How to build safer communities

An Esri® White Paper

DECEMBER 2015

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Introduction

Protecting, defending and securing citizens is more difficult today than ever before. In addition to more traditional threats like crime and terrorism, governments must now also guard against technological- and climate-driven events that can devastate communities and countries. Governments must now adapt to achieve their national security and public safety missions. The same workflows and approaches agencies have relied on for years are no longer effective enough to secure our nations and communities. Governments need modern, evolving, and adaptive solutions that solve real problems at all scales—from global disasters to border security to local law enforcement and public health. This new reality means that government must embrace big data and other technological advances to meet daily tactical needs as well as more strategic, large-scale requirements.

Safe Communities is a new initiative that aims to rapidly empower government agencies with shared situational awareness through geospatial technology. It builds on decades of successful use of Geographic Information System (GIS) technology for managing information. Multiple organisations with overlapping missions can use the GIS platform as a system of engagement to connect many systems of record, improving and integrating strategic and tactical efforts across the national security spectrum. Defence, intelligence, emergency management, fire, law enforcement, health, transportation, and utility workflows will all use GIS in their daily operations as part of an overall inter-agency, multi-jurisdiction information strategy to more effectively provide safety.

The Complex World of Twenty-first-Century Security

The 21st century is more complex, interconnected, and reliant upon technology than ever before. For leadership, this means adaptive and diverse mission requirements that differ from traditional workflows. Government agencies, departments and staff of all ranks must adjust to fluid priorities and ever-increasing mandates.

Modern security and safety issues scale from local communities to regions and nations. Organisations must prepare for natural and technological disasters, criminal activity, daily emergency calls, public health emergencies and social unrest—both foreign and domestic. They must account for political, economic, and social crises as well as displaced populations.

Recent events shed light on the complex, interrelated worlds of security and safety. Economic instability, political unrest, active shooters, cyber attacks, domestic and foreign terrorism, severe storm systems and wildfires, territorial disputes, rogue states and disease pandemics all reflect the heightened need for coordinated preparedness and response.

In other words, today's safety and security mission involved more than just responding to crises. Agencies must optimise their day-to-day operations to ensure that they're prepared for any event and can minimise the impacts of incidents when they occur.

Modern government agencies need to do the following:

- Identify vulnerabilities and mitigate potential impacts thorough risk assessment and planning
- Collaborate seamlessly with other agencies to achieve unity of effort during a crisis (before, during, after)
- Intelligently deploy staff and resources to quickly respond to and recover from complex emergencies
- Communicate with and engage citizens and the private sector to keep them informed
- Institutionalise data-driven decision-making and take advantage of big data as well as other fragmented sources of information

Why build a safe community?

What is a safe community?

The solution to the challenging world of modern security is a *Safe Community*. But exactly what does that mean?

In a safe community, people, technology, and processes work together in a coordinated and collaborative way to enhance safety, manage risk and increase overall engagement through daily operations. Safety and security professionals make the most of existing resources and domain expertise to ensure tactical and strategic success in their missions.

The safe community approach empowers organisations to do more with less by connecting disparate data from multiple agencies for overlapping missions. Stakeholders with shared interests communicate and better understand risks, community hazards and crime problems. They prepare in advance to deal with known and potential issues and have shared situational awareness.

Your community can evaluate its ability to be safe by answering the following questions:

- Can your community respond to health threats such as epidemics?
- Are you prepared to deal with an environmental or technological disaster?
- Can you protect your citizens gathered together for a major event?
- Can you manage civil unrest and execute modern crime control strategies?
- Can you manage emergencies or an intentional attack?
- Can you protect critical infrastructure (both physical and virtual)?
- If applicable, can you secure your borders and manage refugees or migrants?

A safe community supplies a wealth of capabilities that empower you to answer *yes* to these questions using a geo-spatial solution based on GIS.

A safe community is a smart community

The availability of Big Data, mobile technology, GPS-enabled devices, and live data sensors—and the convergence of these and other technologies—is creating a foundation for government to develop better services, accountability, and transparency. This is the

new global trend of building **a smart community**. Citizens reap the benefits with greater economic and social gains that result from improved utility infrastructures, roadways, open spaces, housing, health services and more.

The smart community approach has impacted national security agencies. Often identified as the primary protectors against large-scale threats and natural disasters, national security agencies rely on working with local agencies. From the local level all the way up to the national level, agencies across multiple jurisdictions play a vital role in preventing and responding to critical incidents. Leadership from all communities must adapt by continually changing the way they plan and operate, and this means taking advantage of Big Data and technology. Communities that become smarter, in turn, will also become safer.

Over the past four decades, GIS has changed the way safety and security forces operate. GIS has served as the record-keeping and data management system of choice, automating a wide range of workflows and map production. Why? Because GIS uniquely takes advantage of the locational and temporal aspects of data from any information system.

Today, modern GIS has moved out of departmental systems historically used for planning and analysis to organisation-wide frameworks that support access and usability. In addition to geospatial analysts and cartographers, government officials, managers, commanders, frontline staff, policy makers and elected officials — private business and the public at large have all embraced the use of mapping analysis and visual problem solving.

As a result, **GIS** is more widely recognised as a powerful resource for governments to achieve diverse goals. Its ability to manage, integrate, analyse, and visualise very large and complex data make it the **platform** of choice for developing modern smart communities. These smart, data-driven communities become attractive to citizens and businesses because people **work and live without fear** of natural or manmade threats. At its foundation, a **smart community begins with a safe community**.

A safe community leverages the advances of a smart community's core capabilities. It provides safety and security personnel with the following:

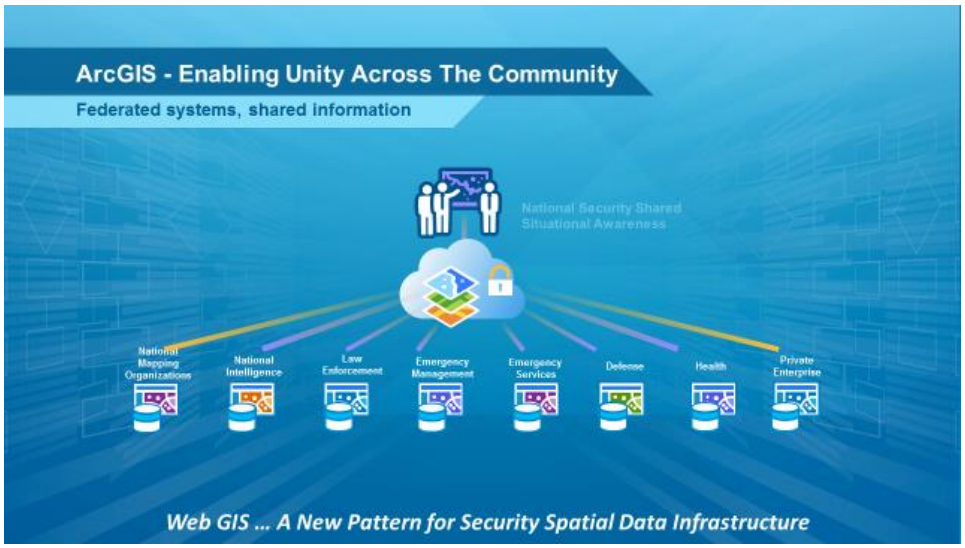
- Multi-agency, inter-departmental collaboration
- Shared, real-time situational awareness
- Secure, scalable capability that can support surge during emergencies
- Complete analysis in understanding and solving problems
- Access to authoritative, actionable data from multiple sources
- Accurate, data-driven decision-making
- Workflows for easily collecting, sharing, and consuming data in the field

Why take the Esri platform approach?

A common Operational Platform for many missions

Today, it is generally accepted that location and time provide the integration framework for all sensors, data and activities. Security and resilience required shared understanding and collaboration across all agencies routinely and during crises. Esri's ArcGIS® platform uniquely provides this essential component of the IT infrastructure—vital to planning and executing operational workflows—to provide the necessary coordination and unity of action. With ArcGIS, you can quickly begin improving the safety of your community and operating across jurisdictions and missions.

ArcGIS empowers staff to work across multiple departments within an agency as well as with external government agencies. It provides a common picture and shared understanding through geography. Web GIS transforms data into dynamic applications with data from multiple agencies providing real-time operational awareness.



Every public safety and security sector can use the same Esri ArcGIS platform, which ensures faster, more accurate decisions and incident response. This supports emergency dispatching, national operations centres, emergency operations centres, and fusion centres with mapping capabilities to improve all types of missions. You can then easily share authoritative data with stakeholders operating in different locations and in the field. As

you communicate and team together, you leverage existing resources from multiple sources, saving time and money in the process.

As a common operating platform, ArcGIS is available on any device, anywhere, in real-time. Whether responding to a fire, crime scene, border traffic or a port inspection alert, staff operate using shared situational awareness. The ArcGIS platform and shared maps also provide immediate, two-way communications. Police officers responding to a call can view a map of the incident and all related call data from their vehicles' mobile devices so they understand the situation before they arrive on scene. After an event is over, investigators and analysts can document damaged buildings and other important information from the field to inform recovery efforts and improve planning for the next incident.

The ArcGIS platform enables users to configure web maps that are intuitive and easy to use. Security professionals don't have to become technologists. They focus on the mission and objectives—not the technology. The reduced training burden ensures greater adoption and daily use. GIS use—whether at a fusion center or on a mobile device via a lightweight, configurable app—work together seamlessly through a distributed environment. The platform provides scalability; is robust; and is easy to deploy, upgrade and extend.

Perhaps most importantly, the platform is secure. Esri ArcGIS technology uses standard infrastructure security protocols, including named user authentication, identity management, and access profiles, to protect information and provide proper access to the appropriate chain of command or public view.

Esri ArcGIS technology is built using a superior collection of spatial analysis tools that let you build advanced, predictive analyses. Open, standards-based interfaces mean you can easily configure, upgrade and connect to your existing systems as well as external information sources.

The Esri ArcGIS platform provides multi-jurisdictional situational awareness and supports multiple missions:

- **Intelligence**
  - Counter-terrorism
  - Managing informants
  - Non-proliferation
  - Risk terrain modeling
- **Law enforcement**
  - Crime prevention through environmental design
  - Predictive crime trends
  - Community policing and engagement
  - COMPSTAT
- **Emergency management**
  - Incident management and response
  - Special event planning
  - Damage assessment
  - Disaster planning
- **Defence**
  - Crisis response
  - Land, air and maritime ops
  - Border, port and cyber security
  - Training support
- **Health**
  - Spread of pandemics
  - Access to health facilities
  - Understanding health and disease patterns
  - Health and safety reports
- **Fire**
  - Pre-incident planning
  - In-vehicle response
  - Safety inspections and community education
  - Fire station location/allocation
- **Emergency services**
  - Call-taking and dispatch
  - Historical drive-time and routing analysis
  - Vehicle placement, identification and routing
  - Dispatcher situational awareness

Initial operating capabilities

It doesn't take months, years or thousands of man-hours to get started. The Esri ArcGIS platform is simple to activate and begin using, facilitating multiple key core capabilities.

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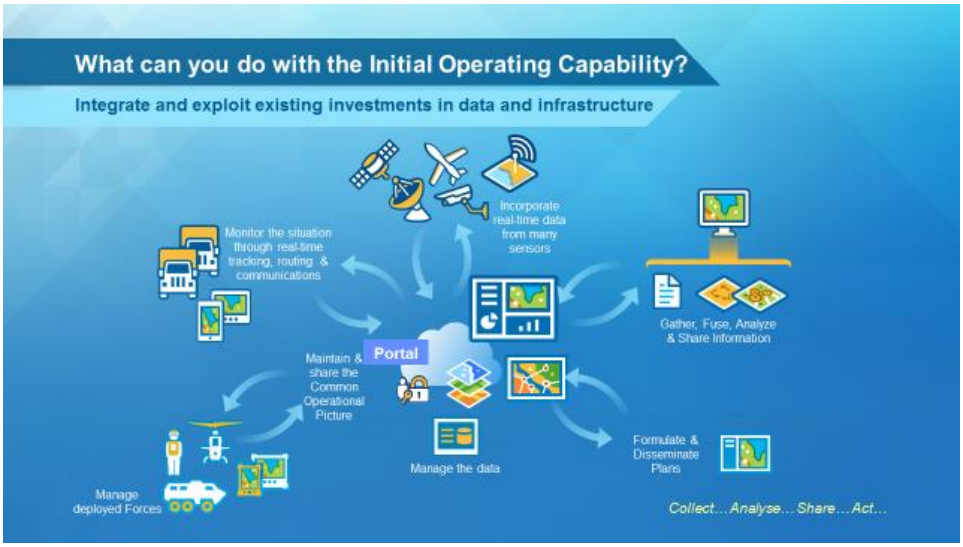

Building a Safe Community centres around using ArcGIS, supporting daily operational requirements. When you empower staff with tools that improve their core work, whether it's training staff, planning, responding to daily emergencies, or monitoring activity in real time, you prepare them for large-scale, major events. As every commander and IT senior executive knows, tools must be used on a regular basis for staff to become comfortable with them and to realise their full value. If you wait for a major event or crisis to employ a tool, it won't be used, and the intended benefit is lost.

Four major ArcGIS functions make this possible today:

- ArcGIS for Server and Portal for ArcGIS
- Operations Dashboard for ArcGIS
- Collector for ArcGIS
- Esri Story Maps

ArcGIS for Server and Portal for ArcGIS

ArcGIS for Server and Portal for ArcGIS technology provide a secure environment for a safe community. They exist behind an organisation's IT firewall, yet easily integrate with cloud-based capabilities and content. These configurable GIS servers enable multi-jurisdictional teamwork, allowing agencies to share common web maps, map services, tradecraft and data from any location or device to support a diverse range of use cases.

ArcGIS for Server and Portal for ArcGIS allow you to implement web GIS, which allows maps and geographic information to be accessed anywhere, anytime, on any device. This includes web browsers, smartphones, tablets, and desktop applications. The geographic and related safety information made available using ArcGIS for Server can be accessed through a variety of ready-to-use apps and templates. Whether a small law enforcement or fire department or a large-scale national security organisation, agencies can quickly configure simple, focused user experiences so personnel can effectively perform their responsibilities.

ArcGIS for Server extensions allow for fast, efficient alerts to field users and commanders in assigned zones. These tactical push notifications reduce data clutter by providing users with the information that is most relevant to them.

Operations Dashboard for ArcGIS

Stay on top of your security and safety operations by monitoring, tracking and reporting real-time data feeds. Whether you're involved in a major crisis, disaster, or event, or whether you're viewing day-to-day training and activities, use Operations Dashboard for ArcGIS to focus on the mission and objectives relevant to you.

The dashboard capability is flexible and provides the ability for multiple dashboard views—sharing pertinent data for internal leadership and curating select data to inform the public. Both are vital to begin immediately socialising the value that GIS offers. You can deploy operations dashboards that track dynamic data such as emergency calls, GPS feeds, weather and government vehicles. They give commanders daily views into staff, resources, activities and issues. Dashboards integrate maps, charts, lists and gauges for real-time operational views. Using interactive maps, dynamic data sources update automatically as underlying information changes. This allows users to identify anomalies hidden in a Big Data environment.

Collector for ArcGIS

A key component of a safe community involves giving personnel exactly what they need where and when they need it. Collector for ArcGIS makes it easy to assemble field reports using mobile devices, including easy-to-use, map-driven forms that help improve the quality of data collected in the field. In addition, because the app lets the community capture and share geo-tagged photos and videos in real time, organisations can respond more rapidly to suspicious activities.

Emergency management personnel can configure and customise Collector for ArcGIS for a specific workflow—such as performing damage assessment of homes after an earthquake, flood or hurricane. In addition, the ability to send that information in real-time takes safety and security to a new level. For instance, defence personnel can incorporate and analyse threat information that comes from the field, supporting a comprehensive, real-time field understanding of events.

Esri Story Maps

Esri Story Maps provide an intuitive communication method for briefings and community engagement. They let you combine authoritative maps (displaying streets, buildings, political boundaries, parcels, infrastructure, health, crime and law enforcement) with narrative text, images and multimedia content. They make it easy to harness the power of maps and geography to tell your story—whether reporting the status of humanitarian response, a health crisis, crime suppression or counter-narcotics trafficking measures.

Why Esri?

Trusted expertise

For more than 40 years, Esri has worked with agencies just like yours. Esri doesn't just provide software and solutions—it partners with you to ensure your success now and into the future. In addition to technology expertise, Esri's national security and public safety teams consist of former military, law enforcement, health, government and public safety experts just like you. In addition, Esri's global distributor network provides powerful partners to add value to your successful deployment of the ArcGIS platform.

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A global partner community

The Esri Partner Network is a global collection of leading experts specialising in high technology and national defence and government. Esri partners provide focused solutions tailored to meet your market demands. Much more than technology providers, these organisations have the subject matter expertise that comes from an intimate understanding of public safety and intelligence issues.

A team of users like you

The Esri national security and defence global network consists of the largest, most advanced collection of US and international domain experts from defence, intelligence, public safety and the private sector. Whether you're a commander, first responder, analyst, GIS specialist or executive, the Esri user community is a great resource. Discover how Esri software, services and partner agencies improve mission workflows. Webinars, regional groups, and annual events in Europe, Asia and the US combine to provide year-round professional learning and networking.

Build a location strategy

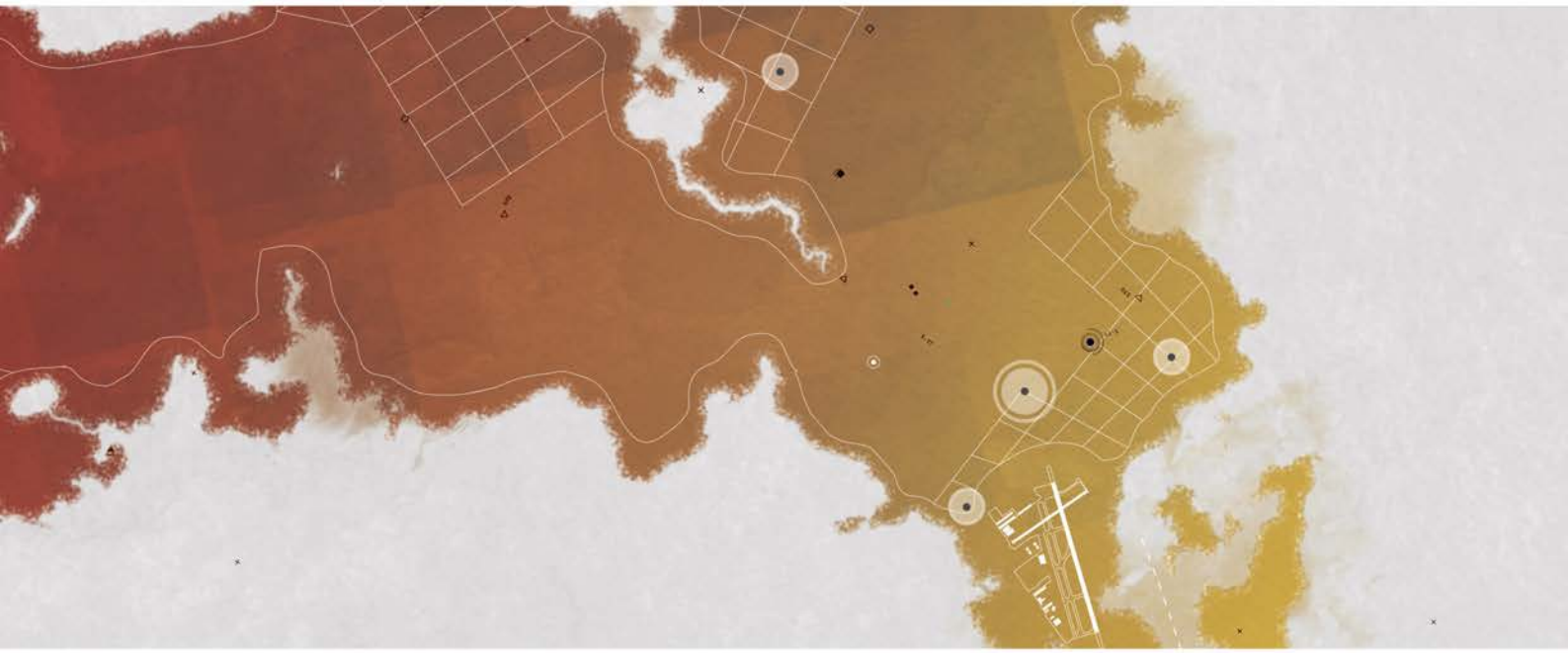
Building safe communities encompasses side-by-side collaboration with all stakeholders —from the commander to the field operator to the elected official—to comprehend specific requirements. Partnering with Esri means you'll have experts available to help you build out a detailed strategy for success. You'll be able to outline the proper approaches to solving problems and leveraging opportunities in a way that serves every stakeholder. Esri makes that possible by supporting all major government workflows.

Use the right plan that works for you, whether you're looking to activate the benefits of location across your national organisation or simply starting on a single department, such as law enforcement or emergency management, and then planning to scale up.

Get started

Build your safer community—an integrated, collaborative, authoritative, data decision-driven community—today, with a smart response to the challenges of protecting and serving. Let Esri help you with the entire journey—from technology implementation to adoption to scaling up. Develop greater transparency among agencies and citizens. Take advantage of the latest in smart government adoption to provide unparalleled safety and citizen service. Build communities where people and families live, work and play in a thriving, protected and prepared environment. Grow your best practices for more resilient and sustainable populations. Every community can be a Safe Community. Let Esri help you get started.

Esri smart community experts are ready to answer questions and provide more details. Send an e-mail to support@esrimalaysia.com.my.



esri Malaysia

Esri Malaysia is the nation's foremost authority on Geographic Information System (GIS) technology and more specifically, Esri's world-leading ArcGIS platform.

Esri Malaysia has worked diligently over the past three decades to build a strong track-record of achievement, earning the trust of the nation's most progressive government agencies and commercial enterprises.

Our reputation and commitment to quality has seen us awarded some of the country's most important projects, including the roll out of the Malaysia Geospatial Data Infrastructure, the JUPEM mapping modernisation project and the Defence Geospatial Information System project.

Through our association with the Boustead geospatial group and broader Esri distributor community, we have played a key role in furthering the adoption of GIS capabilities throughout the country.

Armed with a quality product and unique understanding of the ArcGIS platform, we are committed to delivering commercially responsible solutions for a stronger Malaysia.

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