



# Choosing a Mapping System

A Public Safety Perspective

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**POSITRON PUBLIC SAFETY SYSTEMS**

## Overview

In public safety, the maxim that a picture is worth a thousand words holds true. Electronic map displays are enabling Public Safety Answering Points (PSAPs) to locate callers faster and better manage dispatching tasks.

The phenomenal growth of wireless calls and the pace of technological progress are changing the landscape of what mapping means to the PSAP. Today there are many mapping choices available to a PSAP and making the right call on which system to choose can be difficult.

Having a clear understanding of what different map systems do eliminates common frustrations, and helps deliver on the promise of electronic map technology to provide better service to your community. This paper provides information to help guide your selection of a public safety mapping solution.

## The Changing Face of 9-1-1

Prior to the introduction of cell phones, a large majority of 9-1-1 calls came with an Automatic Location Information (ALI) record showing where the caller was. This allowed the 9-1-1 call taker to receive the caller's address on-screen and dispatching stations to direct aid to the emergency.

As the number of wireless callers grew, the Federal Communications Commission (FCC) recognized that wireless callers were receiving a lesser quality of service than wireline callers were. In response, since 1994 the FCC has issued a series of orders aimed at improving the quality and reliability of 9-1-1 emergency response for wireless phone users.

The FCC adopted a phased approach to enable PSAPs to locate and provide assistance to wireless phone users. In summary, these phases were:

<b>Phase 0</b>	Route the voice of the caller to the appropriate PSAP
<b>Phase I</b>	Provide the PSAP with the wireless caller's call back number and the location of the cell site or base station receiving the 9-1-1 call
<b>Phase II</b>	Phase I information plus the caller's latitude and longitude coordinates, accurate to specified distances

Today there are dozens of PSAPs receiving Phase II data with many hundreds more requesting Phase II service.

## The Changing Face of Mapping

Electronic mapping at PSAPs often originated as a component of Computer Aided Dispatch (CAD) or Automatic Vehicle Location (AVL) systems, displaying incident and resource locations. Frequently these systems are proprietary and independent from 9-1-1 call handling equipment.

When PSAPs started implementing mapping for 9-1-1 service, they often found that their legacy mapping systems could not accommodate their needs. Sometimes the map system could not technically perform the required operation while at other times the upgrade needed was prohibitively expensive or affected bundled applications, such as the CAD system.

Today's mapping system must be able to support all the services performed by the PSAP, including locating wireless and wireline callers. Additionally, all positions benefit from having a mapping system, which increases the level of service to your community.

## What to Avoid

The following undesirable characteristics should be avoided when selecting your solution.

- Limited access to 9-1-1 data: Legacy-mapping systems often do not have complete access to the ANI/ALI information as provided by the phone equipment. This limits the mapping system's ability to process all available information.
- Closed GIS data: avoid systems that do not allow you to add all the GIS layers you want or have. The data requirements for 9-1-1 mapping are unique and the system should permit you to access whatever data you feel will help your operations.
- Proprietary GIS data formats: systems that are not open with respect to GIS data will limit the ability to keep the map data up-to-date, and are usually much more expensive to maintain.
- Bundled mapping: mapping solutions that are a bundled module with other applications may not offer all the features that you need. Additionally, application upgrades usually rely on the main application, which can delay the introduction of new features or fixes, or induce extra cost or delay to get the update.
- Positions without mapping: the mapping solution should be available at all positions, not just dispatching stations.

## Getting the Power to Respond

Power MAP is a dedicated public safety map viewer providing automatic display and management of calls, incidents, responses and resources including AVL support. Power MAP's blend of sophisticated engineering and simplified operation allows agency personnel to locate callers and direct emergency responses quickly and accurately. Power MAP provides beneficial features and functionality to every aspect of PSAP operation.

The balance of this paper describes Power MAP as the benchmark of what to look for in a PSAP mapping solution.

### Power MAP and Wireless E911 calls

Power MAP provides the richest Wireless E911 call handling experience available. Advanced features automatically react to the call, presenting you with the information and tools required to locate wireless callers quickly and accurately. Power MAP can:

- Distinguish the wireless provider and class of service, and perform specific actions based on any combination of data. This allows you to accommodate different data formats from the wireless providers, and specify individual cell sector layers for each.
- Display phase I calls with a different icon so that the user is immediately aware that it is a phase I call.
- Display cell sector as a tower point, derived cellular coverage or actual RF coverage. This allows you to work with the best data available from each wireless provider and accommodate whatever standard operating procedures you have setup for wireless call processing.
- Display phase II calls with a different icon so that the user is immediately aware that it is a phase II call.
- Support repeat ALI requests. Power MAP will automatically update the location of phase II calls upon receipt of new coordinates.
- Provide tools to aid in locating callers. Power MAP offers features that aid in locating phase I callers, such as its Find Near feature. If the GIS data has such information, a user can search for common places, such as restaurants within a specified radius of the cell tower.
- Load your wireless phase I information into your GIS data. Power MAP is open with respect to GIS data, and provides you with full control over the loading of additional wireless layers (with optional help from Positron).

### **Power MAP works the way you want**

It is critical that the mapping system work the way the way you want, and not the other way around. Power MAP's intuitive user interface allows the user to concentrate on responding to the emergency and not on the mapping system. Power MAP provides:

- Easy searching – Power MAP provides a single, free-form entry field to perform manual searches. This allows the user to easily search for an address, a street, an intersection or a commonplace name from one simple field.
- On-the-fly Coordinate system conversion – Power MAP allows the user to switch between decimal degrees and DMS coordinate systems on the fly. This is especially useful when providing DMS coordinates to responding resources that require them and the call's coordinates are in decimal degrees. Conversely, it allows the user to enter coordinates in DMS from callers with handheld GPS units.
- Geo-decoding on the fly – Power MAP continuously displays a full geo-decoded address in the status bar as the mouse moves over the map (in addition to the latitude-longitude). This permits the user to know the address or coordinates of any spot on the map at a glance.
- Locator map – Power MAP provides a locator map that shows where the main map display is in context to the entire map.
- Custom map views – Power MAP allows the PSAP to define views of high risk/activity areas, such as airports and hazardous materials locations, ahead of time and recall them to the screen rapidly. This saves time for directing aid to these hot zones.
- Layer control – All GIS layers have default zoom levels where they are automatically visible or hidden. In addition, Power MAP can provide full manual control over what layers are visible or hidden.
- Multiple map windows – Power MAP allows the user to open as many map windows as desired. This permits the user to have a secondary map open for non-emergency tasks, such as pre-planning activities, while the main map will automatically center on the next 9-1-1 call answered. Once the emergency is complete, the user can then resume the pre-planning activities without resetting the map display.
- More tools – Power MAP provides a completely customizable approach to presenting supplementary information such as call details, GIS attributes and other premise information such as photographs or other site notes.

## Meeting the Supervisor's Needs

PSAP supervisors and managers know how their agencies need to operate. Some prefer to allow full user access to system features, while others want to limit it. Power MAP provides complete control over what individual users can do.

Power MAP also allows each user to have multiple roles. This means that the user only has to remember one password, but can perform whatever they need to with Power MAP. For example, a user can log in as a call taker one shift, and only be able to view the calls answered at their position. At the next shift, they can log on as a supervisor and see all calls in progress.

## Meeting the System Folks' Needs

Power MAP is an open and modular map. This means it can run as a standalone application or as a fully integrated extension of Positron's call handling and dispatching suite of applications. This architecture provides best in class features and benefits with the flexibility of a dedicated mapping viewer.

Power MAP runs on Windows NT/2000/XP on standard PCs. Power MAP runs on a distributed network and does not normally require a dedicated server. All GIS data is stored locally, and you make all configuration changes centrally.

## Meeting the GIS Folks' Needs

Power MAP is very GIS friendly. Power MAP natively supports ESRI shape files and a wide range of raster image types, including MrSID.

In addition, Power MAP allows each layer to be in any ESRI recognized coordinate system, with layers independent of each other. If you receive layers from other sources that are in a different coordinate system, there is no longer any need to convert them before using them.

Power MAP offers optional centralized updating. By simply copying updated files to a centralized location, Power MAP can automatically distribute them and make them active at the next user login.

## Meeting the Director's Needs

Power MAP is very cost-effective. The initial investment is affordable, and while Positron recommends a turnkey approach, you have choices with respect to sourcing the PC hardware. In addition, Positron offers Software Evergreen to maximize your return on investment.

Software Evergreen is a software maintenance service designed to maximize the return on your software investment in Positron products. Software Evergreen is an annual subscription fee that provides access to all software enhancements during the subscription period and allows you to plan your technology spending more accurately. Subscription fees are a one-time yearly investment, regardless of how many upgrades you receive.

## Getting More Information

To find out how Power MAP can give you the Power to Respond, please contact:

- your Regional Sales Manager ([www.positron911.com/corporate/contact](http://www.positron911.com/corporate/contact))
- email [info@positron911.com](mailto:info@positron911.com)
- call 800-443-3313