

Esri News

for State & Local Government

Spring 2018

City of Moorhead, Minnesota— Staying Ahead with Web GIS

With a history of innovating with location technology, the City of Moorhead focused on deploying Web GIS in creative ways to solve its unique challenges and serve citywide users efficiently, easily, and accurately.

The City of Moorhead, Minnesota, is a true innovator, with a level of GIS deployment that is rarely seen in rural communities. The city served up its first internal Web GIS application over 20 years ago and has stayed a step ahead of others in introducing developments such as centralizing data, public Web GIS, parcel fabric implementation, and mobile deployment.

A Clear Case for Web GIS

Moorhead's GIS manager, Brad Anderson, was eager to embrace Web

GIS to support growing expectations and demands by providing faster, easier-to-use information and services without large development costs.

Working with its longtime GIS partner, Pro-West & Associates, Moorhead identified the following priorities:

- Manage data requests
- Deploy a sales comparison application for the Assessor's Department
- Create a one-stop shop for publicly available real-time information on parks and trails in the city
- More efficiently manage flood-fighting planning and infrastructure
- Easily view parcel history
- Improve service to citizens who report problems to the city's Engineering Division

A Gateway to Web GIS

To house the city's Web GIS resources, an ArcGIS Online gallery, go.esri.com/CityofMoorhead was created, serving as a front door.

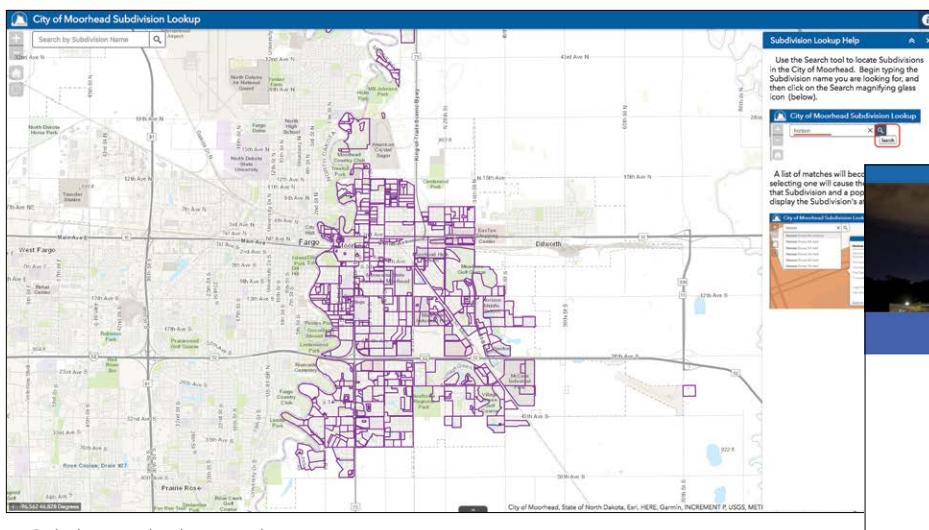
The city's six priorities were addressed with the following solutions:

1. Data Request Management

An ArcGIS® software-based open data portal, gis-share-moorhead.opendata.arcgis.com (bitly will be created), makes data easily accessible, providing a platform for users to explore available data and easily find what they need from six categories:

- Land Records
- Transportation
- Administrative
- Flood Data
- Infrastructure
- Utilities

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↑ Subdivision lookup application.

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Dedicated web maps and apps for the Sanitary and Storm Utilities, Subdivision Lookup, and Property Information maps are available via the ArcGIS Online public gallery to make the process of finding information even easier. Go.esri.com/Subdivision

The portal, based on ArcGIS Online, has been instrumental in eliminating the response-gathering process—which previously consisted of a dozen steps—and serving the public more quickly and accurately.

2. Sales Comparison App

The Assessor's Department is using this easy-to-use mobile ArcGIS Online app, which displays information on property sales dating back to 1990 and allows assessors to track whether sales ratios are within their goal of 95–105 percent of appraised values. Data is automatically updated

every night, thanks to the integration of a publishing script from Pro-West.

3. Parks and Trails

Moorhead has an abundance of parks, bike trails, and other outdoor public recreational facilities. The city implemented an app based on ArcGIS Online, Parks and Trails Finder app, providing a single source of information on parks, bikeways, the status of bike and pedestrian bridges, and more. Users can perform a radial search or search by activity or amenity and skip to an individual facility's website with a single click via pop-up windows.

4. Focus on Floods

Situated next to the Red River and vulnerable to seasonal flooding, Moorhead is one of the nation's most advanced communities when it comes to identifying

and deploying flood mitigation tools. For over 20 years, GIS has been a key component of the city's flood-fighting arsenal, becoming indispensable as Web GIS has taken hold. An interactive website, based on ArcIMS, was developed in 2002, displaying invaluable information to city staff and the public based on one-half-foot flood inundation polygons. A new version of this site will debut in spring 2018 with updated polygons that enable users to visualize the results of flood mitigation projects, especially useful the record floods of 2009. In 2012, Moorhead worked with Esri to develop The Flood Planning Map, the first in a series of maps and apps to help communities prepare for flooding events. The city now uses ArcGIS Online to manage many GIS-enabled flood

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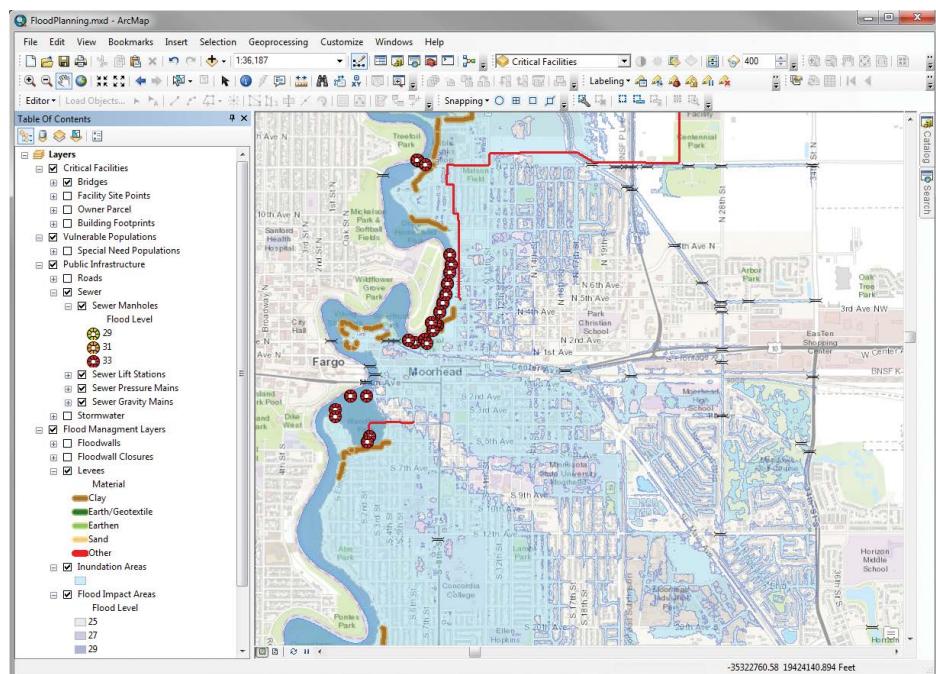
mitigation measures, including strategies for getting information to the public. Recent additions include the Federal Emergency Management Agency (FEMA) Floodplain application, which displays the current FEMA floodplain information and FEMA's official Letters of Map Correction (LOMCs).

As the city's emergency flood-fighting plans mature, so does the role of GIS. Goals for further GIS integration include the following:

- Deploy Portal for ArcGIS for security should the emergency flood plan need to be implemented
- Transition more components of the emergency plan from paper to GIS
- Extend field capabilities to enhance monitoring and information sharing

5. Instant Parcel History

To further streamline its parcel maintenance process, Moorhead implemented Pro-West's Parcel Lineage app, designed to provide instant visibility to a parcel's history. As an early adopter of Esri's parcel fabric, Moorhead wanted to realize the value of the historical data the city had accumulated. A single click on any parcel displays historical information, making it quick and easy to discover data.



↑ The Flood Planning Map, developed by Esri working with Moorhead

6. Service Request Tracking

Moorhead needed to move citizen service requests to Web GIS to resolve the challenge of efficiently routing, recording, and tracking incoming requests through the appropriate channels. Citizens' calls were often transferred from one department to another, requiring multiple explanations of the problem. Meanwhile, geographic patterns of the issues affecting the city could not be analyzed. Although each

caller's address was recorded, that was typically not where the issue was located. The city also lacked the ability to easily track requests to ensure that they were resolved in a timely manner.

However, if a public app for submitting and tracking requests was implemented, how could the city guarantee that all requests received timely responses and resolutions?

The solution was an internal GIS application, which city staff use to indicate the type of request and record relevant details. Information is instantly available to any city staff or departments that become involved in resolving the issue.

The application is improving customer service and helping the city run more efficiently. Members of the public provide information just once, and an estimated two hours per day of city staff time—which used to be spent processing requests—is being saved by having a single, consistent source of information.

To see how others are using GIS in government, check out go.esri.com/ Government.

"The move to focused applications that each accomplish a single task has been a game changer. It has changed the way people think about GIS. Maps used to be considered the exclusive domain of 'the GIS guy,' but now they are seen as a way to visualize and interpret data in a way that's easy to understand and, most importantly, useful! People are using GIS more; our GIS program has greater momentum than ever, and we're able to better serve our citizens."

Brad Anderson,
GIS Coordinator, City of Moorhead

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Location Data Is Essential for Leadership

by Phil Mielke, Esri



Historically, in government, the decision-making process is something that has occurred behind closed doors. When the fate of a program, a budget, or the response to a disaster or epidemic is decided without transparency, it leads to distrust and a deep sense of uncertainty. The fast pace of social media and news cycles profoundly affects the perception of decisions. Your constituents' satisfaction with a strategy or an outcome hinge on perception, and it's increasingly clear that information needs to be truthfully represented. Data is truth, and not only will data help communicate and justify a decision made, data will unsurprisingly lead to better decisions and better leadership.

Let's use the opioid epidemic as an example. Most cities and counties are not equipped to overcome the institutional hurdles that hinder understanding

the depth of the epidemic and details of how it is affecting them. There are the big-picture numbers about deaths in the United States, there are news stories of overdoses in their communities, and there is the impression that the picture is getting worse. Yet many cities and counties are unable to say with certainty where the overdoses are occurring, how many are resulting in deaths, and what combinations of drugs were involved. The main challenge preventing the understanding of this is that there are barriers to collecting and sharing data that would create a common, cohesive vision of the problem.

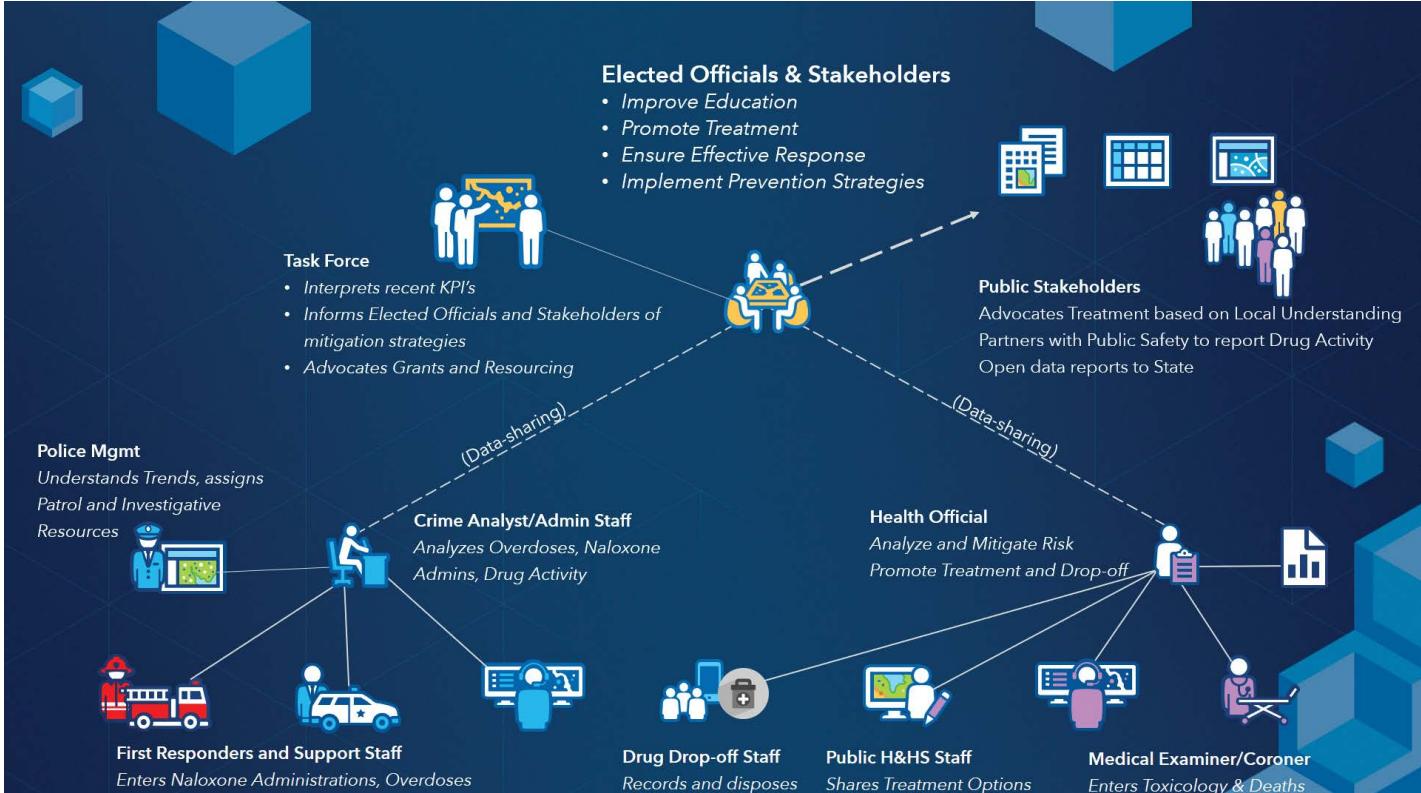
Disparate Sources, Disparate Systems

Two of the major local groups involved with responding to the opioid epidemic have different perspectives on the problem, and they are ultimately concerned with handling distinct aspects of it. These

groups are the first responders and the health and human services organizations. Their systems are shaped by the work that they've done for decades, and many are struggling to adapt their systems to address the overlap of the response.

First responders are frequently on the front line to handle addiction, homelessness, and mental health issues. They will be called to respond to overdose situations, do triage with immediate medical assistance, transport patients to hospitals, and assess whether there are any investigatory leads. "Triage" means that the information available is assessed and shared quickly to provide an appropriate level of service and resourcing. The data frequently reflects uncertainty about the drugs taken in an overdose, and because many first responders' and others' emergency activities overlap, there's duplication in between the systems that needs to be identified and addressed. Location

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Public Safety Operational Awareness

Showing a Return on Investment

City of Chicago, Illinois, USA	Office of Emergency Management and Communications	The City of Chicago was interested in understanding real-time awareness for special events like the Chicago Marathon to help inform and guide public safety response and resources.
City of Key West, Florida, USA	Emergency Operations Center	Emergency officials were challenged to collect damage assessments and establish benchmarks for degree of damage, required by the Federal Emergency Management Agency (FEMA) following the aftermath of Hurricane Irma. Key West was left with no Internet connection and loss of communication.
City of Fayetteville, North Carolina, USA	Police Department	The City of Fayetteville's goal was to use data and analysis to drive decision-making and reduce crime, but the burden of managing systems and producing information products became overwhelming.
City of Wellington, New Zealand	City Council	Awakened by a 7.8 magnitude earthquake, Wellington City officials needed to mobilize emergency response and recovery efficiently.
State of Oklahoma, USA	Highway Patrol	The Oklahoma Highway Patrol (OHP) was looking for a way to modernize its operations and enhance real-time situational awareness by viewing the location of all on-duty officers while maximizing officer safety and remaining cost-effective.
State of Indiana, USA	State Police	Traffic collisions in Indiana rose 7.5 percent between 2014 and 2015. Indiana State Police (ISP) sought a way to reduce traffic accidents by compiling historical data to better understand contributing factors.
City of Fort Lauderdale, FL, USA	Emergency Operations Center	Knowing the city was in Hurricane Irma's direct path, Fort Lauderdale's Emergency Operations Center (EOC) needed to prepare for, assess, and rectify the damage caused by the storm's high winds and heavy rains.

<p>The City of Chicago achieved a common operational picture by feeding real-time sensors from radio-frequency identification (RFID) chips into Operations Dashboard for ArcGIS, providing the Office of Emergency Management and Communications (OEMC) with operational insight and real-time awareness.</p>	<p>Chicago's OEMC was able to track 44, 508 marathon runners as well as field officers from Chicago Police, Fire, and Emergency Medical Services throughout the course to properly deploy assets as needed.</p>
<p>With no Internet access, the City of Key West Emergency Operations Center (EOC) quickly turned to Collector for ArcGIS, a mobile data collection app for field crews, to build a dataset of city damages that later fed into Operations Dashboard to provide a real-time view of the recovery efforts, which aided in critical decision-making.</p>	<p>Key West seamlessly transformed its outdated method of data collection with paper maps to an agile and mobile damage assessment collector app. Using this app, the city mapped hundreds of damage assessment data points as well as building footprints for each of its 11,000 buildings.</p>
<p>The Fayetteville Police Department (FPD) implemented MARVLIS Forecast LE, which leverages ArcGIS Server to integrate and share data and analytics through portals, dashboards, and widgets. This gives FPD the ability to put the right data in the hands of those who need it.</p>	<p>After implementing the MARVLIS LE, FPD has seen an 86 percent reduction in data management time, saving almost 16 hours a week, allowing analysts to spend more time analyzing crime data and supporting detectives with investigations.</p>
<p>City officials turned to the ArcGIS platform and 3D data to give the Wellington City Council real-time operational awareness and the ability to make data-driven decisions.</p>	<p>As a result of using the ArcGIS platform, over 1,600 multilevel commercial and residential buildings were inspected in real time, giving the Wellington City Council the ability to be proactive rather than reactive in its management of the emergency.</p>
<p>OHP made Workforce for ArcGIS and ArcGIS Online available to all its troopers. Dispatchers can use the built-in Near Me widget to find the officer closest to the scene of an incident.</p>	<p>After a 90-day test period, OHP found a savings of 889 miles and 14 hours of travel time, giving the department significant cost savings in gas and faster response times.</p>
<p>The Indiana State Police(ISP) partnered with Management Performance Hub (MPH) to create an analytical web app on ArcGIS Online. The app uses a machine-learning algorithm that incorporates historical data to predict the probability of a crash.</p>	<p>ISP launched the Daily Crash Prediction web app that is easily accessible by citizens, law enforcement agencies, and first responders. This app will assist law enforcement agencies in directing resources to anticipated areas of need and will reduce response time for first responders.</p>
<p>Fort Lauderdale's GIS Division used their 911 dispatch system and Esri's Web AppBuilder for ArcGIS to provide real-time, map-enabled data from field crews assessing damage.</p>	<p>Various departments within the city—from Public Safety to Public Works—were able to contribute and gain operational awareness during hurricane response, allowing for a fully integrated emergency operation.</p>

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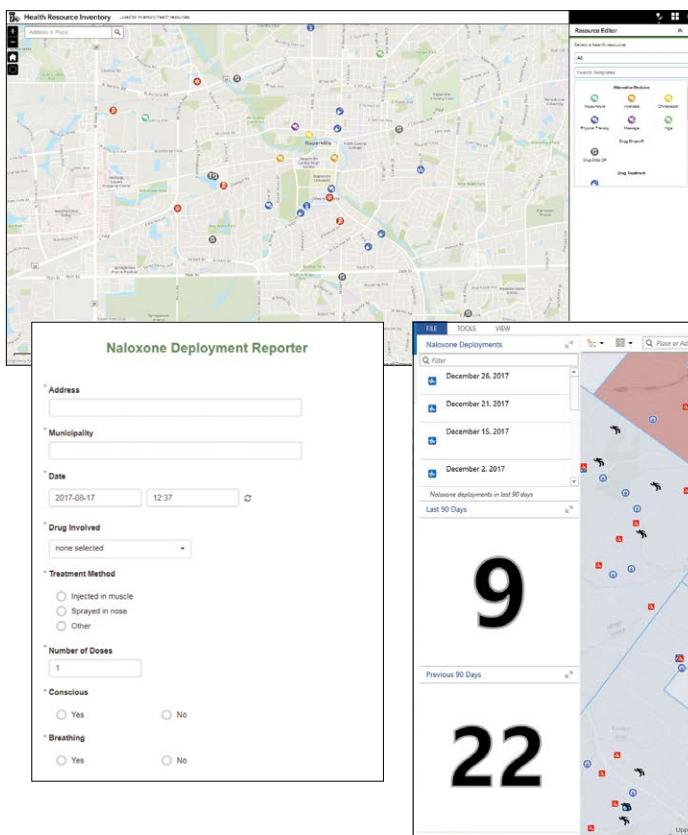
ArcGIS Solutions for the Opioid Epidemic

Introduction

As the severity of the opioid epidemic increases, it is critical that proper measures are taken to confront it. With ArcGIS solutions for the opioid epidemic, you can do just that. These apps were created with the sole purpose of improving people's overall understanding of the opioid epidemic, analyzing which areas are being affected and why and determining where to deploy community resources to help prevent future opioid overdoses and deaths. Take the first step toward ending the opioid epidemic today.

Track Naloxone Deployments

The Naloxone Deployment Reporter is vital to tackling the opioid epidemic. This tool provides the ability to log real-time data about where naloxone has been used to treat an opioid overdose during an emergency incident. Emergency responders can use this to better understand where and how many doses of naloxone have been used in the past and where there are trends in opioid overdoses, ultimately providing key data about the opioid epidemic.



Measure Effectiveness of Drug Drop-Off Locations

In this collection of maps and apps, your staff can easily use the Drug Drop-off Locator to promote safe disposal of unused prescription drugs, while the Drug Drop-off Calculator enables officials to track the weight of the drugs left at the drop-off locations. The Health Resource Inventory helps departments build a complete and current record of the homeless, as well as a list of drug treatment facilities and other types of health centers in a community.

Monitor Opioid Response

The Opioid Response Dashboard helps provide a complete picture of the opioid epidemic in your area. Public health and safety staff can use this tool to track the effectiveness of their efforts toward opioid overdose prevention and monitor the success of the response activities within your community. Ultimately, your efforts will be more impactful in fighting the opioid epidemic in your community.

Learn More about Opioid Epidemic Solutions

With these solutions, you will have the tools for true data-driven decision-making and effective public communication, and you will be able to collaborate across departments to tackle the opioid epidemic. Visit the site below to learn more about our opioid epidemic solutions and how you can help your community fight back.

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Getting the Most out of Your GIS Investment

By Christie Pleiss and Anna Sokol, Esri

More than 150 state and local government organizations, many of which have been featured in this newsletter, all have something in common. They belong to the Esri Enterprise Advantage Program (EEAP). Now entering its fourteenth year, the EEAP provides users across all sectors and industries with a proactive partnership and gateway to Esri business and technical experts.

State and local governments have used Esri technology in some capacity for years, and many see the potential to do so much more. Some aren't sure where or how to start. Others may be ready to start but could use expert guidance. Still others, that are experts themselves, seek the insight and experience of industry peers.

For each of those users, an ongoing, proactive relationship through the EEAP can help them succeed faster. Scenarios could vary: moving from a desktop-based world to ArcGIS Enterprise or from an enterprise to Web GIS, leveraging GIS in relation to an organization's strategic plan, or any situation where users are focused on growing their GIS.

Many local government customers have put in time, money, and effort to create great systems leveraged for broad initiatives to enable business units and conserve economic resources. And the demands on and expectations of state and local governments only continue

to increase. The EEAP can help them continue to progress through collaboration and access to specific support and expertise, fully leveraging Esri technology as those demands and expectations continue to shift.

How does EEAP work?

Customers that are part of EEAP are assigned an Esri technical adviser (TA) to work with them throughout the course of their annual engagement. Most customers stay in the program year after year, maintaining a strong, collaborative relationship for the long term.

The TA is an Esri expert who gets to know the technical and business needs of EEAP customers and helps craft or support a location strategy. A location strategy is a plan for how location or geography can add value to and improve an organization's business processes, workflows, and outputs. It is the link between a business plan and a GIS-focused technical strategy. To get an understanding of this, the TA, customer, and other key Esri staff typically spend a day in an annual planning meeting—a daylong series of conversations and discussions and a critical part of the EEAP experience.

The discussions cover workflows and customer needs in an effort to build a sense of where the organization currently is compared to where it wants or needs to be. Part of the TA role is to help users

see their potential and expose them to new ideas and concepts as well as evolving workflows and standards in the industry. The TA works with the customer to develop a technical work plan that will serve as a road map for how to proceed throughout the year and beyond.

The technical work plan captures the customer's overarching mission and vision for GIS and itemizes a series of activity recommendations tailored to help users meet the needs pointed out by their GIS vision. These can be technical or business needs, depending on the users and where they are in their plan. The TA primarily works with an organizational champion to drive incremental success, paving the way to a more robust engagement—proactive and ongoing. This takes shape through conference calls, emails, formal meetings, and monthly status reports. The regular cadence of communication helps the organization get ahead of potential issues and paves the way for key initiatives.

Why so popular?

Users' reasons for joining EEAP vary almost as much as their geography. For some, it's practical. Subscribing to the EEAP can help reduce bureaucratic overhead by moving away from one-time projects with the associated support and guidance. Instead, many state and local governments like the ease of accessing support and services via the EEAP, giving them flexibility throughout the year to work with their TA to adjust and fine-tune how they use the program and which services they access. This means that if priorities shift during the engagement, the work plan activities can also shift to accommodate the immediate needs. The EEAP is a uniquely agile and flexible engagement—another reason many customers are drawn to the program.

"What the EEAP provides us is a great set of resources and cost-friendly options for accomplishing our goals. I will always recommend EEAP, especially for local government/state agencies, because even with an ELA, there is always a mountain you have to climb to provide information to the public in which you serve."

Trich Van Wagner,
Bonneville County GIS Manager

"Esri does a great job matching our needs with the right experts so that we end up with a customized collection of efforts that provide the maximum benefit to our users throughout the year . . . Great value add!"

Jim Sparks,
State of Indiana GIO

Teaming with an Esri TA also means that customers have someone familiar with their business who is fluent in Esri's broad services capabilities: training, consulting, managed cloud services, and premium technical support. Esri TAs are also familiar with partner technologies and services as well as the ArcGIS platform and product road map. The TA actively collaborates with and brings in key resources and experts who represent these other areas of support and services

for Esri. This helps broaden the ecosystem of people supporting the customer and ultimately accelerates value creation and innovation.

A key difference between EEAP and other styles of engagement is that the EEAP doesn't center on the customer handing off projects to be completed by someone else. Instead, it's about teaming up, rolling up sleeves, gaining in-house knowledge, and forming a partnership connected to an organization's

mission. The EEAP helps build long-term success for Esri customers by showing what is possible. Through flexible access to many services and support offerings, it can help them fully leverage their investments and enable them to provide the best GIS solutions to their communities.

For more information, contact your Esri account manager or visit [|go.esri.com/EEAP](http://go.esri.com/EEAP).

Location Data Is essential for Leadership

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and date are the primary keys to depict as accurate a picture of the overdose as possible. Keeping track of deployment of the reversal agent naloxone and its stock levels helps illustrate one of the aspects of how the community is responding.

Coroner and medical examiner systems document cause of death with legal authority and implications. Medical examination is precise, and toxicology reports declaring, with certainty, a cause of death can take six or more weeks. Coroners and medical examiners are the final authority for overdose death data, but their pace may be slower than what's needed for short-term and focused response and preventative measures.

Public health and human services organizations are focused on assessing community risk factors and trends, providing treatment options, and publicizing preventative measures. They typically are responsible for overseeing unused-drug drop-off programs and keeping inventory of addiction and pain management

alternatives; however, there is no common approach or system to do so. Brochures quickly become out-of-date, and it's increasingly difficult to provide timely and accurate information about addiction resources at a critical moment in people's lives.

Overcoming the Barriers to Sharing

The data gathered from first responders and health agencies is location-based data by nature, and the problems are understood and overcome by our thinking spatially. Where are the programs operating most effectively? Which areas are especially at risk? The response to this epidemic is coordinated best when disparate agencies share their views of the problem. ArcGIS software provides tools to easily obfuscate personally identifiable health information by aggregating data to useful neighborhood geographies. Portal-to-portal collaboration with ArcGIS Enterprise or ArcGIS

Online enables agencies to share a predetermined level of detail to facilitate a real-time common operating picture.

Elected officials and community stakeholders are ultimately responsible for coordinating the effort of voicing a cohesive strategy to their constituents. Sharing a message of how this problem is affecting the community and what local leaders are doing about it is the first step to removing the uncertainty and unease that constituents feel about the problem.

If you're considering establishing a collaborative, community-based method to understand and mitigate the opioid epidemic, you're not alone. There are many states, counties, and cities that are utilizing The Science of Where to have an accurate and timely picture of the problem. To better understand how these agencies succeeded in their initiatives, download our industry perspective paper at go.esri/LocationData.

2018 Trends: Bringing Digital Transformation to Public Safety

By Ryan Lanclos, Esri



You've heard for years how the world is undergoing a digital transformation (DX). In fact, your own home probably has more sensors than you realize.

They might control everything from your air conditioning to your lights, or they may even provide real-time audio and video from your front door. However, many of us don't fully realize that digital transformation is more than just a buzzword or the inclusion of smart sensors in our homes. Digital transformation is also about how we apply and integrate digital technologies to support the business processes of our organizations. For those who work in public safety, the ongoing digital transformation around us presents an amazing opportunity to build safer communities.

In a recent article on Forbes.com, Daniel Newman writes, "Whereas digital transformation may once have been just a buzzword in some (lagging) boardrooms in 2017, 2018 will force many companies to realize DX is no joke." He adds, "Disruption will continue to be an increasingly common occurrence in the next few years, and companies unable or unprepared for those changes will quickly fall to the bottom of the pack."

As you plan your work in 2018, here are four key trends in public safety that will help you take advantage of the digital transformation.

Drones Flying High

In 2017, the Los Angeles Fire Department used drones for the first time to fight the Skirball Fire. The department's aerial drone provided situational awareness and helped firefighters assess hot spots around the fire, using infrared

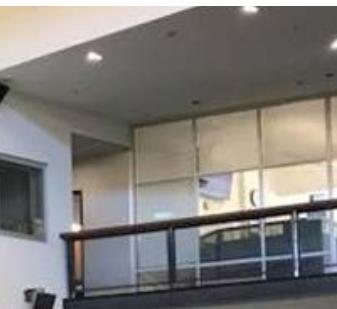


imagery. In a similar vein, the Austin Fire Department's Robotics Emergency Deployment Division now has 21 employees supporting firefighters' efforts. As standards are developed and regulations are simplified, more public safety departments are looking to integrate drones into their arsenal. As this transformation continues, GIS tools like Esri's Drone2Map for ArcGIS enable you to integrate data directly from your drone into ArcGIS software. From there, you have the full capabilities of ArcGIS at your disposal. You can conduct image

analysis and create apps that provide decision support to first responders and operators. For more info on Drone2Map, visit go.esri.com/D2M.

Machines That Are Getting Smarter

Machine Learning (ML) continues to make ArcGIS smarter. At Esri, we are focused on where ML and GIS intersect; this, in turn, means that public safety organizations will be able to make better, data-driven decisions. For example, ML enables law enforcement agencies to



make predictions about where crime may occur, or an emergency management planner to determine where a certain hazard might strike and what part of the community is most vulnerable. The massive amounts of data already available to and within many of our organizations becomes the training data that allows ML to work its magic. By connecting the data in your record management system (RMS) to ArcGIS and then leveraging ML, you can gain insights on where to position your limited resources to mitigate potential issues. When a disaster strikes

and postevent imagery is made available, ML enables you to classify an image to determine damage estimates in areas that may still be inaccessible. ML will continue to evolve within ArcGIS and provide you with tools that help you make smarter and more data-driven decisions.

Real-Time Data and Event-Driven Actions

I started this article talking about how sensors are showing up in some of the most unexpected places. But what about the sensors you have access to within your public safety organization? Traffic sensors, cameras, stream gauges, weather stations, air quality monitors, and even smart assets like streetlights and trash cans provide you with real-time data that you can leverage. By connecting to these sensors and exploiting the location element within this network of sensors, you can begin to trigger actions based on the real-time information you are receiving. When a certain set of criteria or business rules are met, your system responds to this new information in real time. A simple example might be that you proactively dispatch resources and alert citizens in a flood-prone area, based on changing weather conditions. In a recent article for Gartner, Kasey Panetta says, "By 2020,

event-sourced, real-time situational awareness will be a required characteristic for 80% of digital business solutions."

Esri's real-time GIS capability provides you with the tools to improve situational awareness and enable a faster response that can help save lives and property. Learn more at go.esri.com/RTG.

Dedicated Connectivity

At the end of 2017, all 50 states opted for to the nation's first public safety dedicated broadband infrastructure that will support communications across the public safety industry. FirstNet provides communities with access to a broadband network that enables a much-needed priority flow of data and information to first responders. This means that your GIS applications running on mobile devices in the field will have priority access to bandwidth during an incident. The apps your first responders rely on will now have a dedicated network capable of providing high-speed connectivity that improves information delivery, collection, and collaboration.

Learn more about how Esri helps you embrace digital transformation in public safety by visiting go.esri.com/publicsafety1.



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