

A Quick Guide to Building a GIS for Your Public Safety Agency



NAPSG Foundation

**National Alliance
for Public Safety GIS Foundation**



Education & Training
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Introduction

Why use GIS?

Increasingly public safety practitioners recognize the importance of geographic information system (GIS) technology to the public safety mission.

Creating, maintaining, and managing an effective information system is critical to the mission of today's emergency operation. This booklet provides practical advice on how to partner with the right people in your community to build a GIS that serves the needs of public safety.

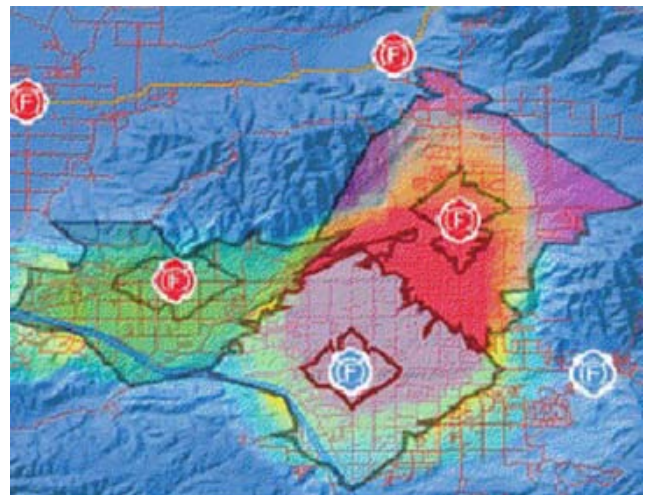
Developing a fire department or public safety agency GIS is an exciting journey. Use this booklet as a resource for getting started.



How to Use This Guide



Plume Modeling and Analysis for Training and Response



Calculating response times allows fire departments to determine optimal station locations

Pages 4-7 of this guide describe a set of fundamental concepts and principles universal to a successful public safety GIS. Whether you are new to GIS or an experienced user, please review these pages first.

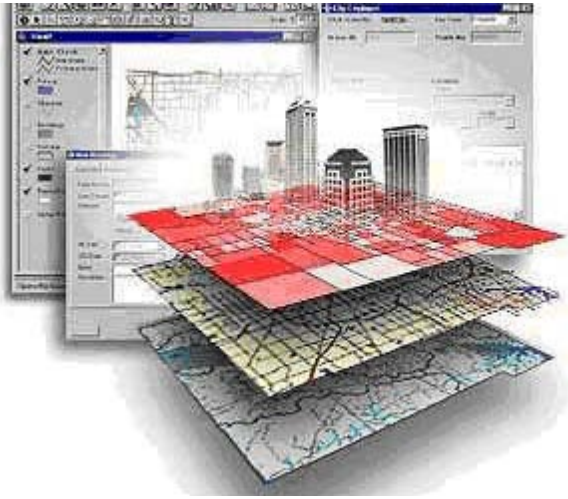
The tabbed sections, beginning on page 9, are where the action starts. Each tab represents a crucial phase in building your GIS: assessing needs, planning the system, using the system, and managing the system. Checklists are provided for each of these phases. You will occasionally find yourself back at step one reviewing your needs assessment. This will actually keep you on track, driving your GIS program development in the right direction.

This guide is designed to be interactive. It is a guide that also points you to additional resources and information.

Understand GIS Basics

A GIS is an information system that understands location.

Much more than a map, a true GIS is intelligent and interactive. Why? Because of two universal characteristics that make GIS a unique information system:



1. GIS is layer-centric.

Map projects are built with layers of data. Each of these layers can be stored in a standard relational database management system (RDBMS). In this way, a GIS combines the visual benefit of a map with the power of a database. Data can include

- Base maps
- Roads/Infrastructure
- Land use/Land cover
- Environment
- Weather information
- Vehicle locations

2. GIS is more than a map.

In a map project, GIS sorts all these different types of data by their common geography. This is what gives GIS its distinctive analytic ability. Because information can be organized by a specific place on the earth, you can see relationships between otherwise disparate datasets. GIS provides you with the type of situational awareness that enhances incident-level decision making and helps save lives.

These principles always apply:

- Geography integrates and organizes all kinds of data.
- Collect data once, then use it often for multiple purposes.

GIS Is a Team Sport

Seek Support and Identify Benefits

You should seek executive-level support and identify departmental benefits. Start small with the capability to grow—GIS is scalable. If GIS is a team sport, there has to be a head coach, and that coach needs a good assistant coach.

Head Coach (The Chief)	Assistant Coach (Technical Analyst)
Directing policy	Efficient operations
Budget support	Training
Accountability	Measuring performance

Other Agencies Can Help

You will likely find many departments and agencies in your community that use and benefit from GIS. Knowing who else in your community uses GIS and has GIS data to share is essential. Building relationships, leveraging existing GIS data, and establishing a support network will serve you well. You will find that GIS users are good at sharing.

Integration with other departments is key.

- Identify & engage all stakeholders.
- Maximize sustainability of technology investments
- Support data development
- Avoid duplication of efforts
- Identify & engage all stakeholders



Public Safety Information Needs

GIS Must Work for You and Your Mission

GIS supports many different public safety jobs and functions. You may have seen GIS used to plan a station location or support response with location information, maps, and incident data.

Summary of Fire Department Use Benefits

Situational Awareness

Community infrastructure · Population · Risk · Incidents · Damage



Planning	Preparedness	Response	Recovery
<ul style="list-style-type: none"> • Inspections • Inventory/Assets Management • Vulnerability Assessment • Community Risk Assessment • Capability Assessment • Program Planning 	<ul style="list-style-type: none"> • Preplanning • Deployment Analysis • Targeted Mitigation • Training and Exercises • Management, Analysis, and Budget Support • Executive Dashboard 	<ul style="list-style-type: none"> • CAD, AVL, and Routing • Mobile/Field Intelligence • Multidisciplinary Coordination • Public Warning and Notification • Command and Control 	<ul style="list-style-type: none"> • Damage Assessment • Logistics • Infrastructure Restoration • Public Information



Data Management

Community infrastructure · Population · Risk · Incidents · Damage

The Checklists

Whatever your expectations are for implementing a GIS for your fire/rescue department, using the checklists in the following steps will help you stay on track.

Assess

The first step is to assess your agency's need for GIS. Here, you will learn about how other departments have used GIS effectively. Once you know the options, you will begin to determine which uses are relevant to your agency's planning and operations.

Plan

The planning step is a discovery process. This is where you will learn about what resources already exist in your community to help you build your GIS. As you plan, you will match your highest-priority needs to existing resources.

Use

Step three, using GIS for the fire service, involves bringing all the right components together to successfully deploy a GIS tailored to your goals.

By collaborating with other agencies and departments, you'll take advantage of a system using outside expertise and resources.

Manage

The final step—managing your GIS—is where you'll demonstrate achieved results and help gain support. You'll begin to spread awareness of your program through the successes you attain. You'll also continuously evaluate and refine your system.

The goal is to develop a plan that identifies easy wins—needs you can quickly fulfil—with a longer-term plan in mind.

Assessing Need for a Fire & Public Safety GIS

To discover how GIS can be used to support your agency's planning and operations, you must first determine your agency's particular needs.

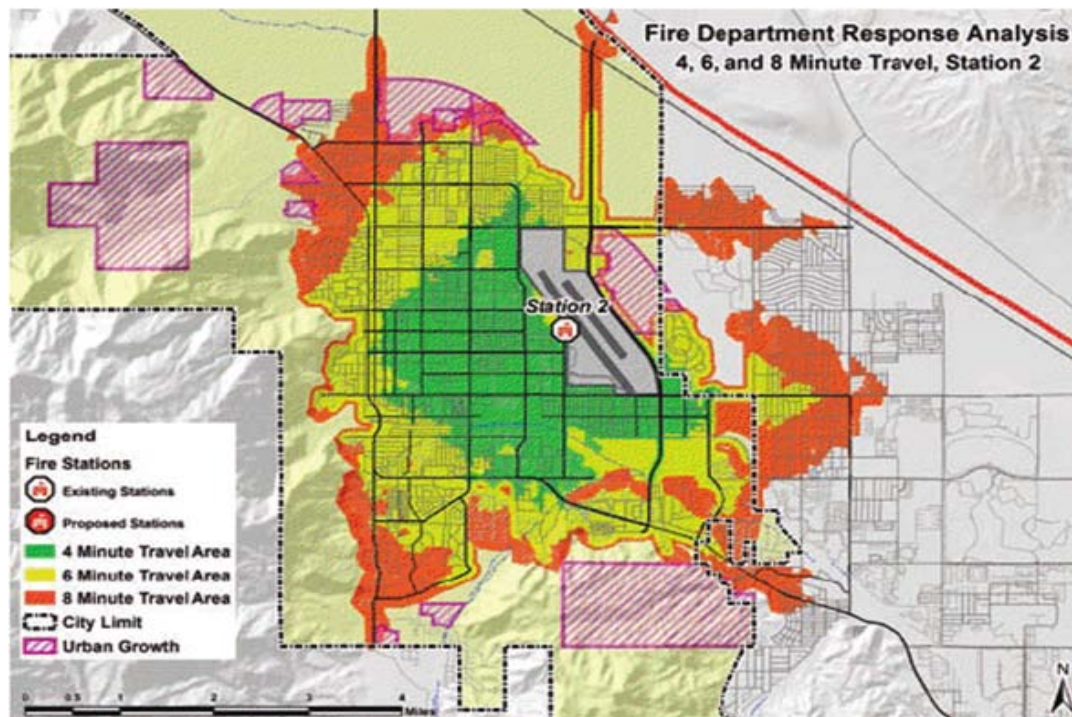
Refer back to page 6 of this guide. The chart on that page lists many different kinds of GIS applications fire & public safety agencies find useful.

There are many ways you can learn about public safety GIS. Go to the National Alliance for Public Safety GIS (NAPSG) Web site (www.napsgfoundation.org) Website's Resource Portal or Capabilities & Readiness Assessment Tool to access best practice case study examples and supporting implementation guidance.

As you read these case studies and best practices, think about all the ways your agency might benefit from GIS.

Share your thoughts with others, both inside and outside your agency.

The main goal in this step is to create a wish list of all the ways your agency can benefit from a well-designed GIS system. And to ensure that your departments strategic and financial plan supports the implementation of a GIS system that meets your needs.



Needs Assessment Checklist



Building a Fire/Public Safety GIS

Once you have developed a comprehensive list of the ways GIS can benefit your department, you will begin to figure out where to start with your GIS project.

- Identify available data sources and gaps where data development is required
- Identify GIS expertise and required training.
 - GIS analyst/technician
 - Data/Training sources
- Other agencies using GIS Network with GIS user groups in your area to leverage lessons learned
- Network with GIS user groups in your area.
- Conduct a needs assessment at www.napsgfoundation.org

Strategic Planning for Fire/Rescue GIS

Think about . . .

- Where are the greatest needs?
- What is of greatest interest to your staff?
- What essential problems can GIS solve for your department?
 - Map books
 - Incident-level situational awareness
 - Pre-incident planning
- Response Time Analysis
- Incident Command and Control
- What are the biggest gaps?
 - Data
 - GIS Software
 - Hardware
- Expertise & Technical Training
- Where are the most significant obstacles?
 - Staffing and budget cuts
 - Lack of communication and collaboration
 - Lack of policies and governance for information and data sharing
- What are your unique needs, and how will they impact your GIS resources?
- Identify where needs intersect:
 - Sharing costs, maximizing cost benefit
 - Gaining GIS capabilities to support common problems across multiple agencies

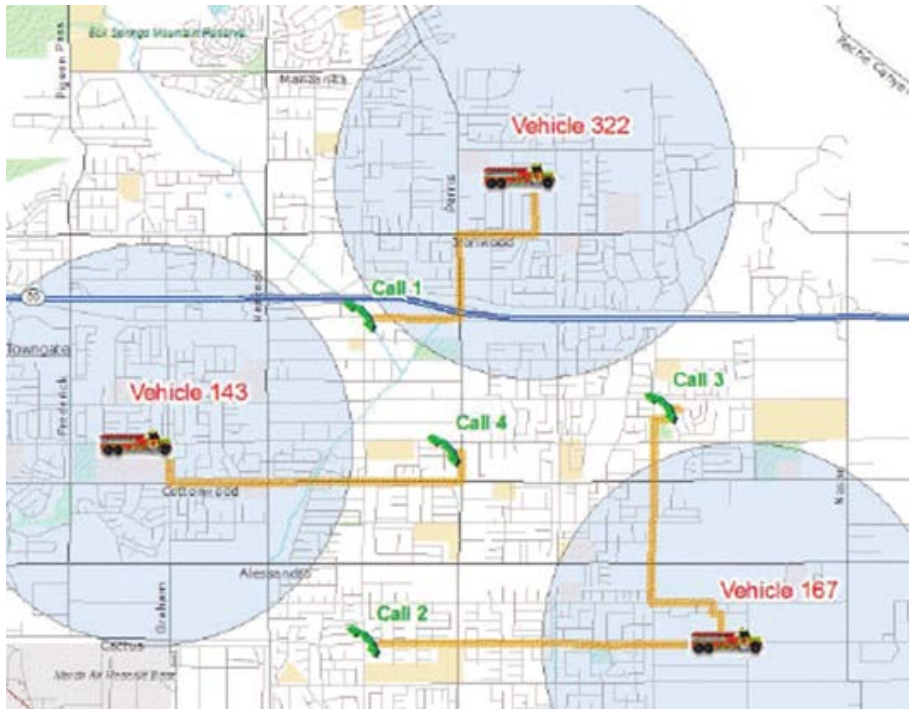
Building bridges for increased communication and collaboration across agencies and neighbouring jurisdictions



And discover . . . The most likely early wins.



Checklist for Planning a GIS



Call routing using “as the crow flies” buffer circles does not always equate to the closest unit. GIS analyzes variables such as drive time, distance, and street impedances to determine the unit closest to the call.

Building a Fire/Rescue GIS

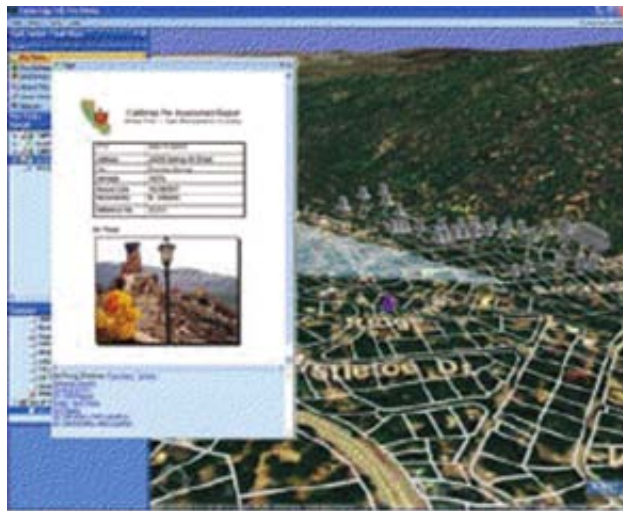
Once you have developed your list of GIS needs, it is time to determine what access you have to GIS resources, including GIS data, software, training, and expertise. This planning phase also provides you with an idea of what resources you need to bridge the gap between existing and needed resources.

Go to the Resources page at www.napsgfoundation.org for more information on how to build a public safety GIS strategic plan.

- Print out your data/application matrix from the Web tools.
- Prioritize applications (needs).
- Start small (quick wins).
- Develop a long-term plan (vision & sustainability).
- Socialize your plan with your team—both internal and external stakeholders.

Using GIS for Fire/Public Safety

- Consider your requirements in the context of your jurisdictions GIS program
- Look for common priorities among other government agencies and focus on opportunities to leverage existing resources.
- Look for ways to help outside agencies by sharing your GIS work.



Effective Collaboration= Improved Outcomes

Managing GIS for Fire/Rescue

Public Safety Geospatial Continuum

Geospatial Continuum is designed to assist emergency response agencies and policy makers in planning and implementing effective public safety GIS solutions. It provides an outline of the five key variables needed for successfully deploying GIS to support the public safety mission



Good Governance Is Key

- Demonstrate benefits and return on investment (ROI).
- Develop next-step projects.
- Gain support and feedback.
- Begin to institutionalize GIS throughout the department.
- Review the template SOP on the NAPSG website- GIS Standard Operating Guidance for Multi-Agency Coordination Centers- as an example for what you need to include in your local GIS governance policy.

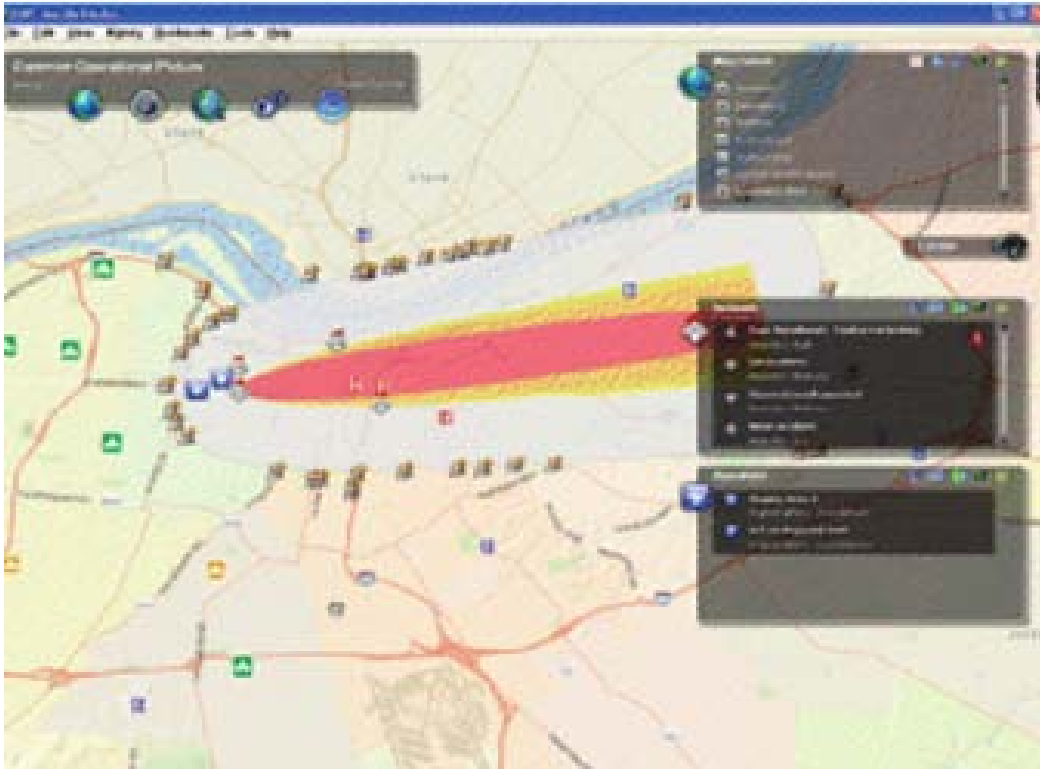
Management Checklist

Building a Fire/Public Safety GIS

The last step in building a GIS is to put a plan in place for ongoing maintenance.

Here is a checklist of the basic functions for maintaining your GIS:

- Data management—Current and new data
- Building capacity—GIS acquisition, training, and support
- Standard operating procedures—Rules of use in your agency for mutual aid and information sharing
- System maintenance—Keeping your technology up-to-date and your data accurate and current



Situational awareness can be obtained with the COP application using the Flex Viewer illustrating a chemical plume and identifying road closures and critical infrastructure.



The National Alliance for Public Safety GIS Foundation
Establishing Excellence in Public Safety GIS

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