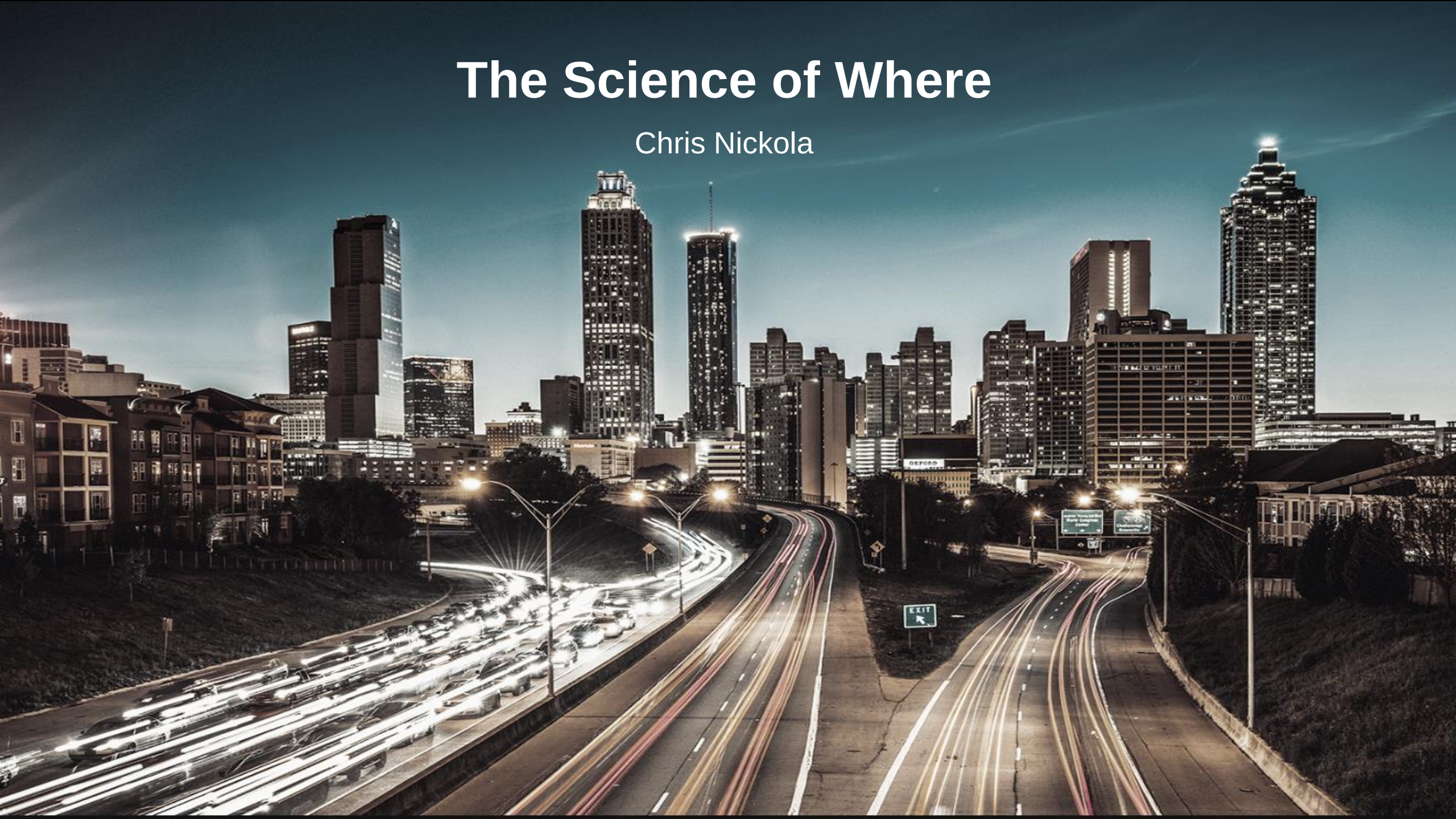
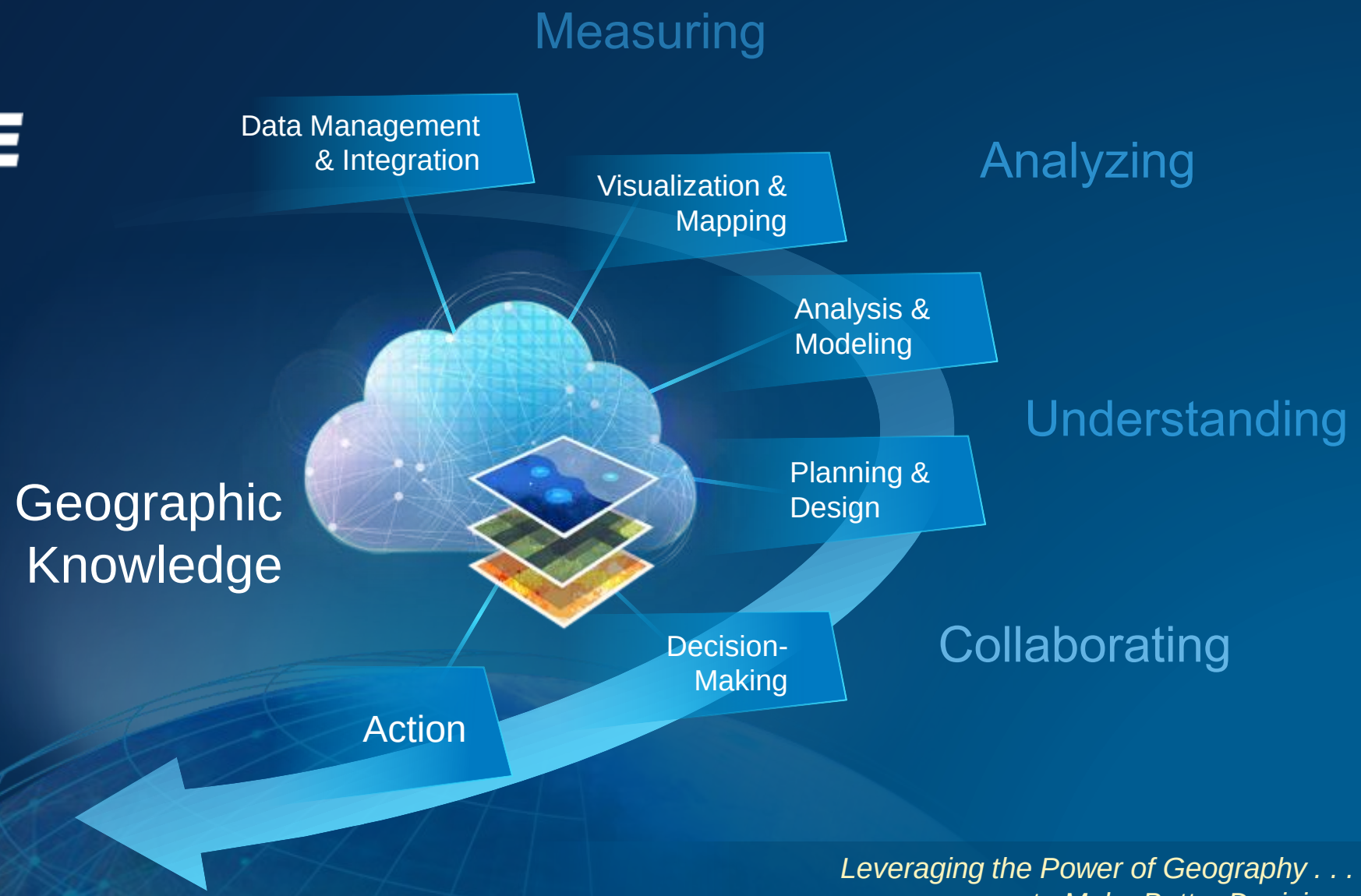
The Science of Where

Chris Nickola



THE SCIENCE OF WHERE

A Framework and Process



Leveraging the Power of Geography . . .
to Make Better Decisions

Web GIS Is the Modern GIS Architecture

Helping Everyone Do Their Work Better

Distributed
. . . and
Interconnected

Leveraging
Web Services

Communities

Organizations

Departments

Teams

Individuals

Engaging
Everyone

Sharing and
Collaboration

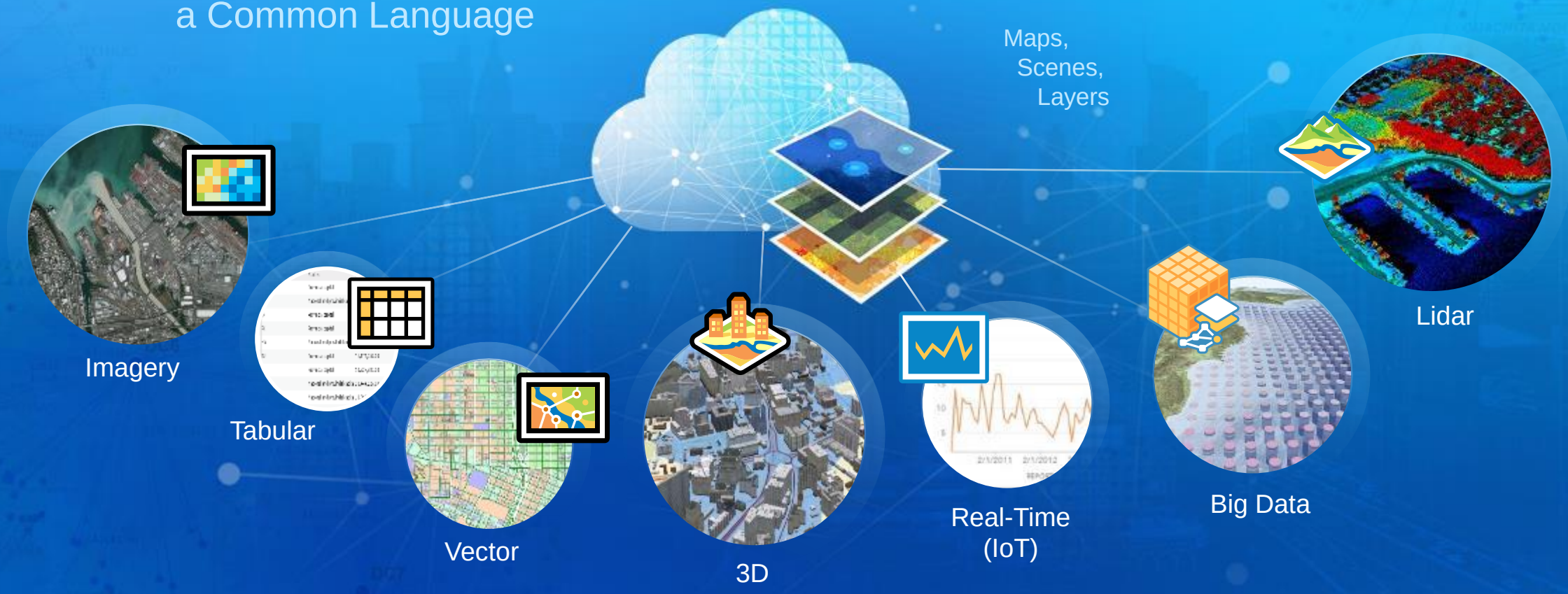
ArcGIS Simplifies Working With All Types of Data

Using Web Services and Maps, Scenes, and Layers

Creating
a Common Language

Apps

Distributed



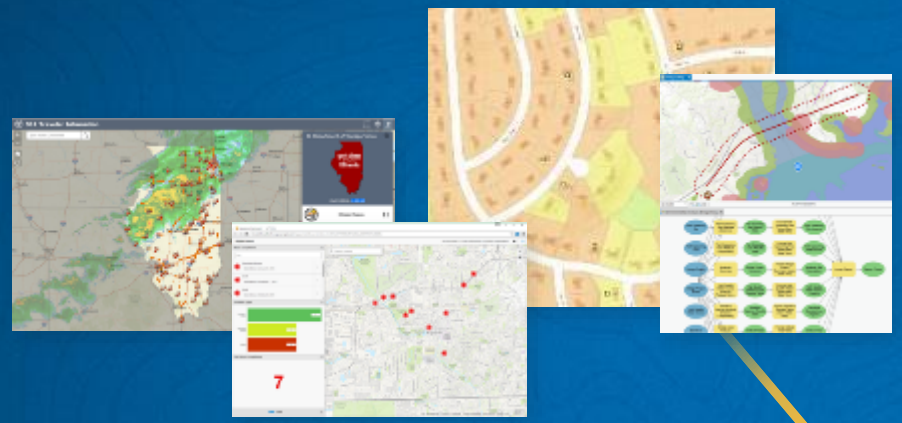
ArcGIS Brings the Power of Location to Everyone

Extending the Reach of GIS

Across Organizations and Beyond

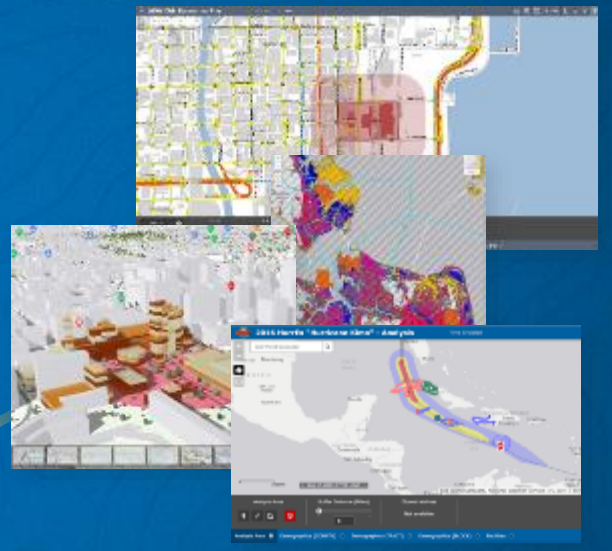
ArcGIS Government Solutions | Industry Focused Apps and Capabilities

Local & State Government



Utilities & Telecom

Emergency Management & Public Safety



Local Government

Utilities & Telecom

State Government

Emergency Management

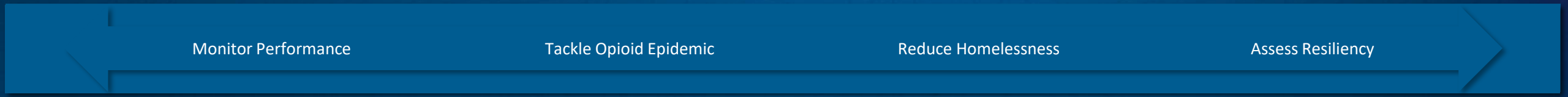
Military & Security

Military & Security

450+ Solutions | 500,000+ Downloads

Open Source, Supported and No Cost

Simplifying and Accelerating Deployment



Elections

Share Election Results

- Early Voting
- Election Polling Places
- Polling Wait Times
- Election Results
- Historical Election Results Gallery
- My Elected Representative

Land Records

Manage Assessment Roll

Determine Property Value

Respond to Appeals

Inform Public

- Tax Map Book
- Community Parcels

Determine Property Value

- Value Analysis Dashboard
- Tax Reverted Properties

Respond to Appeals

- Property Tax Assessment Appeal

Inform the Public

- Tax Parcel Viewer
- My Tax Distribution
- School Locator
- Residential Comp Finder

Public Health

Tackle Opioid Epidemic

Reduce Homelessness

- Naloxone Deployment Reporter
- Drug Activity Reporter
- Drug Drop-off Locator
- Drug Drop-off Calculator
- Health Resource Inventory
- Opioid Treatment Locator
- Pain Management Locator
- Opioid Response Dashboard

Reduce Homelessness

- Homeless Point-in-Time Counts
- Homeless Service Locator
- Homeless Activity Reporter

Law Enforcement

Organize Foundational Data

Perform Crime Analysis

Develop Tactical Plans

Inform the Public

- Near Repeat Analysis

Develop Tactical Plans

- Tactical Operation Planner
- Tactical Operation Dashboard
- Tactical Operation Surveillance

Inform the Public

- Public Crime Map
- Neighborhood Crime Reports

Fire Service

Improve Fire Operations

Develop Pre-Incident Plans

Increase Fire Prevention

Respond to Emergencies

- AED Locator
- AED Inventory

Develop Pre-Incident Plans

- Target Hazard Analysis
- Pre-Incident Plan Coordinator
- Pre-Incident Plan Field Inventory
- Pre-Incident Plan Dashboard
- Pre-Incident Plan Locator

Increase Fire Prevention

- Fire Safety Survey

Respond to Emergencies

- Emergency Assistance
- Warming/Cooling Center Locator
- Warming/Cooling Center Reporter

Public Works

Maintain Public Road Network

Promote Public Parking

Reduce Traffic Fatalities

Engage the Public

Respond to Emergencies

Maximize Capital Investments

Reduce Traffic Fatalities

- Crash Analysis
- High Injury Network Locator
- Vision Zero
- Fatal and Serious Crash Dashboard

Engage the Public

- Citizen Problem Reporter
- My Trash Services
- Adopta

Respond to Emergencies

- Flood Planning
- SnowCOP

Maximize Capital Investments

- Capital Improvement Plan
- Capital Project Dashboard
- Capital Project Journals
- Capital Project Locator
- Capital Project Plans
- Capital Project Reports
- Capital Project Review
- External Agency Projects
- Pavement Moratoriums
- Participatory Budgeting

Inventory ROW Assets

Manage Mosquito Populations

Manage ROW Activities

- Street Tree Inventory
- Bridge Inventory
- Sidewalk Inventory
- Pavement Marking Inventory
- Guardrail Inventory
- Street Furniture Inventory
- Railroad Crossing Inventory
- Traffic Calming Inventory
- Street Intersection Inventory
- Cycling Infrastructure Inventory

Manage Mosquito Populations

- Mosquito Adulticide Planning
- Mosquito Field Observations
- Mosquito Health Concerns
- Mosquito Larvicide Reporting
- Mosquito Population Surveillance
- Mosquito Service Request
- Mosquito Spray Areas
- Mosquito Spray Exclusions

Manage ROW Activities

- ROW Permit
- ROW Permit Manager
- ROW Permit Dashboard
- ROW Permit Review
- ROW Permit Locator
- ROW Permit Public Comment

Planning and Development

Manage Address Information

Promote Vibrant Communities

Manage Community Events

Visualize Proposed Developments

- Address Crowdsourcing
- Administrative Area Data Management

Promote Vibrant Communities

- Site Selector
- Incentive Zones
- My Neighborhood Services

Manage Community Events

- Events Calendar
- Events Permit
- Events Permit Review
- Events Site Map
- Events Coordination
- Events Map Gallery

Visualize Proposed Developments

- Local Government 3D Scenes
- 3D Public Survey
- Visualize Proposed Developments
- Visibility Assessment
- Calculate Solar Radiation
- Shadow Impact Analysis

Encourage Orderly Growth

Stabilize Neighborhoods

Engage Public

- Property Condition Survey
- Neighborhood Early Warning
- Blight Status
- Demolition Tracker
- Mortgage Counseling Locator
- Code Violation

Engage Public

- Construction Activity Tracker
- Park Locator
- Public Comment
- Public Notification
- Photo Survey

Entire Organization

Performance Management

- Performance Management

State Government

Transportation

Reduce Traffic Fatalities

Inventory ROW Assets

Manage Snow Operations

Inform Public

Pavement Marking Inventory

Railroad Inspection

Signal Inventory

Sign Inventory

Streetlight Inventory

Manage Snow Operations

SnowCOP

Inform the Public

Transportation 511

Road Closures

Public Health

Analyze Birth Outcomes

Conduct Restaurant Inspections

Birth Outcome Briefing

My Health Services

Conduct Restaurant Inspections

Restaurant Inspections

Restaurant Inspection Results

Law Enforcement

Organize Foundational Data

Perform Crime Analysis

Develop Tactical Plans

Inform the Public

Near Repeat Analysis

Develop Tactical Plans

Tactical Operation Planner

Tactical Operation Dashboard

Tactical Operation Surveillance

Inform the Public

Public Crime Map

Neighborhood Crime Reports

Agriculture

Monitor & Report Invasive Pests

Protect Water Quality

Invasive Pest Status

Invasive Pest Surveys

Invasive Pest Viewer

Protect Water Quality

BMP Dashboard

BMP Reports

BMP Surveys

Natural Resources

Engage Citizen Scientists

Monitor Permit Status

Analyze Environmental Impact

Monitor Water Quality

Engage the Public

Analyze Environmental Impact

Environmental Analysis

Environmental Impact Briefing

Environmental Impact Public Comment

Environmental Screening

Monitor Water Quality

Water Quality Inspections

Water Quality Status

Engage the Public

Water Access Locator

Fish and Wildlife

Engage the Public

Wildlife Photo Survey

Wildlife Management Area Locator

Hunting License Locator

Park and Recreation Locator

State Trail Locator

Economic Development

Attract Businesses

Manage Community Events

Incentive Zones

Property Lister

Property Listing Reviewer

Manage Community Events

Events Calendar

Events Permit

Events Permit Review

Events Site Map

Events Coordination

Events Map Gallery

Secretary of State

Share Election Results

Early Voting

Election Polling Places

Election Results

Historical Election Results Gallery

My Elected Representative

Entire Organization

Organize Foundational Data

Community Addresses

Community Parcels

Public Land Survey Editing

Resilience

Preparedness

Organize Foundational Data

Prepare for Incidents

Community Addresses

Engage the Public

Manage Community Events

Prepare for Incidents

Flood Planning

Engage the Public

Emergency Assistance

Floodplain Inquiry

My Hazard Information

Manage Community Events

Events Calendar

Events Permit

Events Permit Review

Events Site Map

Events Coordination

Events Map Gallery

Response

Maintain Situational Awareness

Assess Incident Impact

Situational Awareness Viewer

Inform the Public

Produce Emergency Maps

Incident Status Dashboard

Incident Briefing

Road Closures

Assess Incident Impact

CAMEO Tools

Inform the Public

Impact Summary Map

Shelter Locator

Evacuation Zones

Public Information

Produce Emergency Maps

Emergency Management Maps

Recovery

Conduct Damage Assessments

Collect Health & Safety Reports

Photo Survey

Manage Storm Damage

Citizen Reports

Public Safety Reports

Health & Safety Reports

Health & Safety Dashboard

Manage Storm Debris

Debris Reporting

Mitigation

Assess Vulnerabilities

Hazard Assessment & Analysis

Hazard Vulnerability Assessment

Community Mitigation

Mitigation Feedback

Resilience

Become More Resilient

Community Resilience

Community Resilience Surveys

Community Impact

Resilience Dashboard

Resilience Outreach

Community Impact Dashboard

Environmental Screening

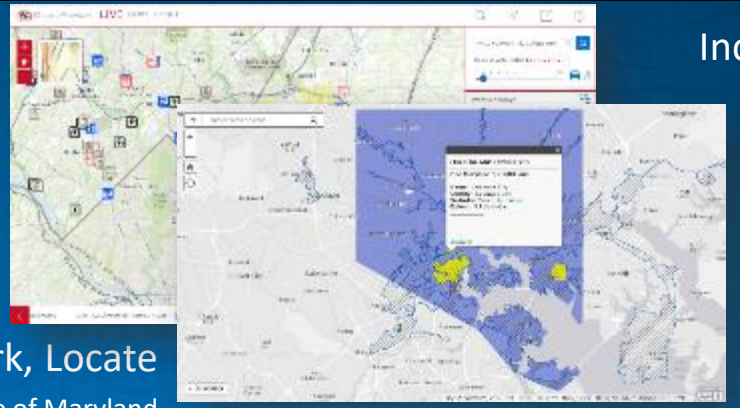
State of Nebraska

State of Idaho

Country of South Africa

Florida Fish and Wildlife

Adirondack Park Organization



Incentive Zones

State of Maryland

Washington, DC

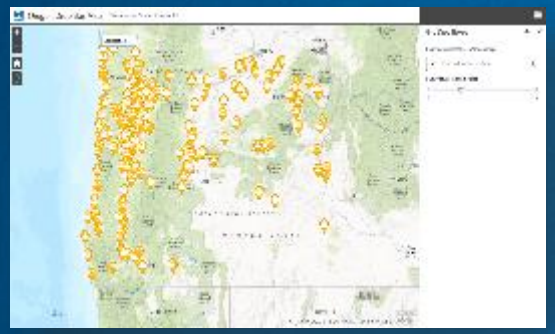
Live, Work, Locate

State of Maryland

Elected Officials

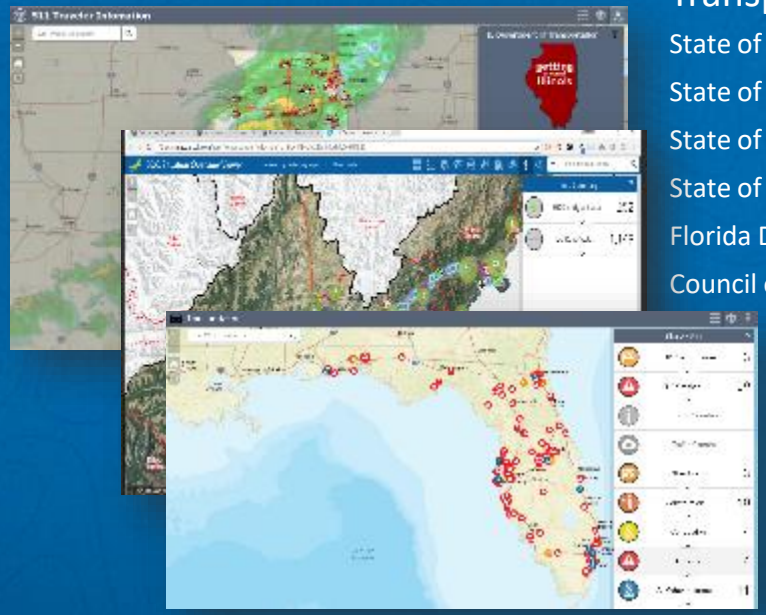
Alabama

Tennessee



Elections

Oregon



Transportation 511

State of Illinois

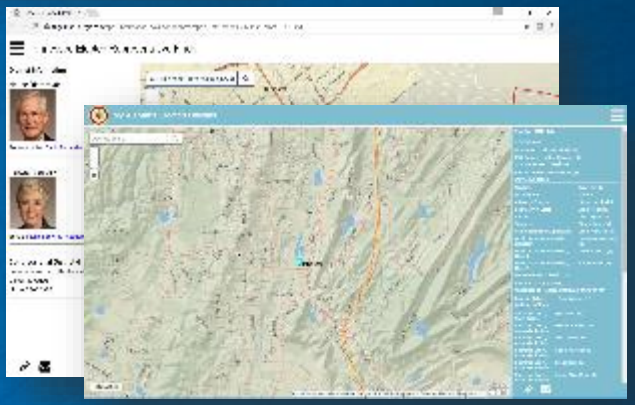
State of Indiana

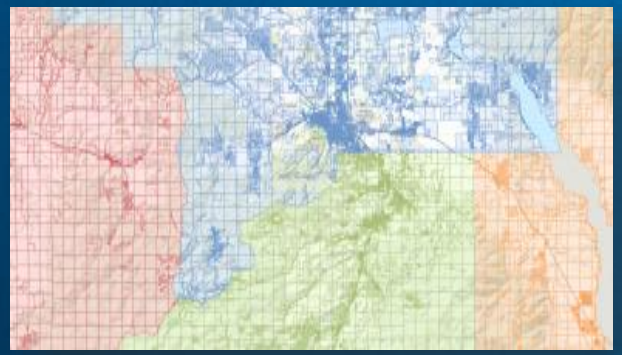
State of Iowa

State of Kentucky

Florida DEM

Council of Canterbury - NZ





Community Aggregation

Wisconsin, New Mexico, Kansas, Michigan …

Photo Survey

State of Louisiana

Implementations

Orchestrate Field Operations with No-Code

Use the ArcGIS Apps to plan, optimize and coordinate your mobile workforce

Deploy complete field mobility solutions

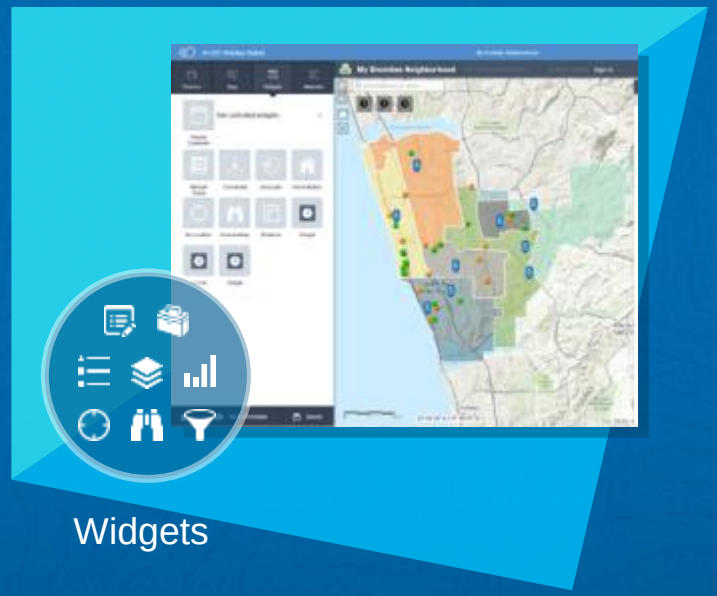
Deploy Modern Low-Code Apps

Minimize customization and expense while maximizing impact

Web App Templates

20+

Web AppBuilder



Widgets

HTML5/JavaScript

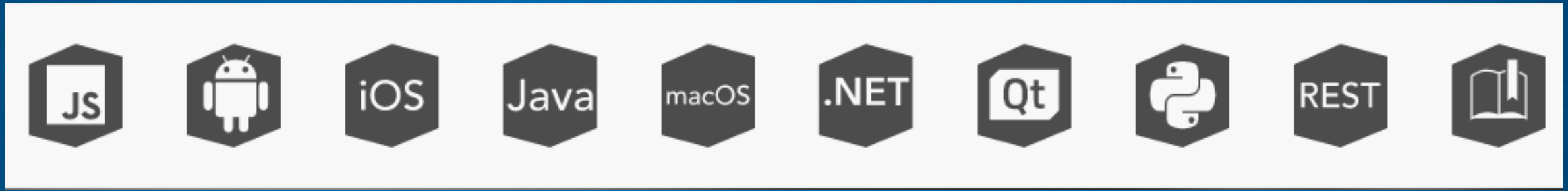
AppStudio

(Apple, Android, Windows, Linux)

Native Apps

Leverage the ArcGIS APIs and SDKs

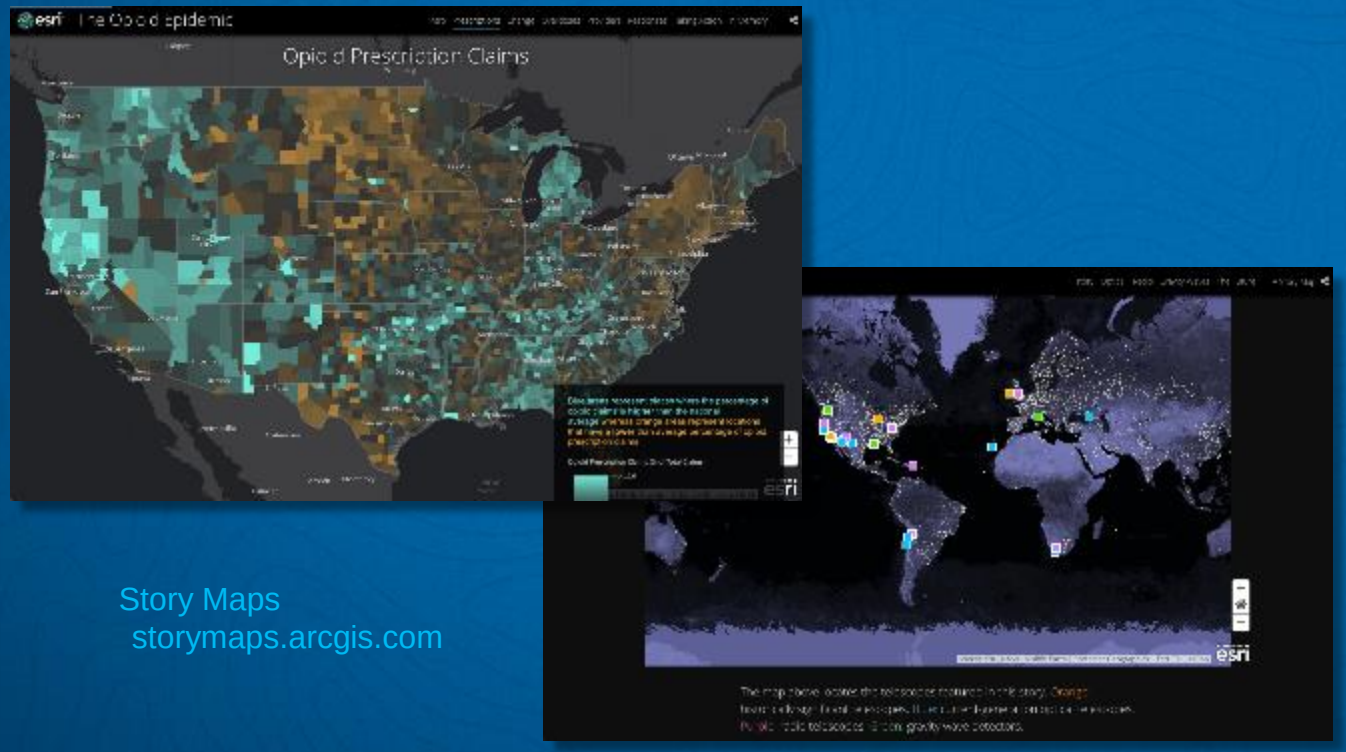
When you need fine grained control over your apps and integrations



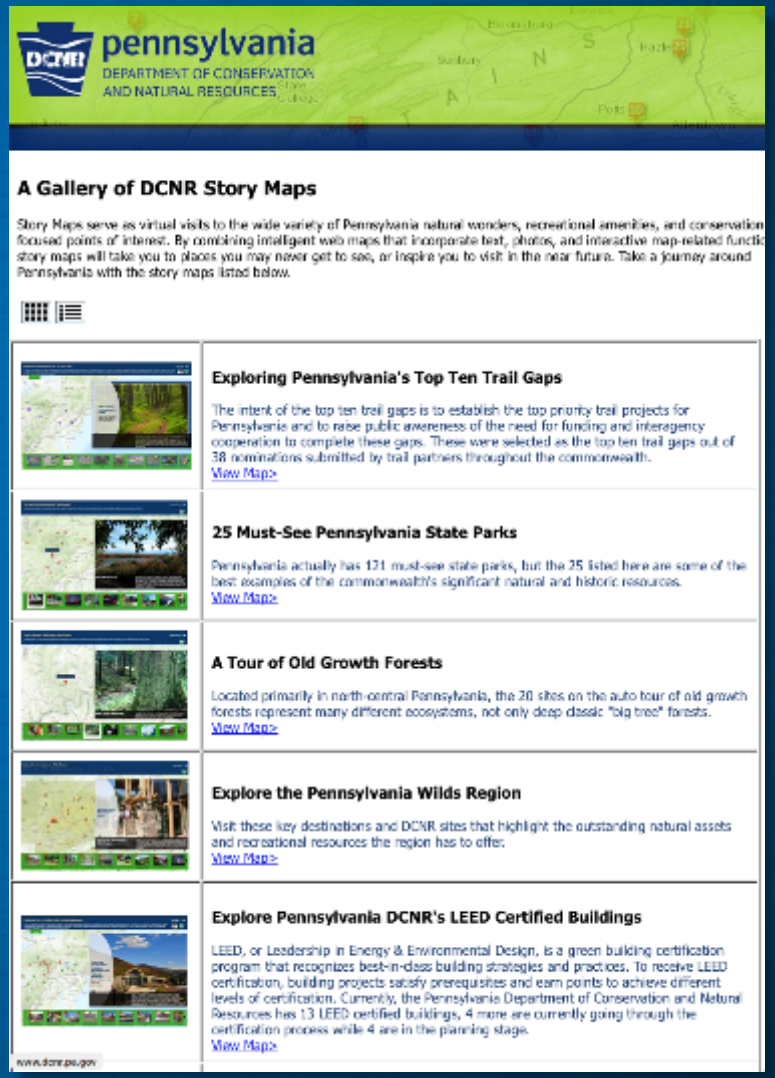
developers.arcgis.com

Use Maps to Tell Compelling Stories

Aligned with your mission objectives and initiatives



Story Maps
storymaps.arcgis.com



Story Maps

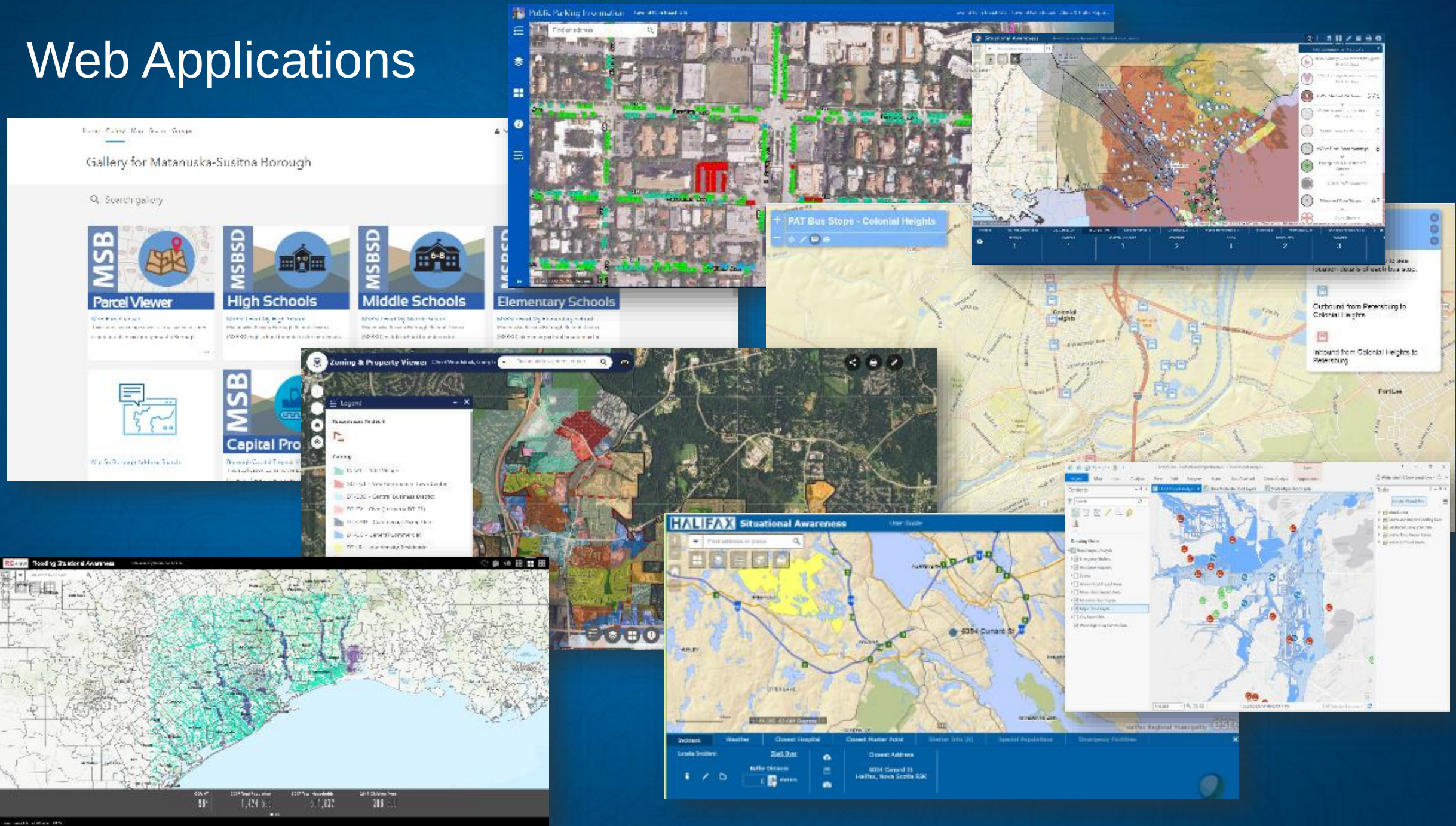
MAKING PROGRESS FOR HAWAI'I
Governor Ige's 2017 Accomplishments

Seminole Tribe of Florida Attractions
Seminole Tribe of Florida
The Seminole Tribe of Florida currently employs more than 2,000 non-Indians and purchases more than $24 million dollars in goods and services from more than 850 Florida vendors a year. In addition, the Tribe pays $3.5 million in federal payroll taxes. The Seminole Tribe of Florida has more non-contiguous reservations than any tribe in North America. Take a walk through our six reservations by clicking the points on the map or the images below.

Resilient City Recovery Maps
Interactive Maps Overview to Aid in the City's Recovery from the October 2017 Wildfires.

Growing a Resilient Anchorage from the Ground Up
Cities of Service and Mayor Berkowitz partner to increase food security in our community

Web Applications



ArcGIS Hub | Is Transforming Community Engagement and Collaboration

Organizing and Leveraging Stakeholder Interactions

Open Data

Policy Initiatives
Initiative Framework

Community Portals
Apps
Story Maps
Identities

Performance Dashboards

Smart Communities

Stakeholders

- Government Leaders
- Community Leaders
- Universities
- NGOs
- Citizens

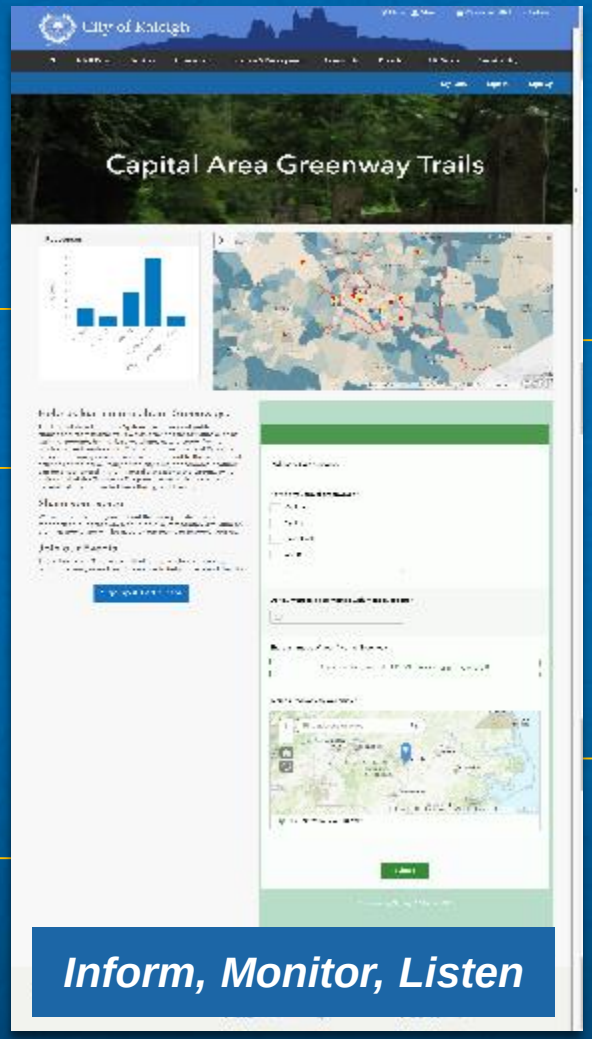
Initiatives

Enabling Civic Participation

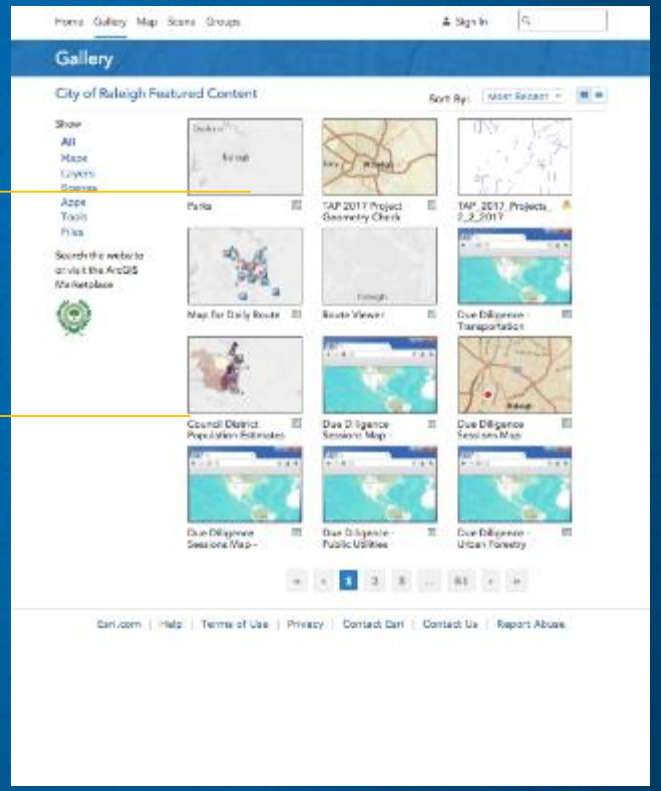
Building Bridges from Vision to Execution

Government Site

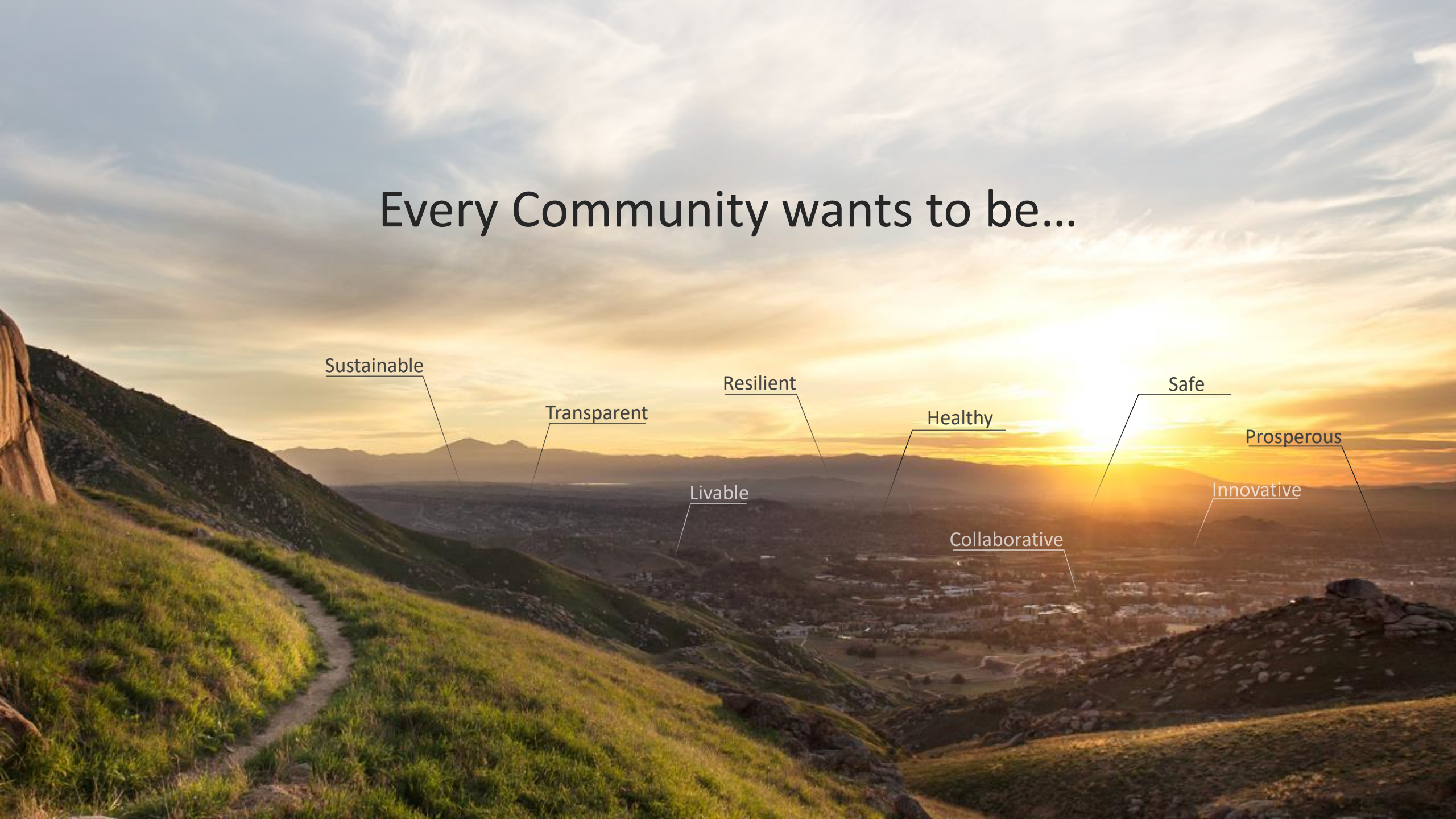
Initiatives



GIS Content & Apps

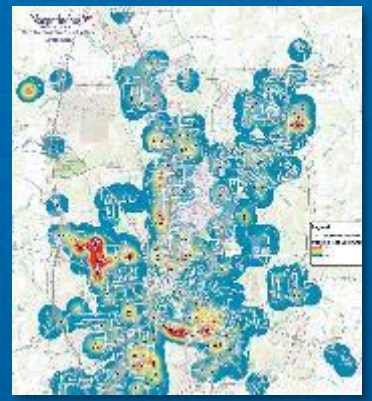


Every Community wants to be…



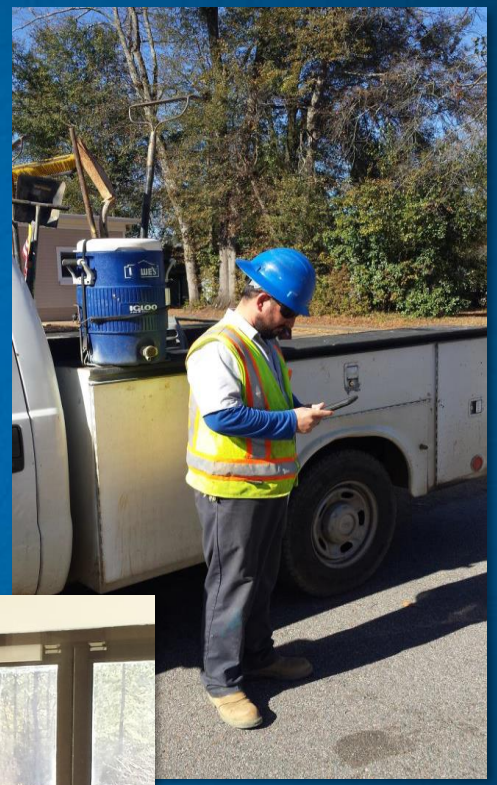
Nacogdoches, TX

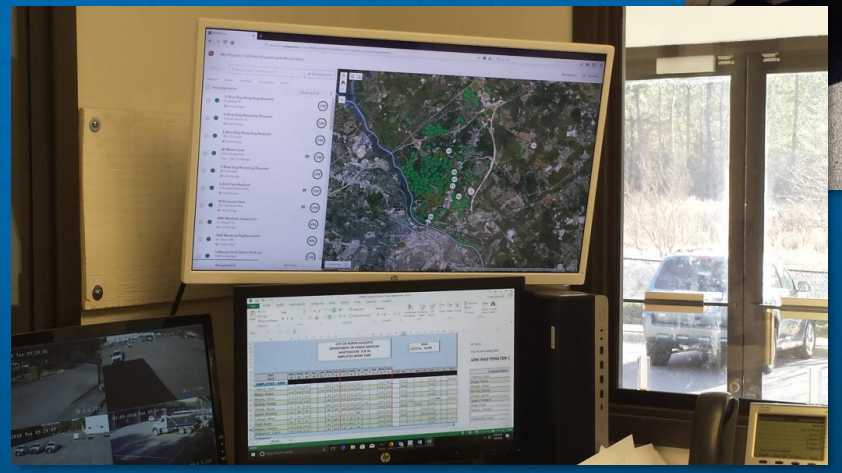
- Smart devices coupled with mobile GIS solutions enable City GIS to get data into the field quickly.
- Eliminated paper-based work orders.
- Transitioning from paper to digital workflows saved 11 hours/day ($230/day) or 2,860 hours/year ($60,000/year).



North Augusta, SC

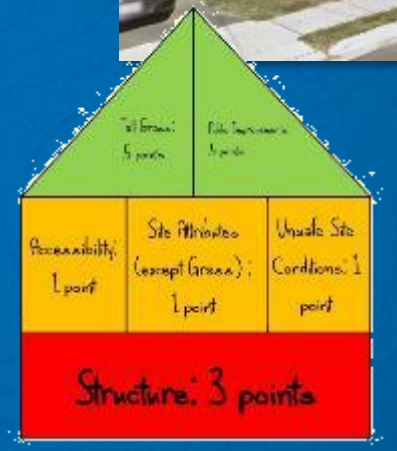
- Modernized work order management process from paper to web-based common view in field and office.
- Faster customer service: City reduced average response time from 33 hours to 8 hours.
- Savings on fuel and mileage through reduced number of daily trips.

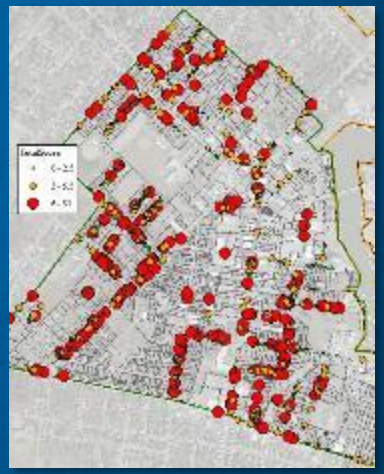


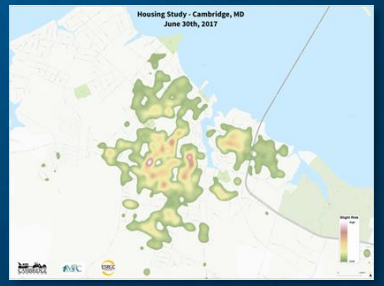


Cambridge, MD

- City of 12,480 wanted to map property conditions of all residential structures to identify deteriorating housing stock and at risk properties.
- Piloted a GIS workflow in one ward of city
- Effort resulted in securing $1 Million (to date) from U.S., State of Maryland and Habitat for Humanity for housing improvements – in just one ward.
- Initiative is now expanding to remainder of City and other Eastern Shore communities.

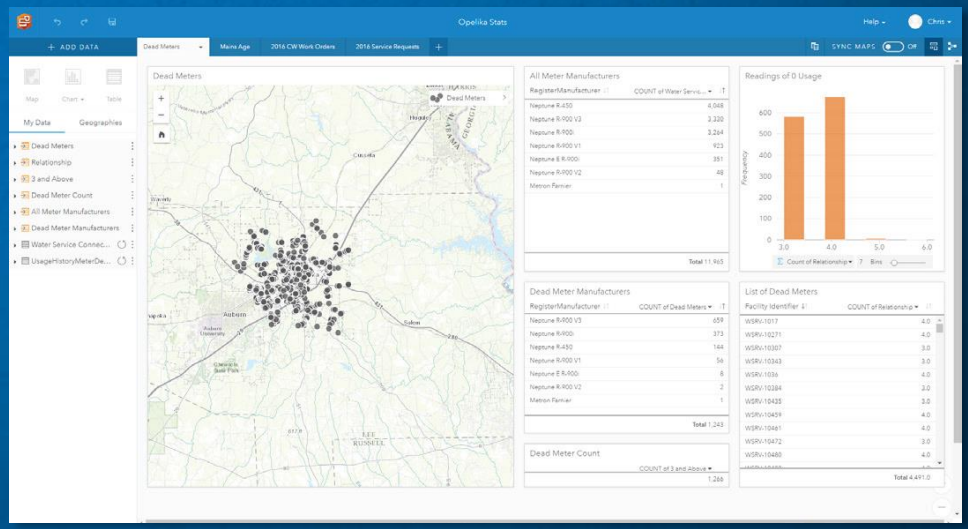






Opelika, AL

- Opelika Utilities serves 14,000 water customers.
- City took a closer look at potential revenue loss and solutions to help increase revenue more efficiently.
- Non-operational (dead) meters are City's primary concern for non-revenue water.
- Discovered problem was bigger than they ever imagined (3,000 of 14,000 meters or more than 20%) were dead.
- Losses were $25,000/month or $300,000/year
- Using spatial analysis, determined dead meters were result of one manufacturer and model – still under warranty. No cost to City. d



New Bern, NC

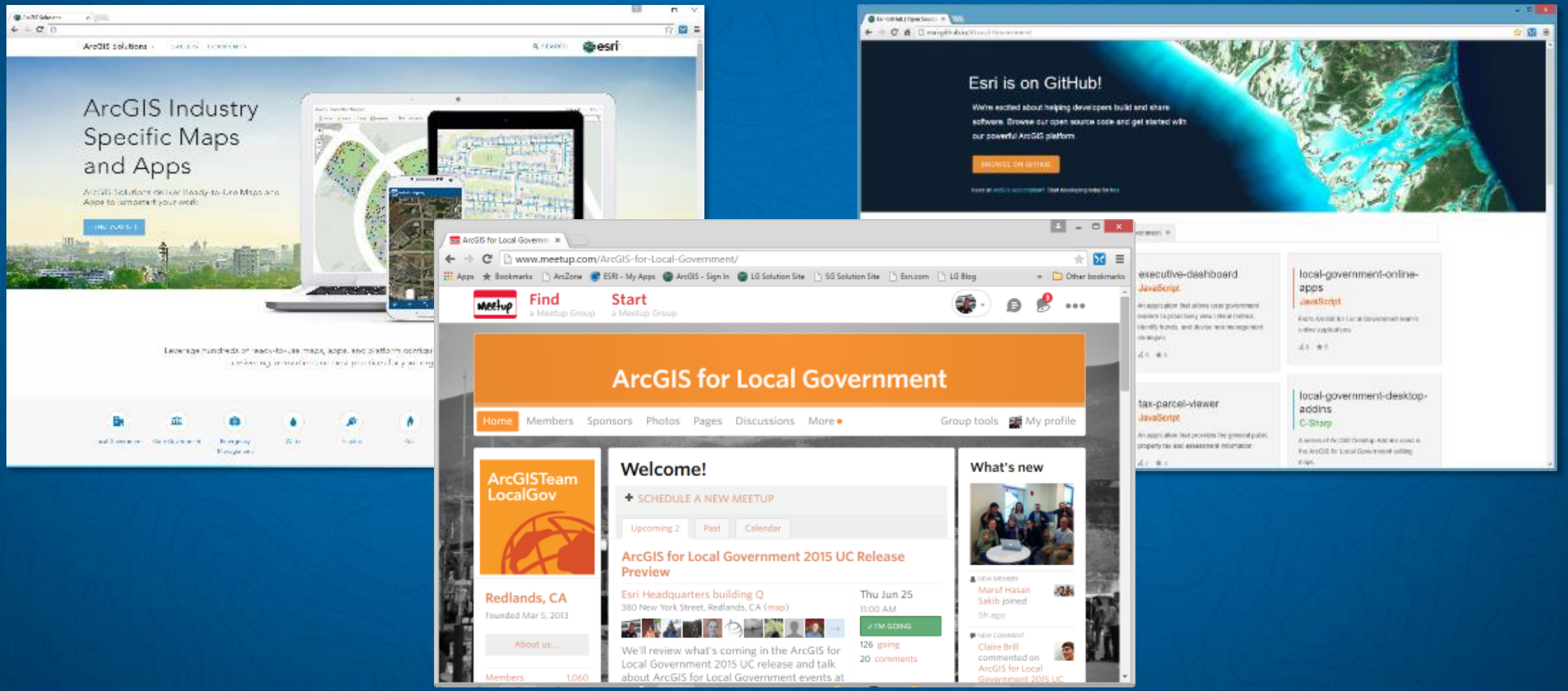
- For each person not counted during the Census, it costs a community $1,624/person per year. GIS is essential for Census preparation.

- Estimated savings of $50,000 following each of the last 2 Census counts by doing redistricting in house vs. hiring an outside consultant.

- City provides utility services to customers outside the city limits. Non-city customers pay a 2x rate but nearly 2,000 customers were not being assessed the accurate rate – recovered $250,000 annually.

The Community

It's not just about the technology



Thank you

Chris Nickola
cnickola@esri.com