

Location based Services

Introduction

The value of adding location capabilities to mobile applications has become widely recognized, and many location-enabled solutions have reached the marketplace. This case study discusses the general approaches for enabling applications with location. It also describes a unique example where location capabilities provided breakthrough improvements in a Public Safety command with a control solution.

Components of LBS applications

Important building blocks for LBS applications have become widely available and continue to grow in capability. The following diagram depicts the key components.



Mobile Devices with GPS: Mobile devices that are equipped with GPS technology have become ubiquitous. Many of these devices have programming APIs that enable custom client software to access the GPS to obtain location fixes in real-time.

Geo-Information (GIS) Servers: Multiple vendors of turn-key GIS products and servers can be built in-house. This is done with spatial enhancements that are available in both commercial and open-source databases. The GIS servers perform several roles, including:

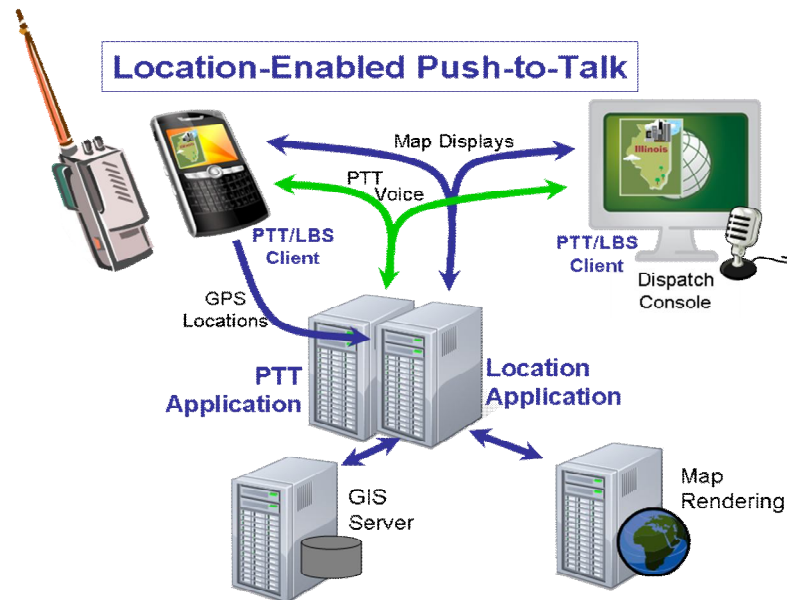
- Geocoding- translating between latitude/longitude and street addresses
- Directory searches based on location
- Distance calculations
- Route calculations

Geo Content: Street names, topology, points of interest, and many other sources of geo content data exist. Some of these are available commercially from vendors such as NAVTEQ and some are held privately by organizations that create it for internal use.

Map Rendering Engine: These products are often included with the GIS server solution and are also available as stand-alone components. They create the image file that depicts the subject being mapped, such as city streets, highways, topologies and any other features of the location. With the building blocks in place, an LBS application can be implemented to creatively assemble the pieces into a novel solution that incorporates its location.

Location Enabled PTT

Public Safety and Homeland Security organizations have a need to effectively manage incident response in real-time. One of the key tools they depend on is a push-to-talk communication system (PTT). This walkie-talkie style voice capability is well suited to command and control procedures. Because this has worked so well all Public Safety and Homeland Security agencies have deployed a PTT solution. The US Department of Homeland Security (DHS) recognized the need to augment traditional PTT communications with location, thereby enhancing command and control with "situational awareness." As depicted in the diagram, each mobile communications device reports GPS location to a central location application.



The location application interoperates with the PTT application to associate a location with each PTT user. The client software in the mobile devices and dispatch consoles can then present map displays with user locations depicted. The new capabilities provided by this location-enabled PTT solution include:

- Central dispatchers that can view all personnel on real-time map displays.
- A PTT voice call between the dispatcher and any DHS agent. This can be initiated by simply clicking the agent's location on the map display.
- A PTT group call with any arbitrary group of agents can be initiated simply by dragging an area on the mouse display, and every agent located within the defined region is automatically bridged into the call.

The resulting solution provides unprecedented improvements in coordinating and communicating with deployed personnel during incident response situations.

Conclusion

Creospan can leverage its strong background in LBS technologies as a solution developer for any company that desires to add location intelligence to an existing or new suite of applications. Creospan can bring its development experience to any of the components in your location solution, including device client software, PC client software, GIS server software, and LBS Application servers.

If you would like to follow-up with questions or comments, please contact Creospan at 847-598-1101 or email: info@creospan.com.