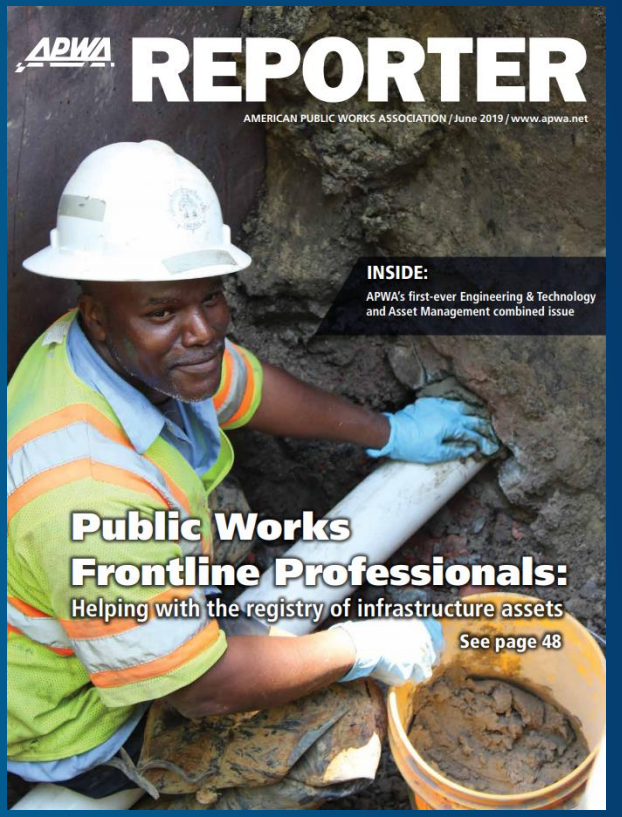
References from APWA Reporter

"The principles and elements that make up asset management aren't new. The public works industry has long recognized the importance of sustaining infrastructure over time at the lowest cost while still providing excellent service. ***New technologies*** *can help us reach the next level by providing better information more efficiently."* – Page 3

"If it ain't broke, don't fix it. But when it comes to a community's infrastructure, you should consider a plan to preserve it before it's too late. As the United States' infrastructure ages and funding measures are often unable to keep up, the search for a ***solution*** *has led many to consider preservation instead of building new. Because of this, many public agencies are shifting their focus—and funding—to preserving their infrastructure."* – Page 66



ArcGIS for Public Works

Mitchell Winiecki – ESRI

ArcGIS for Public Works

Agenda

- Introductions
- Patterns, Practices & Industry Trends
  - Products, Solutions, Workflows
- ArcGIS Solutions for Local Government
  - An Overview for Public Works
- Industry Examples & Scenarios
  - - Supporting Mobile Workflow

Introductions

GeoNet | Your Ideas in Motion

https://www.community.esri.com

Ideas Implemented in the December 2018 ArcGIS Online Update

Blog Post created by **KCullen-esristaff** on Dec 6, 2018

Like • 0 Comment • 0

"Undo" Feature Service Edits in ArcGIS Pro

Idea created by **jrflannery** on Aug 31, 2018

Comment • 3

Reviewed

SCORE
70

0 VOTES DOWN

rmed on items that are streamed in from a feature

. . . The Esri Community

Meetups | In Person & Virtual

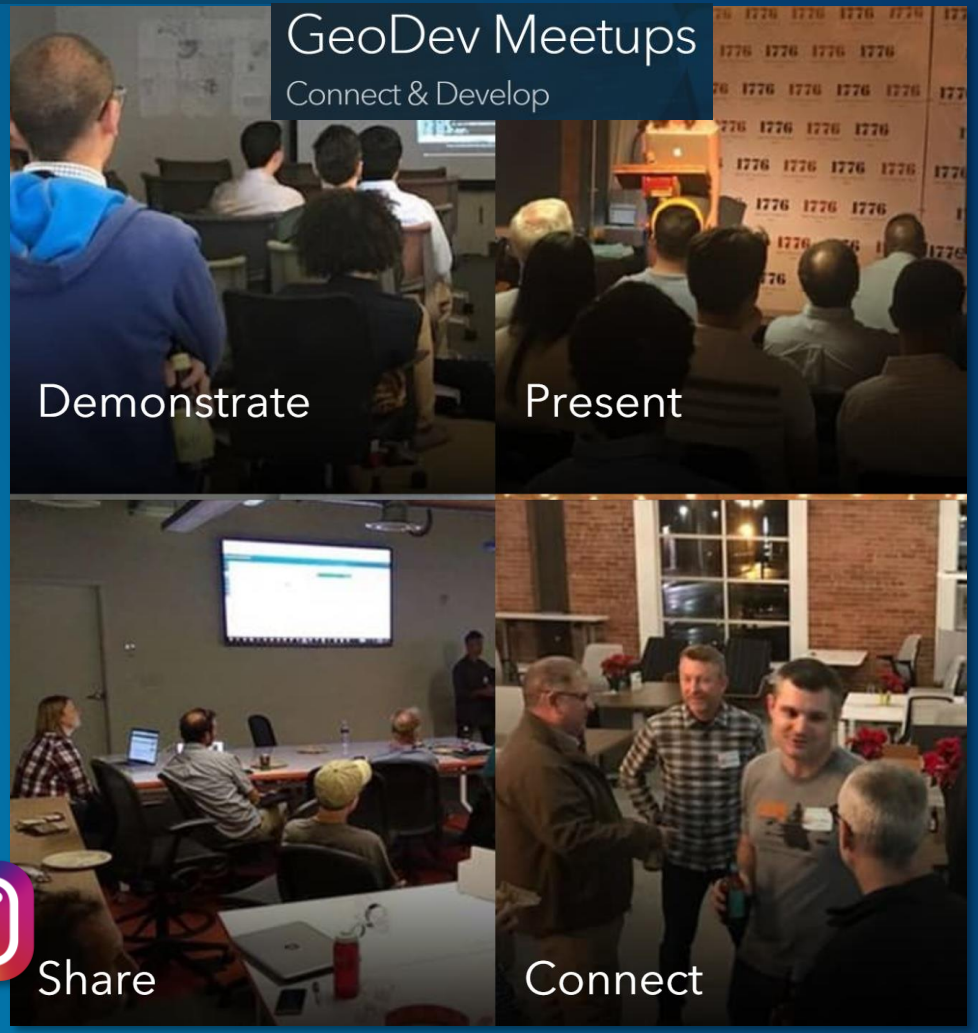
Meetup

Largest ESRI Meetups

1 **ArcGIS Solutions for Local Government**
2,178 Members | Redlands, CA
Organized by Heather E.

2 **GeoDev Meetup Group - Northeast**
1,949 Members | Washington, DC
Organized by Amy N.

https://www.meetup.com/topics/esri/

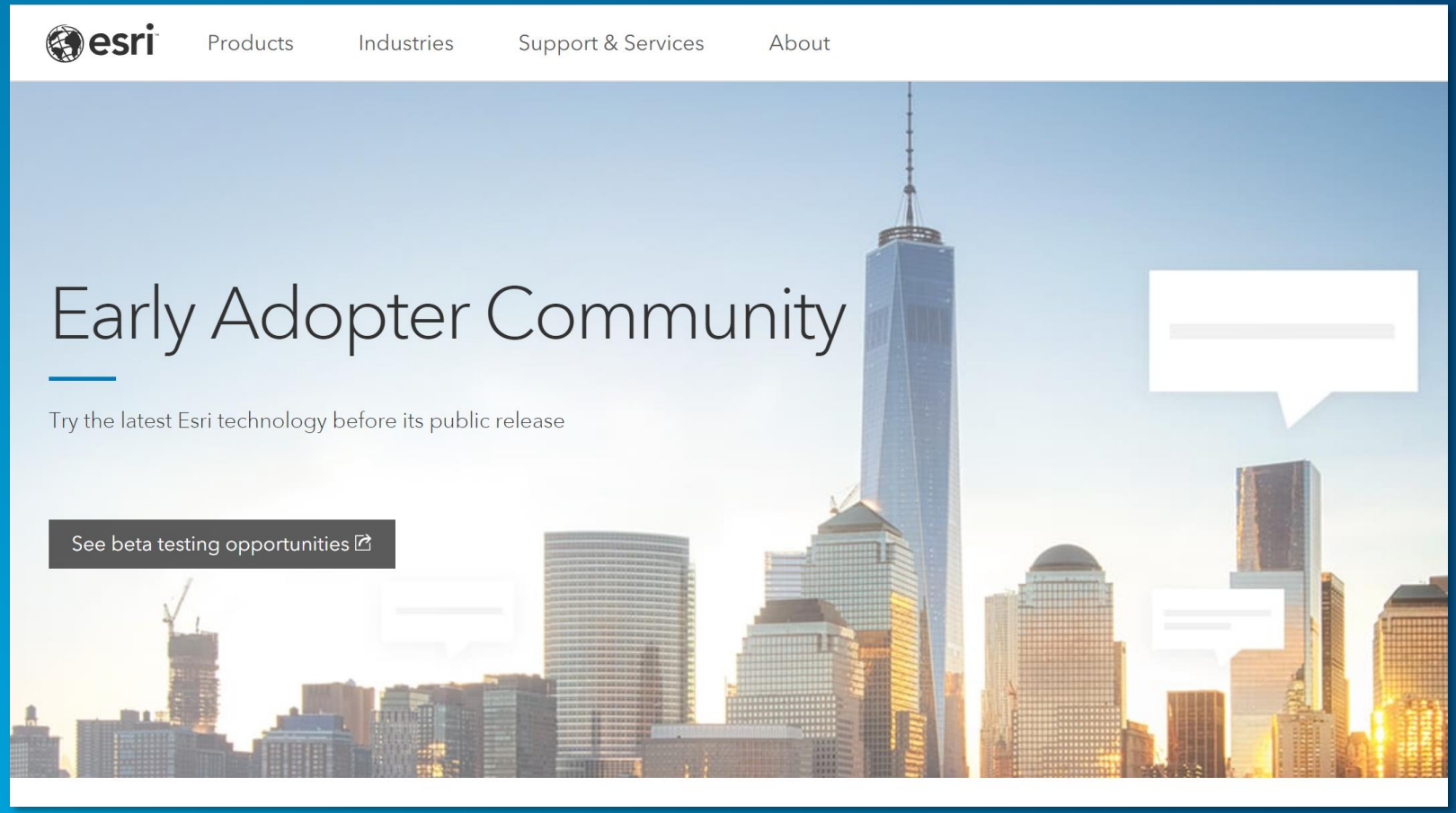


EsriGeoDev

GeoNet
The Esri Community

. . . Connect with Esri Experts, Partners, Your Peers

Early Adopter Community | Try the Latest Esri Technology Before its Public Release



https://www.esri.com/en-us/early-adopter

. . . Your Authoritative Source for Esri's Alpha & Beta Releases

Patterns, Practices & Trends.

Products – Solutions - Workflows

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

Industry Challenges?

Specific to Illinois

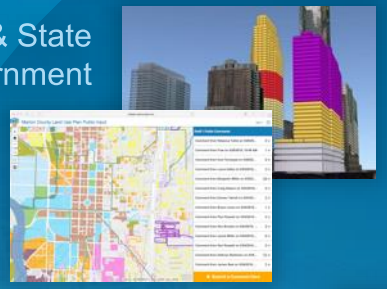
On a daily basis, Public Works are faced with a number of demands and challenges including:

- Containing operational costs
- Responding to unfunded mandates
- Increasing demands for services
- The need to be more transparent
- Managing and maintaining aging assets
- Disaster preparedness and recovery efforts
- Safety concerns
- Attracting and Retaining Talent

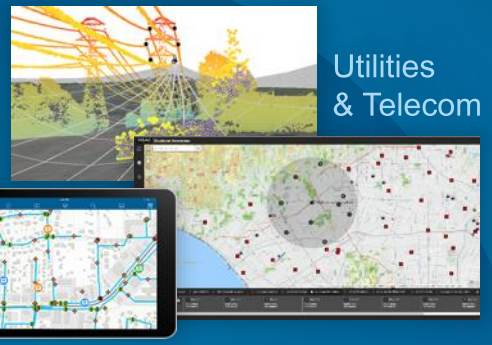
ArcGIS Industry Solutions | Industry-Specific Apps, Maps, & Tools...Extending Your GIS

Solution Components

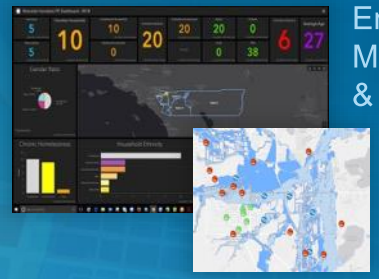
Local & State Government



Utilities & Telecom



Emergency Management & Public Safety



- Popular (500K Downloads)
- Extensive (450+)
- Open Source
- Fully Supported

Defense & Security

Tools

Data Models

Apps Workflows

Maps

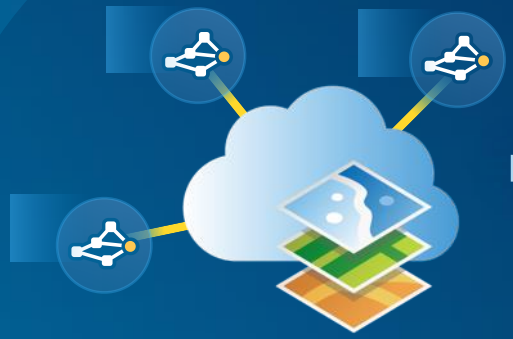
Widgets Add-Ins

Dashboards

http://solutions.arcgis.com/

Solution Configurations

New



Preconfigured

Ready to Deploy

- Technology
- Workflows
- Implementation
- Training
- Support

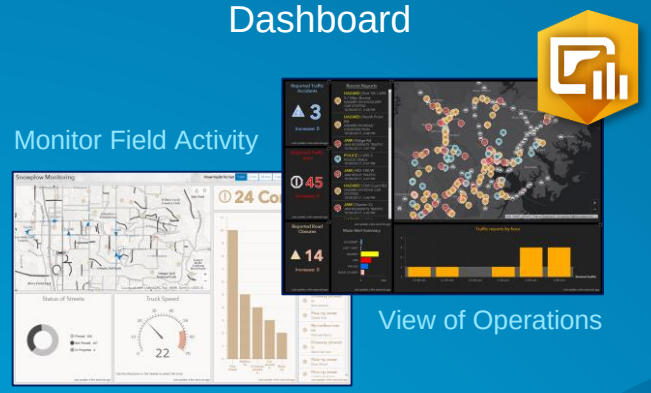
Solutions Page
ArcGIS Gallery

Rapidly Delivering Value . . .
. . . Implemented by Users, Partners, & Esri

Field Solutions | Taking ArcGIS Beyond the Office

New Operations Dashboard

Monitor Field Activity

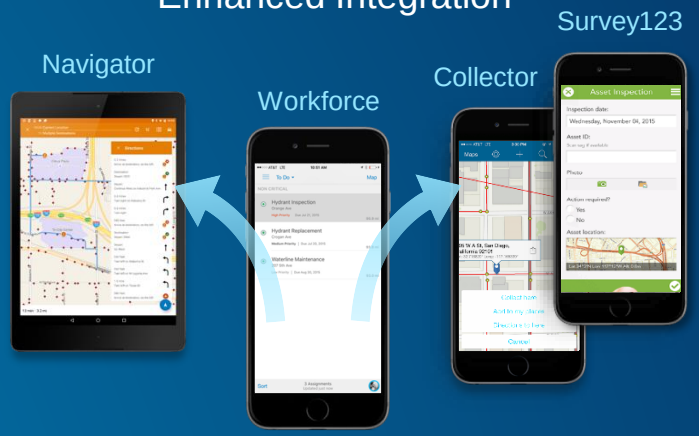


View of Operations

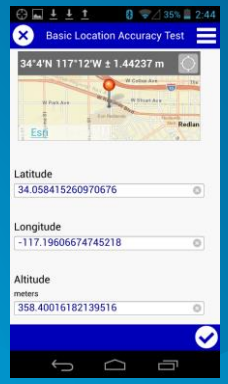
Mobile Map Packages with Vector Tiles

Mobile Map Package (MMPK)

Workforce for ArcGIS Enhanced Integration



Integration with GNSS Receivers



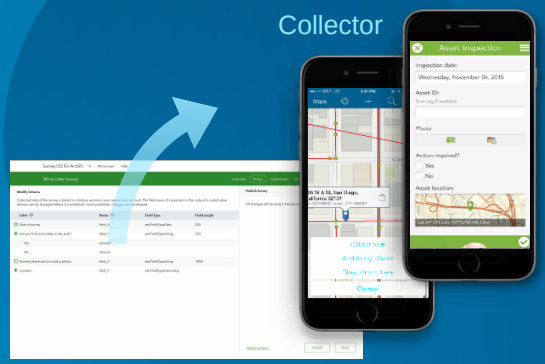
High Accuracy

Map Markup in Explorer for ArcGIS

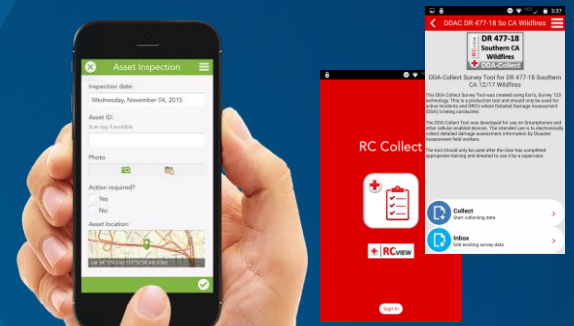
Explorer

Markup

URL Schemes



Smarter Forms in Survey 123 for ArcGIS

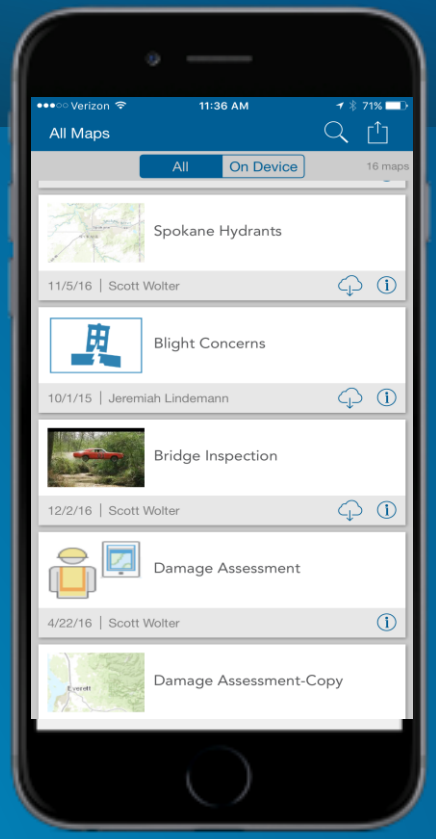


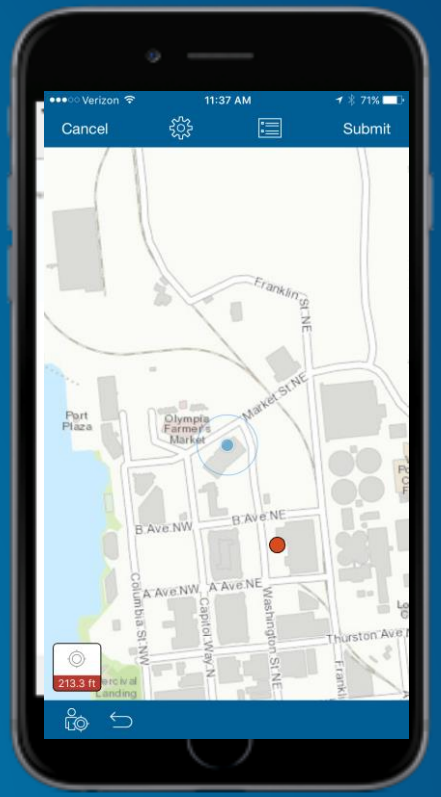
Solutions Page

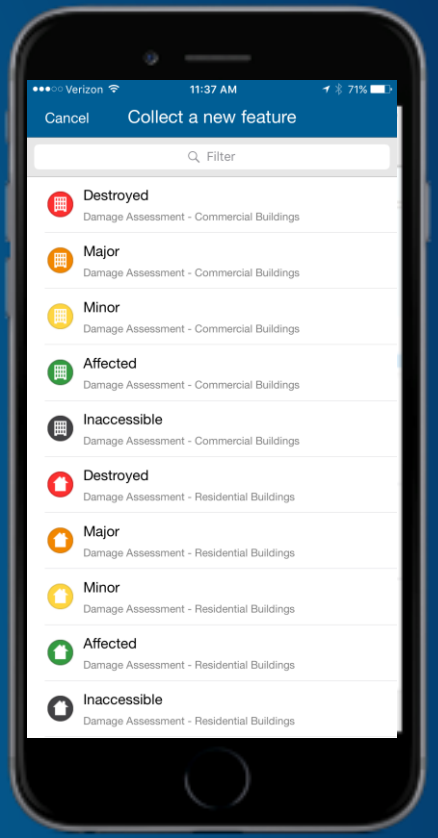
ArcGIS Gallery

Collector for ArcGIS

- Create and Share a Map
- Collect Data
- Edit Related Data
- Edit Versioned Data
- Go Offline
- Get Professional Grade Accuracy

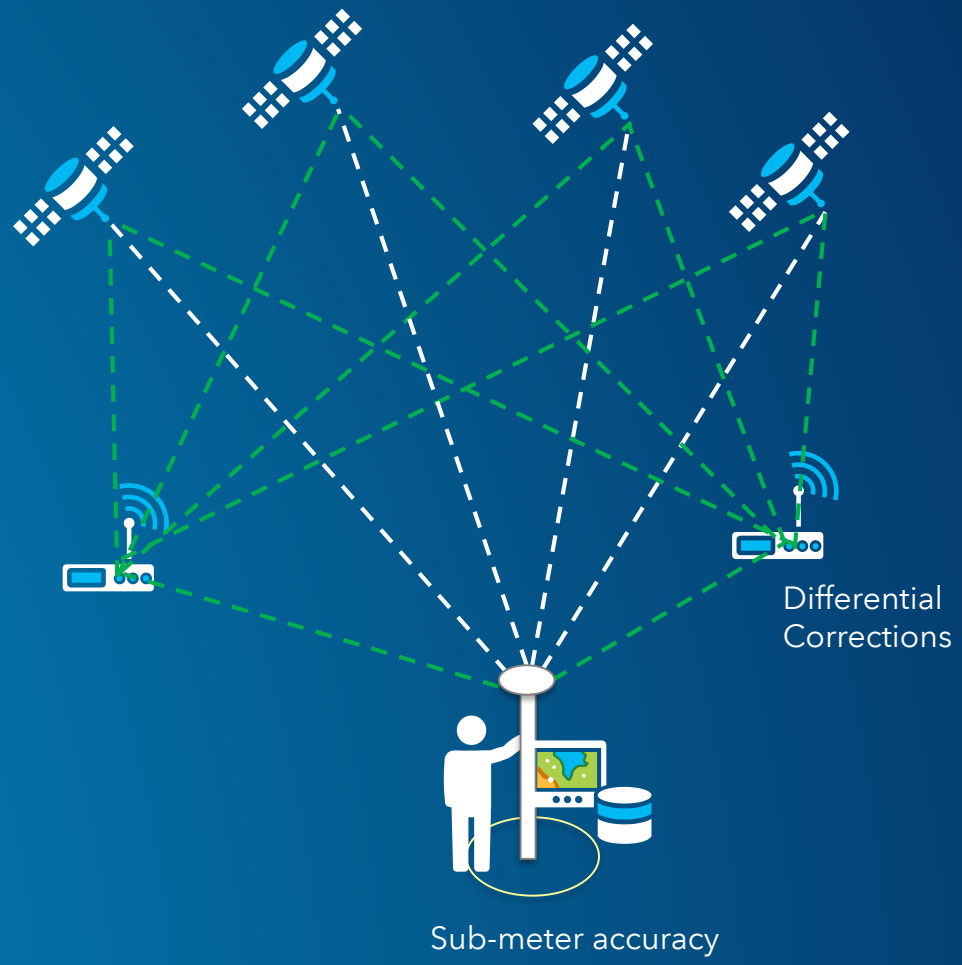






Collector for ArcGIS

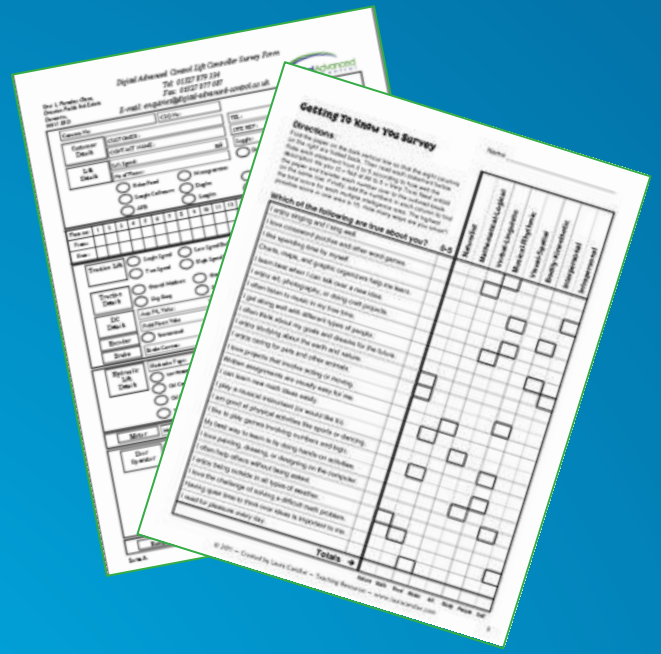
- High Accuracy Data Collection Receivers:
  - Set a location provider
  - Define a location profile
  - Attach accuracy information to your data
  - Receive alerts and notifications

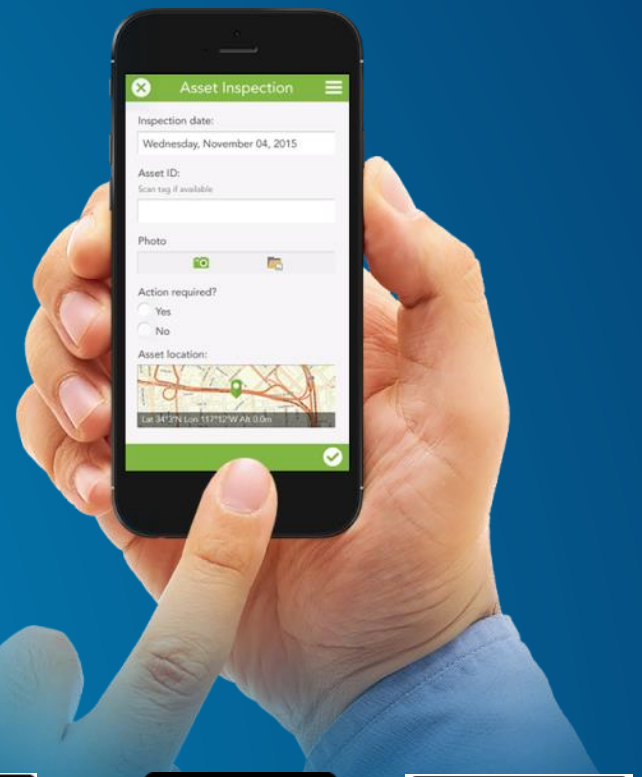


Collector for ArcGIS – Lots of Receivers

Survey123 for ArcGIS

Are you trying to replace paper forms?





Survey123 for ArcGIS works on any device

Available on the App Store

ANDROID APP ON Google play

Download on the Windows Store

macOS

ubuntu

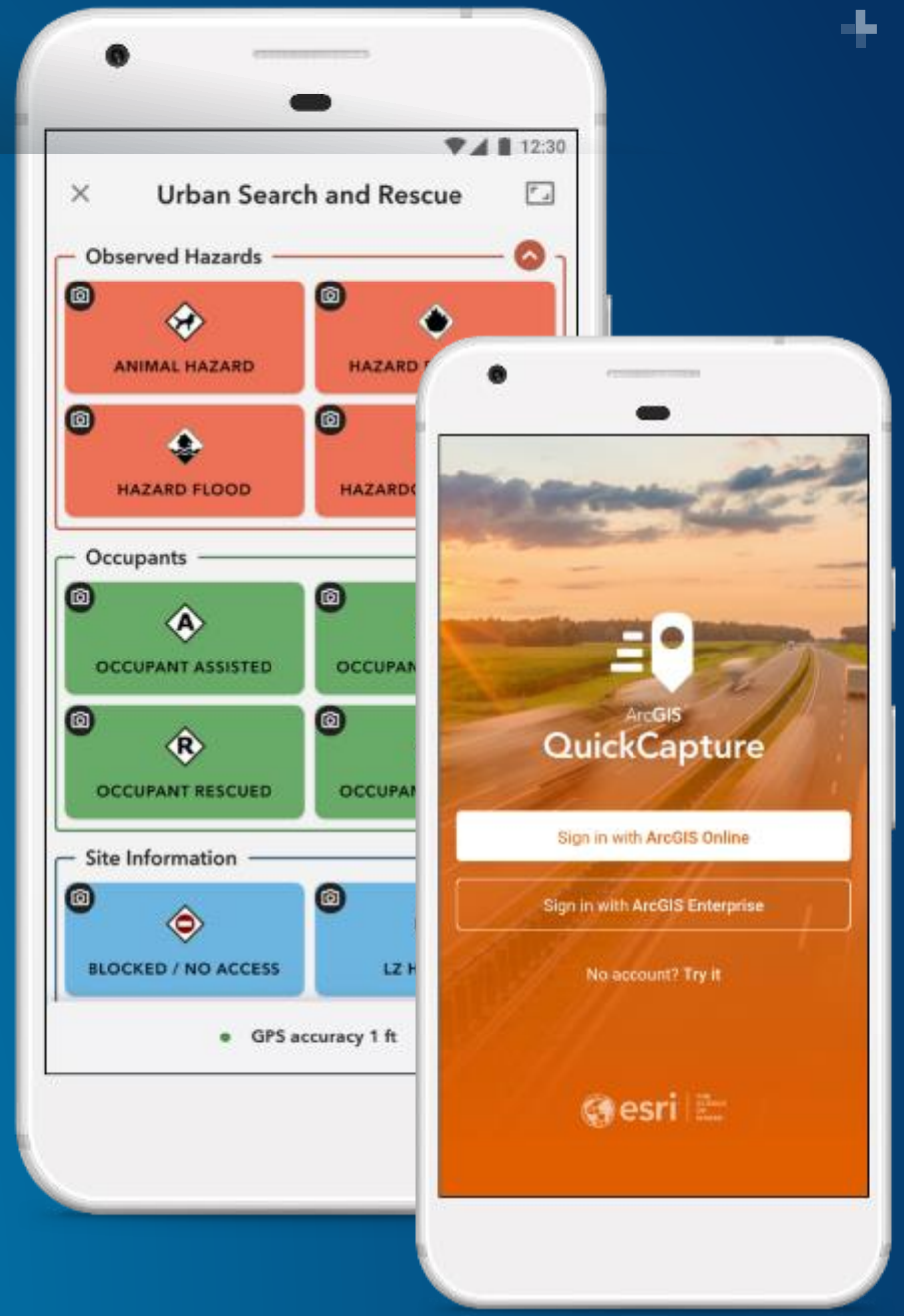
Windows

ArcGIS QuickCapture - The rapid data collection app

A “big button” mobile app

Simplest way to capture field observations

At-speed data collection workflows



Download on the App Store

GET IT ON Google Play

Windows

Operations Dashboard | Dynamic Visual Reporting & Analytics

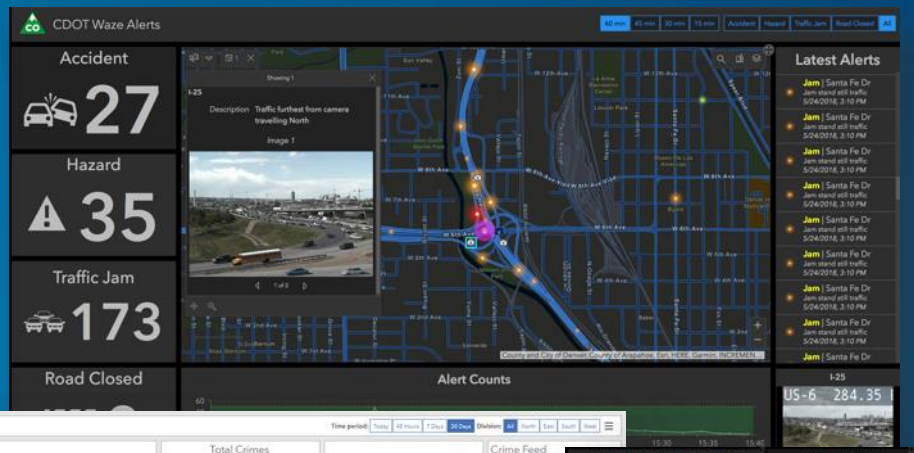
Totally New App

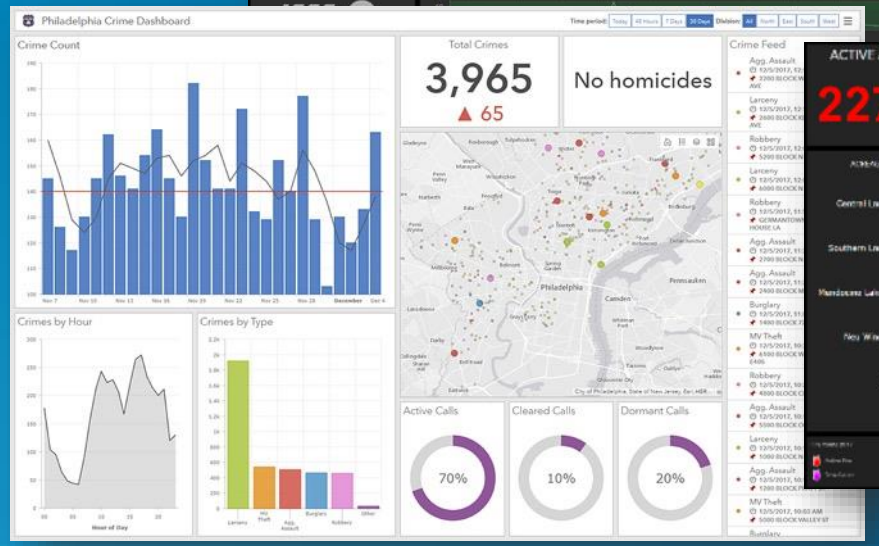
- Web-Based
- Improved Performance
- Easy Configuration
- Easily Embedded
- New Widgets

Online or Enterprise

Any Data Feed

Accidents



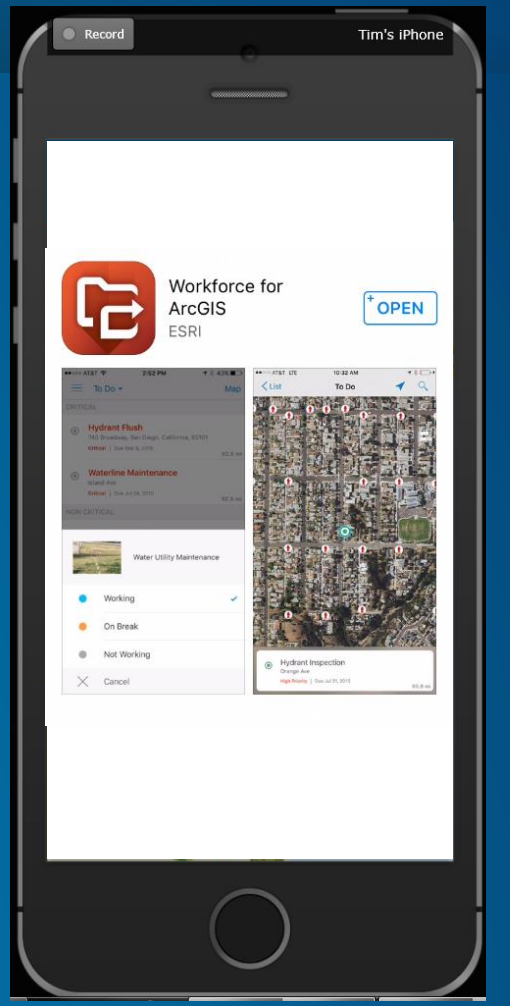


Crime

Wildfire

Workforce for ArcGIS

- Field Workforce Optimization
- Efficiently plan and assign work
- Issue Assignments to Field Workers
- Report Status from the Field



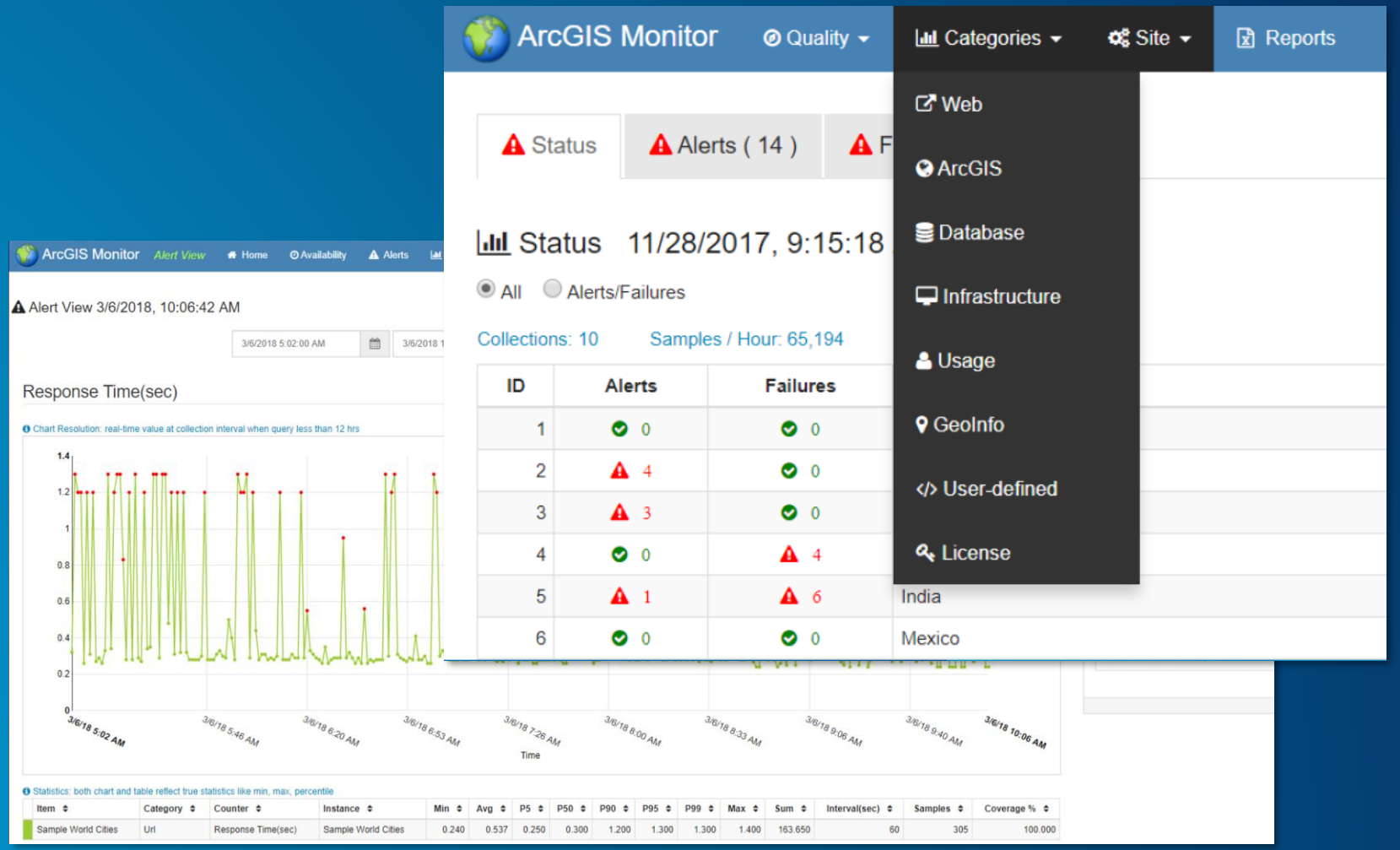
Available on the App Store

ANDROID APP ON Google play

Download on the Windows Store

ArcGIS Monitor | Optimize Your Enterprise GIS Deployments

- End-to-End monitoring:
  - ArcGIS platform
  - Underlying infrastructure
- Quickly diagnose:
  - Unstable infrastructure
  - Overloaded system
  - Bottlenecks
- Scalable & non-intrusive



. . . Used by Esri Managed Cloud Services to Monitor 500+ GIS Servers

GeoEvent Server: *Real-Time Capabilities*

Analyze Data with Filters, Processors
Event Handlers, Listeners, if/then do this…

ingestion

dissemination & actuation

Apps

Desktop

APIs

Live Features
Stream Services

Live & Historic
Aggregates & Features

visualization

ArcGIS Enterprise

ArcGIS GeoEvent Server

analytics

Spatiotemporal big data store

storage

SnowCOP dashboard– Sandy, UT

IN DOT Waze dashboard

ArcGIS Hub | Transforming Community Engagement & Collaboration

Organizing & Leveraging Stakeholder Interactions

Open Data

Policy Initiatives
Initiative Framework

Community Portals
Apps
Story Maps℠
Identities

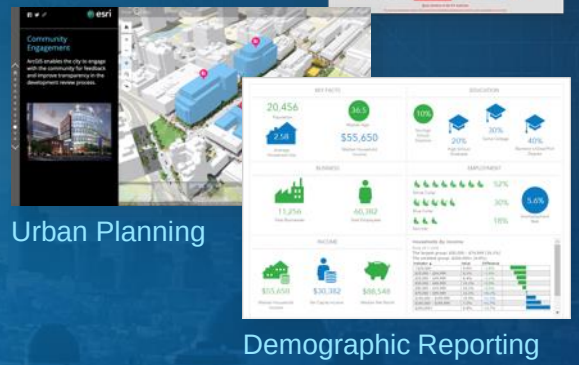
Performance Dashboards

Smart Communities

Stakeholders

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

Initiatives

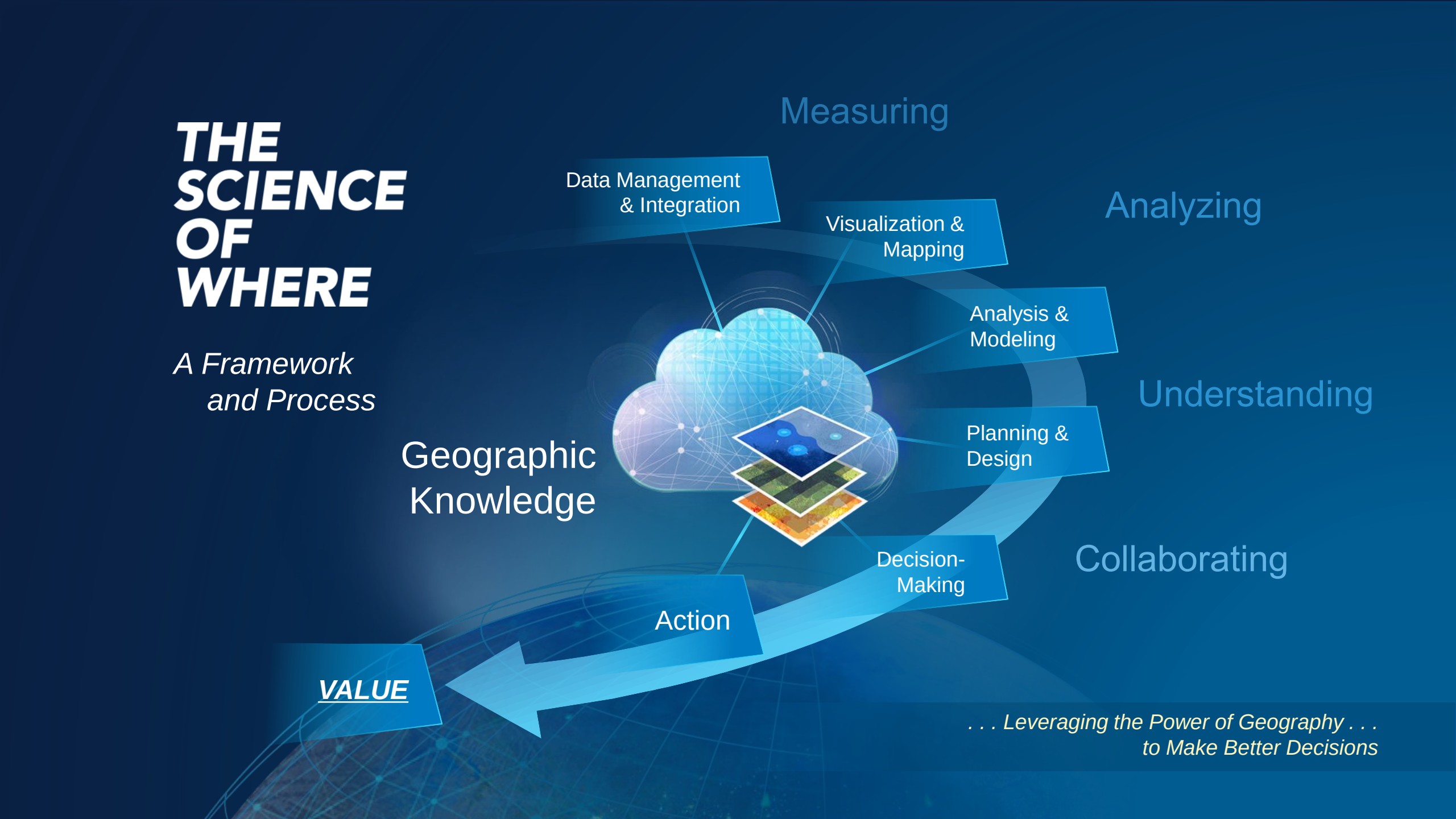


. . . Enabling Civic Participation

Loudon County GeoHub

THE SCIENCE OF WHERE

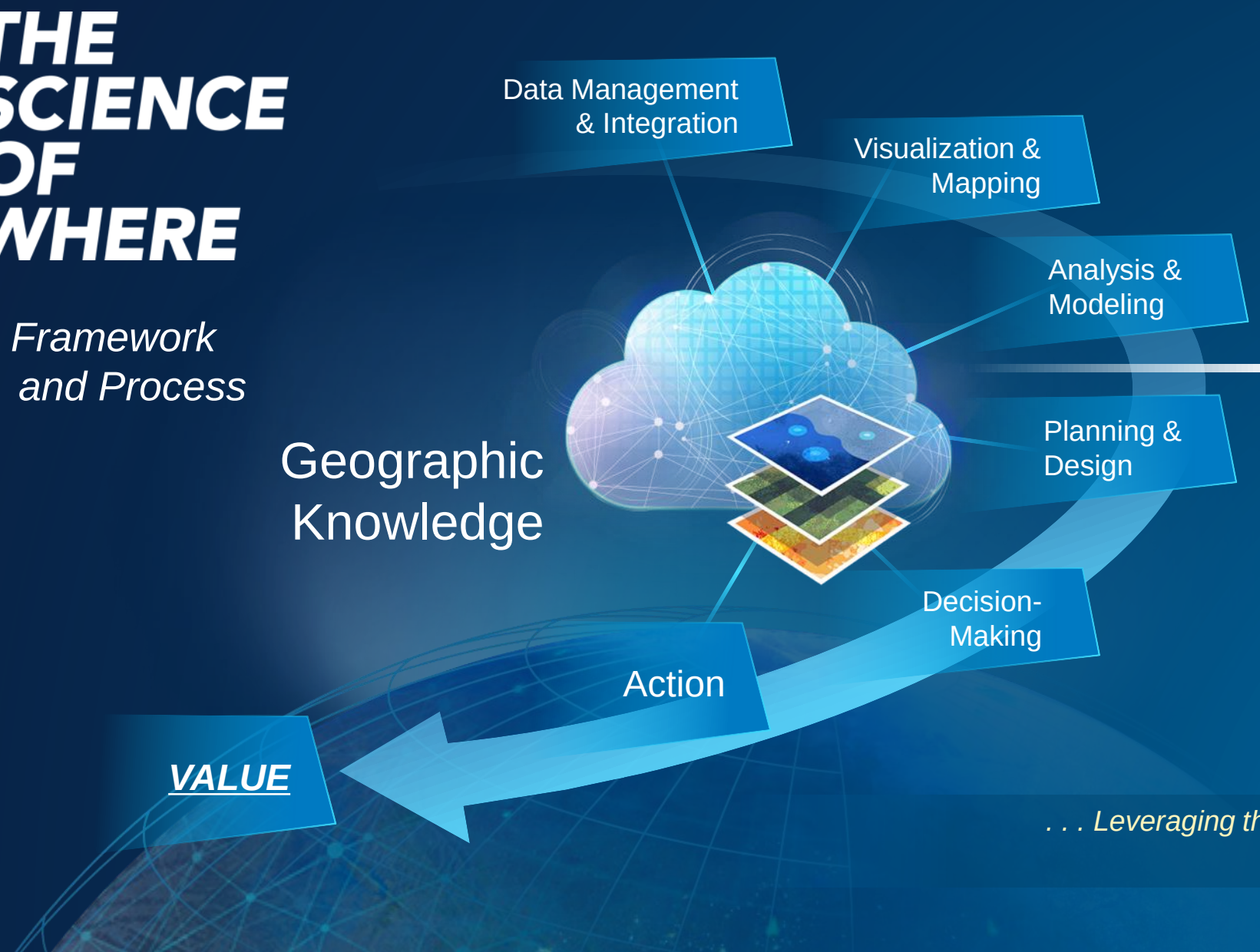
A Framework and Process



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

THE SCIENCE OF WHERE

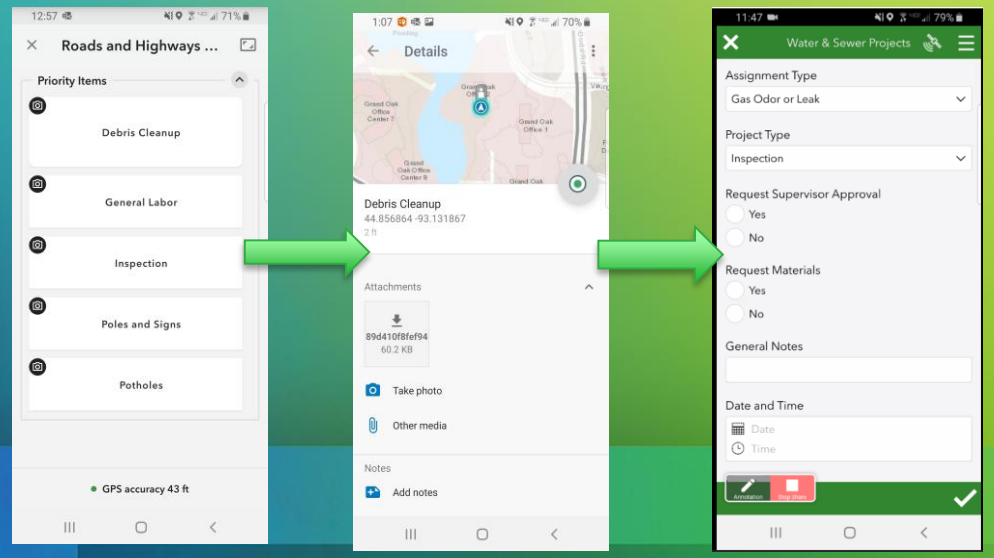
A Framework and Process



GIS

LOCATION INTELLIGENCE

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



Science of Where Framework

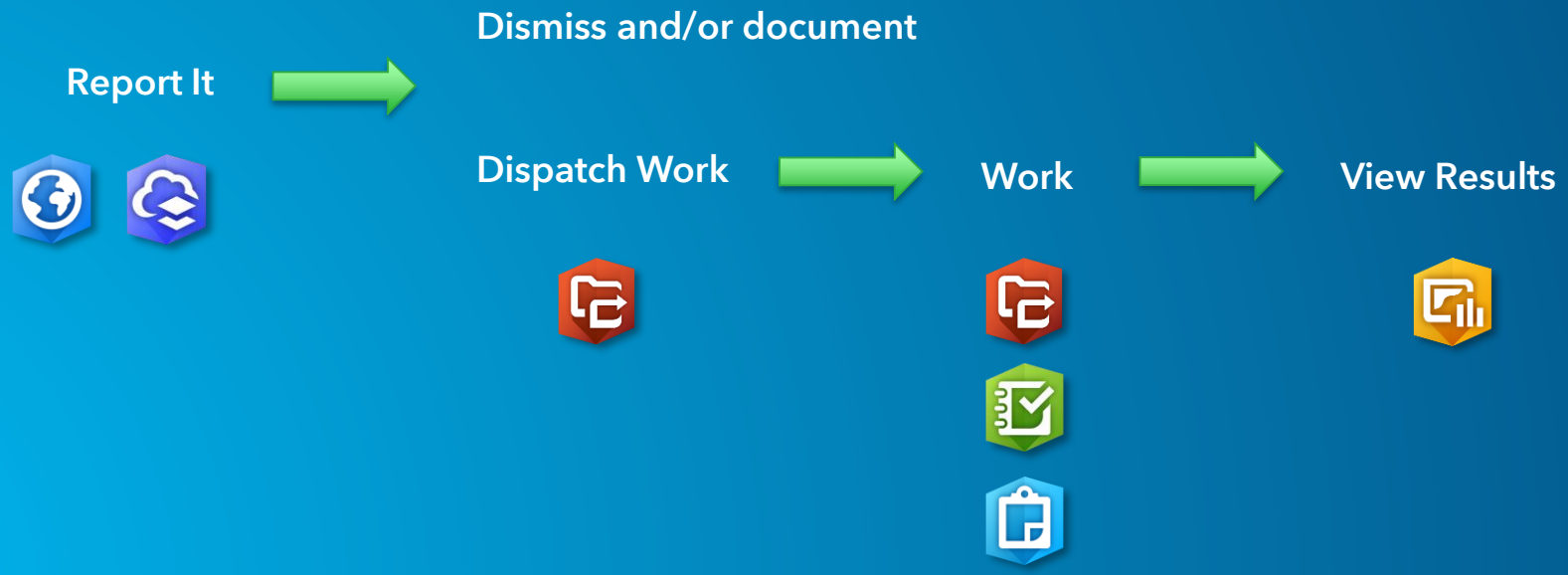
Supporting Mobile Workflows

Supporting Mobile Workflows

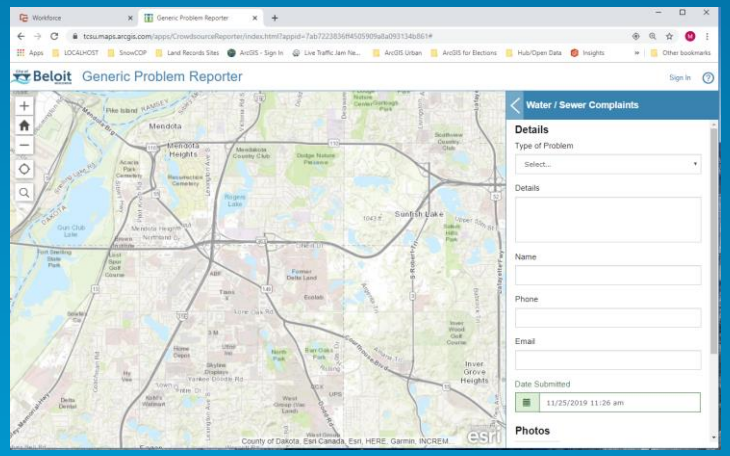
Scenario #1:

I need a solution for internal use to manage simple water and sewer projects. This solution would preferably streamline workflows and replace paper form / double entry.

More specifically, our work follows a general order and we would like a solution to account for every stage. The solution would also act as a system of record for historic data, to assist with Customer Service calls, etc.

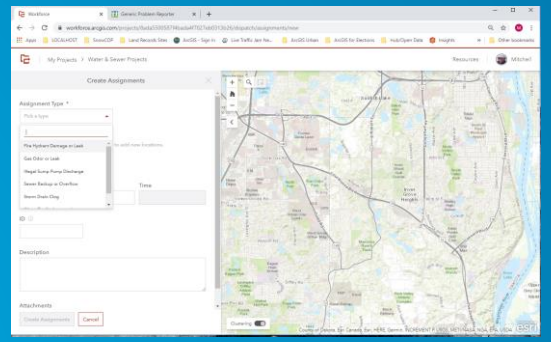


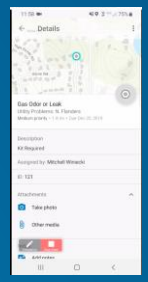
Supporting Mobile Workflows Scenario #1 Continued



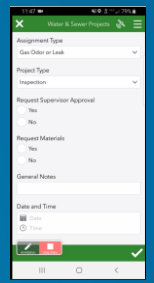
Report It

Dispatch Work

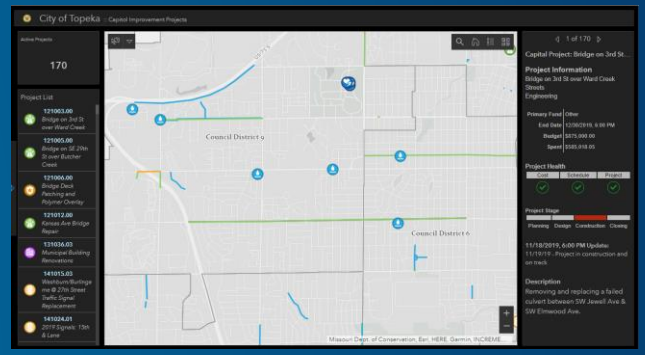




Field Worker



View Results



Let’s do it!

Recap:

- **We repurposed an existing, out of the box solution and configured it for internal use for Water and Sewer Projects.**
- **Viewed incoming issues using Workforce, and then dispatched work directly to field workers.**
- **Field worker utilized Workforce to view work, and record work and events associated with their at that site.**
- **Used Operations Dashboards and view live or historic data.**

I need a solution for internal use to manage simple water and sewer projects. This solution would preferably streamline workflows and replace paper form / double entry.

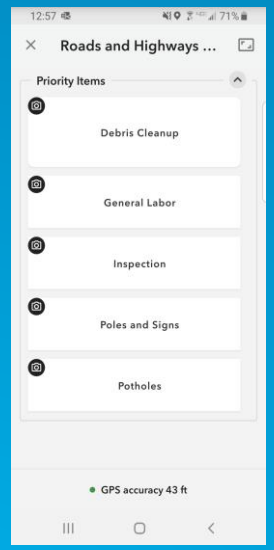
More specifically, our work follows a general order and we would like a solution to account for every stage. The solution would also act as a system of record for historic data, to assist with Customer Service calls, etc.

Supporting Mobile Workflows

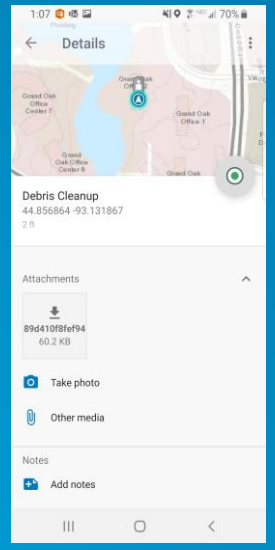
Scenario #2:

I want to document "____" roadway problems and use that to create work orders. Essentially, I want my entire team to be able to document any one of our major issues, anytime, anywhere. Then the work will be automatically dispatched to the appropriate person, whereby they will be notified immediately and even receive a picture of the problem/issue.

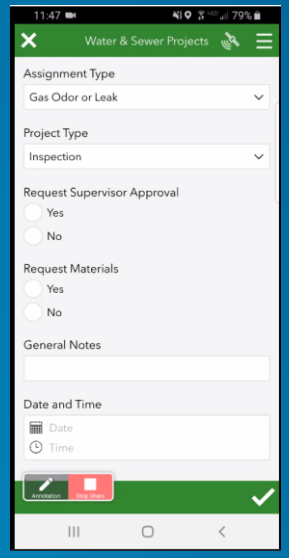
Supporting Mobile Workflows Scenario #2 Continued



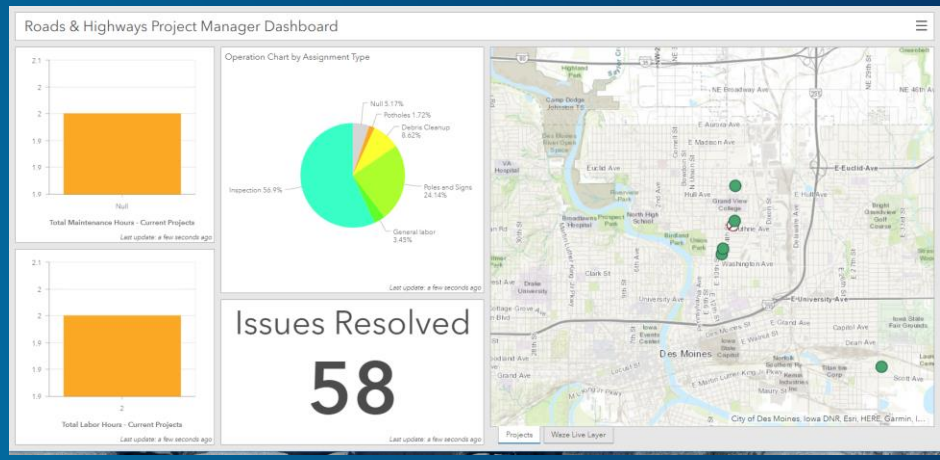
Record issue with photo, that creates assignment in Workforce



Mobile workers sees new assignment in queue



Mobile workers access integrated apps to record work associated with assignment. Provides system of record.



- View results in real-time
- Public vs. Private capabilities
- Performance Management

Let’s do it, pt.2!

Recap:

- **We used ArcGIS QuickCapture to document our roadways problems.**
- **Linked QuickCapture to Workforce to create Work Order Assignments automatically with each problem recorded.**
- **Field Worker uses Workforce to receive work, integrated Survey123 app to record completed work.**
- **View results in Operations Dashboard.**

I want to document roadway problems and use that to create work orders. Essentially, I want my entire team to be able to document any one of our major issues, anytime, anywhere. Then the work will be automatically dispatched to the appropriate person, whereby they will be notified immediately and even receive a picture of the problem/issue.

Public Works: What can ArcGIS do for you?

ArcGIS helps public works organizations:

- Maintain an authoritative inventory of public assets
- Analyze the effective life of aging infrastructure and visualize proposed improvements
- Coordinate capital project investments and maximize public expenditure
- Reduce the cost of field operations and maintenance activities
- Improve operational awareness and response to a storm, natural disaster, special event, or an incident
- Increase transparency and accountability
- Improve customer service

Thank you!!!

esri
esri
THE SCIENCE OF WHERE