Mobile Apps

Time-to-Adoption Horizon: One Year or Less

There is a revolution that is taking place in software development that parallels the changes in recent years in the music, publishing, and retail industries. Mass market is giving way to niche market, and with it, the era of highly priced large suites of integrated software is giving way to a new view of what software should be. Smartphones including the iPhone and Android have redefined what we mean by mobile computing, and in the past three to four years, the small, often simple, low cost software extensions to these devices — apps — have become a hotbed of development. New tools are free or sell for as little as 99 cents, and anyone can be a developer. A popular app can see millions of downloads in a short time, and that potential market has spawned a flood of creativity that is instantly apparent in the extensive collections available in the app stores — themselves a new way of delivering software that reduces distribution and marketing costs significantly. Apple’s app store opened in July 2008; Google’s followed in October of that year. Since then, simple but useful apps have found their way into almost every form of human endeavor.

Overview

With the advent of mobile apps, the way we think about software itself is changing, and whole industries are adjusting to a new world in which sophisticated but simple tools routinely sell for 99 cents. In contrast with the model for desktop applications that stack feature upon feature in a one-size-fits-all approach, mobile apps are small, simple, and elegant. They generally do one thing, or a small list of tightly related things, extraordinarily well. They cost so little, trial versions are unnecessary, and it is simple to outfit a tablet or mobile phone with exactly the feature set you want for far less than you would pay for typical desktop software. Both Apple and Google have developed extensive collections of apps, and adding to your set is as simple as it is inexpensive.

The app software model is clearly working: ABI research shows that over 18 billion apps had been downloaded in the Apple marketplace by October 2011, and over ten billion in the Android marketplace by December the same year. Those numbers just scratch the surface of the anticipated growth of mobile apps. A recent study by Distimo predicted that 44 billions apps will have been downloaded by 2016 — or, around seven apps per person across the entire population of the earth.

The assortment of available apps is wide-ranging, from those that extend the camera or sensors on the device (“Siesmometer”, “Hipstamatic,” and “360”); to new forms of newspapers and magazines (“McSweeny’s”); to games that make use of gestures in clever ways (“Angry Birds”); to new forms of mapping tools (“StarWalk”); to apps that make restaurant recommendations based on the user’s location (“Urbanspoon”). What makes apps as a category interesting are two key factors: the first is that there are so many to choose from — one can find an app to support almost any interest or endeavor, and the possibilities expand every day. The second is that they are inexpensive — rare is an app on someone’s mobile that costs more than $1.99. Taken together, the result is that it is both easy and economical to completely customize a device to suit one’s own interests.

The best apps are tightly integrated with the capabilities of the device itself, using location data, motion detection, gestures, access to social networks, and web search, to seamlessly create a full-featured experience. As just one example, users are now able to not only read an article foregrounded because of its relation to the user’s location, but also to share it with their social networks, make comments, swipe over an image to see
more, and store specific content to read at a later date — all within a typical newspaper app.

In the last year, new additions to mobile operating systems have made it easier for newspapers, periodicals, and other subscription-based publications to migrate to mobile devices. Print and online publications, such as *Time*, *Wired*, or *Mashable*, provide users with new material on a regular basis, sometimes sending the user alerts when there is a new edition, breaking news, or a story that is relevant to the user’s interests. Mobile apps designed for tablets have given many traditional print-based publications a new life, and new tools, such as iBook Author, are making it very easy for anyone to create and publish media-rich interactive pieces. The newest version of iBook is optimized for viewing interactive textbooks, and it seems that the e-readers for the Kindle and Android platforms are heading the same direction.

The mobile app marketplace reflects an expanding world of resources that fits into the palm of a hand. While the adoption of apps has been especially apparent in the consumer sector, there has also been a great interest in apps that illustrate scientific and related concepts via tools that also have practical application. Apps that support learning are commonplace. Fun, easy-to-use tools can be found for budding chefs, astronomers, physicists, artists, musicians, book lovers, and writers — and all of them are designed to go with you anywhere and to be available with a tap on a screen. The higher education sector is beginning to capitalize on this by integrating mobile apps into the curriculum and designing their own to encompass course materials and campus maps.

Relevance for Teaching, Learning, or Creative Inquiry

Mobile apps embody the convergence of several technologies that lend themselves to educational use, including annotation tools, applications for creation and composition, and social networking tools. GPS and compasses allow sophisticated location and positioning, accelerometers and motion sensors enable the apps to be designed and used in completely new ways, digital capture and editing bring rich tools for video, audio, and imaging. Mobile apps encompass it all, and innovation in mobile device development continues at an unprecedented pace.

The potential of mobile computing is already being demonstrated in hundreds of projects at higher education institutions. Since 2009, Abilene Christian University has provided each student with an iPhone or iPod Touch, in addition to offering professors mobile training and support. The institution has been developing apps to extend learning outside of the classroom and documenting the results along the way in an annual mobile learning study. At the most basic level, many universities and colleges have developed map and directory apps for current students to navigate campuses and for prospective students to take virtual tours or to enhance physical tours.

As institutions begin to understand the potential of apps, they have built in features for students to check their grades, or to update them with sports scores or breaking campus news. Ohio State University’s mobile app includes a campus directory, plus library resources and personal information that is tied to each student’s ID. Higher education institutions have also been designing apps that enhance the classroom learning experience. The University of Warwick in the UK created an app that quizzes medical students on the human anatomy and various laboratory scenarios using video and audio clips.

While institutions are rapidly developing their own apps, they are also making use of external ones. Popular apps include those that help students and educators stay organized and exchange their findings and ideas with peers. Many apps, when coupled with digital textbooks, ease the transition for students who are accustomed to print books. For example, “Good Reader” is an app
that enables users to highlight, annotate, sketch, and add footnotes to e-books — just as they would in the print version. “JotNot Pro” is another app that allows professors to digitally distribute course documents and students to instantly scan printed documents and store them on their device.

As mobile apps become an important fixture in the business world, many universities and colleges have deployed special courses and programs to teach student entrepreneurs how to design, develop, and market them. Vanderbilt University founded the Vanderbilt Mobile Application Team in 2009 to prepare their students for high technology jobs. Since the group was founded, participating students have developed three award-winning apps. All of their work is open source, and can be used as a learning model at other institutions. At the University of Wisconsin-Madison, a faculty associate in the School of Journalism and Mass Communication has incorporated app development into her magazine publishing class, recognizing that mobile devices are taking on a prominent role in the magazine industry.

The increasing availability of network access means that the growing capabilities of mobiles are available to more students in more locations each year. Educational institutions around the world are investing in the infrastructure that supports mobile access, sponsoring programs that provide devices to students who do not already have them, and commissioning custom mobile applications to serve their communities.

A sampling of applications of mobile apps across disciplines includes the following:

> **Multimedia Production.** Students in the Instructional Systems program at Penn State University are developing a mobile video app for video ethnographers to record and annotate video in the field. The app allows users to add, edit, and delete text annotations displayed alongside the video footage. go.nmc.org/waxvi

> **Project Management.** Using the mobile app “MindJet,” students can create mind maps and organized outlines in addition to attaching notes to specific topics or automatically arranging them based on common themes. The app has built in social features that allow students to share their project plans with each other. go.nmc.org/qnquw

> **University Services.** Professor Catheryn Cheal at Oakland University, Michigan sends her students to five specific campus locations with the “SCVNGR” app on their smartphones. They answer questions about visual rhetorical space into their phone at each site. Once back in the classroom, they have the background to write their essays in a learning management system. go.nmc.org/hochw

### Mobile Apps in Practice

The following links provide examples of mobile apps in use in higher education settings:

**Berkley Mobile International Collaborative**
go.nmc.org/pramk

In the Berkeley Mobile International Collaborative, student-created mobile apps will be judged based on business model and utility, with ten finalist university teams competing in Barcelona.

**The Cleveland Historical App**
go.nmc.org/aeue

“Cleveland Historical” is an interactive and GPS-enabled app, providing historical information on specific sites within the city in the form of images, audio, and video clips. “Cleveland Historical” is curated by the Center for Public History and Digital Humanities with stories contributed from community members, teachers, professors, and students.

**iPrinceton**
go.nmc.org/oadcp

Princeton University’s free “iPrinceton” app enables users to catch up on athletic and academic news, browse a full library catalog, and connect to the university’s social media pages. The app also connects with Blackboard for direct course support at any point.
Stanford University's iPhone and iPad Apps Course
go.nmc.org/tvlvs
Lectures and slides from Stanford's iPhone and iPad application development course can now be freely accessed online through iTunes U. The appearance of the course material made iTunes history with one million downloads by the seventh week.

The University of Michigan's Mobile Apps Center
go.nmc.org/sewzg
University of Michigan's Mobile Apps Center brings together instruction and app building resources to allow students and faculty to create and distribute useful apps to the U-M community.

University of Virginia iPhone and Android Apps
go.nmc.org/xaess
The University of Virginia has developed its campus app through WillowTree apps. Augmented reality features allow users to personalize their maps. The app has many components useful for alumni too, allowing them to follow sporting events live and easily connect with UVA clubs and contacts.

For Further Reading
The following articles and resources are recommended for those who wish to learn more about mobile apps:

7 Things You Should Know about Mobile App Development
go.nmc.org/velrd
(EDUCAUSE, 19 April 2011.) This guide provides higher education institutions with helpful information to take into consideration when building an app, including accessibility standards and enterprise system integration opportunities.

Can the iPhone Save Higher Education?
go.nmc.org/abuoc
(John Cox, NetworkWorld, 23 March 2010.) Exploring the effect of digital devices for teaching and learning, Abilene Christian University has focused on mobile phones and how they are changing the classroom. The lecturer to student model is becoming a more collaborative and interactive model, now that instructors and students have ubiquitous and equal access to information.

How to Build a University Mobile Application: Best Practice and Insight
go.nmc.org/qnbcv
(Karen Eustice, The Guardian, 8 December 2011.) This article compares the different avenues universities are taking in creating and updating their mobile apps, showing the efficiency and reasoning behind each option from the developer’s perspective.

Smartphones on Campus: the Search for ‘Killer’ Apps
go.nmc.org/wskke
(Jeffrey R. Young, The Chronicle of Higher Education, 8 May 2011.) There is no one size fits all app because diversity in professors and courses leads to mobile apps being used in varying degrees and manners. This article explores different examples of apps benefiting professors and students, and how they are providing links from the classroom to the community.

Taking Mobile Applications Into the Cloud
go.nmc.org/zzrut
(Mary Grush, Campus Technology, 31 August 2011.) Because mobile devices are limited in their capabilities, researchers are looking to resource-rich cloud-based services that, when integrated with mobile apps, will expand the depth of information mobile phones can access and the range of their function.

University Leverages Mobile App to Keep Students Connected
go.nmc.org/ehjiw
(Jeff Goldman, Mobile Enterprise, 17 October 2011.) This article on Indiana State University’s mobile app powered by Pryxsis Mobile describes the challenges and decisions that were a part of the app building process, as well as marketing and monitoring the finished product.