

THINGS YOU SHOULD KNOW ABOUT... MOBILE IT

Scenario

After several semesters of discussing what they consider to be the “writing on the wall,” Don, the CIO, and Earl, the vice president for IT, agree to take the institution in a new direction regarding mobile IT. Usage stats show that campus users access most services from mobile devices and that this shift is intensifying. Having heard the question “Why doesn’t *such and such* work on my mobile device?” countless times, often from students but increasingly from faculty and staff, the pair implement a program they call Natively Mobile. Rather than redesigning services to work on mobile devices, under the new program, services are built to work on mobile devices from the outset.

The Natively Mobile program forces Don’s staff of developers to question long-held assumptions and allows them to introduce new features. With limited real estate on a mobile screen, the developers focus on the most important functions and scale back the graphics. At the same time, they begin to incorporate tools that use the GPS and touch-screen features of many mobile devices. The university’s library services, for instance, allow mobile users to text-message a reference librarian for assistance, place a hold on a resource, pay a fine for an overdue book, and get guided directions on a map from where they currently are to the proper library branch and even to the particular aisle where the book is. Don’s staff work with developers in distributed units around campus to ensure that all of the university’s mobile services work together, and they press their CMS vendor to develop a toolkit that formats its applications for mobile devices.

In addition to supporting a growing number of academic uses of mobile devices, the Natively Mobile program results in a clearer sense of which services and functions are most valuable—and of how to deliver them efficiently. Despite the additional security concerns of having so much information on a mobile device, campus users are excited about the expanded services, and they aren’t shy about asking for even more. The program gives Don and his staff the opportunity to rethink IT security policies and accessibility issues, and improvements are made in both of these areas. The program also builds sufficient staff expertise in mobile development that Don is confident in his staff’s ability to stay on top of the ongoing changes in mobile IT.

1 What is it?

The evolution of computer and telecom technology is ushering in an era of mobility. Smaller and more powerful portable devices, expanding coverage for wireless and cellular networks, and a flourishing pool of applications that take advantage of these technologies promise that one day, most things you can do at a desktop computer—and some things that you can’t—will be possible from a mobile device. Information technologies pervade daily life, and many of them have already migrated to mobile platforms. Cell phones offer untethered voice communication, iPods and similar devices store vast collections of music and videos, e-readers let users carry thousands of pages of books on a sub-1-pound device, and tools such as the BlackBerry have put mobile e-mail into the hands of millions of users. These and other examples testify to the appetite for mobile technology, and mobile functions are increasingly merged onto a single device, primarily in the form of smartphones but also netbooks, tablet computers, and emerging classes of hardware. Mobile IT both reflects and drives the convergence of applications and functionality on smaller and smaller devices. The notion of mobile IT is also tied to issues such as cloud computing and federated identity, which help enable secure access to IT tools and resources from remote locations and multiple devices.

2 How does it work?

Mobile devices encompass a wide array of sizes, designs, and capabilities. They use cellular networks, Wi-Fi, or both, and many have touch-screen interfaces. Operating systems vary, and support for software such as Java and Flash is mixed. Just as there isn’t a one-size-fits-all device, so too do current and emerging examples of mobile applications span a wide range. Some services—a campus directory, for instance—function similarly on various mobile devices and have the same look and feel as on a desktop computer. For other services—a news site, perhaps—graphics are pared down, even as functionality is enhanced to take advantage of the flexibility of mobile devices. Most mobile devices have GPS functionality, and location-aware applications can, for example, point a user to the closest lab with an available computer. Leaders of mobile initiatives face a matrix of decisions regarding which applications and services to make available and how best to build them. Many campus services require users to log in, and one of the key considerations is whether an institution will offer mobile services that require authentication. Doing so can be especially valuable for users, but it involves additional effort and introduces privacy and security concerns—making the course catalog available is one thing; providing mobile access to a student’s schedule and grades is another. Mobile applications can be built using device-specific toolkits, often resulting in more functionality, but applications that use browser software work on a wider range of mobile devices.

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3 Who's doing it?

College and universities offer many types of information and services online, and many are good candidates for mobile IT. Aside from numerous academic uses, institutions have undertaken initiatives in areas of administration, library services, and campus life. Initial forays into mobile IT often involve generic information—such as directories, campus maps, events calendars, shuttle schedules, dining hall menus—that is available on the institution's primary home page. Other projects offer mobile library services such as catalog searches and reference desk help. Institutions that implement mobile authentication can offer administrative services such as course registration and drop/add, financial aid support, and access to grades, schedules, and other services in ERP and course management systems. A mature mobile IT initiative might provide access to the institution's portal and all of its user-specific features. Not to be overlooked is communication. Mobile IT has its roots in phone service, and mobile devices are becoming a primary tool for students, faculty, and staff to communicate through voice, text messaging, e-mail, and chat. Having a single point of convergence for these several channels of communication presents an opportunity for institutions to integrate messaging services, including emergency notifications.

4 Why is it significant?

Ownership of cell phones is approaching ubiquity, with growing numbers of smartphones and sophisticated mobile devices. When the iPhone was introduced, it broke new ground in convergence for mobile devices, and new products continue in this direction. People today carry devices that feature phones, digital cameras (including video), MP3 players, e-mail and text messaging, and mobile browsers, and users expect even greater functionality tomorrow. Mobile devices are leading a move to touch interfaces, which have considerable implications for application design and function. Because mobile IT is fast becoming a part of some professional practices, an institutional choice not to pursue mobility is increasingly untenable. Student expectations for mobility are rising, and mobile IT efforts are an important part of keeping an institution's online services competitive. At the same time, the range of devices, formats, and tools—and the frequency with which they change—presents formidable challenges for institutions to navigate the many decisions about how and where to devote resources to mobile IT for maximum benefit.

5 What are the downsides?

Although any institutional service might be converted to work on mobile devices, the restrictions inherent in today's devices rule out some of those services. Converting to mobile IT is not simply a process of miniaturization, and many institutional IT staffs lack expertise in redesigning websites or applications for a mobile context. As a result, although many institutions are dipping their toes into the waters of mobile IT, best practices don't exist to serve as a guide. Until (and unless) standards emerge, mobile IT initiatives require duplicative effort to accommodate the many devices and formats. As with any digital resource, accessibility for

users with disabilities is a concern. One area of great potential with mobile IT is in location-aware applications, but whenever computer systems know where users are, privacy and security concerns arise. Institutions that pursue such applications should develop a policy that outlines what data are collected, as well as how, and under what circumstances, they can be used; such a policy might also allow users to opt-out of location-aware applications.

6 Where is it going?

Colleges and universities will continue to convert applications and services to mobile formats, generally at a cautious pace. As best practices emerge—particularly if they allow convergence among efforts to accommodate different devices—mobile IT initiatives could see significant expansion in a short time. Vendors will increasingly offer their products and services in mobile formats. Institutions will seek to understand how to integrate mobile IT effectively into campus culture, and development is likely to accelerate around location-based mobile IT services and the capabilities of touch interfaces. Aside from academic uses, students will soon be able to use mobile devices to do everything from registering for classes and paying tuition to meeting with advisors, reserving a tennis court at the rec center, requesting official transcripts, and getting personal assistance from campus police, health services, or the IT help desk. Those same devices might also become the primary delivery channel for emergency notifications, updates about network outages, and other timely information.

7 What are the implications for higher education?

The role of mobile IT will continue to take on new dimensions as technologies mature and converge, and higher education will both guide and benefit from those developments. Given that mobile IT is working its way into many professional activities, colleges and universities have a responsibility to develop learning environments that model those kinds of practices. This has broad implications for using mobile IT in teaching and learning, but it also extends to a wide variety of nonacademic applications. Mobile IT can develop into a specialized field of study, and some institutions already offer courses on development of mobile applications. In one case, a doctoral student at Penn State University developed an iPhone application that vocalizes words or phrases that users type, similar to text-to-speech machines used by people who have impaired ability to speak due to conditions such as autism, strokes, or cerebral palsy. In contrast to these machines, which can cost thousands of dollars and are not portable, the iPhone app costs less than \$200.

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