

KEYS TO A GREAT LOCATION

Location characteristics depend on the technologies used to pinpoint 9-1-1 calls

By Doug Kesser

Just think of how broad of a response you receive when asking someone, “Where are you located?” Responses vary from “I’m at work” to “I am on the 37th floor of the Empire State Building.” During a 9-1-1 call, location is a linchpin to a dispatch and can be the difference between life and death. The ability to obtain and deliver a location one second earlier or with just a little better accuracy can literally save a life.

In the 9-1-1 industry, there is a big difference between bad, good and great locations. An example can easily explain: a bad location is “I am at the Sears Tower;” a good location is “I am at the Sears Tower, 57th floor, on the river side;” and a great location is “I am at the Sears Tower, 57th floor, Suite 100, Office 12;” Within a 9-1-1 ecosystem, a good location allows for dispatch with accuracy, while a great location allows for dispatch with accuracy and identification of where the incident is located.

Today, over 75 percent of 9-1-1 calls originate from a mobile phone; that’s roughly 180 million 9-1-1 calls just this past year. Additionally, approximately half of the households in the U.S. have “cut the wire” and only use a mobile phone. These trends make obtaining the location of a mobile device more important than ever.

CHARACTERISTICS OF LOCATION

There are four main characteristics associated with location technologies: accuracy, availability, latency and morphology support. Most are familiar with location accuracy (how close the location fix is to the ground truth location of the 9-1-1 caller), but many

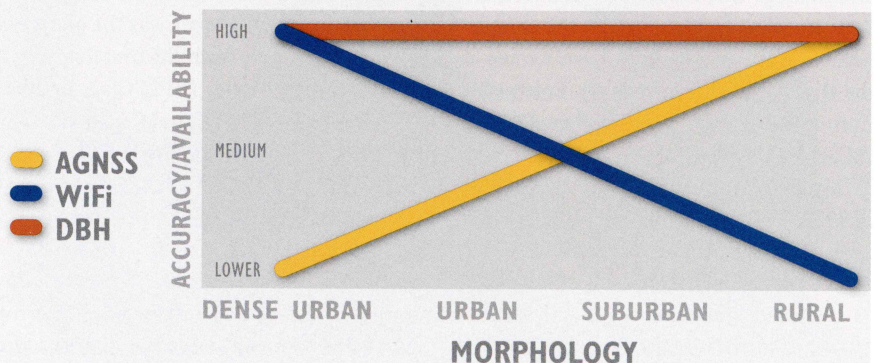
are not familiar with location availability, latency and morphologies. Availability is associated with ubiquity of the technology, i.e., is the technology highly deployed throughout the area? Latency is simply the time it takes to obtain a location fix. And morphology support relates to population density; does the technology work in urban, dense urban, rural or suburban areas? For instance, the majority of all wireless 9-1-1 calls are routed using cell sector location information. Cell sector location is highly

available, highly inaccurate, has very low latency and operates in all morphologies.

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

Assisted Global Positioning System (A-GPS) is perhaps the best known location technology given its use in many navigation and mapping applications. A-GPS is part of the Global Navigation Satellite System (GNSS), which consists of a constellation of satellites, including Russia’s GLONASS, the European Union’s Galileo, and China’s BeiDou and BeiDou-2. GNSS-based location technologies are highly accurate and mostly available, but have high latency and are best used in urban, suburban and rural areas. Satellite-based systems are much less reliable in densely urban areas with larger buildings (urban canyons) and struggle within indoor environments. Satellite-based location

LOCATION TECHNOLOGIES THAT WILL HAVE AN IMPACT ON 9-1-1 IN THE FUTURE.



Reference: Ryan Jensen, T-Mobile