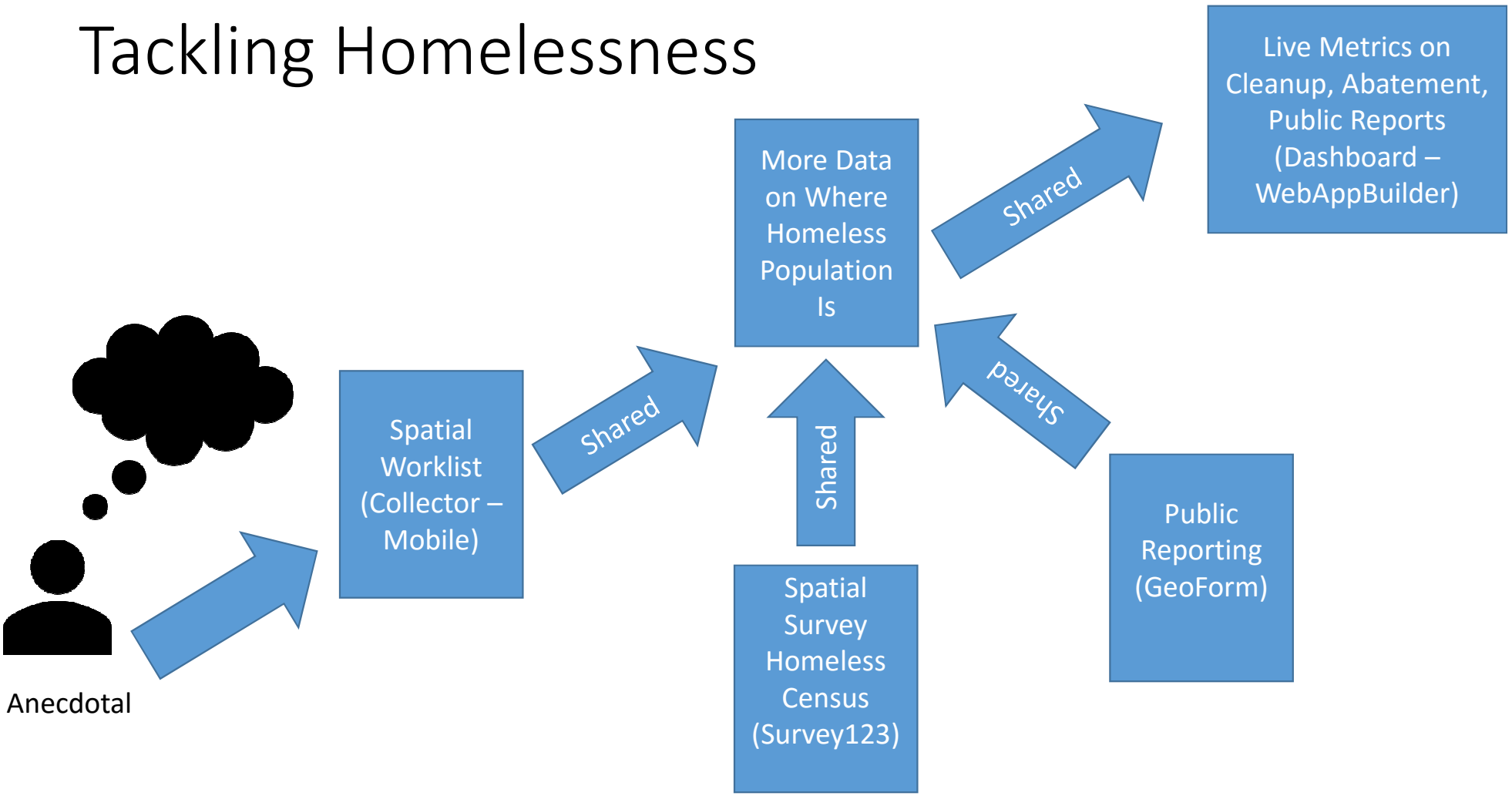
AFD, Property Appraisal, Land Records, City Clerk, Legal, Public



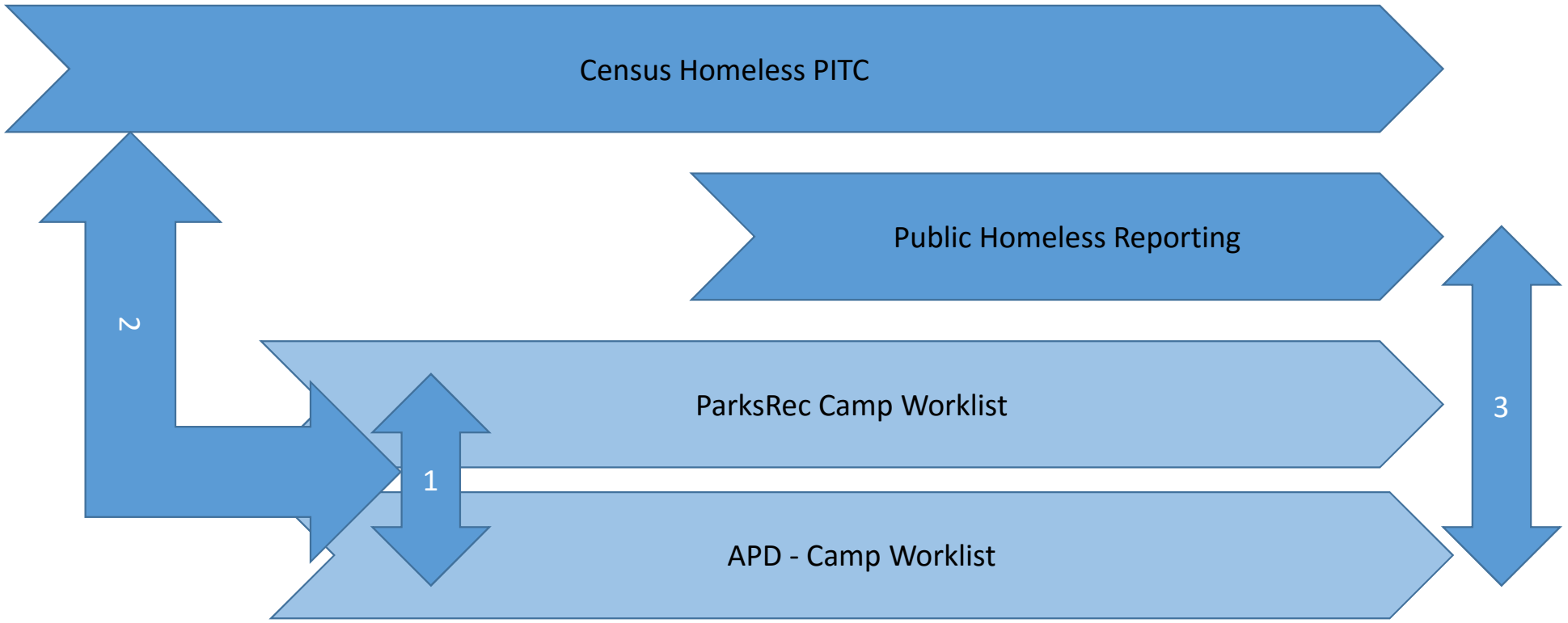
Voting- Data Maturation



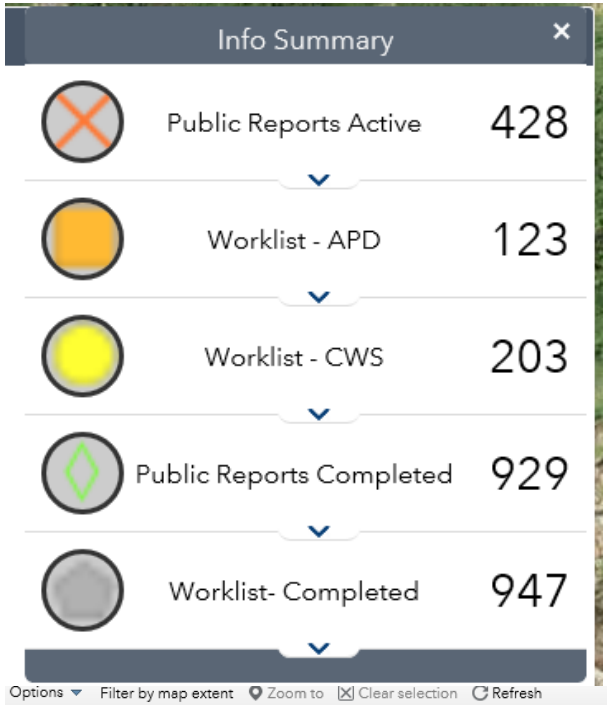
Tackling Homelessness



Homelessness – Developing the data



Homelessness – Keeping it Running



Options | Filter by map extent | Zoom to | Clear selection | Refresh

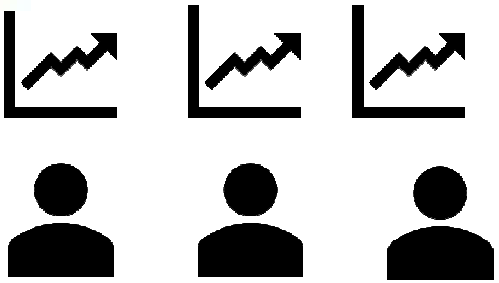
Eviction_Notice_Date_P	Cleanup_Complete_Da	CWS_Comments	CAP_Comments	General_Comments	Abatement Complete (Date)	CAMPID	APD_WorkflowStatus	CWS_WorkflowStatus	AncWorks_Comments	Private_Property	DateCreated	MoveOffWorklistD
	July 20, 2017					731	NoAbatementNeeded	Cleaned		No	June 14, 2017	July 20, 2017
June 14, 2017	July 20, 2017				June 30, 2017	1,049	Abated	Cleaned		No	June 14, 2017	July 20, 2017
June 14, 2017	July 20, 2017				June 30, 2017	1,050	Abated	Cleaned		No	June 14, 2017	July 20, 2017
	July 20, 2017		location shows to be on private property			1,279	Close_NoWorkDone	APDWorklist	Camp With Tents: Camp. Tents. Tarps. Trash		July 16, 2017	July 20, 2017
	July 20, 2017		gone			1,278	Close_NoWorkDone	APDWorklist	Camp With Tents: Tents up and people		July 15, 2017	July 20, 2017

Measuring Success…

Infrastructure Reliability

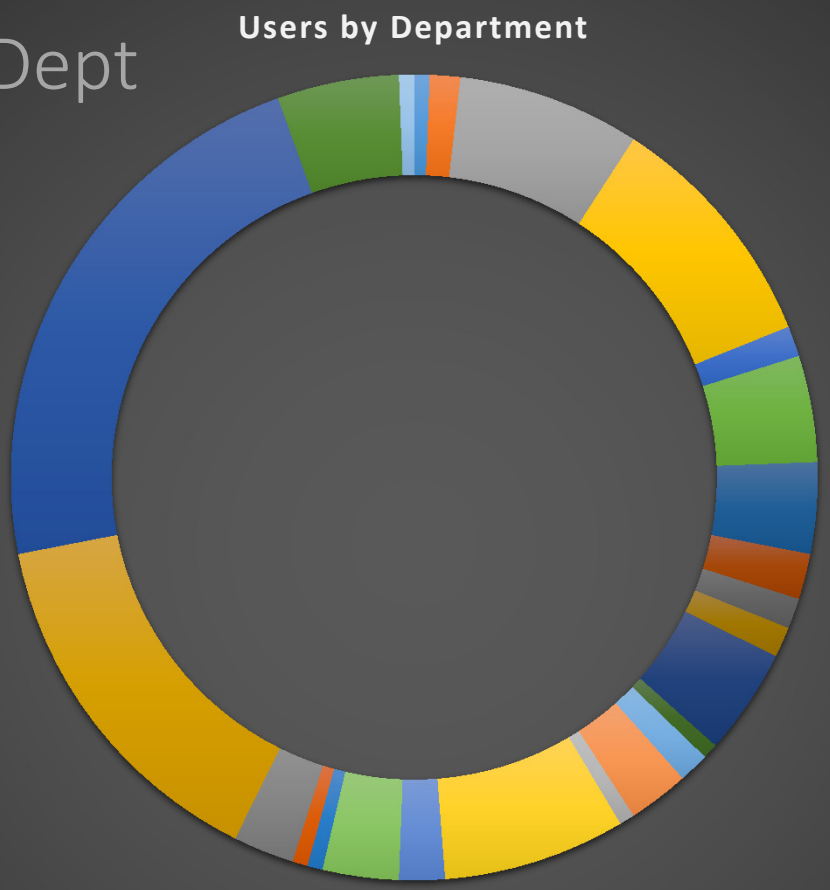
Governance - Participation

Usage –
People
Governance
Authoritative Data

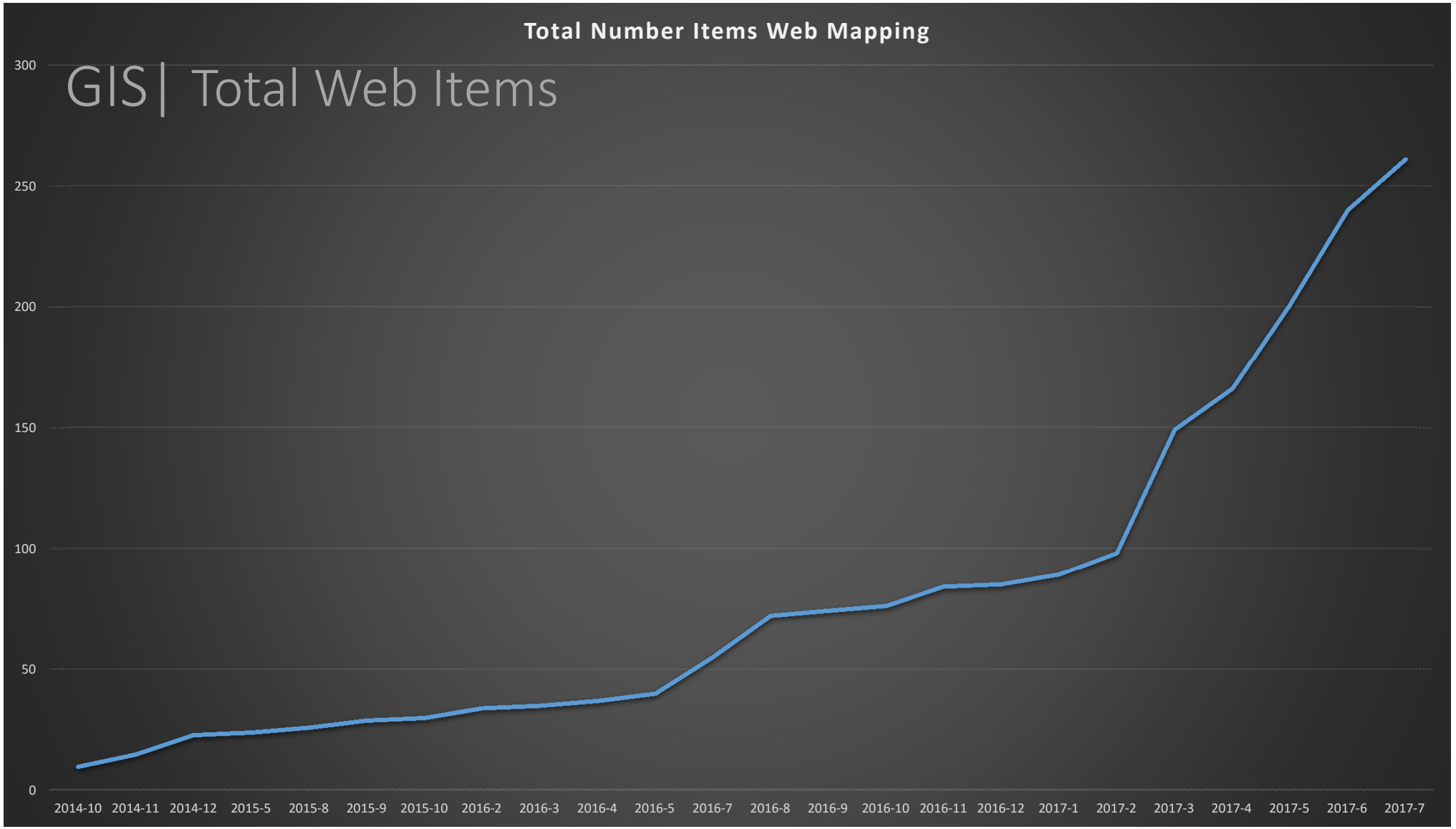


Data - Authoritative Data Source

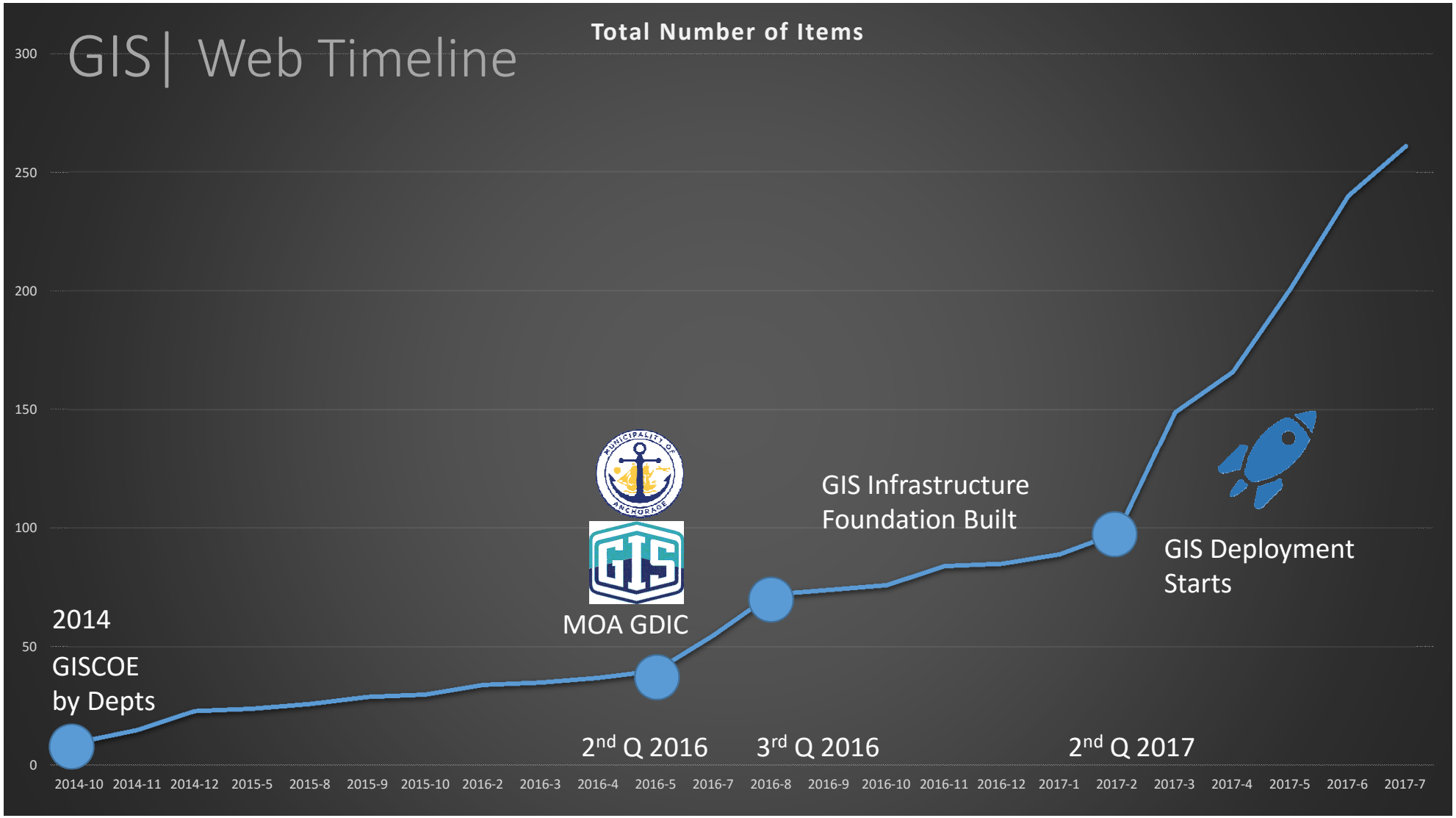
GIS| Users By Dept



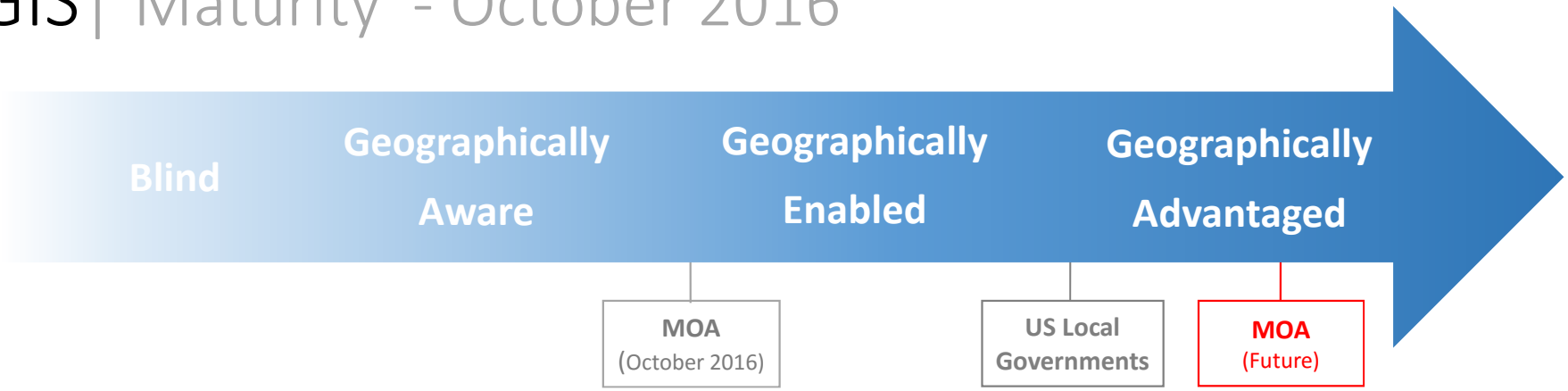
GIS| Total Web Items



GIS| Web Timeline

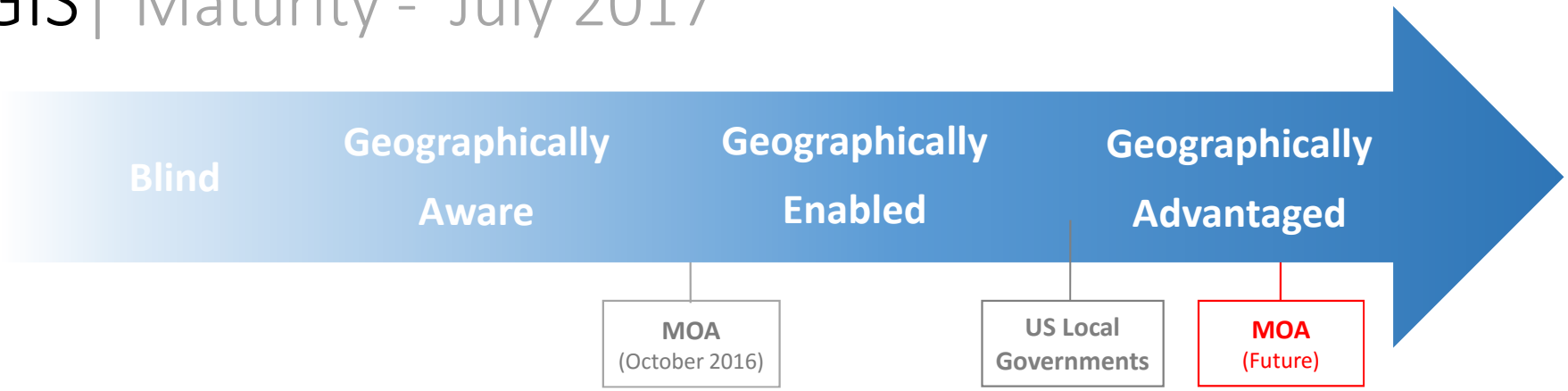


GIS| Maturity - October 2016



Data	none (recognized)	Ad-hoc spatial data creation	Departmental spatial data silos	Authoritative location data - governed for the enterprise
Maps	none	Ad-hoc "*Dots on a Map*"; mostly static	Broader use of mapping (dynamic); niche audience	Maps are easily made, used, discovered and shared to all employees and contractors
Analysis	none	none	Little knowledge/use of spatial analysis, focus on data management	Spatial analysis is central to operational workflows & decision making

GIS | Maturity - July 2017



	Blind	Geographically Aware	Geographically Enabled	Geographically Advantaged
Data	none (recognized)	Ad-hoc spatial data creation	Departmental spatial data silos	Authoritative location data - governed for the enterprise
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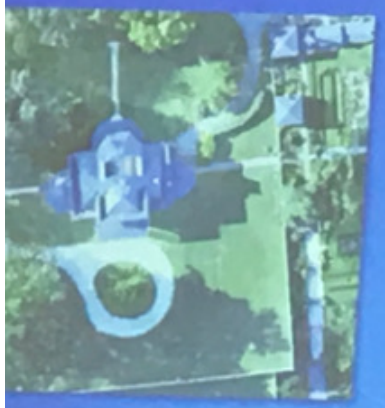
The Approach – Keep Learning

Drone2Map for ArcGIS

Create 2D and 3D products from raw drone imagery

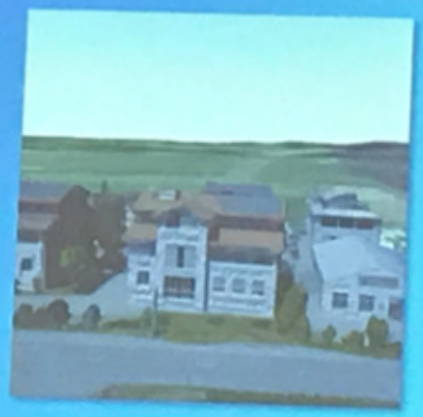
esri

Drone2Map for ArcGIS is a desktop application that turns raw, still imagery from drones into orthorectified mosaics, terrain models, point clouds, 3D meshes, & more.

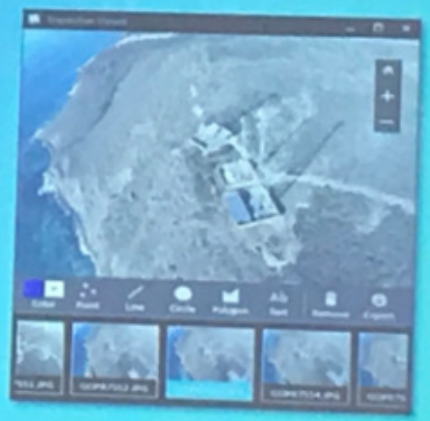


Orthomosaics

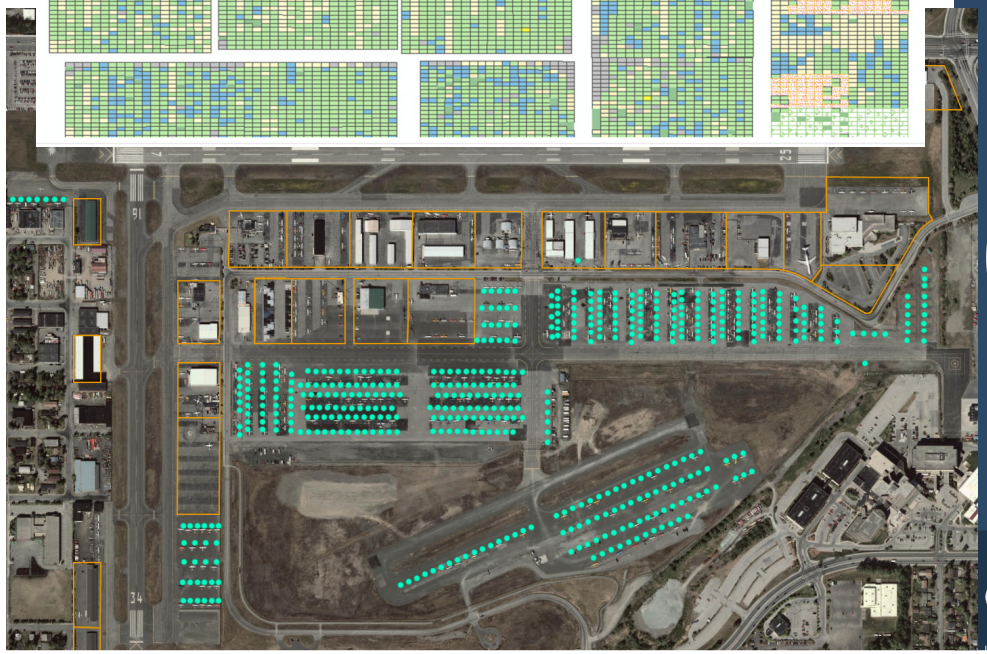
Digital Surface Models
DSM & DTM



Point Clouds
&
3D Meshes



Smart Inspection
&
3D PDF



Unlock the City's Geodata

Anyone can use open data from the City of Los Angeles Innovation Hub at no cost. Download raw data and share your insights with your community or build new applications that serve specific users.

Explore

Dig into the data.

Visualize & Analyze

Highlight spatial patterns and discover trends.

Build

Develop new apps using templates and API's.

Share

Embed analysis on your website.

City Employees

Not a City Employee?

Drones

Land History

Unitized Service Costs by Providor (Roads)

Initiative Based Mapping – the “Hub”

Cemetery

Merrill Field

Imagery Renewal – Base Map

Easier Parcel Data Management

Citizen Reporting – Crime Tips, Trail Watch

Predictive Crime States

New Computer Aided Dispatch System

Updated Trails

Groomed Ski Trail Status

Dog Friendly Anchorage Companies

Living Land Use – State Business License

Coordination with Other Agencies

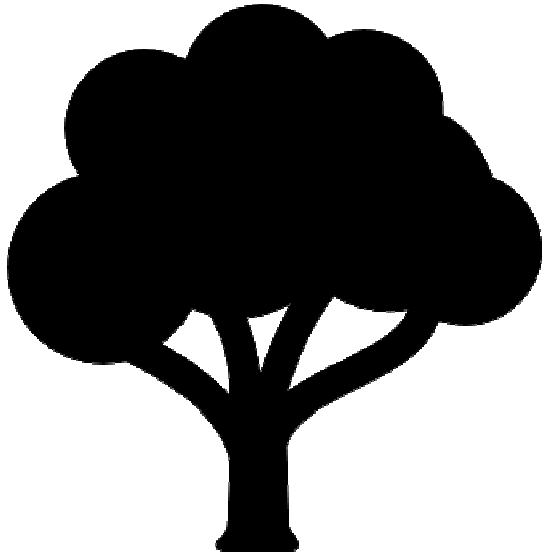
Unified 511 System

Easy Record Drawing Lookup

Latest Business opening

Historic Buildings

Tree down in my Road
Who do I call….



Questions or Ideas?

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