

The Power and Danger of Location Data



By Russ McGuire - russ.mcguire@gmail.com

In this second column on “The Power and the Danger,” I’d like to discuss location data. Location data has been in the news in recent weeks due to the revelation that iPhones and Android phones regularly report back their location to Apple and Google respectively (although [Apple denies](#) that they track users). In a world where our privacy is increasingly under threat from digital technologies, the dangers of location data are apparent. In response, lawmakers want to [increase regulations](#) on smartphone data.

Meanwhile, in other news, Google reports that use of Google Maps on [smartphones will surpass](#) that on PCs within the next few weeks. GigaOM quoted a Google Vice President as saying “Desktop apps will be important but maps on the phone that knows ... where you are and where you’re going is a killer app.” That pretty much sums up the power of location data – your phone knows enough about you, including where you are, to deliver a much richer and better experience than the desktop can deliver.

What is “Location Data”?

15 years ago the Federal Communications Commission (FCC) adopted Docket 94-102 requiring wireless carriers (e.g. Verizon, AT&T, Sprint, and T-Mobile) to deliver to the Public Safety Answering Point (PSAP) the cell site (tower) from which a 911 call was placed. This requirement had to be met within 18 months. Over time, more precise location data was required to be delivered, specifically, within 5 years of the order, the “latitude and longitude of a mobile unit making a 911 call, within a radius of no more than 125 meters” had to be delivered to the PSAP with the 911 call. Obviously, the Com-

mission was focused on improving the ability to quickly deliver emergency services to wireless customers, wherever they may roam.

Over the years, to meet these requirements the wireless carriers implemented increasingly precise methods for determining the location of their subscribers.

To meet the initial requirement, the carriers simply had to pass along the cell site that the cell phone was connected to when the call was made. Later, the carriers figured out how to estimate the location of the caller by measuring the signal delay from the cell phone to the three (or more) nearest cell sites. This method is known as “triangulation.” This approach can, at times, yield highly accurate results, but most of the time the results are only useful for identifying the general vicinity of the wireless subscriber, not their precise location.

In 2001, Nextel introduced the first cell phone with a GPS chipset. This phone used signals from the global navigation satellite system to precisely identify its location. The location data was passed back over the network to Nextel and then on to the PSAP to satisfy the FCC’s requirements. This solution has been widely deployed by all wireless carriers, especially in high

end smartphones (including the iPhone and Android devices). (The location could also be made available to local applications on the phone, which has opened up many new possibilities.)

Triangulation continues to be useful since many people turn off their GPS to preserve battery life and GPS typically doesn't work indoors since the phone can't "see" the navigation satellites. Recently, the triangulation method has been extended to be able to determine location based on the strength of WiFi signals.

No matter what method is used, to meet the FCC's requirements, the wireless carriers are collecting your location data. Carriers store this information, if for no other reason than to assist in after the fact location efforts, including searches for missing persons and criminal investigations. Because of privacy concerns, regulations limit how they can use this data without the subscriber's permission.

In a sense, these carriers can be viewed as stewards of the precious treasure of our location data. On one hand, we rightfully expect them to protect this information (and our privacy). But, as good stewards, we must also expect them to maximize the value of this treasure to our benefit. (Full disclosure: I work for a wireless carrier, and this is exactly [the position I advocate](#) within my company and across the industry.)

What does it mean to "maximize the value" of location data?

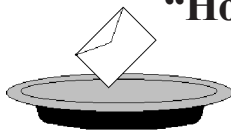
You already have a sense for the value of location data from the discussion above. When you need emergency help and dial 911, you want the ambulance or fire truck or police car to come exactly to where you are. You expect the wireless carrier to pass your location data to the PSAP so that this happens. Before the FCC's E911 requirements, the PSAP only knew what you were able to tell them, however precise or accurate that may be. Location data dramatically improved the process of responding to emergency calls.

Undoubtedly you've also heard stories of [lost hikers](#) or other [missing people](#) who have been found because their wireless carrier was able to provide location information to the authorities. Increasingly, location data is also being used in [criminal investigations](#) to catch "the bad guys" and prove their guilt.

There are other uses of location data that can create value for you today. Being able to use your cell phone for navigation directions as you drive is a current example, especially if your cell phone tells you real time information, such as "traffic ahead." Perhaps you've also used one of many [applications](#) that can help you find where you parked your car.

Another powerful example of the value of location data is in the field of restaurant recommendations. Yelp was already a

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leading provider of social recommendations, but when [it added "augmented reality"](#) to its iPhone app in 2009, it made those recommendations incredibly relevant. Just point your phone in any direction and it will tell you the ratings for nearby restaurants. Now, finding a good place to eat has become simple, wherever you go. John Deere is even using location data to automatically [steer farm equipment](#) for the best possible results.

But the future possibilities are even more dramatic. For example, imagine arriving at your hotel. Your phone tells the hotel system that you've arrived and you are able to completely bypass check-in. Your phone tells you your room number and actually [serves as your room key](#). Or imagine that your phone automatically places your normal Starbucks order as you approach the drive-thru. Or imagine if your [house lights automatically turn on](#) when you drive into the neighborhood. Or perhaps your cell phone will let you know about prayer requests near where you currently are. Of course, you'd have to approve the use of your location information for each of these applications, but I think you can probably start to see how location data can create new value for the things you already do today.

Bonus: If you're interested in teaching the next generation how to live responsibly in this digital age, you might want to download my presentation on "Raising Digital Natives Without Cannibalizing Your Faith" from the recent Midwest Parent Educators conference. The presentation is available in the ["The Power and Danger" community](#) at ccmag.com.

It is my hope and prayer that these articles on the power and danger of technology will encourage you in your daily walk with Christ. Whether it is the printing press, radio, television, personal computers, the Internet, mobility, or even location data, new technologies continue to advance our ability to know God and to serve Him, wherever we go.

Russ McGuire is an executive for a Fortune 100 company and the founder/co-founder of three technology start-ups. His latest entrepreneurial venture is Hschooler.net (<http://hschooler.net>), a social network for Christian families (especially home-schoolers) which is being built and run by three homeschooled students under Russ' direction.