

INTERACTIVE SESSION: TECHNOLOGY

LIFE ON THE GRID: IPHONE BECOMES ITRACK

Do you like your smartphone? Living on the grid has its advantages. You can access the Internet, visit your Facebook page, get Twitter feeds, watch video, and listen to music all with the same “communication and media device.” Less well known is that living on the grid means near continuous tracking of your whereabouts, locations, habits, and friends. At first, the Web made it possible for you to search for and find products, and some friends. Now the mobile Web grid tracks you and your friends to sell you products and services.

New technologies found on smartphones can identify where you are located within a few yards. And there's a great deal of money to be made knowing where you are. Performing routine actions using your smartphone makes it possible to locate you throughout the day, to report this information to corporate databases, retain and analyze the information, and then sell it to advertisers. A number of firms have adopted business models based on the ability of smartphones to report on your whereabouts, whether or not you choose to do so. Most of the popular apps report your location. Law enforcement agencies certainly have an interest in knowing the whereabouts of criminals and suspects. There are, of course, many times when you would like to report your location either automatically or on your command. If you were injured, for instance, you might like your cell phone to be able to automatically report your location to authorities, or, if you were in a restaurant, you might want to notify your friends where you are and what you are doing. But what about occasions when you don't want anyone to know where you are, least of all advertisers and marketers?

Location data gathered from cell phones has extraordinary commercial value because advertising companies can send you highly targeted advertisements, coupons, and flash bargains, based on where you are located. This technology is the foundation for many location-based services, which include smartphone maps and charts, shopping apps, and social apps that you can use to let your friends know where you are and what you are doing. Revenues from the global location-based services market are projected to reach \$3.8 billion by the end of 2012, and will rise to \$10.3 billion in 2015, according to Gartner.

But where does the location data come from, who collects it, and who uses it? In April 2011,

the Wall Street Journal published the results of its research on smartphone tracking technology and individual private location data. They discovered that both Apple's iPhone and Google's Android phones were collecting personal, private location data, for a variety of reasons. Both firms are building massive databases that can pinpoint your location, and although Google is already a leader in search across most platforms, Apple is also trying to establish itself in the mobile advertising marketplace. Advertising firms will pay Apple and Google for that information and for distributing their mobile ads.

Apple transmits your location data back to central servers once every 12 hours, and it also stores a copy of your locations on the iPhone. Android phones transmit your location data continuously. Apple's files on the iPhone device can be stored for many months. Both Apple and Google have denied that they share this information with third parties, as well as that the information can identify individuals (as opposed to cell phones), and claim the information is being used only to identify the location of cell phones for Wi-Fi-connected phones, and to improve the customer experience of location-based services. Apple's technology reads the signal strength of nearby Wi-Fi transmitters, identifies and maps their location, and then calculates the location of the iPhone device. The result is a very large database of Wi-Fi hotspots in the United States, and a method for locating iPhones that is not dependent on global positioning system (GPS) signals. Both companies say the location information is needed for them to improve their services. And location tracking is itself improving: newer tracking technologies can automatically detect the places you visit, know when you arrive or leave, track how many times you've been to that location, and even know whether you've been sitting, walking, or driving. Several companies, including Alohar Mobile, Skyhook, Wifarer, and Broadcom, are developing this type of next-generation tracking technology, which will add even more value to the data you generate by using your smartphone.

Smartphone apps that provide location-based services are also sources of personal, private location information based on the smartphone GPS

capability. Foursquare is a popular mobile social application that allows users to “check in” to a restaurant or other location, and the app automatically lets friends on Facebook and other programs learn where you are. If you’re in a new town, the app transmits your location and sends you popular spots close by, with reviews from other Foursquare users. After starting up Foursquare on a smartphone, you’ll see a list of local bars and restaurants based on your cell phone’s GPS position, select a location, and “check in,” which sends a message to your friends. Foursquare has a widely accepted loyalty program. Each check-in awards users points and badges, which can be used later for discounts at various venues. Visitors to places compete to become “Mayors” of the venue based on how many times they have checked in over a month’s time. Mayors receive special offers.

As the popularity of location-based services like Foursquare has grown, so too have concerns about the privacy of individual subscribers, and their friends on Facebook and Twitter who may not be members. Many observers fear these services will operate automatically, without user permission or awareness. The revelation in 2011 that Apple and Google were surreptitiously and continuously collecting personal, private, and location data spurred privacy groups and Congress to launch investigations. Most cell phone users are unaware that their locations and travels are readily available to law enforcement agencies through a simple e-mail request, and without judicial review, and at the expense of the carriers. In June 2012, a U.S. District Judge in California ruled that Apple must defend against a lawsuit accusing it of secretly tracking location data on millions of its iPhone and iPad users, and the Supreme Court ruled that law enforcement may not use GPS devices planted on a car to track suspects without a warrant.

To date, wireless location-based services remain largely unregulated. In 2011, the Federal

Communications Commission in cooperation with the Federal Trade Commission sponsored a forum to discuss with industry and privacy groups the social impact of location-based services, both positive and negative. Industry representatives from Facebook, Google, and Foursquare argued that existing apps as well as corporate policies were adequate to protect personal privacy because they rely on user permissions to share location data (opt-in services). The industry argued as well that consumers get real benefits from sharing location data, otherwise they would not voluntarily share this data. Privacy experts asked if consumers knew they were sharing their location information and what kind of “informed consent” was obtained. Privacy advocates pointed out that 22 of the top 30 paid apps have no privacy policy, that most of the popular apps transmit location data to their developers after which the information is not well controlled, and that these services are creating a situation where government agencies, marketers, creditors, and telecommunications firms will end up knowing nearly everything about citizens including their whereabouts. The biggest danger they described are services that locate people automatically and persistently without users having a chance to go off the grid, and without being able to turn off the location features of their phones.

Sources: “Apple Fails to Fend Off Mobile Tracking Lawsuit,” Reuters, June 14, 2012; Christina DesMarais, “Location Tracking of Mobile Devices Gets Really Nosy,” *PC World*, June 2, 2012; “This Smart Phone Tracking Tech Will Give You the Creeps,” *PC World*, May 22, 2012; Andy Greenberg, “Reminder to Congress: Cops’ Cell Phone Tracking Can Be Even More Precise than GPS,” *Forbes.com*, May 17, 2012; Noam Cohen, “It’s Tracking Your Every Move and You May Not Even Know,” *The New York Times*, March 26, 2011; Robert Hotz, “The Really Smart Phone,” *The Wall Street Journal*, April 23, 2011; Peter Swire, “Wrap Up on Privacy and Location Based Services” and Matt Blaze, “Technology and Privacy,” FCC Forum: “Helping Consumers Harness the Potential of Location Based Services,” June 28, 2011; Julia Angwin and Jennifer Valentino-Devries, “Apple, Google Collect User Data,” *The Wall Street Journal*, April 22, 2011; “When a Cell Phone Is More Than a Phone: Protecting Your Privacy in the Age of the Smartphone,” Privacy Rights Clearinghouse, <http://www.privacyrights.org>.

CASE STUDY QUESTIONS

1. Why do mobile phone manufacturers (Apple, Google, and BlackBerry) want to track where their customers go?
2. Do you think mobile phone customers should be able to turn tracking off? Should customers be informed when they are being tracked? Why or why not?
3. Do you think mobile phone tracking is a violation of a person’s privacy? Why or why not?