esri | THE SCIENCE OF WHERE®

SITE SECURITY AND SPECIAL EVENT MANAGEMENT

Managing Safe Venues and Communities in the New Normal

SUSPICIOUS ACTIVITY
Nearest Facility: 0.2 MI
Total Employees: 23

ASSAULT
Nearest Facility: 0.7 MI
Total Employees: 35

The Unique Challenges of Securing a Special Event

Unexpected global events routinely remind us of the perilous challenges faced within the interconnected worlds of site security and special event management (**SS-SEM**). The new normal is to prepare for everything, from natural disasters to widespread occurrences involving active assailants, political unrest, crime, and terrorism. There is—now more than ever before—a heightened need for coordinated prevention and response capabilities to protect employees, customers, organizational assets, and the public. Securing critical facilities and special events demands unprecedented coordination and fast access to available information that can provide the earliest indication of risk, enabling a more rapid and effective response. Access to up-to-date information is not always easy and requires close collaboration between public and private security organizations.

Geographic information system (**GIS**) technology is the tested and proven platform that can **unify** this complex mission.

Public and private security organizations have a responsibility to protect both lives and property during special events. To succeed at this mission, organizations must be able to

- Understand their operating environment.
- Anticipate threats and manage risk.
- Embrace a multiagency planning process.
- Deploy resources effectively.
- Establish shared awareness.
- Execute a coordinated response around SOPs.

The First Step: Understanding the Environment

Large-scale special events require complex security planning.

Securing a site for a special event begins with fully understanding the operational environment. Only after this is achieved can security professionals effectively plan for and mitigate critical incidents, reduce injuries, and improve the safety of individuals.

Security professionals require **complete awareness** of the operational environment to effectively plan for and mitigate critical incidents. By understanding the built environment well enough to replicate it digitally, from an individual venue to the entire community, GIS provides the framework to fuse operational data—weather, social media, incident, and intelligence—with foundational data. In order to provide insightful views in and around buildings, event venues, and campuses, foundational and operational data must integrate with 2D and 3D facility and data models.

To align overlapping security missions, SS-SEM must provide simple mechanisms for trusted organizations to collaborate and to share data. This involves locating and exploiting open access to publicly available data from government agency sources, social media, and third-party providers.

Integrating information from multiple data sources, data types, and organizations with advanced maps and spatial analysis can only be accomplished through the effective use of GIS technology.

A Geographic Approach to Site Security

This strategy brief outlines a geographic approach to site security and special event management. It goes far beyond using GIS to support common operating pictures for visualization. This document also introduces configurable security information products based on internationally recognized **best practices** for event and stadium security.

Merging GIS technology with operations requires a strategy that enables seamless integration with an organization's standard operating procedures. Establishing an effective governance structure can help reflect the inter-related relationships between IT, GIS and operations. Ensure your geo-spatial strategy does not become an afterthought through effective training and table top exercises.

When a GIS platform acts as the unifying technology for security officials, security protocols, and disparate data sources, organizations tasked with an SS-SEM mission can

- Collect and integrate information for rapid analysis.
- Create repeatable and shareable information models.
- Reuse information and services across systems, organizations, and jurisdictions.
- Modernize risk, threat, and vulnerability assessments.
- Provide enhanced information dissemination and reporting.
- Evolve the common operational picture to a common operational platform.

Reasons to Choose GIS

Security personnel make it a priority to keep decision-makers informed, prevent incidents, manage responses to incidents, and quantify impacts when they occur. To achieve these goals, personnel must collect and process data from various sources for current and accurate situational awareness, then staff must develop actionable processes and plans for prevention and response. GIS is a unique technology that excels in these areas, empowering your team with the right tools.

GIS is a complete system that goes beyond powerful visualizations. It provides the ability to organize information as well as analyze and understand trends and protection priorities in new ways. GIS also supports streamlined data dissemination and is a highly effective tool for both internal and external communication.

It has the unique ability to **capture, integrate, and analyze** all types of information. Integrating structured and unstructured information—including sensor, imagery, social media, 3D, and video data—empowers security officials to fully analyze, exploit, and create actionable information out of raw data. As it pertains to the complex environment of site security and event management, one GIS platform can support multiple missions.

ArcGIS® evolves the common operational picture to become a common operational platform.

Perhaps most importantly, GIS provides a common language and reference system for multiple disciplines and sectors, including the following, to collaborate and make data-driven decisions:

- Private security
- Law enforcement
- Emergency management
- Intelligence
- Public health
- Defense

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Best Practices in Site Security and Special Event Management

High-profile sports and entertainment events represent an industry that generates $75 billion a year. At any iconic event or occasion that draws large crowds, countering terrorism, active assailant, and other mass-casualty scenarios present formidable challenges. Deployed technology must **inform operations,** counter threats and vulnerabilities, and align with industry best practices. GIS technology, when employed as the foundational security platform for SS-SEM, is best suited to manage these complex requirements.

A review of SS-SEM activities from a variety of government and industry publications indicates that there are core best practices that need to be addressed.

This document does not intend to provide solutions for every best practice or security requirement. It should also be understood that each solution may not be applicable to every venue or event. That said, when properly implemented, the configurable workflows contained within this document—in conjunction with other security procedures—can significantly assist security organizations in achieving their safety goals.

Core best practices include employing the following:

- Game day and nongame day security and operational planning
- Crowd control
- Critical incident and emergency planning
- Threat assessment
- Disaster prevention through facility environmental design
- Modern command center
- Technology including situational awareness, intelligence fusion, and GPS tracking

From the Command Center to the Field

Command and control is a process—both organizationally and technically. It is defined as the exercise of authority and direction by properly designated individuals (commanders in a Security Operations Center) over assigned resources and assets (field personnel, equipment) in the accomplishment of a common mission—securing a special event.

Command and Control (**C2**) activities include collecting and analyzing information, making decisions, organizing resources, planning, communicating, sharing information, coordinating, monitoring, and executing a plan of action. A GIS platform brings to command and control a unique ability to manage and operationalize data in a swift and agile manner that directly supports multiple, changing missions. GIS also aligns with the need to observe, orient, decide, and act— the tenets of the **OODA loop**. This enables streamlined decision-making.

Most large-scale events rely on a Security Operations Center (**SOC**) to act as the brain center for managing all event-related security activities. GIS is fast becoming the preferred technology platform to manage SOC operations. The SOC serves as the focal point for managing the flow of information and coordinating a response to incidents that may occur at or near the venue.

Ultimately, GIS is the premier platform SOCs should use to **unify missions and personnel** among agencies. From data collection to its dissemination, from the start of an incident to its closure—GIS helps keep people safe.

Configurable Workflows for SS-SEM

Investing in a COTS-configurable solution provides unique advantages, as it is built on a **flexible development** platform. Tools within the environment are used to make enhancements in a manner that the application was designed to have changes made. Configuration is inherently better because it is working within the application.

Configurable GIS apps make it easy to create and share interactive web applications. Based on the requirements of SS-SEM, numerous configurable workflows can be deployed rapidly and simply, ranging from conceptual requirements to a digital map to the accumulation of numerous interactive web mapping applications.

GIS is the platform that allows security professionals the flexibility to integrate evolving requirements into their own SS-SEM solution.

The examples highlighted on the following pages **represent a best practice**. They signify a series of technical workflows, performed in chronological order, that outline key tools to deploy when managing a complex SS-SEM program objective.

The Creation of a Centralized Geographic Approach

Unifying multisector and multiagency operational and analysis requirements, a GIS portal provides front-end access for security staff. This vital access allows them to manage content and share maps, scenes, apps, and other geographic information with authorized personnel within an organization.

With a GIS portal, you can

- Create, host, and share web mapping apps like dashboards, viewers, and business intelligence tools.
- Search for GIS data and other content within multiple security organizations.
- Create groups that enable sharing GIS information among personnel from different organizations and agencies.
- Share links with GIS apps and relevant information products to internal and external partners.
- Share map and layer packages to use in ArcGIS Desktop apps.

ArcGIS Enterprise = **ArcGIS Web Adaptor (IIS)** + **Portal for ArcGIS** + **ArcGIS Server** + **ArcGIS Data Store**

Area of
Influence

Area of
Operation

Define Your Inner and Outer Security Perimeters

For SS-SEM, defining the space in and around a venue includes two primary zones:

- Area of Operations (**AOO**)—AOO is defined as the inner perimeter where tactical operations are conducted to ensure the safety and security of persons and property inside the walls of the primary venue, facility, or stadium.
- Area of Influence (**AOI**)—AOI is defined as the outer perimeter where tactical operations are conducted to ensure the safety and security of persons and property outside the walls of the primary venue. This usually includes parking lots and other land areas adjacent to or in the immediate vicinity of the venue.

Security personnel can digitize tactical zones that represent the AOO and AOI as the first step in creating tactical plans for a variety of scheduled special events or unforeseen critical incidents. These are predefined geographic regions that provide a simple graphical reference of the **primary protective area** during an operational period.

This process may entail the following steps:

- Identify AOO/AOI zones.
- Digitize zones into an operational plan.
- Share plans for situational awareness.
- Filter and focus data based on geography.

Establish a Common Basemap and Enforce Its Use

A basemap is a collection of GIS data and imagery that form the background of a map view of your AOO/AOI. A basemap is the **foundational geographic layer** required for all subsequent operational planning, incident response activities, and situational awareness.

Steps toward establishing an effective, robust common basemap include the following:

- Leveraging an existing authoritative collection of global location data for use in ArcGIS, starting with data from ArcGIS Living Atlas of the World
- Leveraging near real-time basemaps, imagery, demographics, and environmental and business data to establish minimal foundational support for any security operation
- Adding basic functionality that supports the Find and Locate tools to identify key layers like buildings, parcels, streets, paths, and utilities
- Enforcing the use of one common basemap among all organization/ agency participants
- Considering a drone flyover for enhanced near real-time imagery of AOO/AOI
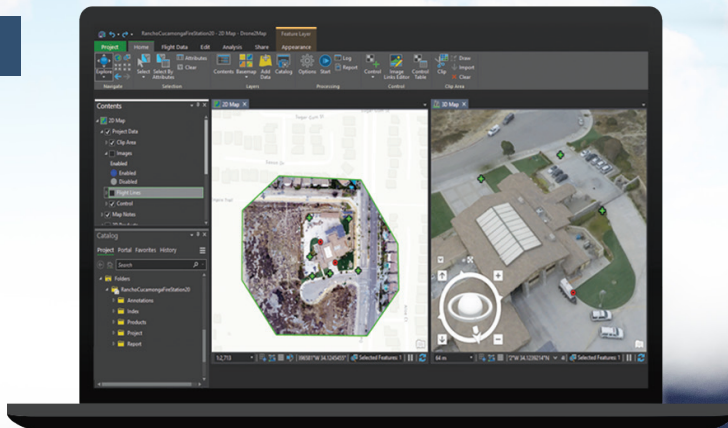
Collect and Share Near Real-Time Imagery

Relying on existing imagery is oftentimes not ideal, as it provides an outdated operational picture that can create confusion during critical events. To bridge the gap, security planners are now leveraging unmanned aircraft system/unmanned aerial vehicle (**UAS/UAV**) technology for near real-time imagery and basemaps. UAS/UAV provides an in-field imagery collection process used to support the real-time critical decision-making required by incident commanders. Imagery products are equally useful to back-office or command center analysts who can conduct detailed processing of large image collections to understand changes over time.

Near real-time imagery is ideal for large-scale special events where temporary structures, stands, and tents are routinely set up, creating new challenges for security operations. It is also powerful when used to collect imagery after a critical incident occurs, allowing commanders to visualize and quantify the impact.

Drone technology and image processing techniques are simple to use, even for GIS users with **minimal expertise in imagery**.

- Deploy drone and UAS/UAV technology to collect, process, and deliver near real-time imagery to your operations plan.
- Deploy new imagery as an additional base layer, establishing a near real-time image for your common basemap.
- Conduct change detection operations if multiple flights are conducted.
- Deploy UAS/UAV after a critical incident to quantify an incident's impact.

Enhance and Visualize Security Operations in 3D

A modern 3D GIS builds on your existing GIS infrastructure and helps you integrate data from many sources to **create a 3D model of your environment**. You can better understand your threat landscape by representing urban forms and structures in 3D, assessing your infrastructure, and applying real-world context to improve tactical plans and operational decisions.

For special events held in large venues, security officials can visualize their AOO/AOI in 3D and immediately attain true-to-life context of the venue and the adjacent perimeter.

To best inform operations, users can replace static 2D maps with immersive 3D models derived from lidar data, building models, or image captures from drones flown the day of the event. With 3D event basemaps, security personnel can access the foundational 3D data they need to explore and analyze AOO/AOI to **better prevent and respond** to planned events and unplanned incidents.

Enabling 3D basemaps allows security personnel to

- Understand the relationship between urban design (built environment), threats, and vulnerabilities.
- Pair real-time location data with terrain, vegetation, and the built environment.
- Fully explore visibility for operational planning.
- Make tactical decisions based on the most accurate representation of the environment.

Conduct Line-of-Sight Analysis

Some tactical questions can only be answered in 3D. There is a growing awareness among security organizations that three-dimensional space needs to be accounted for in event preplanning and response activities. Currently, most security organizations have only limited capabilities for visualizing and analyzing the 3D characteristics of specific event sites, facilities, and public spaces. Characteristics like line-of-sight visibility and viewsheds can't be accurately represented and understood in 2D. This inhibits the ability to identify and analyze threats that a **sniper or active assailant** could present, making it difficult to plan effectively and respond quickly to hazardous incidents when they occur.

Effective tactical planning requires a clear understanding of threats, and guidance on the most efficient way to respond.

A 3D GIS provides visualization and analysis tools that let tactical users run line-of-sight and viewshed calculations for areas in or around a gathering space such as windows, rooftops, and other locations above ground level—helping identify vantage points that could be exploited by bad actors with firearms. These insights can help determine the optimal strategy for allocating and **coordinating security resources** (including countersnipers) so that personnel can respond rapidly and effectively when incidents occur.

A visibility analysis strategy involves the following activities:

- Building the capacity for creating, managing, analyzing, and sharing 3D content for tactical operations
- Configuring operational use cases that support line-of-sight analysis (countersniper)
- Configuring operational use cases that support viewshed analysis (field surveillance, CCTV analysis)
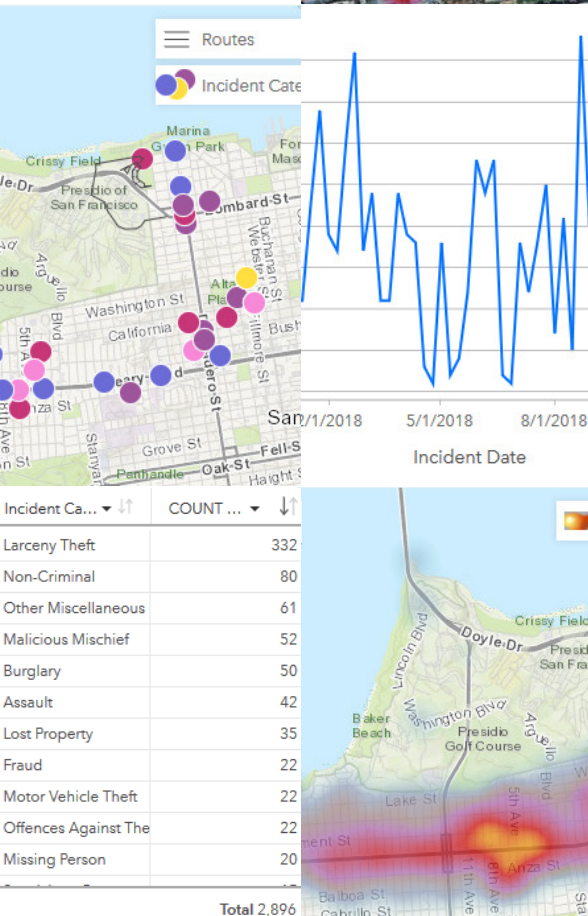
Fenway Park

Understand Your Security Perimeter

Understanding your AOO at the operational level is an important step in setting conditions for success during the event planning phase and the response phase when unplanned incidents occur.

By analyzing and understanding the characteristics of an AOO, security officials can determine how best to allocate tactical resources.

Access to demographic and community data helps security planners and leaders identify, understand, and share the relevant community characteristics that make up an AOO/AOI. This is useful for a variety of planning and emergency response workflows such as those that require knowing the details about schools, nursing homes, and other **vulnerable populations**.

These tools, integrated into a GIS platform, allow security personnel to share and leverage content they and others have created. Additionally, web maps published in an online environment can be viewed and used within the demographic analysis application.

Reasons why this capability is important for event security include the following:

- Data interrogation tools make it possible to know more about a community, going beyond intuition.
- Color-coded maps for performing targeted searches can be based on specific demographic, economic, or other types of criteria.
- Custom and preconfigured reports allow personnel to quickly interpret complex community environments for better-informed decision-making.
- Targeted populations are identified by digitizing user-defined areas or through traditional reporting by numerous geopolitical boundaries.
- Easy-to-use tools are available for nontechnical security professionals.

Analyze Historical and Real-Time Incident Data

A **threat assessment** is one of the most important elements of a comprehensive site/event security plan.

Security planners must know where threats and vulnerabilities exist to adequately manage risk.

A threat assessment is the practice of determining the existence, credibility, and seriousness of a potential threat.

GIS business information (**BI**) tools fuse location analytics with open data science and business intelligence workflows. BI empowers analysts and operators—at all skill levels and across departments, organizations, and agencies—to directly connect data, perform **advanced analytics**, and develop robust information products. Users can automatically document analytical workflows to **share tradecraft** and reports or solve similar problems with alternative datasets. Users can easily link and interrelate charts, maps, graphs, and tables and produce robust analytical products.

As part of the preplanning process, GIS BI tools can help planners understand historical threat trends in and around the AOO. These tools include the following:

- BI tools to discover historical and near real-time trends
- Crime/911 data around the perimeter of your campus (from local police department)
- Supplemental data from open data sites (e.g., crime index)
- Supplemental demographic data and other community datasets
- Incident analysis within your campus perimeter using in-house record management system (RMS)
- Historical data from warehoused third-party threat feeds
- Link charts and maps for understanding networks and relationships
- Desktop applications for more advanced clients and/or workflows

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Conduct Tactical Site Survey to Pinpoint Sensitive Locations

Conducting a site survey is a common approach to pre-event planning. Pinpointing sensitive locations is a core activity during this process.
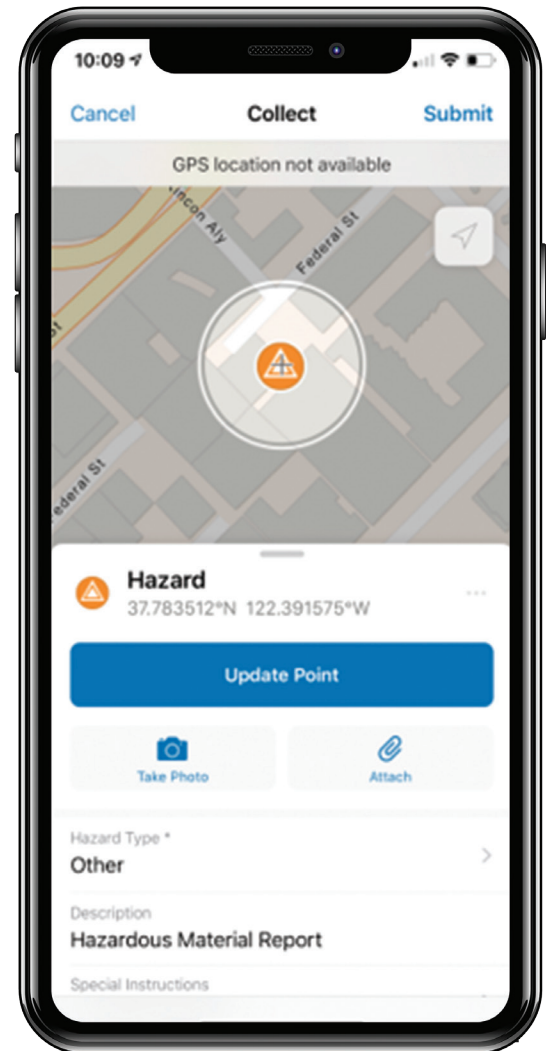
A tactical site survey is a product derived from a comprehensive inspection of high-threat facilities (AOO) and their surrounding grounds (AOI). It is a **catalog of critical data points and emergency plans** and can help security personnel respond to a crisis quickly and efficiently.

Security officials must use **mobile field data-collection apps** to locate and track all sensitive locations in the AOO/AOI, supporting the build-out of a tactical site survey.

Using a mobile device to update sensitive building features—while connected or disconnected— transforms a paper process to a digital solution that uses smart devices.

The foundational component of the survey requires collecting location intelligence on facility features, emergency plans, and points of interest that have a bearing on the safety of a facility or the handling of a crisis at or near a facility. These features may include the following:

- Gun rooms/Armories
- Electrical panel and telephone boxes
- Hazardous materials, underground utilities
- Fire extinguishers/ Automated external defibrillators (AEDs)
- Ingress/Egress routes, evacuation zones
- Building schematic plans
- Map-driven forms

Build Operational Preplans

Plot tactical assets and fixed resources based on threat and vulnerability assessment.

Preoperational planning for any major event begins with a design. It starts out as an idea that guides the conduct (the plan, preparation, and execution) of **operationalizing security** for the event. Core elements of the design involve GIS tools to aid security planners in visualizing and **plotting tactical resource** assignments as an overlay to the AOO and AOI, including 3D facility data of the venue. This process helps clarify and refine a commander's security vision by providing a framework to design and edit the preoperational plan for the facility/event, and share it with any authorized personnel, agency, or organization.

The Tactical Operations Planner app is a **configurable solution template** designed for security planners to build special-event plans. In addition to creating plans for known special events, Tactical Operations Planner can be used to strategize responses to unforeseen incidents like active assailants, barricaded gunmen, and other high-risk operations.

Employ the Tactical Operations Preplanning App to

- Create operations preplans for special events.
- Plot tactical assets throughout the AOO/AOI based on vulnerabilities and threats.
- Plot fixed resources, denial operations, roadblocks, and barriers.
- Use plans during operational and nonoperational periods.

Prepare for Unplanned Critical Incidents

No security plan survives its initial implementation. Technology solutions must be **adaptable and reconfigurable** so that security personnel can edit and design tools on the fly. From the command center or in the field, all users need real-time updates of security incidents and new operation plan configurations to address these emergencies.

The Tactical Operations Planner app is a configurable solution template designed for security planners to build response plans for emergency situations during special events. It can be used to strategize responses to unplanned incidents that may include the following:

- Active assailants
- Barricaded gunmen
- Suspicious packages

Configure Operational Preplan for Traffic-Related Scenarios

Clarify, refine, and share a commander's security vision for managing traffic.

Most large events require significant planning around traffic and transportation. Private vehicles, taxis, city buses, subways, trains, and/or ferryboats may be used to travel to and from large events. Security planners must be able to **coordinate and anticipate** the volume, safety, and security of passengers.

When an event involves complex traffic scenarios, security planners can

- Plot points that represent the traffic plan including the location of tactical assets securing drop-off and pickup locations.
- Digitize lines that show planned routes and emergency ingress and egress routes.
- Leverage real-time traffic and closed-circuit television (**CCTV**) feeds to better inform transportation planning.

Crowd Size Estimator

Light	7,339
Medium	16,309
Dense	29,357
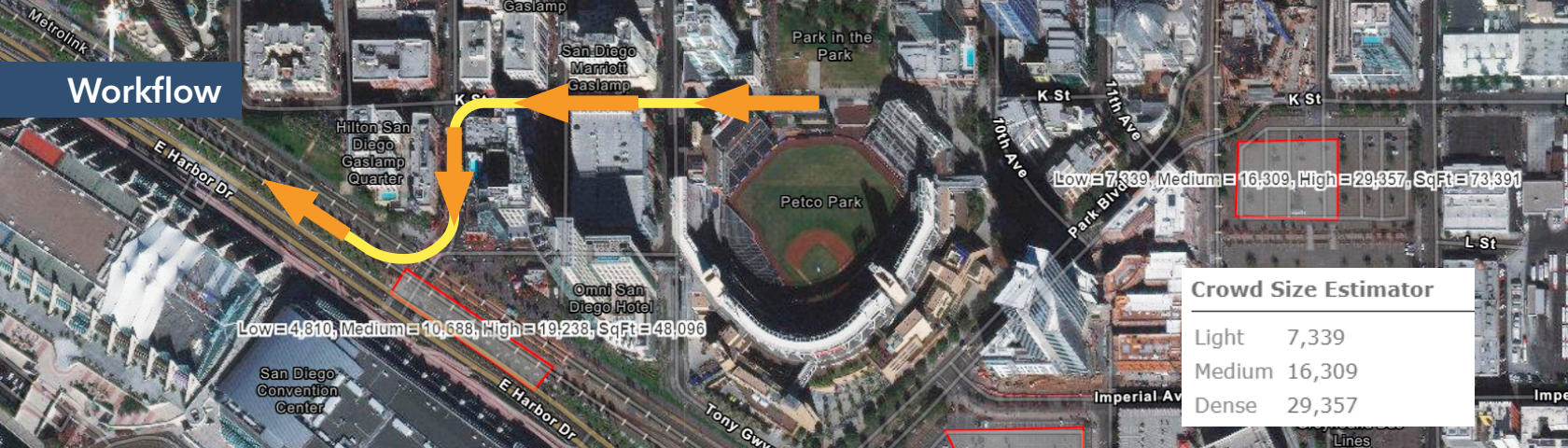
Conduct Evacuation Planning

Calculate evacuation zone crowd capacity.

Core elements of the evacuation design involve GIS planning tools and 3D facility data of the venue. Security personnel can then configure a plan to aid in visualizing and plotting tactical resource assignments as an overlay to the AOO and AOI. This step in the planning process includes being able to calculate crowd capacity for evacuation zones.

Emergency evacuation planning involves identifying egress or escape routes away from an area that contains an imminent danger, an ongoing threat, or a hazard to lives or property. When planning for an event, emergency evacuation routes and zones must be **digitized onto the operations plan** basemap.

Evacuation zones must be outside an anticipated impact area and depend on proximity to the venue, available open space, and other safety factors. Security planners must

- Map out primary and alternate evacuation routes.
- Digitize evacuation zones.
- Use a crowd size widget to calculate/understand evacuation zone parameters or estimate the size of a protest group (using **Jacobs's Method**).
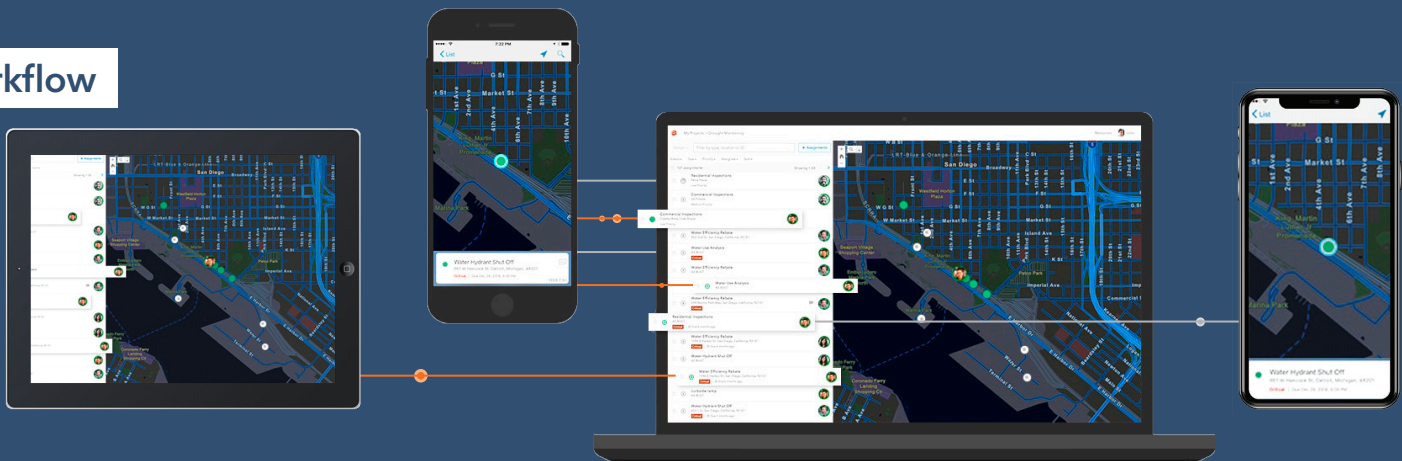
Dispatch Assignments to Mobile Field Force

Incident dispatch applications allow command center personnel to initiate **a call for service assignment** based on the incoming threat or the incident being reported. Enhanced service is provided through real-time operational awareness—knowing the location of the incident and all available security assets. Field personnel can receive assignments and report status updates via smart devices, establishing greater overall efficiency.

As field personnel are carrying their maps and assignments on a smart device, they can stay organized, report progress, call for help, and stay productive.

Key capabilities that establish operational awareness include the following:

• Plan—Use maps to create and assign calls to field personnel.
• Navigate—Leverage routing tools for efficient response.
• Capture—Collect and submit incident updates.
• Monitor—Visualize the location of all active incidents and personnel.
• Understand—Evaluate resource allocation before, during, and after an event.
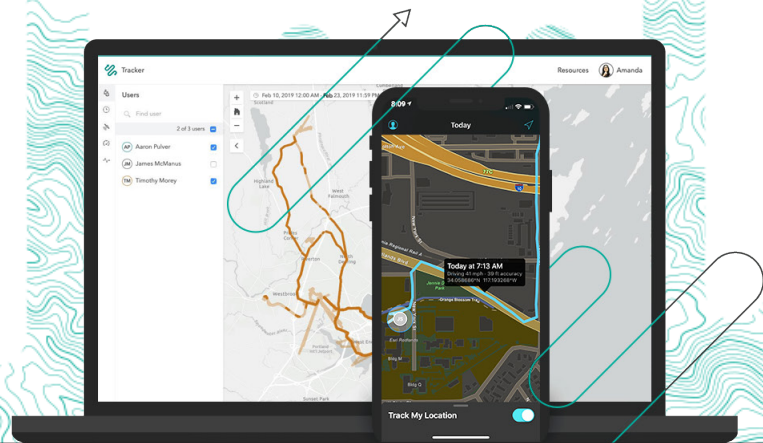
Track Tactical Assets in Real Time

Location matters when it comes to **deploying tactical teams** in complex security situations. Proper command and control necessitate knowing the **real-time location** of security teams. Establishing operational awareness means that tactical team members can visualize each other's location.

This all must be done through a mobile field app that is easy to deploy and use. Using GPS, the location tracks of field personnel must be effortlessly captured, recorded, and fed into your GIS.

Location tracks must be visualized to support the effective allocation of personnel relative to operational plans and response to critical incidents.

Location tracks can be analyzed to identify where personnel were situated prior to an incident or to determine if work assignments like an EOD canvass were properly conducted in high-threat geographic areas.

With tactical tracking, you can

- View the precise locations of tactical teams.
- Establish command and control between the command center and the field.
- Provide location awareness to all field personnel.
- Discover missing or redundant territory coverage.
- Evaluate patterns of movement against reported critical incidents.
- Understand productivity and efficiency.

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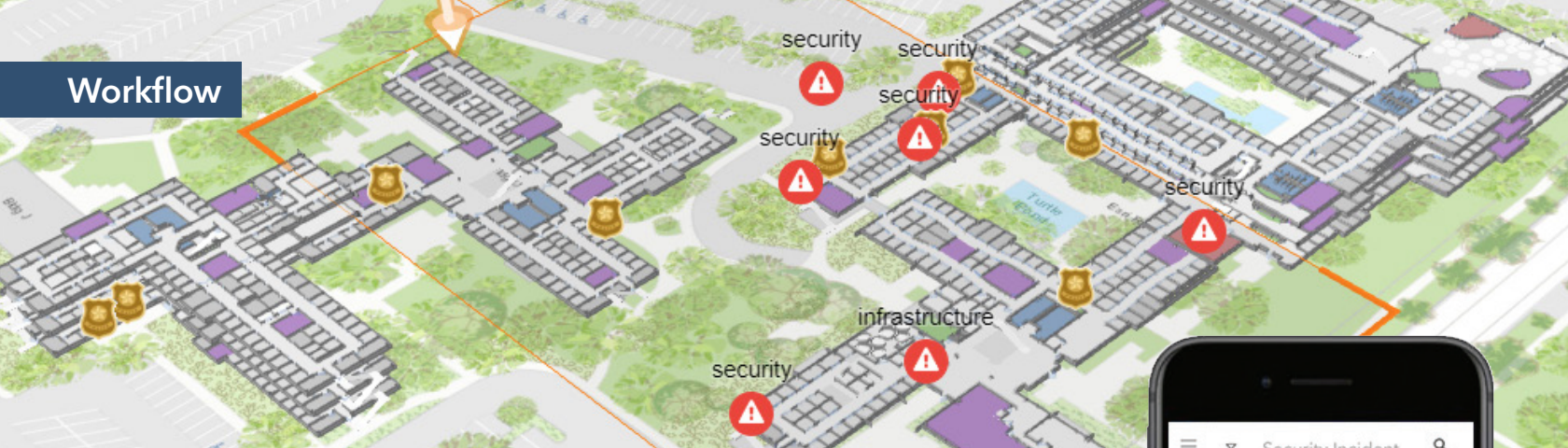
Track Indoor Location of Personnel

Site security, workplace security, and business continuity are under constant threat from increasingly frequent natural disasters and human-caused catastrophes. A **facility map** serves as a record of assets and is the perfect tool for planning and responding to critical incidents.

Indoor mapping solutions create a connected workplace and establish a common view of the built environment, which enhances 3D situational awareness.

To support complex security requirements, indoor mapping solutions must

- Enable facilities data to visually activate indoor spaces for optimized security operations.
- Leverage precise indoor mapping and positioning technology.
- Create 2D or 3D digital indoor maps of buildings, visualizing all rooms or an entire campus.
- Collect, catalog, and plot critical data points and emergency plans.
- Integrate tools into security operations to enhance C2 between the command center and field personnel.

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Incident Reports

Incident Time: 7/24/2019, 8:59 AM
Incident Type:

Incident Time: 6/20/2019, 8:08 AM
Incident Type: POI
IC3

Incident Time: 6/20/2019, 7:33 AM
Incident Type: POI
IC3

Incident Time: 6/20/2019, 7:10 AM
Incident Type: POI
IC6

Incident Time: 6/20/2019, 6:30 AM
Incident Type: PPOI
IC10

Incident Time: 6/20/2019, 5:53 AM
Incident Type: MedAssist
IC6

Incident Time: 6/20/2019, 4:49 AM
Incident Type: POI
IC8

Incident Time: 6/20/2019, 3:40 AM
Incident Type: SuspiciousPackage
IC8

Manage Status of Reported Incidents

A dashboard is a **configurable web app** that allows security planners to create information products—maps, charts, graphs, and other visual indicators—to reflect the status of incidents, events, personnel, and field assets in real time.

Dashboards provide an executive-level view of the activities and key performance indicators (KPIs) that matter most to a security mission. Users can monitor progress and identify critical vulnerabilities that may compromise safety and security during an event.

Advanced mapping capabilities yield data analyses that support better-informed decision-making.

The integration of suspicious activity reporting (**SAR**) data sent from the **field to the command center** is one example of how dashboard technology supports the mission.

The SAR/Incident Dashboard workflow may include

- Submitting SAR data from mobile field applications to the command center.
- Leveraging GIS/maps for situational awareness.
- Using a dashboard to manage if an incident is open, closed, or pending.
- Interrelating with other operational layers.
- Using Esri's Geospatial Cloud for wide dissemination of information.

Workflow

Street Cameras

📷 TV388 -- SR-1 : Just South of Presidio Tunnel

📷 TV322 -- I-280 : US-101

📷 TV379 -- US-101 : Bayshore

📷 TV305 -- US-101 : Just North of Candlestick Park

📷 TV355 -- US-101 : Candlesticks Offramp

📷 TV403 -- US-101 : Just North of Lagoon Way
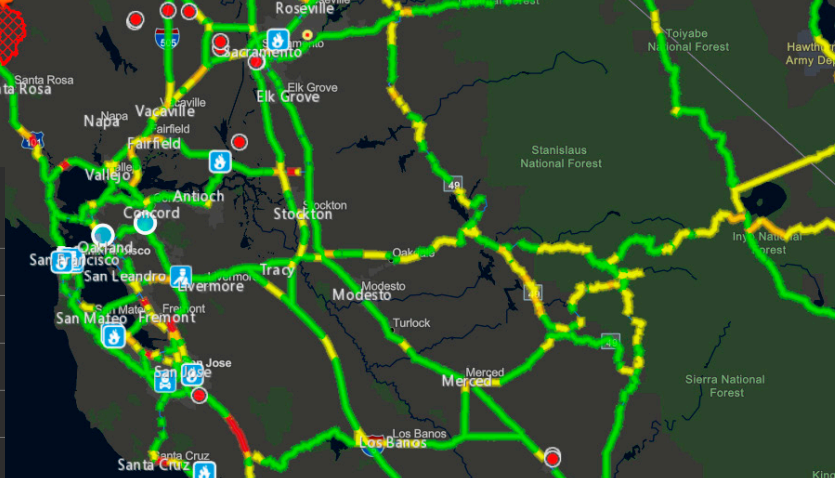
# Monitor Traffic Data and CCTV Cameras Using Operations Dashboard

A configurable traffic dashboard allows security planners to reflect the status of traffic incidents, events, personnel, and field assets in real time. Advanced mapping capabilities yield data analyses that support better-informed decision-making.

Managing transportation-related events entails integrating mapping services that present historical and near real-time traffic information in and around your AOO/AOI.

Traffic dashboards can support the following use cases:

- Identifying accidents, construction, and road closures that could impact the flow of traffic
- Analyzing reported traffic incidents to inform emergency vehicles on routing, navigation, and field operations
- Using a data service that works globally and can be used to visualize traffic speeds and incidents near an AOO and in many countries around the world
- Leveraging live, predictive, and historical traffic views
- Interrelating with other operational layers
- Enabling wide dissemination of information by using the Geospatial Cloud
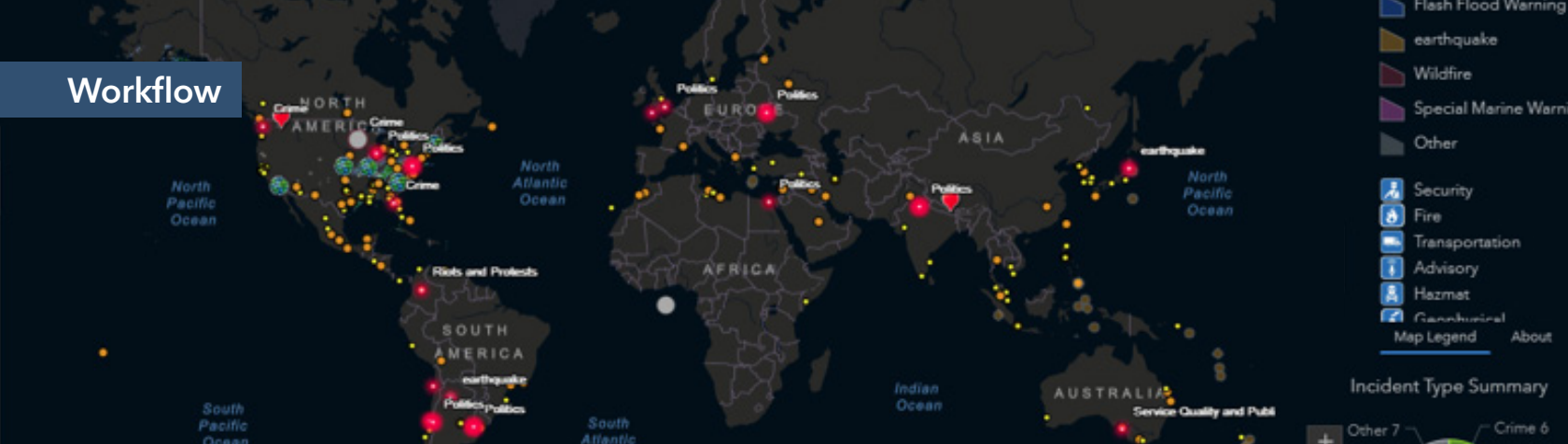
Track and Manage Multisource Threat Feeds

Live threat feeds are constantly updated streams of indicators derived from multiple sources that report on weather conditions, social media trends, wildfires, earthquakes, flooding, and more. When comparing **multiple threat feeds simultaneously** with other operational layers, security analysts can produce and disseminate robust operational intelligence. Security staff can focus on what really matters by setting up automated alerts that occur when external threat feeds intersect with high-value internal assets (people, property).

Live threat dashboards can support the following:

- Real-time monitoring via keywords and user-defined algorithms
- Early detection of high-impact events
- Situational awareness of worldwide threats
- Prioritization of threats, based on proximity to agency assets
- Reduced clutter by triaging incidents
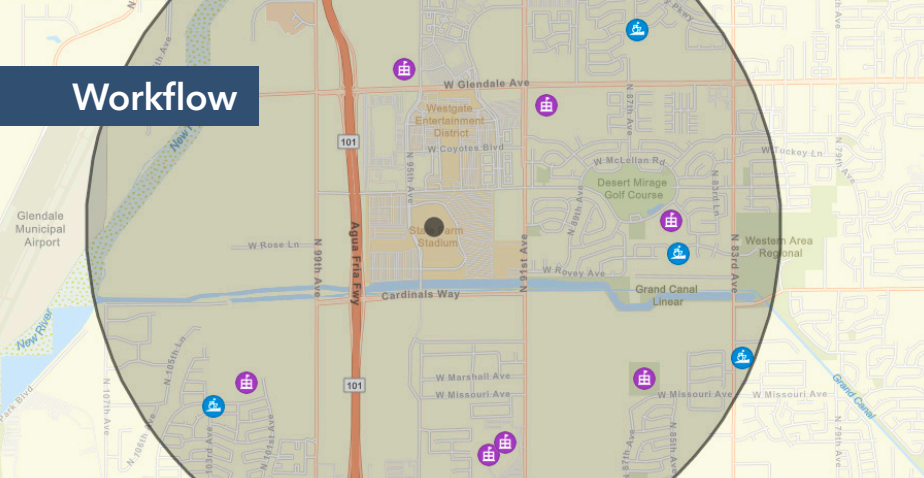
Understand Impact and Affected Populations

Understanding community characteristics and affected populations empowers a more informed response.

Situational awareness tools are designed to optimize security workflows and simplify interaction with incident and operations data. Special-event security commanders need configurable tools and widgets to quickly **understand the impact** of an incident on human populations and key infrastructure in and around an AOO/AOI. A mission-focused application must deliver tools that **organize incident and operations data layers** so that commanders can quickly quantify incident impact and respond accordingly.

After a critical incident occurs, security officials must be able to quickly locate and identify the following and more:

- Affected infrastructure/facilities
- Affected employees
- Affected population
- Nearest hospital
- Nearest police station
- Nearest shelters
- Nearest schools
- Area roadblocks

Conduct Rapid Hazard Analysis

Model the effects of WMD and HE events.

Rapid hazard analysis (**RHA**), consequence assessment, and impact analysis are mandatory procedures when responding to the threat or damage caused by weapons of mass destruction (**WMD**) and high explosive (**HE**) events.

To facilitate critical decision-making before, during, and after a catastrophic event, GIS, demographic, and infrastructure data must fuel powerful geoprocessing tools to help users predict the consequences to an impacted area. This procedure includes damage assessments of the built environment and **casualty predictions** to the area population.

RHA tools provide the following:

- Evacuation zones
- Shelter in place zones
- Hazmat response guidance to events involving toxic and industrial materials

Vancouver

Leverage Real-Time Mobile Field Reporting

Security personnel during special events need a solution they can use—even when disconnected—for rapidly capturing and reporting **data from the field** and that works alongside other GIS field applications. This solution entails smart forms with predefined questions that are easy to answer. Tools must be configurable to craft surveys to meet the unique needs of the organization.

Two primary use cases include reporting suspicious activity and reporting officer status (safe, not safe).

This eliminates paper-based data collection that relies on the legibility of handwritten notes.

GIS mobile-based field reporting supports the following:

- Rapid collection of field observations
- Real-time information updates between the field and the command center
- Immediate availability of incoming data for visualization and analysis
- Rapid collection of data and photos

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Info Summary	– ✕
NC4 Incidents	162
Active Wildfires	36
Hurricanes	1
Stream Gauges	294
Tornado Reports	1
Hail Storm Reports	0
Wind Storm Reports	330
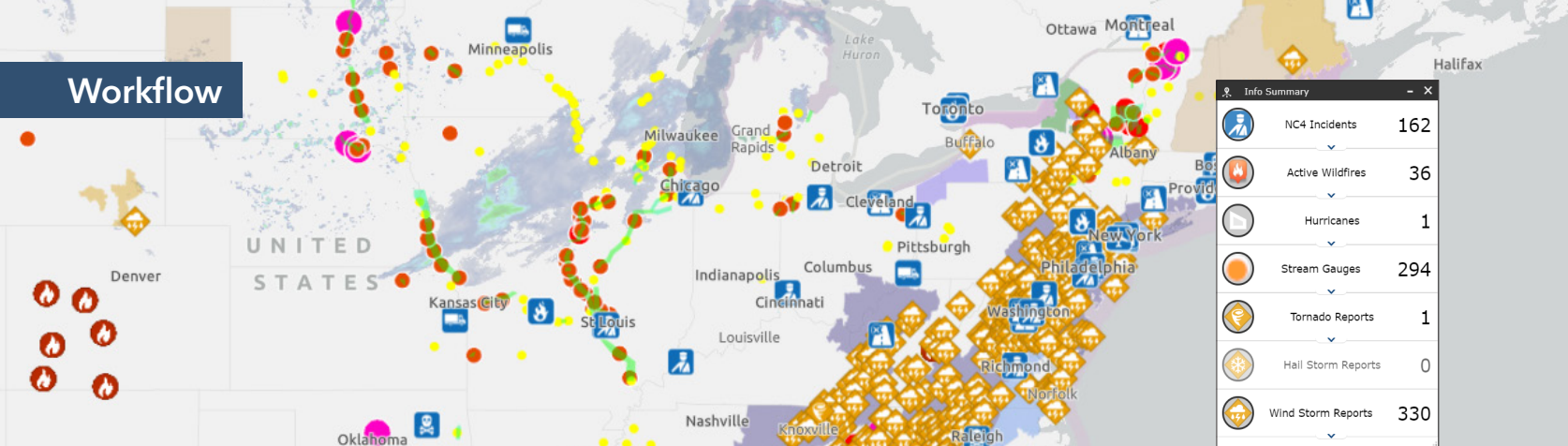
Establish Situational Awareness

The concept of using a **single pane of glass** (**SPOG**) is constantly mentioned in special-event management conversations. In principle, SPOG is a management tool—such as a unified viewer or a dashboard—that integrates information from multiple applications and environments into one single display.

The concept of a single pane of glass is so good that every SOC should use SPOG in several ways. The configuration in the Geospatial Cloud environment is simple to perform. As such, security personnel do not have to figure out the requirements around one master viewer. As needs change or different problems emerge, users can **simply reconfigure the dashboard** or viewer and build a second or third one—all depending on the needs of the organization.

SPOG provides the following:

- Informative use of maps, charts, graphs, and tables in one view
- Executive-level view of interrelated critical activities and KPIs
- Progress monitoring and quick identification of critical vulnerabilities
- High-level analysis for better-informed decision-making

Conduct Security Briefings

GIS as a Communications Platform

An after-action review (**AAR**) is a structured review or **debriefing** process for analyzing the response to a major incident or event. This includes what happened, why it happened, and how the response could have been done better.

Conducting a security briefing or providing an after-action review gives users the opportunity to come together and combine authoritative maps and apps with narrative text, images, and additional multimedia content. This allows staff to **verbally communicate and interrogate data** in live applications simultaneously.

Integrating GIS technology into an AAR can let users

- Visually establish a common understanding of all event-related activities.
- Replay success and failures from the event by using GIS tools.
- Respond to deeper questions through direct access to GIS apps and data.
- Identify lessons learned.
- Drive organizational change.

Creation of an Initial Operating Capability for SS-SEM

Technology solutions for most major events are generally managed out of a Security Operations Center. To lay the foundation for a successful GIS implementation, SOCs need to implement GIS as an initial operating capability (**IOC**). The IOC provides immediate and robust mapping and spatial analysis capabilities without any custom development. Technical implementations for a SOC IOC must follow a configure-first strategy.

The advantage of this approach is that the **SOC immediately benefits from its investment** in a set of COTS apps for desktop, web, and mobile device users. This first phase of implementing a COTS-based platform allows organizations to use tested and trusted industry best practices rather than reinventing the wheel and creating new, customized processes.

When implementing GIS platform capabilities into a SOC environment, the solution architecture should comprise local and web-based software.

Foundational Capabilities for Location-Based Data

ArcGIS contains the tools you need to meet data challenges head on. It organizes all your agency's location-based data into an enterprise data portal for sharing and collaboration. ArcGIS features the following:

Data Management

Expose any data source as a GIS service, and make your authoritative agency data easy to find within a central location. Store, manage, and share spatial data in an organizational portal that provides your agency with a one-stop shop for visualization, analysis, and editing tools that support key workflows and business units.

Named-User Security

Control access to sensitive law-enforcement data with a named-user model that can be tied to your organization's identity management systems. With a unique, secure identity, your users can unlock the maps and apps they need—anywhere, on any device. This model controls the data that personnel have access to and keeps that data secure and accessible only to those authorized to view it.

Analytics

Esri spatial analytics will help you visualize and analyze police data within the context of its location on a map. Spatial analysis can help your agency solve complex problems, better understand not only what is occurring in your jurisdiction but also why, and then recognize where similar events are likely to occur in the future. By combining information from many sources, you can discover patterns and derive new insights from your data.

Groups for Collaboration

Groups organize maps and apps specific to each of your agency's units and its mission. As a group owner, you decide who can see your group, access its content, and create and publish data in it. Groups provide a great way to share activity information across shifts and among operational, administrative, and command staff. Updates on activities are provided from data-driven apps and dashboards as situations change.

Required Software
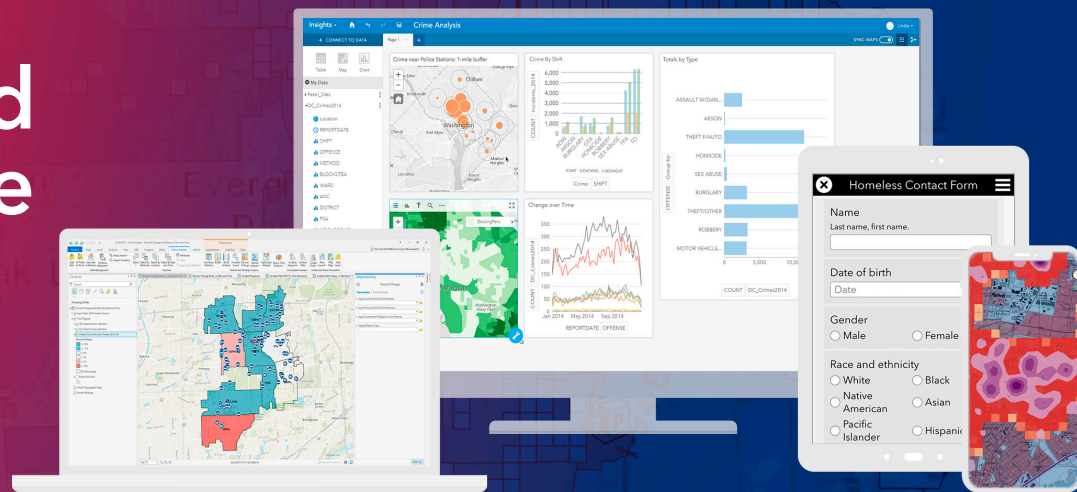
The solution detailed in the previous pages is a web-enabled environment that provides a wide range of GIS capabilities supporting data collection and management, analysis, visualization, and sharing. The foundation for this platform is **ArcGIS Enterprise**, which can run behind an organization's firewall, in its infrastructure, on-premises, or in the cloud (**ArcGIS Online**). This flexible deployment works with enterprise systems and policies.

Geospatial Cloud

ArcGIS Enterprise and ArcGIS Online, which have server and secure portal functionality, are used for securely creating, organizing, publishing, and managing geographic information. Most users (non-GIS professionals) will access and use geographic data and apps through these products. A robust content management capability controls access to data and services.

IOC Apps

ArcGIS Enterprise provides access to a set of powerful productivity apps, including web map viewing templates; data collection apps such as Collector for ArcGIS; analytical tools such as ArcGIS Insights^{SM}; apps such as Operations Dashboard for ArcGIS for monitoring activities and events; and apps such as ArcGIS StoryMaps^{SM} for data dissemination. While powerful, these apps are ready for use with minimal effort. They can be easily configured to support SOC needs, providing personnel with quick access to information.

Desktop

ArcGIS Pro provides powerful tools for spatial analysis, data management, workflow management, and modeling. A small set of GIS professionals within the organization need this tool. ArcGIS Pro is deeply integrated with the entire ArcGIS platform, so online content—such as municipal data or community baseline data as well as content from ArcGIS Enterprise—is readily available to command center users.

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