MOBILE APPLICATIONS FOR HIGHER EDUCATION

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ABSTRACT

Applications for mobile devices are impacting numerous industries and interest groups. From mobile blogging ("moblogging") to so-called "bluejacking," mobile devices have become an institutionalized facet of advanced societies. However, within one industry – higher education – mobile applications remain largely undeveloped. Although, in the wake of the Virginia Tech tragedy (2007), SunGard implemented capabilities for colleges and universities to communicate with students using text messaging, such developments are years behind those of other industries.

This paper advances several ideas for expanding the use of mobile phones within higher education. For both instructors and administrators, mobile applications can serve to enhance students' learning experiences, streamline communication processes, and add ease and efficiency to the recruitment of prospective students.

MOBILE AS A WEB PLATFORM

The first key to understanding the scope of mobile applications is to realize that mobile phones are – unto themselves – tools for browsing the World Wide Web. In addition, the fact that there are 2 billion mobile users around the world (versus only 1.2 billion computer users) underscores its importance as a medium for attracting prospective students.

As of August 2007, however, there are no universities or degree awarding programs with a website designed for downloading on a mobile device. This is especially problematic given the increasing numbers of "smart" (i.e., web-accessible) phones being sold to consumers both in the United States and abroad. (In 2006, for example, twice as many smart phones were shipped vis-à-vis standard devices.) In addition, prospective students in various industries, including pharmaceutical marketing, insurance, and other financial services, are widespread users of such smart phones. The ability – and willingness – of any university to develop a web platform for mobile users would give that school a discrete competitive advantage compared to its peer institutions.

Furthermore, mobile websites can be designed and developed with relative ease. The key feature of a mobile website is that uses a "fluid" (as opposed to "fixed") template. In other words, the images are designed to shrink or expand to neatly fit the screen size of the mobile device. In addition, text is wrapped at the end of each line, such that left-to-

right scrolling becomes unnecessary. The price of such functionality, however, is that the design elements on mobile websites must remain simple. In other words, developers of such websites must be cognizant of the fact that images may appear skewed when adjusted for screen size. Thus, the best mobile websites are those that are text-driven (which, at the end of the day, also helps with search engine optimization).

Other applications may include dynamic forms to request information and/or to complete an online application. To develop any web application for mobile devices, however, three (2) additional criteria must be met:

1. **Navigation must be simple and intuitive**: As opposed to large computer screens and ergonomic keyboards, users of mobile devices face a number of constraints when surfing the web. Small screens, and the use of a stylus, militate against the use of advanced navigation functionalities such as "rollover" or "pop-out" menus.
2. **Pages must be small in size**: Given the slow speed of mobile downloads (as of August 2007), the ideal size for any web page is less than 50 kb. Any larger, and the time required to complete the download takes away from the user experience (and tests the patience of your viewer). Once again, the point is to limit the number of images in lieu of short and effective content.

CLICK TO CALL

Nearly every website is limited in terms of the *type* of hyperlinks available to web surfers. This is, of course, the reason that the World Wide Web exists, i.e., the "web" consists of a complex series of links among websites and computer servers. Today, however, another type of hyperlink is possible—one that "links" a web user to a telephone number at the company whose website is being viewed. So-called "click to call" websites prevent the need to manually dial a telephone number displayed on a conventional website (or to send an email). Rather, users of mobile devices can initiate the call via the website itself, and interact with a live person to get answers to their questions.

Search engines have already adopted this technology in the form of search engine marketing (i.e., the "pay per click" advertisements generally displayed on the right side of a search engine). And while few websites have incorporated this feature (those that do generally use an Internet phone service called "Skype"), applications are limitless.

Within higher education, for example, mobile users should easily be able to call admissions counselors by clicking a telephone link. Admissions decisions – often displayed via secure login – could also be made available using a fully-automated, password-prompted, voiceover system. In addition, although not currently in use, it is fully possible to use telephone hyperlinks to conduct multi-user conference calls (similar to a "chat room") for prospective students, sports team enthusiasts, or any *student group*.

EMERGENCY NOTIFICATION

Using mobile devices for emergency notification (i.e., via text messaging) is the only application in this paper that is currently in practical use. In the wake of the Virginia Tech shootings, many universities have begun to use text messaging as a means of communicating with students. The reasons for this are simple:

1. Mass emailing requires time that is often not available during emergencies. To send an email to the entire student body of a "large" university would typically take several hours, depending on the number of servers that the school uses, and the speed of its network. By contrast, the infrastructure of mobile providers such as Verizon, T-Mobile, AT&T, and Sprint/Nextel are fully capable of processing thousands of text messages at a moment's notice.
2. To the extent that students are not constantly in front of their computer terminals, they are typically always in the possession of their mobile phones.

Accordingly, the speed with which text messages can be sent, and the likelihood that students can "access" the message regardless of their whereabouts, make mobile phones an essential medium for communicating vital information. However, school administrators should be cautious about sending text messages for any reason other than emergencies. The reason is that – as opposed to emails – text messages are a cost to the end user (in the form of either direct fees or a debit to an account with a fixed number of messages).

That being said, students could be given the option to "opt in" to receiving non-emergency related messages. To the extent that many people receive traffic reports and weather conditions via text message, colleges and universities could – theoretically – make *any* information available via text, such as a student's final grade once his/her professor submits it to the University Registrar. Schools could also text the results of their collegiate sports teams, or notify a student when his/her library book becomes overdue.

MOBILE AS AN ACCESS PLATFORM

In addition to the academic and cerebral uses for mobile devices, there are also practical applications that can – and should – be used to integrate various campus systems, and to consolidate the number of "tools" needed to live on a college campus.

Long a feature of Japanese mobile networks, radio frequency identification (RFID) tags can be inserted into mobile phones with endless applications including, but by no means limited to:

1. **Payment for Goods and Services**: Mobile phones can be linked either to checking accounts, or simply credited with a number of dollars via existing campus systems. Rather than carrying separate cards for laundry services or meal plans, each task could conceivably be completed by integrating RFID technology into the cell phones themselves.

2. **Access to Buildings**: For better or worse, tight security is required on 21st century college campuses. However, student ID cards are routinely lost, left behind, or damaged. But because students rarely travel without their mobile phones (and are less likely to misplace them – versus ID cards – given their high value), an additional use for such RFID tags is to grant (or limit) access to various campus buildings based on the particular permissions assigned to each student.
3. **Library Borrowing Privileges**: An extension of the previous analysis (i.e., that students be notified via text message that a book is overdue), mobile phones could be used to remove books from the library. To do this, a database would be needed to link the RFID account number (i.e., its serial number) with the student in question (i.e., through his/her university ID). In addition, the web-accessible, RFID phone could subsequently provide real-time access to the student's library account. For example, it could display how many books have been checked out, and when is each one due.

Although installation of RFID tags – and the required modifications to cellular networks– are beyond the ability of colleges and universities, capabilities such as these are not too far into the future (and, as stated previously, they already exist in Japan, South Korea, and Taiwan).

As a result, given the capabilities that RFID hardware makes possible, it is both necessary and prudent to conceive of specific applications of this technology in various industries. Within higher education, those possibilities seem bound only by the limits of our imagination. With students constantly seeking new ways to do "old things," RFID-laden phones can take college campuses to a new level of inter-connectedness. In the 1980s and 1990s, higher education was the first industry to deploy Internet technology en masse (recall the early days of campus intranets). Today, smart phones have provided us with Internet access in the palm of our hands. Our vision of tomorrow, however, involves using these same devices to accomplish more and more tasks in our daily lives.

CONCLUSION

Mobile devices have all of the functional capabilities of modern computers, yet their applications in various industries (and in our daily lives) are only beginning to be understood. The fact that we can carry our phones anywhere, whereas our computers we cannot, has enormous implications for leveraging such technology in new and practical ways.

The higher education market is ripe for such developments. Because students are largely "early adopters" of new technologies, a better understanding of mobile applications will likely begin in the minds of today's (and tomorrow's) university community.

To start this process, university administrators should explore the possibilities of those ideas that have *already* been conceived. Whether we use mobile devices as a web platform, or as a simple means of notifying students of ongoing emergencies, the proliferation of mobile devices marks a paradigmatic shift in the ways that we

communicate. Click-to-call technology offers new meaning to “inter-connectedness.” In addition, the limitless applications of RFID tags may very well redefine how we use phones in everyday life.

The purpose of this paper is to shed light on four (4) such ways that mobile technology can be leveraged on college campuses. Its larger goal, however, is to jumpstart the process of brainstorming new and *even better* ways of using mobile devices as the technology-of-record for higher education.