

Integrating Geography and Technology

By Craig Dollar

Location, Location, Location !

If you've ever bought a house or opened a business, surely you were told that nothing is more important than location. And when you're in the 9-1-1 business you know it's important. Understanding your caller's location is the most basic element for getting the right help, to the right place, in the least amount of time. Today, most of us rely on the caller's number and location information provided through ANI/ALI systems. While this information is critical, knowing the location of the address is the essence of the task. To complicate matters further, we have an ever-increasing number of cellular calls to deal with, not to mention mandatory compliance for PSAPs to meet Phase 2 FCC requirements to display cellular locations by the year 2001.

When ANI/ALI was introduced, it provided us with a significant advancement to aid in finding the incident locations. Now, because of the swift advancement and diminishing costs of computer, network, and geographic information system (GIS) technologies, we are on the brink of realizing the most significant and cost-effective additional to the 9-1-1 center since ALI was introduced-Mapped ALI.

Mapped ALI

Simply stated, Mapped ALI is the integration of geographic information system (GIS) technology with digital ANI/ALI systems. Mapped ALI systems are intended to present integrated caller identification and location information as a graphical map display. When a call is detected, the controller displays the caller ANI/ALI information and, using the caller's address (or X/Y coordinates if available), the Mapped ALI system pinpoints the location of the call on a digital map display. Without a digital mapping system, call-takers and dispatchers relied on a map book, paper maps and personal knowledge of local geography to identify the location of an incident. That means precious time was lost, but that's no longer the case.

Despite that graphical mapping will be a Phase2 FCC mandatory requirement, Mapped ALI provides a wealth of features and information that every PSAP can take advantage of right now. For instance, a calltaker needs to know information such as:

- Have there been previous calls at or near this location?
- Is this a duplicate call?
- Are there nearby incidents?
- What Agency should respond to this call?
- Is this a dangerous location
- Is there HAZMAT in the Area?
- Are there any nearby units?

Mapped ALI provides the power to answer these and many other questions quickly, accurately, and demonstrably by letting the operator see, query, and graphically analyze information using location information presented on a digital map display. By quickly scanning the map display, the operator can visually assess what's going on, understand the situation at hand, and intuitively link location to information. Mapped ALI graphically and interactively provides required operational information managed by the operator, thereby revealing previously hidden relationships, information, and incident details.

The Map

The heart of a Mapped ALI system is the digital map. So where do you get one? There are a number of possible sources. Commercial map providers sell "off-the-shelf" digital maps. For a more custom approach, companies develop digital maps according to your Agency's specifications. Another possible source is local government mapping departments or utility companies. And there is always the option of developing the map on your own. Determining what source you'll use involves balancing tradeoffs between map accuracy, type and number of features, and of course, cost.

But the job isn't complete once you've got your base map. As demanding as generating the base map is, the job of maintaining your map is demanding as well. Questions you'll need to answer include: Who will maintain the map? How will discrepancies between the map and the MSAG database get resolved? How often are map updates provided? What is the effort and cost of maintaining the map?

Mapped ALI Architecture

A typical Mapped ALI system is based on a traditional client/server model in which a central map server provides required information to a number of client workstations that contain the digital map and the Mapped ALI applications software. Depending on your current ANI/ALI system, Mapped ALI may be integrated on the same hardware, or a separate system may be provided.

Another exciting approach uses Internet technology to deliver Mapped ALI. Many of us have experienced the Internet and are familiar with the browser interface. The Internet is the world's largest network and is comprised of a mosaic of heterogeneous servers providing all kinds of information to millions of client systems. The Internet is unified by common use of the Internet Protocol (IP).

But for reasons of speed, security, and privacy, the Internet technology can be applied to what is called an intranet. The term intranet is applied to describe private networks that use standard Internet technology. In a technical sense, the Internet and an intranet are identical with respect to the method of communication and the services provided. However, an intranet is separated from the Internet by either a firewall or by not being physically connected, thus ensuring security, privacy, and elimination of low performance due to non-essential network traffic.

Benefits of Mapped ALI

Mapped ALI can provide an Agency with dramatic and immediate benefits. When Emergency response relies on the coordination of tremendous amounts of data from multiple sources, Mapped ALI can provide multiple advantages to 9-1-1 personnel including:

- The capability to access, process, and graphically display information quickly
- Graphical display of incidents and available resources
- Visual display of nearby events, duplicate calls, and premises information
- Generate efficient routes to reported incidents locations

These are just a few of the dramatic benefits Mapped ALI can provide. As we go forward to provide better service to our communities and to meet mandatory FCC requirements, Mapped ALI will show the way.