

The Underutilization of GIS & How to Cure It

Adam Carnow – Esri

Seasonal Tornado Density

Federal Emergency Management Agency
Region V
Chicago, Illinois, USA
By Thomas Griffin

Contact
Jesse Rozelle
jesse.rozelle@fema.dhs.gov

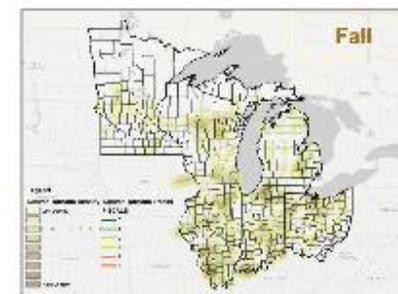
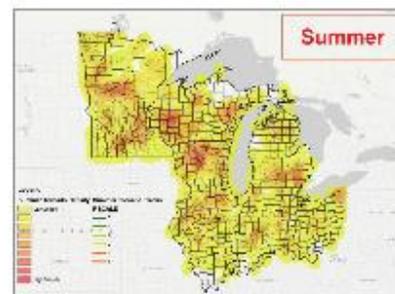
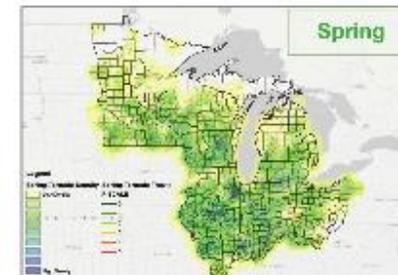
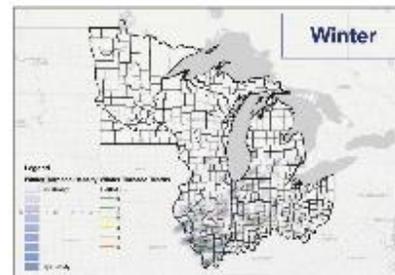
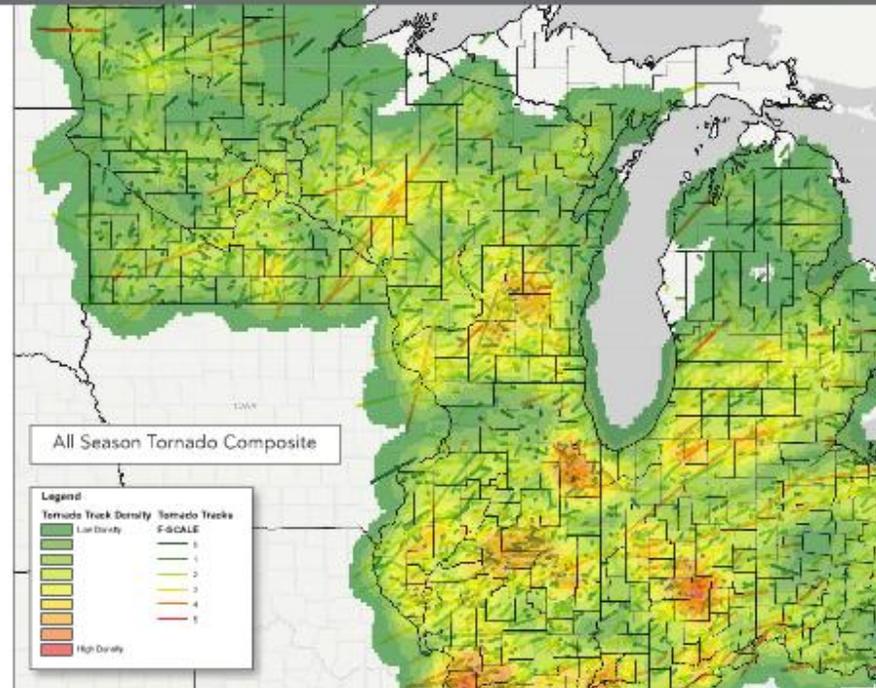
Software
ArcGIS 10 for Desktop

Data Sources
Esri, NOAA, FEMA

This seasonal tornado density map displays an analysis for Federal Emergency Management Agency (FEMA) Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin). Data was taken from the National Oceanic and Atmospheric Administration (NOAA) website about every recorded tornado since 1951. The track for every tornado that entered a Region V state was collected, and a line density was created. The data for these tornadoes also included information on when each tornado occurred, allowing the tornadoes to be further analyzed based on the season in which they occurred.

The purpose of this map was to identify any possible trends, take a closer look at relevant data, and tell a story through the use of GIS. Though tornadoes are very difficult to predict with any degree of accuracy, interesting assumptions can be deduced quickly and easily by looking at the data when it is visually represented. For instance, the map shows that tornadoes occurring during the winter months tend to be farther south where the weather is warmer, while tornadoes occurring during the summer months tend to spread farther north. The ability to see and understand this type of information better using GIS is potentially life-saving and is being used within FEMA more and more every day.

Courtesy of Federal Emergency Management Agency Region V.



The Underutilization of GIS Technologies – 2011

...Generally, people outside of GIS think of GIS just as “maps” or a graphic product, or the younger brother of CAD...

- **Promote the System**
- **Get a “GIS Health Check-Up”**
- **Use a Best of Breed approach**
- **Consider Software as a Service (SaaS) i.e., cloud**
- **Set GIS up as the Central Hub**

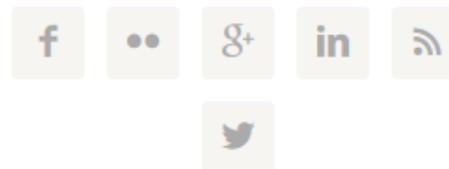
Mapping the Cause: Using GIS to Determine Potential Causes for Cancer

AUGUST 27, 2015 BY [TROY LAMBERT](#)

White Paper [White Paper Reveals 12 Hidden Gems in GeoExpress Software](#)

Much talk lately in the tech world is related to Big Data and how useful it really is. The debate centers not only around making relationships, but how to determine which relationships are significant. How do we make all the demographic data we've gathered meaningful?

CONNECT WITH GISUSER



GEOGRAPHIC INFORMATION SYSTEMS

CUSTOMIZABLE REAL-WORLD GRADUATE DEGREES
AND CERTIFICATES FOR BUSY ADULTS.



GIS is often seen as “maps” or a visual graphics product, and the more advanced capabilities are ignored because they remain unknown to key departments and decision makers.

Much talk lately in the tech world is related to Big Data and how useful it really is. The debate centers not only around making relationships, but how to determine which relationships are significant. How do we make all the demographic data we've gathered meaningful?



GIS Should be about Digital Transformation



Posted for [Esri](#)



GIS Should be about Digital Transformation



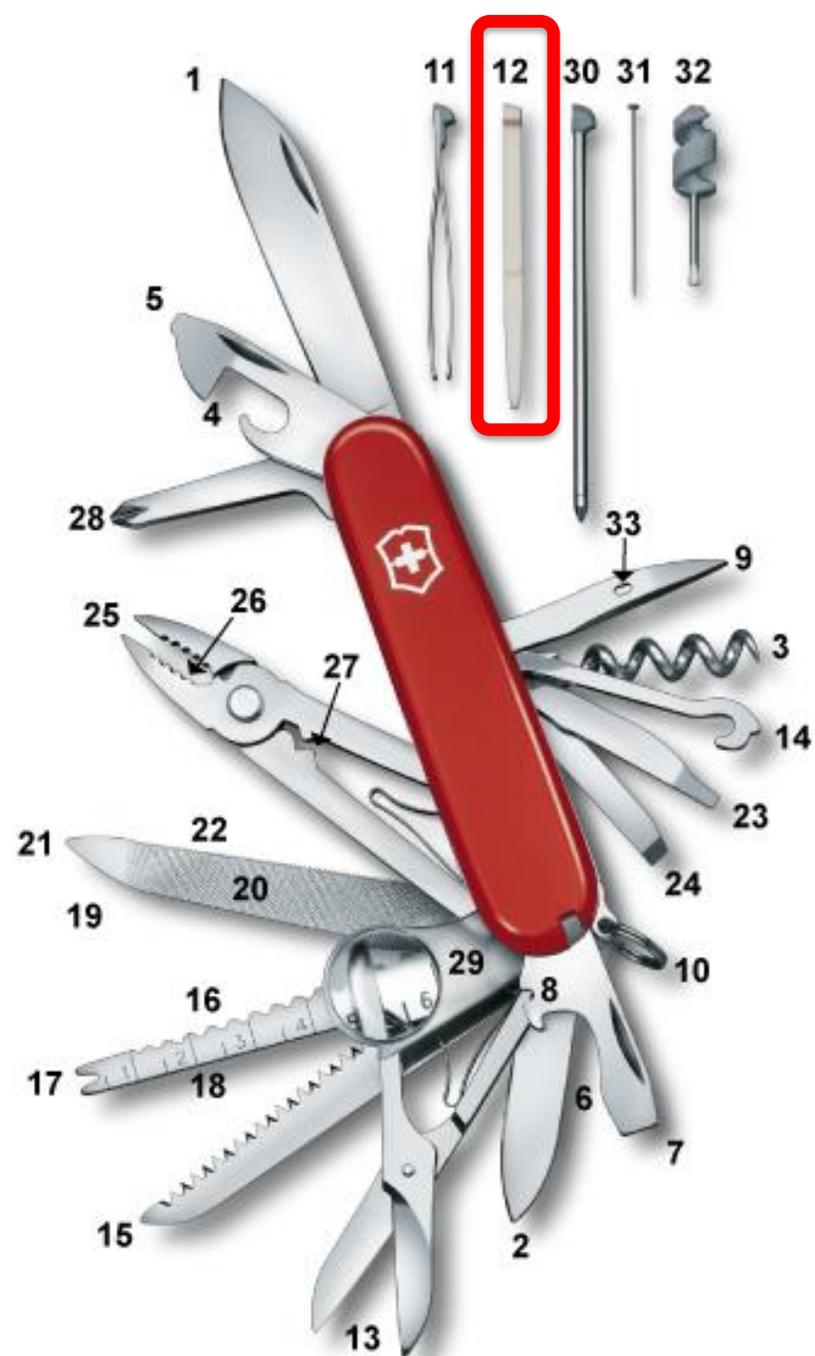
GIS is about discovery. It's not about replicating maps that have been around for years. It's about visualizing trends for better decision making. It's about using spatial analytics to provide insight. An Enterprise GIS is not a series of spatially enabled or map-based applications. It is a location intelligence platform. Who cares about making maps faster? Enterprise GIS can transform the business by lowering costs and hassles, greatly improving decision making, and communicating to executives in ways they have never seen before.

GIS Should be about Digital Transformation



GIS is about discovery. It's not about replicating maps that have been around for years. It's about visualizing trends for better decision making. It's about using spatial analytics to provide insight. An Enterprise GIS is not a series of spatially enabled or map-based applications. It is a location intelligence platform. Who cares about making maps faster?

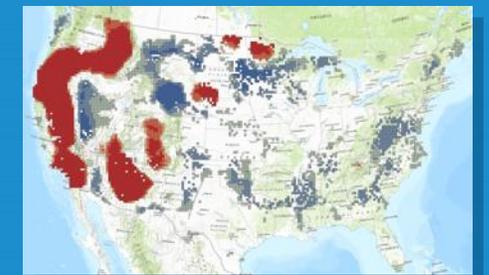
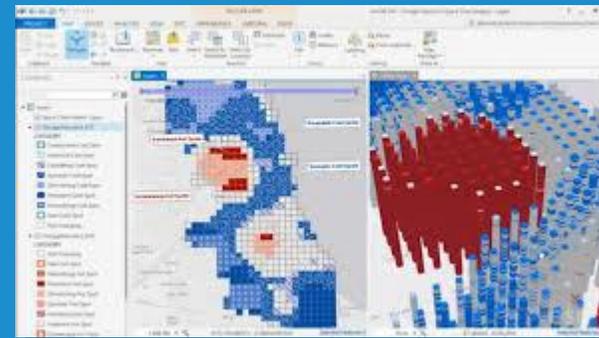
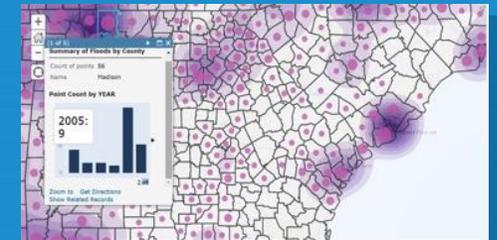
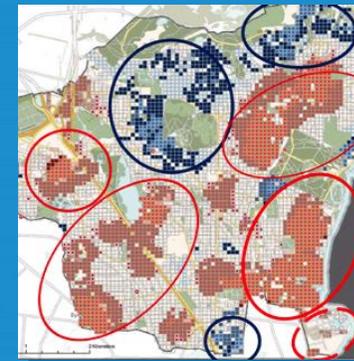
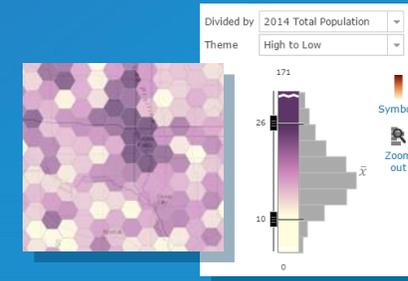
Enterprise GIS can transform the business by lowering costs and hassles, greatly improving decision making, and communicating to executives in ways they have never seen before.





GIS was Created to Perform Spatial Analysis

- Understanding Where
- Measuring Size, Shape & Distribution
- Determining How Places are Related
- Finding the Best Locations & Paths
- Detecting & Quantifying Patterns
- Making Predictions





Spatial Analysis



Apps



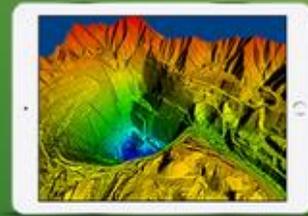
Content



Real-Time GIS



Big Data



Mapping and Visualization



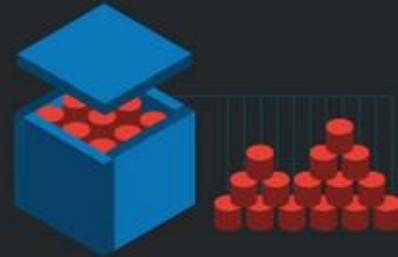
Imagery and Remote Sensing



3D



CAD



Data Management

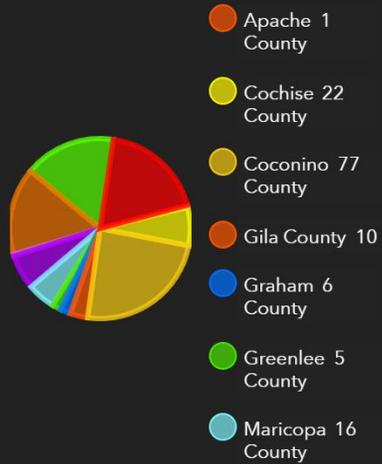


Geodesign



Community Engagement

Individual County Count Summary



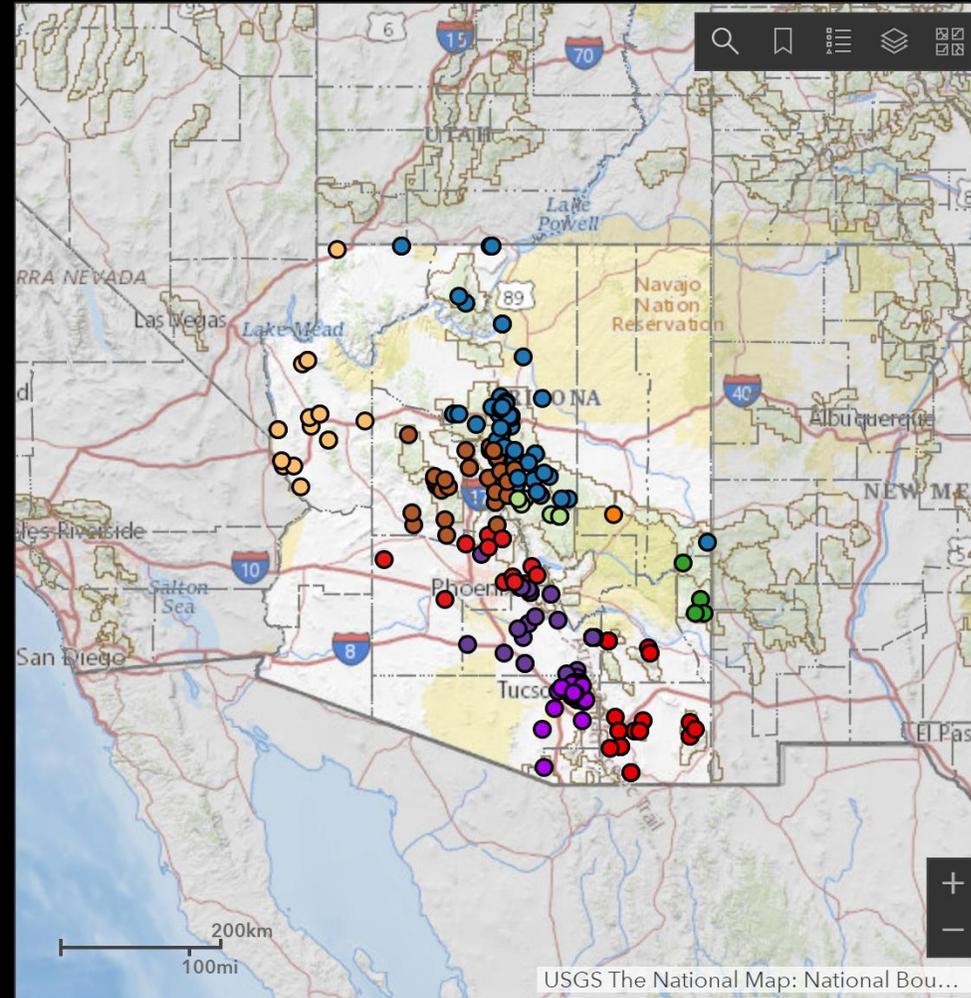
Total Operating Cost
\$50.038k FY 19
\$2.904M FY 18

Total Missions
319 Missions FY 19
476 Missions FY 18

Recovery Type Summary



Last update: a few seconds ago



SAR Missions in the last 24 Hours

0

SAR List Breakdown (Click to Zoom)

- Start Date: 11/14/2018
County: Pima County
- Start Date: 11/14/2018
County: Pima County
- Start Date: 11/12/2018
County: Maricopa County
- Start Date: 11/12/2018
County: Maricopa County
- Start Date: 11/12/2018
County: Coconino County
- Start Date: 11/12/2018
County: Coconino County
- Start Date: 11/12/2018
County: Coconino County
- Start Date: 11/11/2018
County: Pinal County

Reported Traffic Accidents

8

Decrease: -8

Filtered by map extent

Last update: a few seconds ago

- Recent Alerts**
- JAM** | Moores Mill Rd
4/26/2018, 2:01 PM
 - ACCIDENT** | I-75 N
4/26/2018, 2:01 PM
 - WEATHERHAZARD** | I-285 S
4/26/2018, 2:01 PM
 - JAM** | Clairmont Rd
4/26/2018, 2:01 PM
 - JAM** | I-75 N
4/26/2018, 2:01 PM
 - JAM** | SR-13 S
4/26/2018, 2:01 PM
 - JAM** | to I-85 S / I-75 S
4/26/2018, 2:01 PM
 - JAM** | I-75 N
4/26/2018, 2:01 PM
 - ACCIDENT** | Exit 51-B: I-285 N Chattanooga
4/26/2018, 2:01 PM
 - ACCIDENT** | Exit 51 A-B: I-285
4/26/2018, 2:01 PM
 - WEATHERHAZARD** | I-285 S
4/26/2018, 2:01 PM

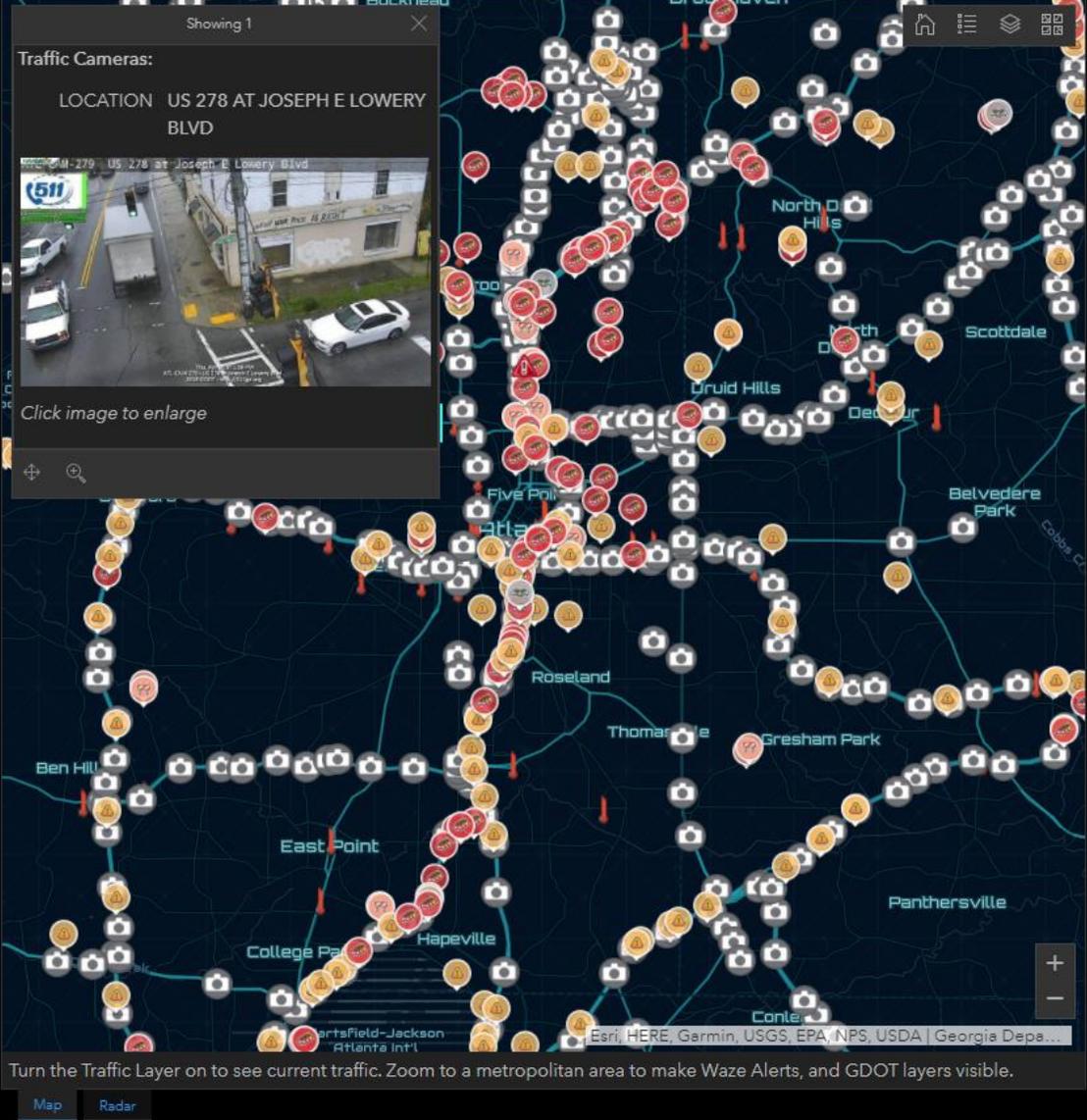
Showing 1

Traffic Cameras:

LOCATION US 278 AT JOSEPH E LOWERY BLVD



Click image to enlarge



Turn the Traffic Layer on to see current traffic. Zoom to a metropolitan area to make Waze Alerts, and GDOT layers visible.

Map Radar

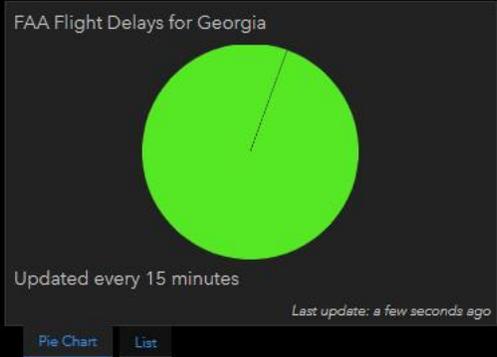
Reported Traffic Jams

114

Decrease: -1

Filtered by map extent

Last update: a few seconds ago



Reported Road Closures

19

Decrease: -7

Filtered by map extent

Last update: a few seconds ago

High Impact GDOT Incidents

0

Decrease: -1

Filtered by map extent

Last update: a minute ago

Indicator List

No Data

Filtered by map extent

Indicator List

GDOT Planned Traffic Interruptions

120

Filtered by map extent

Last update: a few seconds ago

Indicator List

It's about providing different services...different experiences...



WHAT they want, WHEN they want, WHERE they want, RIGHT AWAY...

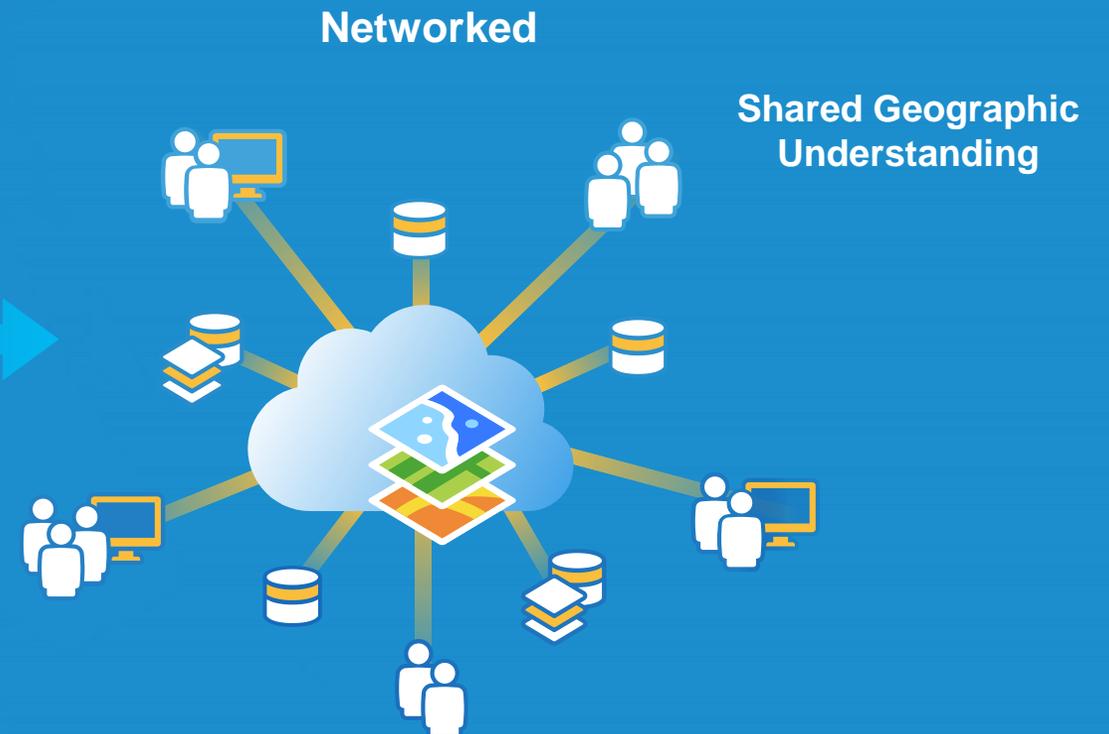
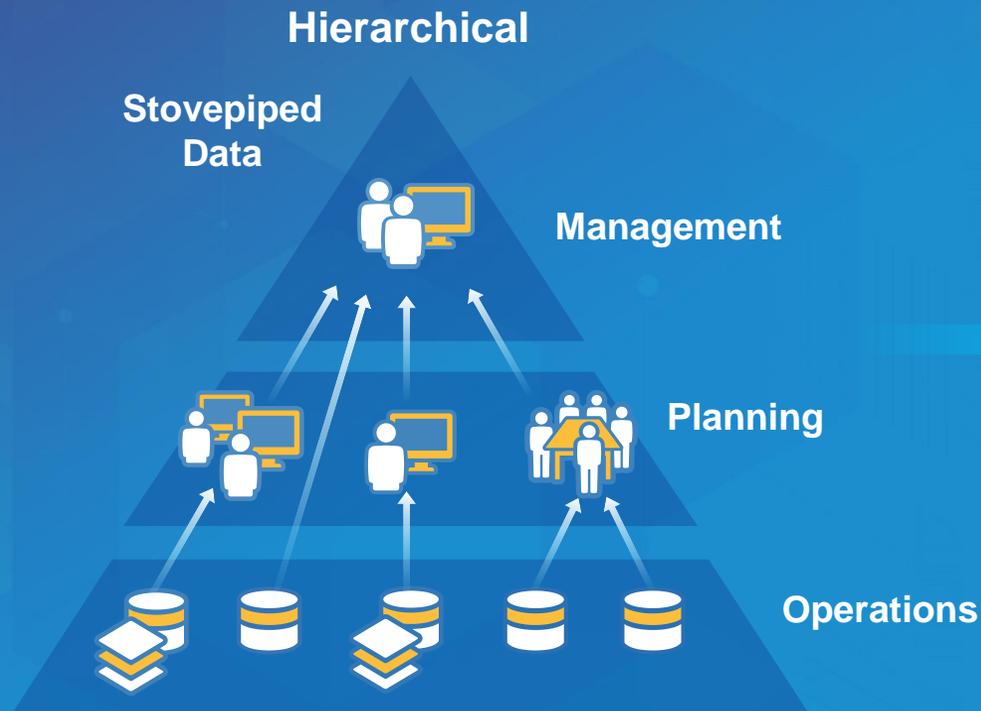
THE AVENGERS



Use **GROUPS** to enable staff to collaborate...

Web GIS Transforms Organizations

Creating Shared Information & Facilitating Collaboration



Opening Access & Engaging Everyone

Goal:

Give everyone alternatives, but keep them in a known, controlled and secure environment, while using the latest and most authoritative data.



We want to help the business get the work done...



By giving them choices...



Time for us to WAKE UP...



Time for us to TRANSFORM...



Government of South Australia

Department for Communities
and Social Inclusion



Walgreens

Store Location: 9372
Address: 674 Far Hills Ave.

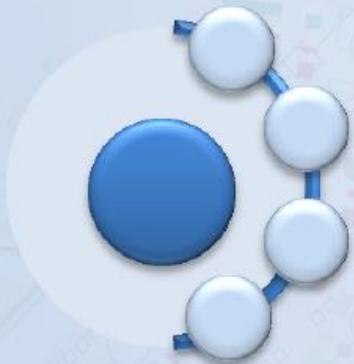
Distance: 9.4
Customer: Yes
Store Locator: 184

Lot: 395
Size: 485 a
County: Warren

DCSI Geospatial Strategy

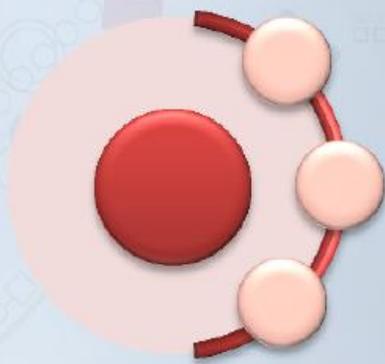
Coordinate

Facilitate collaboration



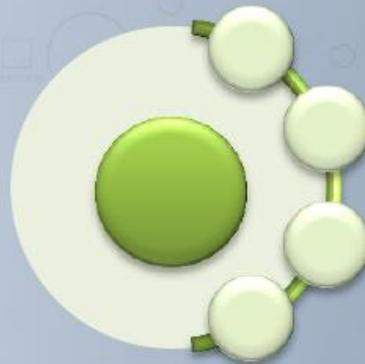
Simplify

Improve business practices



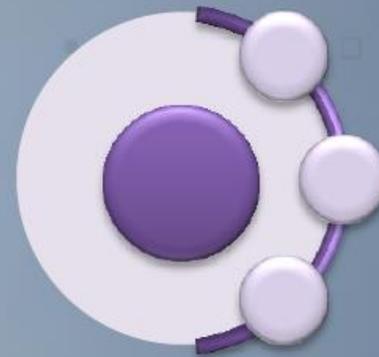
Innovate

Smarter service offerings



Enable

Informed decision makers





Charlotte Water Map Room before their GIS implementation



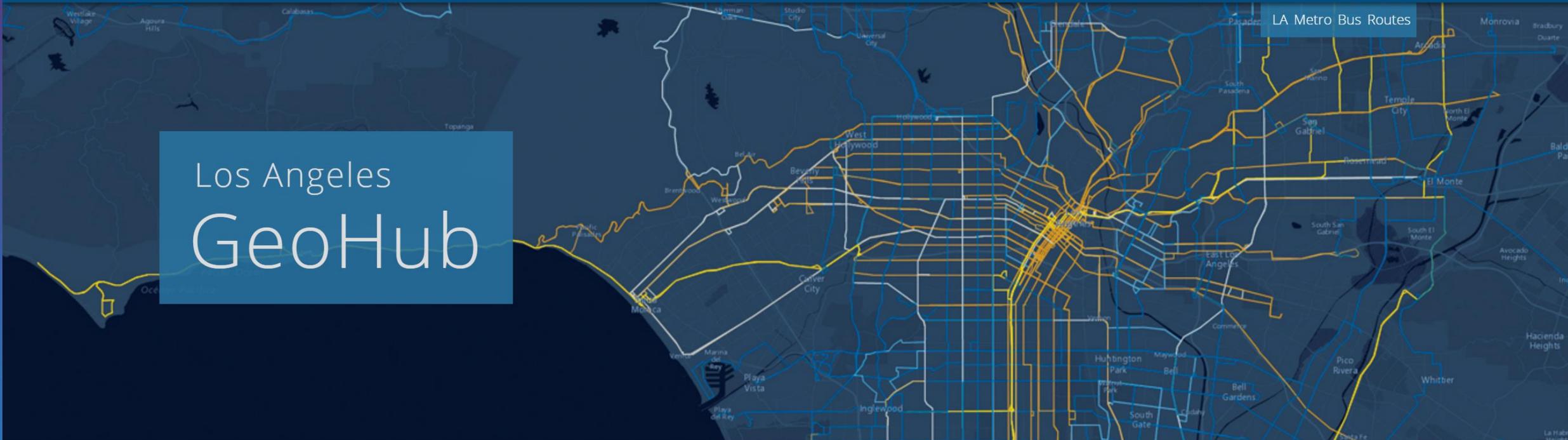
Charlotte Water Fitness Center in their old Map Room



Hartsfield-Jackson
Atlanta International Airport®



Ingrid Bruce
GIS Manager, City of Rancho Cucamonga



Los Angeles GeoHub

The GeoHub is the City's new public platform for exploring, visualizing, and downloading location-based Open Data. You can also analyze and combine Open Data layers using maps, as well as develop new web and mobile applications. Let's make our great City even better, together!

[Find Data](#)

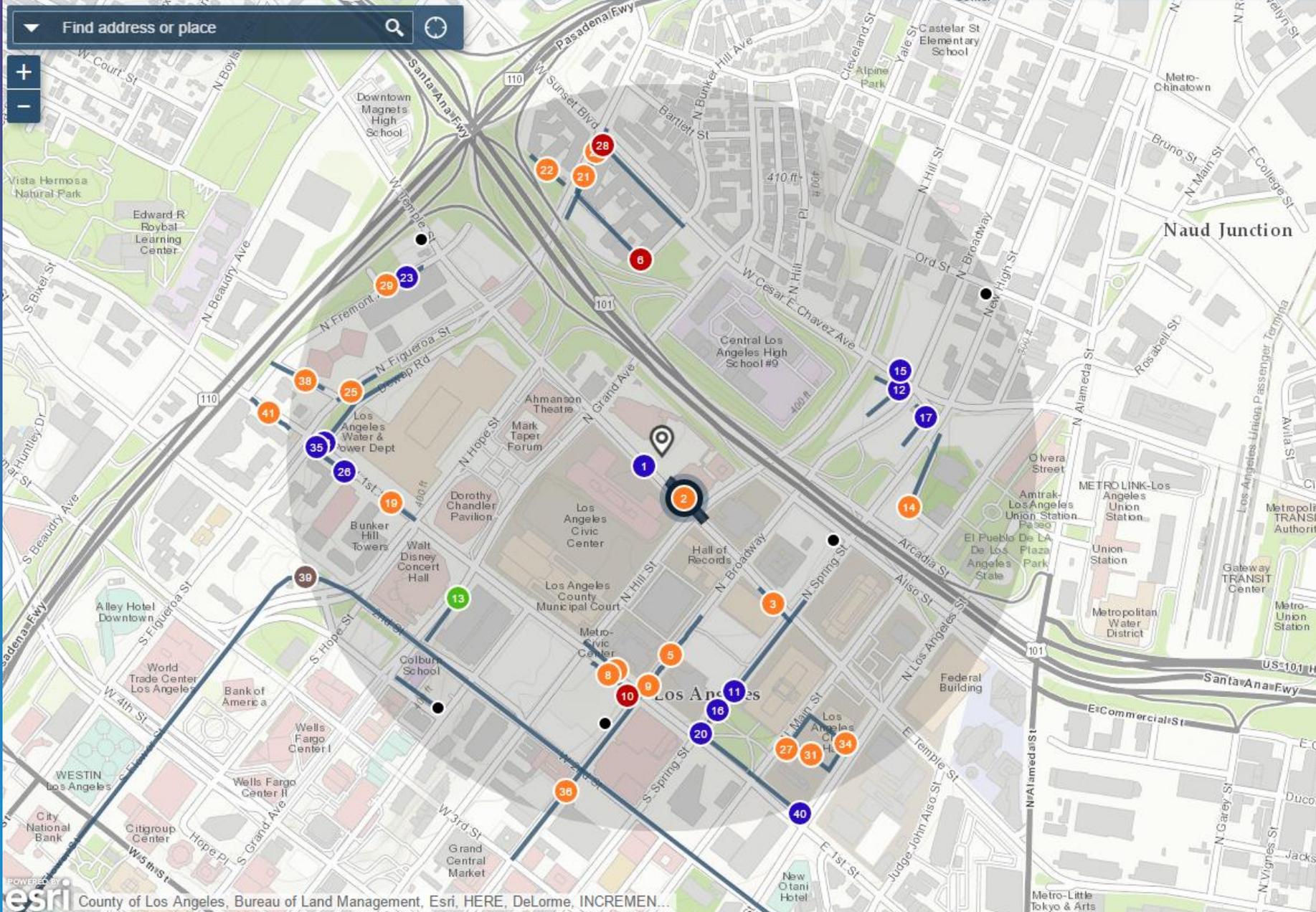
Street Wize

Legend

Current Work

Upcoming Work

Find address or place



41

Projects

Search Radius (0.5 mi)

2 City Capital Improvement Projects
0.06 MILES Remaining: 11 months

ID	18977-4
Agency	Bureau of Engineering
Category	BOE CIP
Type	Capital Improvement Project - SSRP N07 Broadway & Pico BI
Description	Secondary Sewer Renewal Program.
Contact Name	Mary Thomas
Contact Phone	(213) 485-1552
Start Date	Oct 07, 2015
End Date	Aug 31, 2017
Status	In Progress
Report	More info

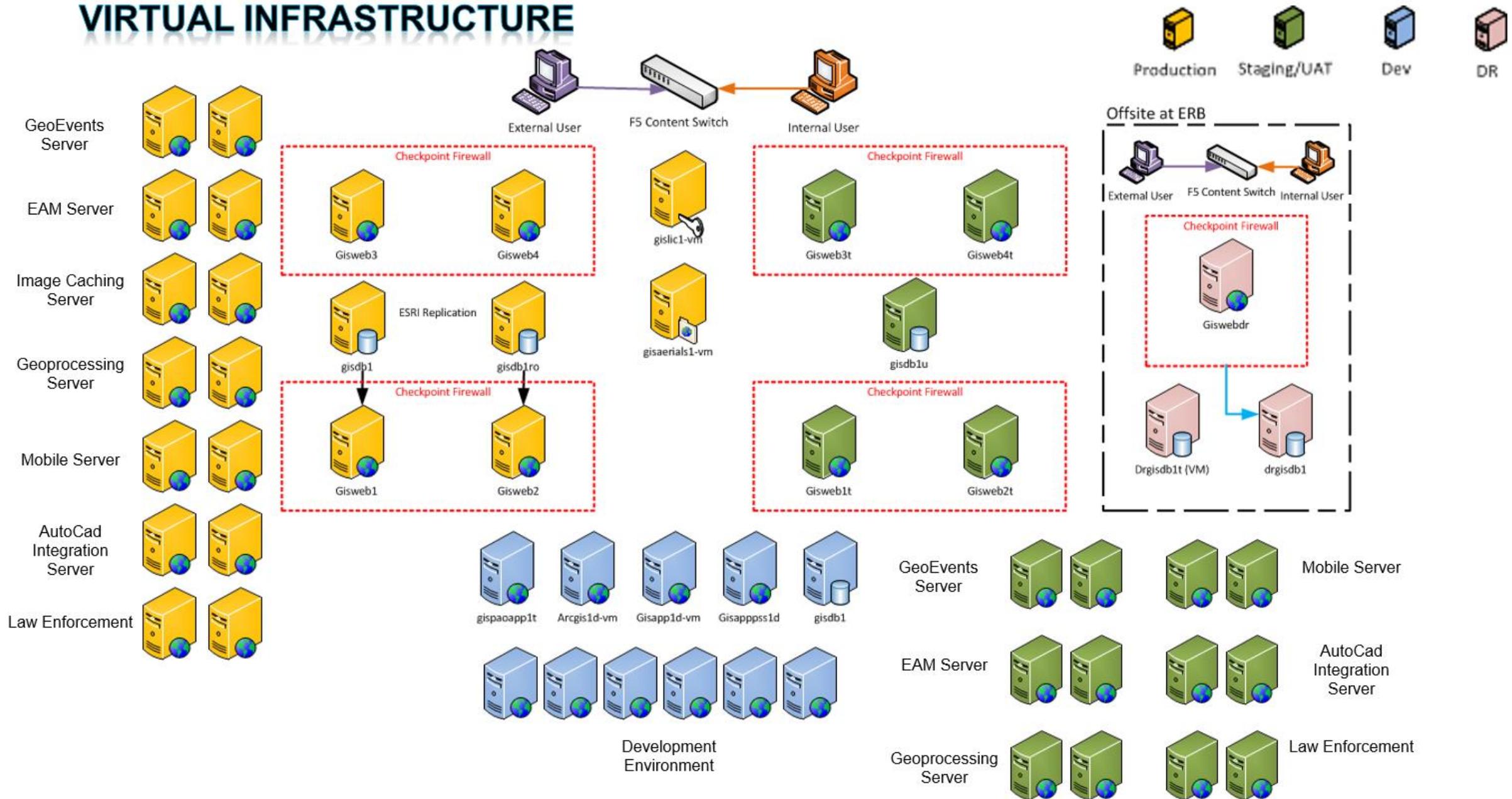
3 City Capital Improvement Projects
0.24 MILES Remaining: 11 months

4 Sewer & Stormdrain Permits
0.25 MILES Remaining: 1 year



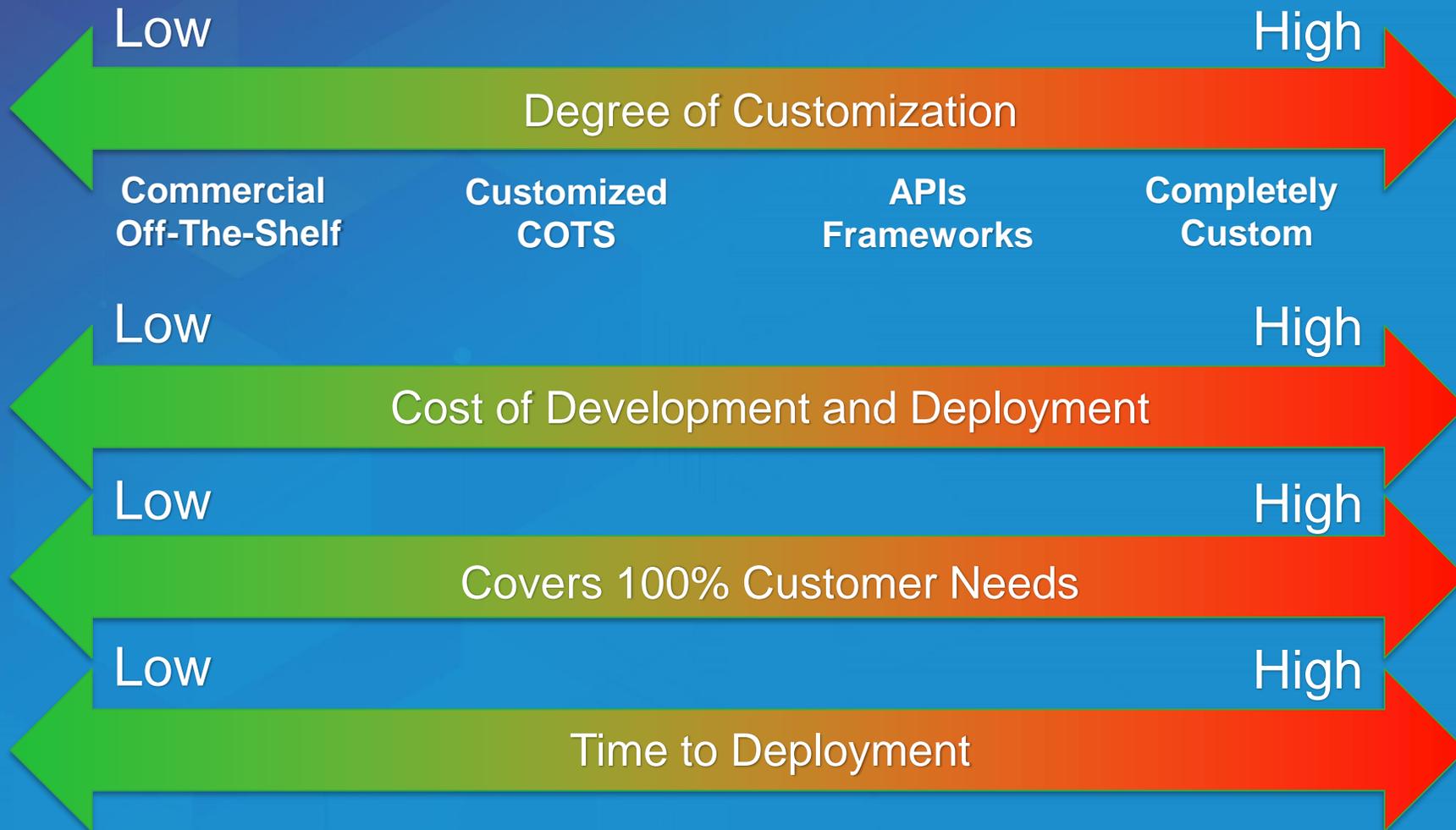
Do we need to rebrand GIS to Location Intelligence?

VIRTUAL INFRASTRUCTURE



If you're going to raise your game, you need to upgrade your infrastructure...

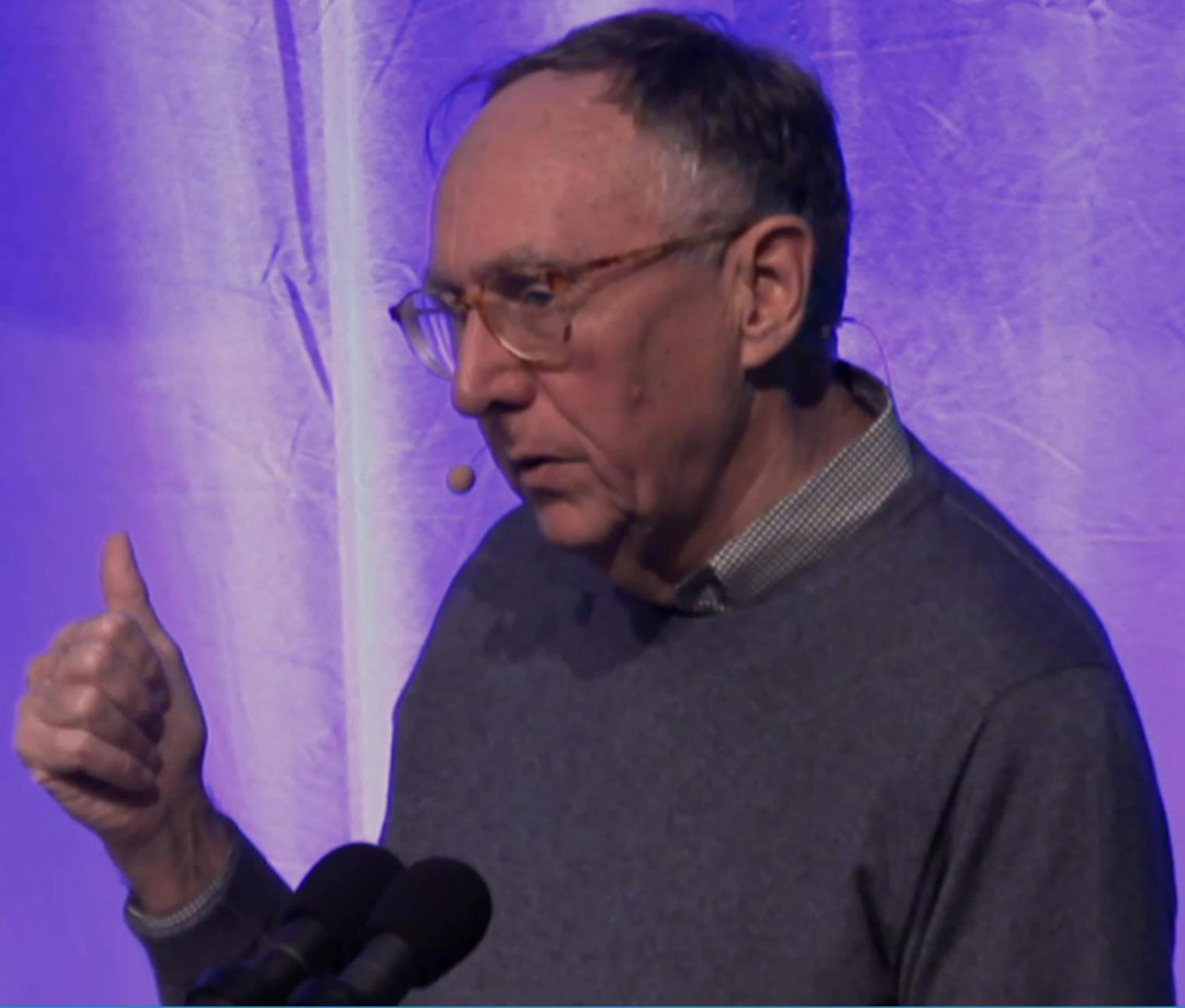
Commercial off the Shelf or “COTS”



YOU WERE SO PREOCCUPIED WITH WHETHER OR NOT YOU COULD

YOU DIDN'T STOP TO THINK IF YOU SHOULD





ArcGIS Common Patterns of Use

Mapping & Visualization



Understand locations and relationships with maps and visual representations

Data Management



Collect, organize, and maintain accurate locations and details about assets and resources

Field Mobility



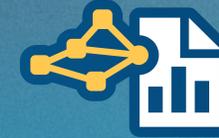
Manage and enable a mobile workforce to collect and access information in the field

Monitoring



Track, manage, and monitor assets and resources in real-time

Analytics



Discover, quantify, and predict trends and patterns to improve outcomes

Design & Planning



Evaluate alternative solutions and create optimal designs

Decision Support



Gain situational awareness, and enable information-driven decision making

Constituent Engagement



Communicate and collaborate with citizens and external communities of interest

Sharing & Collaboration



Empower everyone to easily discover, use, make, and share geographic information

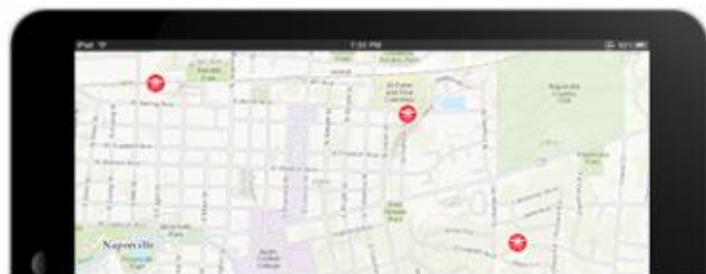
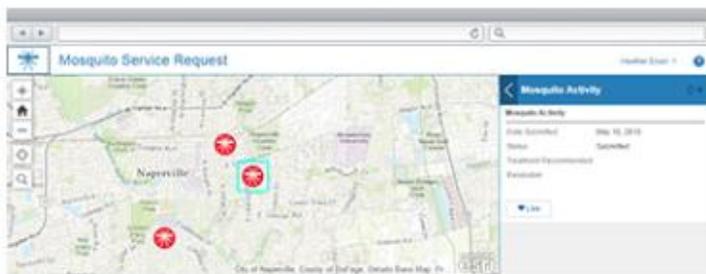
GIS Maturity Assessment Matrix

	Mapping & Visualization	Data Management	Field Mobility	Monitoring	Analytics	Design & Planning	Decision Support	Constituent Engagement	Sharing & Collaboration
Elections	Green	Green	Red	Red	Red	Red	Red	Yellow	Red
Emergency Management	Green	Green	Green	Yellow	Yellow	Red	Yellow	Yellow	Red
Fire	Green	Green	Red	Yellow	Yellow	Yellow	Red	Yellow	Red
Health & Human Services	Yellow	Yellow	Red	Red	Red	Red	Red	Yellow	Red
Land Records	Green	Green	Yellow	Yellow	Green	Red	Green	Green	Yellow
Law Enforcement	Green	Green	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Yellow
Parks & Recreation	Green	Green	Red	Red	Yellow	Red	Yellow	Yellow	Yellow
Planning & Development	Green	Green	Red	Yellow	Green	Yellow	Yellow	Green	Yellow
Public Works	Green	Green	Green	Yellow	Yellow	Red	Yellow	Yellow	Yellow
Transportation	Green	Green	Red	Yellow	Yellow	Red	Red	Yellow	Red
Utilities	Green	Green	Green	Yellow	Yellow	Red	Yellow	Yellow	Green

Green = Meeting Need, **Yellow** = Partially Meeting Need, **Red** = Not Meeting Need

Manage Mosquito Populations

A collection of maps and apps used by public works or mosquito control agencies to manage mosquito populations and the spread of vector-borne diseases.



Engage Citizens

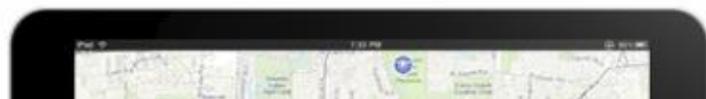
A collection of maps and apps used by the general public to report mosquito activity, request a spray exclusion, and locate information about spraying operations.

[? Learn more](#)

Conduct Field Operations

Mosquito Field Operations can be used by field inspectors to address mosquito activity reports submitted by the general public.

[? Learn more](#)



Get Started

Learn how to leverage your geographic information and the ArcGIS Platform to improve government activities and enhance services delivered to the general public.

[GET STARTED](#)

Online Mapping Platform

Our ArcGIS Online model implementation will help you organize your geographic information and promote collaboration in your organization.

[LEARN MORE](#)

Discussions on GeoNet

[Trouble with large arc lengths in ..](#)

June 8, 2011

Hey all, Just wondering if anyone else has been experiencing this issue. I've been noticing ... [Continue reading →](#)

Keys to Success

Follow Best Practices

- **People**
- **Data**
- **Process**
- **Technology**



AN ESRI
WHITE PAPER

DECEMBER 2018

Architecting the ArcGIS Platform: Best Practices

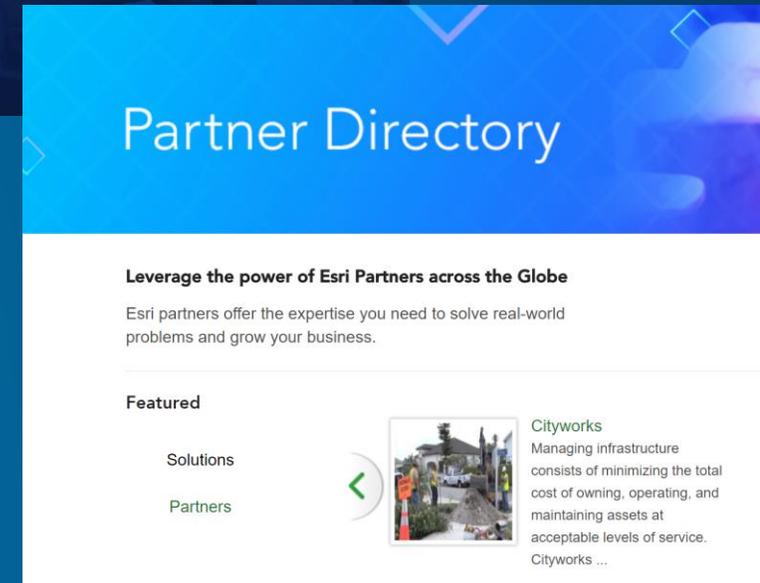
380 New York Street
Redlands, California 92373-8100 USA
909 793 2853
info@esri.com
esri.com



Develop Strong Partnerships

Esri Team and Esri Partners

- **Esri Team**
 - Account Team (Manager and Solution Engineer)
 - Subject Matter Experts
 - Training Consultant
 - Workforce Development Plan
 - Technical Support
 - Premium Support
 - Professional Services
 - Packages, Rent-a-Tech, Projects
 - Esri Enterprise Advantage Program (EEAP)
- **Esri Partners**
 - Specialties (ArcGIS Online, ArcGIS for Local Government)
 - ArcGIS Marketplace



Develop Strong Partnerships

Develop and Grow Your Internal Team

- Executive Champion(s)
 - Alleviate their Pain
 - Support their Vision
- IT Leadership
- Align the GIS Plan with the IT Plan & the Organization's Plan
- Enable collaboration and empower others
- Mindset of a GIS Consulting Firm
- Market Spatial Analysis
- Measure and document the impact (ROI)

GIS Project ROI and Benefits Report		
Project Name:		
Department or Division:		
Project Manager/Sponsor:		
Project Completion Date:		
Executive Summary: (Concisely state the problem and its impact on the organization then describe the solution.)		
Describe current workflow or limitation: (Be as detailed as needed)		
Describe proposed enhancement: (Be as detailed as needed)		
Current Workflow Costs: (Enter values in left column (see wage notes below). Values in right column are current workflow costs.)		
Hours to complete current workflow	6.0	Current workflow cost
Hourly wage rate*	25.00	Current workflow cost
Annual occurrence of workflow	75	
Other workflow costs (consumables/travel exp., etc.)	\$50.00	
Enhanced Workflow Costs		
Hours to complete workflow after enhancement	2.0	Enhanced workflow cost
Hourly wage rate*	25.00	Enhanced workflow cost

THE LANGUAGE OF SPATIAL ANALYTICS

Using *The Science of Where* to understand our world—mapping where things are, how they relate, what it all means, and what actions to take.

- 1 Understanding where things are (location maps).
- 2 Understanding where the variations and patterns in values are (comparative maps).
- 3 Understanding where and when locations and values change.
- 4 Calculating individual feature geometries.
- 5 Calculating geometries and distributions of feature collections.
- 6 Determining what is nearby or coincident.
- 7 Determining and summarizing what is within an area(s).
- 8 Determining what is closest.
- 9 Determining what is visible from a given location(s).
- 10 Determining overlapping relationships in space and time.
- 11 Finding the best locations that satisfy a set of criteria.
- 12 Finding the best allocation of resources to geographic areas.
- 13 Finding the best route, path, or flow along a network.
- 14 Finding the best route, path, or corridor across open terrain.
- 15 Finding the best supply locations given known demand and a travel network.
- 16 Where are the significant hot spots, anomalies, and outliers?
- 17 What are the local, regional, and global spatial trends?
- 18 Which features/objects are similar, and how can they be clustered, classified, and identified?
- 19 Are spatial patterns changing over time?
- 20 Given a success case, identifying, ranking, and predicting similar locations.
- 21 Finding the factors that explain observed spatial patterns and making predictions.
- 22 Interpolating a continuous surface and trends from discrete sample observations.
- 23 Predicting how and where objects spatially interact (attraction and decay).
- 24 Predicting how and where objects affect wave propagation.
- 25 Predicting where phenomena will move, flow, or spread.
- 26 Predicting what-if.

esri THE SCIENCE OF WHERE
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2018 Esri International User Conference GIS Manager Track Videos

- Enterprise GIS: Strategic Planning for Success
- Communicating the Value of GIS
- Architecting the ArcGIS Platform: Best Practices
- Increase GIS Adoption by Integrating Change Management
- Governance for GIS
- Moving Beyond Anecdotal GIS Success: An ROI Conversation
- Workforce Development Planning: A People Strategy for Organizations
- Supporting Government Transformation & Innovation

<https://bit.ly/2OZgNSU>



It's time to seize the opportunity in front of you.



Don't aspire to make a living,
aspire to make a difference.

Denzel Washington

Thank You!

Adam Carnow

acarnow@esri.com



twitter

[@SpatialAce](#)

GeoNet

The Esri Community

LinkedIn