



INFORMATION TECHNOLOGY

THE MOBILE GENERATION

(As published in the *Nashville Bar Journal*, September 2011 Issue)

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In case you missed it, the tipping point has occurred.¹ We have been released from the simple dimensions of space and time. We have become Borg² and in the process are redefining the legal landscape for the major industries that drive our local economy: tourism, banking, and healthcare.

Remember personal computers? An historic artifact.

Remember cellphones? A transitional technology.

We have become the Mobile Generation, a generation driven by a new set of portable devices that redefine how we interact with the economy and society. iPads, iPhones, Androids, tablets, and devices whose names have yet to enter popular lexicon (all collectively referred to in this article as "Mobile Devices") are driving cultural change. And the law is struggling to keep up with the new risks and opportunities that these Mobile Devices create.

Mobile Devices

Like all revolutions, Mobile Devices are really a confluence of technology that resulted in a totally unexpected end state.³ Originally designed around silicon circuitry for voice codecs (compression algorithms specifically designed to digitize analog voice signals and transmit them on low-bandwidth digital systems), Mobile Devices have evolved into a unique amalgam of complementary technologies such as charged coupled devices (CCDs) for capturing images, global positioning systems (GPS) for capturing location-related information, vibrational gyroscopes for providing relative positioning of the device-to-the-environment, thin-film visual displays and extended life batteries enhancing practical weight-to-performance characteristics, and various combinations of plug-and-play interfaces and WiFi/wireless connectivity that allow Mobile Devices to be the constant conduit through which we interact with the world around us using not just the intelligence of the Mobile Device itself (via thousands of "apps"⁴ that can be stored locally on the Mobile Device), but also the network of information and knowledge popularized with the Internet and recently dubbed "the cloud."⁵

Tourism⁶

Interested in getting from point A to point B, and once there finding a micro-brewery that serves barbeque? There's an app for that! From simple mapping and directions via GPS enabled systems such as MapQuest and Google Map/Street View to sophisticated online ticketing offered by the major airlines, Mobile Devices help bridge

the transition between the virtual and real world of entertainment. In Tennessee you can review TDOT SmartWay video images of real time highway traffic conditions,⁷ find your way along hundreds of miles of the state's hiking trails,⁸ and find your way to the closest Starbucks (along with thousands of other destination sites)⁹ with travel apps. Not satisfied with just the view? Then overlay comments and information from web-based applications or other visitors on an image that automatically updates as you pan the horizon with your camera function.¹⁰

But all of that capability comes with a caveat: all of us must be willing to surrender our right to privacy (and probably our Fourth Amendment rights, as well). Most Mobile Devices keep minute-by-minute logs of their geo-location (and, coincidentally an inference with respect to the location of their user). Recent criminal cases have also suggested that a Mobile Device is subject to traditional exceptions to a warrant requirement – the Mobile Device in plain view (along with all information that is stored on it) is accessible from an evidentiary perspective.¹¹ The end result is that Mobile Device users may tacitly be forfeiting any expectation of privacy with respect to the device and the information it stores.

Beyond the mere provision of information, Mobile Devices also enable a transition from physical ticketing at venues or for transportation to eTickets that provide both convenience and reduced transaction costs. The airline industry took the lead in transitioning to eTickets and has now integrated Mobile Devices into the TSAA-approved boarding pass process through implementation of the 2D bar coded boarding passes (BCBP), reducing the cost of ticketing by an order of magnitude and saving the industry over \$3 billion dollars annually according to the International Air Transportation Association.¹² Colleges and universities are now making the same transition for their Mobile Device savvy students.¹³

But with convenience (and the billions of dollars in annual revenues from eTicket sales) comes legal risk. Ticket brokers have used online purchase engines to circumvent venue restrictions against resale and routinely purchase the majority of live event venue tickets electronically within minutes of online sales for subsequent sales at multiples of the tickets' face value.¹⁴ From a Mobile Device perspective, even BCBPs can be duplicated and may eventually become the province of digital scam artists.¹⁵ When added to the geo-location and time code stored in a Mobile Device, with eTickets we not only know where you are and when, but we now know what you are doing.

Banking

Remember when online banking was the hottest new thing in local finance?¹⁶ Now new Mobile Device capabilities have turned currency into eMoney, with annual growth rates over 100% for mobile banking apps since 2009.



Traditional credit/debit card issues, online payment companies, telecommunications carriers, and Mobile Device manufacturers are all poised to gobble up promising tech startups and form alliances in the pursuit of the perfect digital platform for mobile payments. Storage of basic banking/credit information on Mobile Devices and enhancements in security features to protect against fraud, have enabled a host of “tap” applications (where the user merely touches the Mobile Devices to another device to originate a funds transfer)¹⁷ and transformed the Mobile Device into a wallet.¹⁸ Fortune 1000 payment processors have also entered the marketplace with the introduction by Heartland Payment Systems of the MoBuyle application that allows merchants to accept credit/debit card payments through Mobile Devices.¹⁹ These functionalities cumulatively allow mobile peer-to-peer payments, mobile point of sale, mobile commerce, and mobile payment acceptance any time, any place.

However, all of these services are still dependent upon the traditional payment intermediaries and Automated Clearing House (ACH) infrastructure – only the method of origination has become mobile. Because of this dependency, the “virtual money” that is transferred using Mobile Devices can be tracked and is subject to the same set of banking, theft, and fraud laws as is traditional currency. Outside the US, mobile banking means long delayed access to traditional financial services for millions of individuals that have Mobile Devices but no access to a national banking infra-structure.²⁰

But new types of virtual money seem to be propagating across the globe, including, for example, anonymous digital cash that cannot be traced through multiple transactions and entire virtual economies that have been created within the gaming community.²¹

Healthcare

Mobile Devices in healthcare have ushered in a new evaluation of opportunities and risks related to “mobile health” (mHealth). Health care organizations increasingly are integrating Mobile Devices into their medical records, operational infrastructure, and daily use. To encourage this use, the National Institutes of Health awarded over 100 grants for mHealth research projects.²² Even patients have joined in mHealth studies, with one recent study finding that diabetics who used Mobile Devices to monitor their blood sugar experienced a decrease in hemoglobin A1C levels.²³ Add to this over 17,000 mHealth apps that are available to consumers and the trend is significant enough to garner the attention of the federal government.²⁴

On July 21, 2011, the FDA published its draft guidance document on Mobile Medical Applications (the “FDA guidance”).²⁵ The “draft guidance to inform manufacturers, distributors, and other entities” provides an outline of how the FDA intends to regulate select mHealth applications (mApps). While not binding on the FDA or third parties, the guidance reflects the “FDA’s current thinking on mobile medical applications.”

The FDA seems most interested in a subset of mApps that meet the “device” definition in §201(h) of the Federal Food, Drug, and Cosmetic Act (FD&C Act).²⁶ The regulations apply to products “that are built with or consist of computer and/or software components or applications are subject to regulation as devices when they meet the definition of a device in section 201(h) of the FD&C Act.”²⁷ The FD&C Act governs devices such as: “an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent [that is] intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man [or] intended to affect the structure or any function of the body of man or other animals[.]” The mApp must be “used as an accessory to a regulated medical device or [t]ransform[] a mobile platform into a regulated medical device.”²⁸ Such regulation seems to limit the interest to “a subset of mobile apps that either have traditionally been considered medical devices or affect the performance or functionality of a currently regulated medical device.” However, the FDA clearly “intends to exercise enforcement discretion” with respect to mApps that meet the “device” definition. mApps outside of the device definition, however, do not appear to fall within the FDA’s discretionary enforcement capabilities.²⁹

The FDA guidance is consistent with a market and a technology that is relatively new. However, the guidance also reflects concern over the risks mApps can pose within the modern healthcare environment.³⁰

Since Mobile Devices and mApps appear to create “stickiness” between the patient and the healthcare provider, the economic incentive exists to expand mApps as part of the patient care regimen (and economic necessities of for-profit healthcare facilities).

Conclusion

Mobile Devices have created new opportunities and challenges for both commerce and law. To the extent that Mobile Devices merely serve as interfaces for originating or conducting traditional economic transactions, current law seems to provide a framework for assuring equitable and consistent results. However, as Mobile Devices become more complex, integrating functionality and creating a previously inconceivable evidentiary trail of their users’ life (in minute-by-minute detail), traditional frameworks seems insufficient. Lack of governmental regulation, except for clearing defined areas such as the FDA’s oversight of medical “devices,” seems most appropriate as these nascent digital markets develop. At some point, however, traditional legal jurisprudence must accommodate to and specifically deal with the new digital paradigms. Lawyers, like Mobile Devices, are at a tipping point – virtual world capabilities have now created real world problems for the general practitioner who must be armed with the knowledge and skill of both worlds to service his/her clients.



¹ "The tipping point is that magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire." MALCOLM GLADWELL, *THE TIPPING POINT* (200).

² The Borg are a fictional group of cybernetic aliens from the sci-fi adventure *StarTrek* whose singular goal is the consumption of technology.

³ As early as 1972, the Federal Communications Commission was considering licensing of a wireless communication spectrum. However, it took almost a decade to create the infrastructure in the US to enable wireless telecommunications. The result was a market opportunity for "the brick" – a two pound device that cost thousands of dollars and allowed a half-hour of talk time before recharging. *First Cell Phone a real "brick"*; AP, 2005. available at http://www.msnbc.msn.com/id/7432915/ns/technology_and_science-wireless/t/first-cell-phone-true-brick/.

⁴ As of March 2011, the Apple App store had over 435,000 software applications available for download to the iPhone and the Android Market had over 250,000 such applications.

⁵ "The cloud" is the current buzz word for the ubiquitous on-demand digital network access to shared computing resources, knowledge databases, private information archives, and interfaces with computer applications that are not resident on the Mobile Device itself.

⁶ Tourism is the second largest industry in Tennessee, with over \$15 billion in state revenue, providing over \$702 million in annual tax revenue to the state, and employing over 350,000 people (directly or indirectly). Tourism Association of Southwest Tennessee, <http://tast.tn.org/Pages/tast.html>

⁷ <http://www.apple.com/webapps/travel/tennesseetrafficcams.html>

⁸ <http://itunes.apple.com/us/app/accuterra-on-demand-maps-gps/id324036903?mt=8>

⁹ <http://www.androidtapp.com/where/>

¹⁰ <http://www.gizmodo.com.au/2009/11/10-iphone-apps-to-augment-your-sad-reality/>

¹¹ See generally Drew Lewis & Kelly L. Frey, II, *Digital Privacy: A Brave New World*, 7 Nash. Bar J. 8 (Sept. 2007), republished by New Hampshire Bar Assoc. (Oct. 19, 2007); see also *United States v. Santillan*, 571 F. Supp.2d 1093 (D. Ariz. 2008); *States v. Wurie*, 612 F. Supp. 2d 104 (D. Mass. 2009)(gun and drug case holding as a matter of first impression that search of defendant's cell phone data incident to his arrest was reasonable).

¹² Fact Sheet: IATA - International Air Transport Association, http://www.iata.org/pressroom/facts_figures/fact_sheets/pages/et.aspx (July 2011).

¹³ Giselle Tsurulnik, *Universtiy Tickets Rolls Out Mobile Ticketing for Clients*, *Mobile Commerce Daily* (Apr. 1, 2011), www.mobilecommercedaily.com/2011/04/01/universitytickets-rolls-out-mobile-ticketing-for-clients.

¹⁴ Josh Mullins and Kelly L. Frey, Sr., *I Want My Hannah Montana! The Regulations of Ticket Sales in Tennessee*, 6 NASH. B. J. (July 2008) For organizations currently lobbying against such practices, see www.countrymusicfanassociation.com

¹⁵ For an example of the low tech end of eTicket scams see the recent controversy concerning Craigslist advertisements for fake tickets of a Kid Rock concert in Michigan at <http://www.dailytribune.com/articles/2011/01/19/news/doc4d3742d9a18c6694329401.txt>.

¹⁶ Almost 30 million Americans utilized access to mobile financial services in the fourth quarter of 2010.

¹⁷ Tap functionality is defined by the near-field communication (NFC) chip technology and is device dependent because it requires a special chip set.

¹⁸ See specifically Google Wallet at <http://www.google.com/wallet/>

¹⁹ *Heartland Payment Systems® Launches Mobuyle™ Mobile Payment Acceptance Solution*, Press Release, <http://www.heartlandpaymentsystems.com/article/Heartland-Payment-Systems-Launches-Mobuyle-8803.aspx> (Aug. 9, 2011).

²⁰ Dutch-Bangla Bank Limited initiated a mobile device centric banking service in Bangladesh in 2011, a country where over 70 million people have access to cellphones but less than 20% have bank accounts. See generally http://en.wikipedia.org/wiki/Mobile_banking.

²¹ Virtual money is most evident in massively multi-player online role-playing games (MMORPGs) such as *Second Life* and *Farmville*. See generally *Real Legal Issues with virtual currencies*, NETWORKWORLD, May 12, 2010 at <http://www.networkworld.com/newsletters/2010/051010sec2.html>.

²² See Francis S. Collins, *Mobile Technology and Health Care*, 5 NIH MEDLINE PLUS 2 (2011), available at www.nlm.nih.gov/medlineplus/magazine/issues/winter11/articles/winter11pg2-3.html.



²³ Over a twelve month period, patients using the app had an average decline in A1C levels of 1.9% compared with a 0.7% decrease among those patients who did not. See Charlene C. Quinn et al, *Cluster-Randomized Trial of a Mobile Phone Personalized Behavioral Intervention for Blood Glucose Control*, DIABETES CARE (2011)(published online before print).

²⁴ Sonia Kolesnikov-Jessop, *Do-It-Yourself Health Care With Smartphones*, NYTIMES.COM, Feb. 28, 2011, www.nytimes.com/2011/03/01/technology/01iht-srhealth01.html?_r=2&scp=8&sq=health%20mobile%20app&st=cse (relying on a November 2010 report from research2guidance). See also Brian Dolan, *3 Million Downloads for Android Health Apps*, MOBIHEALTHNEWS.COM, Mar. 11, 2010, mobihealthnews.com/6908/3-million-downloads-for-android-health-apps/.

²⁵ See FDA, Draft Guidance for Draft Guidance for Industry and Food and Drug Administration Staff; Mobile Medical Applications; Availability, 76 FR 43689 (July 21, 2011) [hereinafter, the "Guidance"].

²⁶ See 21 USC § 321.

²⁷ Guidance, *supra* note 25, at n.1.

²⁸ *Id.*

²⁹ "This means that FDA intends to exercise its discretion *to decline to pursue enforcement actions* for violations of the FD&C Act and applicable regulations by a manufacturer of a mobile medical app, as specified in this guidance." *Id.* (emphasis added).

³⁰ As explained by the FDA, "mobile medical apps may pose additional or different risks [compared to traditional medical devices] due to the unique characteristics of the [mobile] platform. For example, the interpretation of radiological images on a mobile device could be adversely affected by the smaller screen size, lower contrast ratio, and uncontrolled ambient light of the mobile platform[.]" *Id.*

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