

# Why Worry about Mobile?

## Abstract

*Mobile devices are ubiquitous in today's society, and there's no evidence that that is going to change. According to the Pew Internet and American Life Project, as of mid-2010, 82 percent of American adults own a mobile phone or a mobile computing device that works as a phone. This chapter of Libraries and Mobile Services sets the stage for the Report, explaining why it is crucial for librarians to understand mobile devices and provide services through them.*

I've always had a fascination with gadgets, especially small, portable gadgets. I recall debating with my parents about why a Casio Databank watch would be the perfect souvenir by which to remember a family vacation. And as befits someone who was firmly in the target demographic of the 1980s Transformers craze, multifunction gadgets hold a particular attraction.

The aforementioned predilections go only so far toward explaining how I found myself on a Saturday morning in the fall of 2003 waiting in my car for my local GameStop to open. That October week had seen the release of what I was convinced was a groundbreaking convergence gadget: the videogame- and MP3-playing, Web-browsing smartphone. I was waiting for the privilege of exchanging hard-won U.S. currency for a Nokia N-Gage (figure 1).

If you're familiar with the N-Gage, you're likely wiping away tears from derisive laughter. If not, allow me to explain why the N-Gage holds a special place in the hall of fame of misguided, poorly designed gadgets. Sure enough, it played videogames, which were sold on small memory cards. When the time came to swap cards so you could play another of the few games ever released for the device, you needed to power down the N-Gage, remove the back cover, and pop out



**Figure 1**

The Nokia N-Gage (Photo credit: J-P Kärnä, "Nokia N-Gage," [http://commons.wikimedia.org/wiki/File:Nokia\\_N-Gage.jpg](http://commons.wikimedia.org/wiki/File:Nokia_N-Gage.jpg), licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license, <http://creativecommons.org/licenses/by-sa/3.0/dee.en>).

the battery, underneath which was nestled the *Tony Hawk* or *Red Faction* card.

It played MP3s all right, which you could load on a memory card. The only problem was that memory card occupied the same slot as the game card, so switching from the game I'd been playing on the bus to the music I wanted to listen to on the walk home required balancing the cards, cover, battery, and phone on my lap before my stop.

The challenges of using the N-Gage as a gaming and multimedia device had nothing on the indignity of actually talking on the thing. In order to cram gaming controls and a number pad on the face of the N-Gage, the engineers at Nokia placed the speaker and microphone along the top edge. So, rather than holding the flat face of the device to my ear, as one might expect, I talked

into the long, narrow edge, with the device protruding from my head like a fin. Imagine trying to talk into the bottom of a hard-shell taco. Now imagine my wife shaking her head as she bemoaned my “giant crazy phone.”

My wife wasn't the only one who mocked the N-Gage. “Sidetalking” became quite the meme in 2003–2004, and jokesters shared photos of themselves online talking into the side of improbably large and unwieldy props (figure 2). Visit the Sidetalkin' website for some galleries that immortalize the mockery of my giant crazy phone.

*Sidetalkin'*

<http://sidetalkin.com>

The N-Gage was undoubtedly a commercial failure, and while I didn't love it personally, it did open my eyes to what was possible in a mobile device. It was the first time I had a web browser in my pocket at all times—a slow, clunky WAP (Wireless Access Protocol) browser, but a browser nonetheless. It ran Nokia's Symbian Series 60 smartphone operating system, and there were dozens of free and paid applications available. I had a primitive geolocation app that allowed me to define places like “home” and “work” by the cell towers in the vicinity and change settings on the phone depending on where I was (at work, turn the ringer off; at home, turn the ringer and Bluetooth on, etc.). It was unlocked, meaning it could be used on any GSM mobile carrier. And I have a vivid memory of waiting for the bus one afternoon, listening to music on the hands-free headset I hacked together myself. The music faded down, and through my headphones I heard my ringtone. I pressed a button on the headset and answered a call from my sister. I pressed it again to hang up, and the music faded back up. I felt pretty sure I was living in the future.

I sold the N-Gage after a few months and reinvested the proceeds in my first iPod, a device I'd resisted to that point as being too limited, a unitasker. In the years since, I've owned the first-generation Motorola RAZR, which was the first phone that I could sync with my computer. I bought the BlackBerry Pearl, Research in Motion's (RIM's) first device explicitly targeted at the consumer market, on day one. I'm typing this on an iPhone. I've got boxes full of old phones, chargers, and cables cluttering up my basement, all artifacts of an ongoing search for the perfect mobile device.

Along the way I became a librarian. I realized that my passion for technology and information had a natural intersection in librarianship, and I've spent the past five years working on better ways to marry the two. It's become clear to me over the past couple of years that mobile is the frontier for information creation and access. So you may not have heard my name before. I may not be a universally recognized



**Figure 2**

Your author, sidetalkin'.

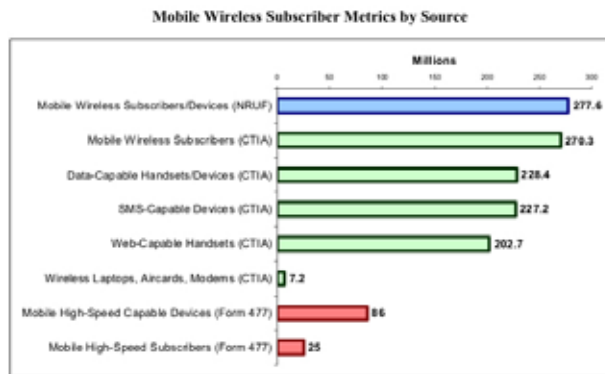
expert. But I care deeply about this stuff. I've invested countless hours and squandered hundreds of dollars to amass the knowledge that I hope to pass on in this issue of *Library Technology Reports*.

## Why Mobile?

Hopefully it's clear that I care about mobile computing. (Perhaps a little too much?) And if you're reading this issue of *Library Technology Reports*, I'd hope that you care about it as well, or at least have a passing interest. One thing that I learned in library school is that for the past thirty-plus years, libraries and librarians have perceived themselves as subject to near-constant technological upheaval and information revolution, largely due to the rise of microcomputing, desktop computing, and Internet connectivity. I'll discuss in this chapter why tech and industry prognosticators believe that the impact of mobile computing on our society and economy will dwarf these earlier innovations. Can we measure or predict exactly how this impact will be felt by libraries? Perhaps not, but key indicators point to profound implications for delivery of information, access to services, shifts in the demographics of connected users, and broadband access business models. Libraries are uniquely positioned to advocate for the responsible evolution of mobile connectivity, and I would argue are duty-bound to move aggressively into provision of library services in the mobile realm.

I'm sure your library is cash-strapped, underresourced, understaffed. Development of tools and services that target mobile likely seems a distraction, a drain on your time and attention. It might feel like it's the flavor of the month, blustery conference paper fodder that's unlikely to pay off in real service to users.

What evidence would provide a good indication that the day had come for your library to focus



**Figure 3**  
FCC statistics on mobile device ownership in the U.S.

concerted efforts on mobile services? If nearly all Americans owned cell phones? Maybe if a large percentage of those phone owners demonstrably used their device to access the Internet? Perhaps if smartphone sales began to approach sales of PCs? If major information service providers were shifting their focus from the desktop to mobile devices? If the trend turned away from mobile devices mimicking the functions of desktop computers, and instead desktops began to emulate mobiles? Maybe if there was evidence that traditional desktop connectivity wasn't reaching people who could be reached on their mobile devices?

If so, then that day is today.

## Mobile Device Ownership

The Federal Communications Commission (FCC) counted over 270 million mobile phone users in the United States in 2009.<sup>1</sup> According to the Pew Internet and American Life Project, as of mid-2010, 82 percent of American adults own a mobile phone or a mobile computing device that works as a phone (this statistic does not include laptop computers).<sup>2</sup> The percentage is higher for younger adults. Fully 90 percent of Americans aged 18–29 own a cell phone.<sup>3</sup>

The Educause Center for Applied Research (ECAR) surveys undergraduate students at U.S. colleges and universities each year about their ownership and use of technology in its *ECAR Study of Undergraduate Students and Information Technology*. In 2004, 82 percent of study respondents reported owning a cell phone.<sup>4</sup> In subsequent years that number rose so high that they have since ceased to bother asking.<sup>5</sup>

## Smartphone Sales

By the time you read this, the day that smartphone sales surpass PC sales may already have passed (figure



**Figure 4**  
Smartphone sales are poised to overtake PC sales (Original image: Dan Frommer, "Chart of the Day: Smartphone Sales to Beat PC Sales by 2011," *Business Insider* website, Aug. 21, 2009, [www.businessinsider.com/chart-of-the-day-smartphone-sales-to-beat-pc-sales-by-2011-2009-8](http://www.businessinsider.com/chart-of-the-day-smartphone-sales-to-beat-pc-sales-by-2011-2009-8) [accessed Jan. 4, 2011]).

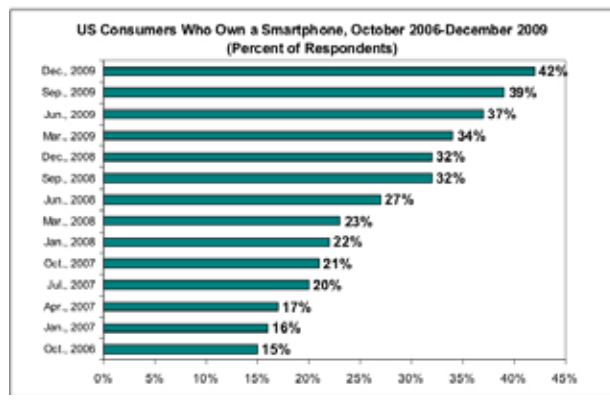
4). Industry watchers have variously pegged this inversion to occur anytime between 2010 and 2012. An RBC Capital analyst quoted by a *Fortune* magazine blogger predicts that between 2009 and 2012, the number of smartphone users worldwide will more than triple, from 165 million to over 500 million.<sup>6</sup>

The FCC reported that at the end of 2009, 42 percent of consumers owned a smartphone.<sup>7</sup> According to the FCC, smartphones accounted for 44 percent of total mobile phone sales in 2009, and for 50 percent of phone upgrades.<sup>8</sup> The FCC's definition of a smartphone is restrictive, however, as it counts over 228 million active mobile devices capable of receiving data service, and over 202 million active devices capable of browsing the Web.<sup>9</sup> Over 35 percent of U.S. adults now own phones upon which they can install software applications, according to Pew. That number does not include devices like the iPad or iPod Touch, which can use apps, but which don't function as a traditional cell phone.<sup>10</sup>

ECAR found that fully 62.7 percent of U.S. undergraduates report owning an "Internet-capable handheld device."<sup>11</sup>

## Mobile Internet Access

Users are taking advantage of the nonvoice connectivity provided by the current generation of mobile devices (figure 6). The Pew Internet and American Life project tells us that in 2010, 40 percent of adults in the United States report using their phone for Internet access, to send or receive e-mail, or for instant messaging. In 2009, that number was 32 percent.<sup>12</sup> A significant majority of young adults access the Internet from



**Figure 5**  
FCC statistics on smartphone ownership.

their phones, a full 65 percent according to Pew.<sup>13</sup> A comScore press release reported that just over 30 percent of American cell phone owners age 13 and older used their device's web browser in an average month in early 2010.<sup>14</sup>

Those mobile Internet users are not just casual users. As of May 2010, Pew reports that 55 percent of mobile Internet users were going online with their phones at least daily, and 43 percent used the mobile Internet several times a day (figure 7).<sup>15</sup> ECAR found that the frequency of mobile Internet use among undergraduates spiked in 2010. In 2009, just under half of undergrads who owned Internet-capable handheld devices used them to access the Internet weekly, and 29 percent did so daily. In 2010, 66.6 percent were online weekly, and 42.6 percent were daily users of the mobile Internet.<sup>16</sup>

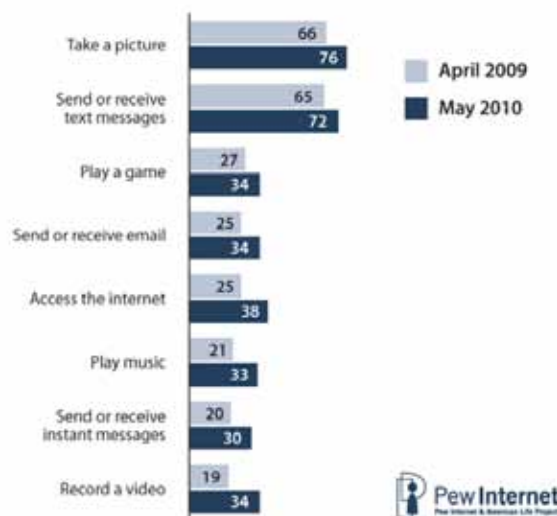
I suppose it should come as no surprise then that between 2007 and 2010, AT&T Wireless, the U.S. mobile service provider for the iPhone, reported that demand for mobile bandwidth increased by nearly 50 times. You read that right. A 4,932% increase.<sup>17</sup>

## Mobile versus the Desktop

I can hardly imagine the gigabytes of server space devoted to archiving library-related e-mail discussion threads in which debates have raged over the precise extent to which Google is good or evil, benevolent or creepy, friend or foe to libraries and librarianship. Regardless of your particular stance on these issues, I think it's clear that if we want to stay abreast of innovations in information services and delivery, we would be foolish not to watch Google closely.

Google has of course developed its own mobile operating system, Android, which I'll cover in more detail later. Beyond Android-specific mobile applications and services, Google has been very aggressive in creating best-of-breed web tools for a wide variety of mobile devices. And according to its CEO, Eric

The % of cell phone owners who use their phones to do the following



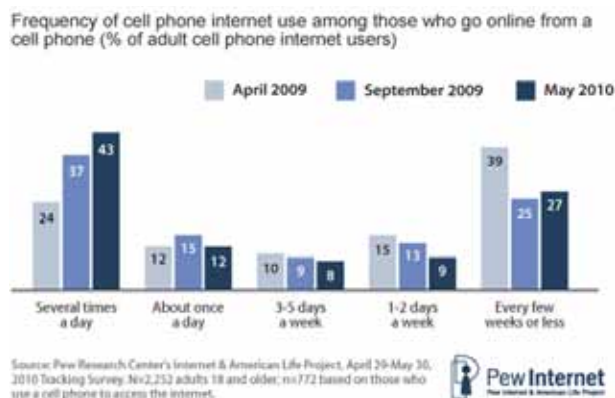
Source: Pew Research Center's Internet & American Life Project, April 29-May 30, 2010 Tracking Survey. N=2,252 adults 18 and older; n=1,917 based on cell phone users.

**Figure 6**  
The use of nonvoice phone applications has exploded in the last year.

Schmidt, mobile is now considered the search giant's first priority when developing new services. Speaking at Mobile World Congress in early 2010, Schmidt said that his engineers are now working on mobile implementations first, before versions optimized for desktop browsers. "We understand the new rule is 'mobile first' in everything. . . . Mobile apps are better apps," he said, according to eWeek.<sup>18</sup> PCMag quoted him as saying, "Every product announcement we've done recently—of course we'll have a desktop version—but we'll also have one on a high-performance mobile phone."<sup>19</sup>

The success of Apple's iOS device platform, the operating system that powers the iPhone, iPod Touch, and iPad, has exceeded the expectations of almost everyone outside the company's Cupertino, California, headquarters. iOS was born out of, and shares a great deal of underlying code with, Apple's OS X desktop operating system. At a recent event, CEO Steve Jobs outlined the ways in which Apple's mobile development is now informing their desktop computer operating system. The event was called "Back to the Mac," and at it Jobs and other Apple executives described how they were bringing the wildly successful App Store model from their mobile devices back to OS X 10.7, the new version of the Macintosh OS. Directly informed by the immersive full-screen applications developed for the iPad, many core applications in OS X 10.7 will take over users' screens, eliminating the menu bars and windows we've long associated with multitasking desktop computers.<sup>20</sup>





**Figure 7**  
According to Pew, more than half of cell phone Internet users go online daily from their mobile device.

## The Changing Face of the Digital Divide

Libraries have long been at the forefront of advocacy for increased broadband Internet access, particularly for the poor and for rural Americans. Mobile may not yet be the ideal solution for rural users, but the demographics of mobile Internet usage show encouraging signs of increased access among groups that have long been underrepresented among Internet users in the United States.

The report *Mobile Access 2010* from the Pew Internet and American Life Project notes that Latino and Black adults are more likely both to own mobile devices and to use them to access the Internet than their White peers (figure 8). While 80 percent of white adults own mobile phones, among African Americans and English-speaking Latinos the rate of ownership is 87 percent. Of all American adults with cell phones, 38 percent use them to access the Internet, but black and English-speaking Hispanic users far outstrip the average, at 46 percent and 51 percent respectively. Pew's survey did not have a Spanish-language option, so data on Spanish-speaking Latinos was not available.<sup>21</sup>

## The Day for Mobile Services Has Come

The evidence is compelling. The vast majority of Americans now own cell phones. Nearly half use them to access the Internet. Sales of smartphones have already or soon will surpass those of traditional PCs. Underrepresented groups are accessing the mobile Internet in impressive numbers. Google is developing for mobile first and the desktop second. Apple is in the midst of making its desktop computers behave more

	All adults	White, non-Hispanic	Black, non-Hispanic	Hispanic (English-speaking)
Own a cell phone	82%	80%	87%*	87%*
% of cell owners within each group who do the following on their phones:				
Take a picture	76	75	76	83*
Send/receive text messages	72	68	79*	83*
Access the Internet	38	33	46*	51*
Send/receive email	34	30	41*	47*
Play a game	34	29	51*	46*
Record a video	34	29	48*	45*
Play music	33	26	52*	49*
Send/receive instant messages	30	23	44*	48*
Use a social networking site	23	19	33*	36*
Watch a video	20	15	27*	33*
Post a photo or video online	16	13	20*	25*
Purchase a product	11	10	13	18
Use a status update service	10	8	13	15
Mean number of cell activities	4.3	3.8	5.4	5.8

Source: Pew Research Center's Internet & American Life Project, April 29-May 30, 2010 Tracking Survey. N=2,252 adults 18 and older, including 1,817 cell phone users. \* = statistically significant difference compared with whites.



**Figure 8**  
Demographic data on mobile device usage.

like its mobile devices. If your library, like mine (and every library I can think of), has been transformed by desktop computing and Internet access, now is the time to take action and be proactive in providing robust services to mobile users.

## Notes

1. Federal Communications Commission, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Mobile Services, 14th report (FCC 10-81), (Washington, DC: FCC, May 20, 2010), 92, [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-10-81A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-81A1.pdf) (accessed Jan. 4, 2011).
2. Amanda Lenhart, Cell Phones and American Adults (Washington, DC: Pew Research Center, Sept. 2, 2010), 2, <http://pewinternet.org/Reports/2010/Cell-Phones-and-American-Adults.aspx> (accessed Jan. 4, 2011).
3. Aaron Smith, Mobile Access 2010 (Washington, DC: Pew Research Center, July 7, 2010), 5, [www.pewinternet.org/Reports/2010/Mobile-Access-2010.aspx](http://www.pewinternet.org/Reports/2010/Mobile-Access-2010.aspx) (accessed Jan. 4, 2011).
4. Robert B. Kvavik, Judith B. Caruso, and Glenda Morgan, ECAR Study of Students and Information Technology, 2004: Convenience, Connection, and Control (Research Study 5, 2004), (Boulder, CO: Educause Center for Applied Research, 2004), cited in Shannon D. Smith and Judith B. Caruso, "Technology Adoption and Ownership of IT," chapter 4 of ECAR Study of Undergraduate Students and Information Technology,

- 2010 (Research Study 6, 2010), (Boulder, CO: Educause Center for Applied Research), 41, <http://net.educause.edu/ir/library/pdf/ers1006/rs/ers10064.pdf> (accessed Jan. 4, 2011).
5. Smith and Caruso, "Technology Adoption," 41.
6. Mike Abramsky, quoted in Philip Elmer-DeWitt, "Abramsky: Apple, RIM Could Triple Revenues by 2012," Fortune magazine website, Apple 2.0 blog, Aug. 18, 2009, <http://tech.fortune.cnn.com/2009/08/18/abramsky-apple-rim-could-triple-revenues-by-2012> (accessed Jan. 4, 2011).
7. FCC, Annual Report, 92.
8. Federal Communications Commission, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Mobile Services, 14th report (FCC 10-81), (Washington, DC: FCC, May 20, 2010), 92, [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-10-81A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-81A1.pdf) (accessed Jan. 4, 2011).
9. Ibid., 16–17.
10. Ibid., 92.
11. Kristen Purcell, Roger Entner, and Nichole Henderson, The Rise of Apps Culture (Washington, DC: Pew Research Center, Sept. 15, 2010), 2, [www.pewinternet.org/Reports/2010/The-Rise-of-Apps-Culture.aspx](http://www.pewinternet.org/Reports/2010/The-Rise-of-Apps-Culture.aspx) (accessed Jan. 4, 2011).
12. Smith and Caruso, "Technology Adoption," 41.
13. Smith, Mobile Access 2010, 2.
14. Ibid., 5.
15. comScore, "comScore Reports March 2010 U.S. Mobile Subscriber Market Share" (press release, May 6, 2010, [http://comscore.com/Press\\_Events/Press\\_Releases/2010/5/comScore\\_Reports\\_March\\_2010\\_U.S.\\_Mobile\\_Subscriber\\_Market\\_Share](http://comscore.com/Press_Events/Press_Releases/2010/5/comScore_Reports_March_2010_U.S._Mobile_Subscriber_Market_Share) (accessed Jan. 4, 2011).
16. Smith, Mobile Access 2010, 17.
17. Smith and Caruso, "Technology Adoption," 47.
18. Luke Wroblewski, "Mobile First," May 28, 2010, YouTube video on LinkedIn Tech Talks channel, [www.youtube.com/watch?v=NjE\\_Or4VlIU](http://www.youtube.com/watch?v=NjE_Or4VlIU) (accessed Jan. 4, 2011).
19. Eric Schmidt, quoted in Nathan Eddy, "Google CEO Eric Schmidt at MWC Puts Mobile First," Feb. 16, 2010, eWeek.com website, Midmarket News, [www.eweek.com/c/a/Midmarket/Google-CEO-Eric-Schmidt-at-MWC-Mobile-First-694942](http://www.eweek.com/c/a/Midmarket/Google-CEO-Eric-Schmidt-at-MWC-Mobile-First-694942) (accessed Jan. 4, 2011).
20. Eric Schmidt, quoted in Chloe Albanesius, "Google's New Rule: Mobile First," Feb. 16, 2010, PCMag.com website, [www.pcmag.com/article2/0,2817,2359752,00.asp](http://www.pcmag.com/article2/0,2817,2359752,00.asp) (accessed Jan. 4, 2011).
21. "Back to the Mac," Apple Special Event, Oct. 20, 2010, [www.apple.com/apple-events/october-2010](http://www.apple.com/apple-events/october-2010) (accessed Jan. 4, 2011).
22. Smith, Mobile Access 2010, 4.