Term Paper: Mobile Computing and Social Networks

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Abstract

This term paper will assess the effectiveness and efficiency mobile-based applications provide to capture geolocation data and customer data based on case studies of State Farm insurance, Mitek insurance company and Lufthansa airlines (Deutsche Lufthansa AG). The specific benefits provided by these mobile apps regarding the ease of access to customers’ data will also be discussed. Furthermore, this paper discusses the real and the perceived challenges of developing applications that run on mobile devices because of the small screen size as well as potential Adobe® supported software solutions and “responsive design” methods for solving these challenges. Specific methods for how IT departments and mobile app developers and designers can decide on supporting different mobile platforms like the Apple iPhone, Apple iPad, Windows Phone, or Android supported smartphones and tablets will be discussed. Other topics addressed in this paper include the issue of “high availability” for mobile app users’. This paper will also address how this technical issue of “high availability” can be solved by potentially utilizing Amazon’s AWS and EC2 services. Lastly, this paper will address the high rate of hacking for mobile devices as well as ways to make mobile devices more secure.

Keywords: Responsive design, Adobe Dreamweaver CS6, Adobe PhoneGap, high availability, mobile apps, smartphones
Mobile Computing and Social Networks

In regards to the issue of how effective and efficient mobile-based applications are at capturing customer data and tools that utilize geolocation technology, let us begin with the current state of smartphone app usage and specific processes made in correlation with mobile devices. Experts predict that by 2020 there will be more than three billion mobile devices making 450 billion mobile transactions. (Chordas, 2012) Because of this key set of projections made by experts concerning future trends in the mobile space, many companies are taking note and preparing to use mobile based apps using tools like geolocation and customer data usage to their advantage. For example, in the insurance sector, companies like State Farm are creating apps that allow young drivers and parents to study driving trends, utilizing young drivers’ smartphones with mechanisms like accelerometers. Indeed, State Farm just released its Driver Feedback app for use on Android devices. (Chordas, 2012) However, State Farm did not just focus on the Android smartphone platform for publishing their apps, the Apple iPhone was also part of the focus regarding their market expansion.

State Farm published this unique app for Apple iPhones to engage broader smartphone markets. And [i]n 2011, the carrier launched an application for iOS devices that tracks driving behavior. This app as Chordas quips, offers teen drivers and their parents access to nonbiased feedback so families can have constructive conversations about safe driving. (2012) Furthermore, [w]hen activated during car trips, a mobile device's accelerometer measures acceleration, braking and cornering. All measurements are then put through the app's special algorithm and gives users a score out of 100, along with a log of potentially dangerous driving activities. (Chordas, 2012) The benefits of the State Farm app is that users can also record trips and get feedback on driving performance from their last five trips, map where dangerous activities
occurred and compare scores with other drivers. (Chordas, 2012)

Other insurance companies are using the smartphone photo capturing ability to record property and casualty claims such as the Mitek insurance company. Indeed, Mitek Systems' suite of mobile imaging solutions allows property/casualty carrier customers to use their smartphone or tablet cameras to conduct secure mobile-imaging transactions. (Chordas, 2012) The true benefit is that their smartphone can work with Mitek to bypass the laborious process of having to use a desktop or laptop computer to file or document a claim. Moreover, Mitek's "Mobile Photo Quoting" allows users to take photos of their driver's license, insurance card and other documents to send directly to their carrier when buying a car. (Chordas, 2012) Although insurance companies are creating novel and efficient ways to utilize smartphone apps to process tasks that would have been done with a scanner and desktop PC less than three years ago, airline companies are getting into the fray by utilizing smartphone apps and geolocation tools as well.

Indeed, Lufthansa airline company (Deutsche Lufthansa AG) offers users the ability to download Lufthansa’s smartphone app to utilize social networks. More specifically, with the new Blue Legends app from Lufthansa, passengers can share information about their journey with others via social networks. Blue Legends gives users the opportunity to virtually "check in" to airports, lounges and Lufthansa flights through foursquare. (Blue Legends: New Lufthansa app connects frequent flyers; App enables virtual "check-ins" at Lufthansa locations worldwide, 2012) Furthermore, Blue Legends, one of the first ten so-called foursquare Connected Apps, is built around the location-based social network foursquare. (Blue Legends: New Lufthansa app connects frequent flyers; App enables virtual "check-ins" at Lufthansa locations worldwide, 2012) To clarify what foursquare is and how their service works with mobile apps, foursquare is a location-based social networking website for mobile devices, such as smartphones. Users
"check in" at venues using a mobile website, text messaging or a device-specific application by selecting from a list of venues the application locates nearby. (TomTom Updates Its Navigation App for iPhone and iPad, 2012) In addition, foursquare claims an audience of 10 million users and 500,000 businesses worldwide that use its merchant platform. (Mulvihill, 2012)

The Blue Legends app created by Lufthansa benefits the smartphone users because users can broadcast their current location via social networks by "checking in." A user who checks in frequently with foursquare becomes a "Mayor" instead of an "Expert Pilot." (Blue Legends: New Lufthansa app connects frequent flyers; App enables virtual "check-ins" at Lufthansa locations worldwide, 2012) And with the Blue Legends smartphone app, a user's position is determined either via radio location or GPS so the app can show nearby locations to check into (such as public buildings, places of interest or restaurants)." (Blue Legends: New Lufthansa app connects frequent flyers; App enables virtual "check-ins" at Lufthansa locations worldwide, 2012) The main benefits Lufthansa flyers receive by using the Blue Legends app is the recognition they receive by checking in along with the badges and points they receive.

Indeed, passengers are rewarded with ranks and badges for regularly checking in virtually to Lufthansa sites. For example, users can become "Expert Pilots" on the routes they fly most frequently. (Blue Legends: New Lufthansa app connects frequent flyers; App enables virtual "check-ins" at Lufthansa locations worldwide, 2012) Furthermore, anyone who racks up more than 388,000 kilometers with Lufthansa will receive the "To the Moon" badge. Badge by badge, regular travelers who check in most frequently to Lufthansa sites can become true "legends of the skies" with Blue Legends. (Blue Legends: New Lufthansa app connects frequent flyers; App enables virtual "check-ins" at Lufthansa locations worldwide, 2012) However, companies from the airline and insurance industry are not the only ones promoting and utilizing
geolocation data with smartphone apps. Ironically, even the Dutch company that created the
geolocation maker for vehicles, TomTom, is joining the smartphone app revolution. But more
importantly, TomTom smartphone app users are able to navigate to addresses found on the
internet [sic], search with foursquare(TM)*, and get the very latest TomTom maps. (TomTom
Updates Its Navigation App for iPhone and iPad, 2012)

Some of the extra benefits of the TomTom app include the following: Drivers can now
quickly and easily navigate to places they've found on websites and other apps by copying an
address and pasting it into their TomTom Navigation app. (TomTom Updates Its Navigation App
for iPhone and iPad, 2012) There's no need to type as the app will automatically work out the
destination and direct them straight there. (TomTom Updates Its Navigation App for iPhone and
iPad, 2012) And because of these useful additions, the TomTom apps allow users to seamlessly
work with the foursquare social network. Yet, even as copy and paste URLs to locations and
check-ins using foursquare are becoming popular, the limitations of these small smartphone
screens have their limitations for users and for app developers.

The challenges for developers who have their sights set on creating apps for mobile
devices deals with the issue of small screen size. However, one could argue that the issue of
designing and developing for devices like the Apple iPhone and Android smart phones is only
as difficult as their perceived notion that there are unmovable roadblocks to designing and
developing these mobile apps. There are many ways that developers can tackle the screen size
issues as part of the development. One new technique for smartphone web app developers and
mobile app developers alike involves the concepts behind a relatively new term called
“responsive design.” The term “responsive design” was first coined by Ethan Marcotte on [sic]
his article “Responsive Web Design” for A List Apart. (Responsive Web Design, Most
Complete Guide, n.d.) Indeed, the initial concept behind responsive design is based on the emerging responsive architecture, in which rooms and spaces have the capacity of automatically adjusting according to the number and flow of people within it. (Responsive Web Design, Most Complete Guide, n.d.) Moreover, some key points regarding the user-centric approach of “responsive design” are noted below:

The concept of responsive web design makes reference to the process of designing and developing websites that are able to react to user’s actions and detect the medium where the site is currently being watched in order to provide the best experience possible to the user in terms of navigability and readability. (Responsive Web Design, Most Complete Guide, n.d.)

The key with “responsive design” is that the issues of navigability and readability can be tackled through the utilization of several grid and layout systems, image optimization and CSS media queries. (Responsive Web Design, Most Complete Guide, n.d.) And more importantly, “responsive design” requires a thoughtful process where the designers and developers work together to determine how to redistribute the elements according to resolution, which elements may be eliminated and how to maintain the concept while simplifying the structure. Responsive Web Design, Most Complete Guide, n.d.)

And since the movement of “responsive design” has gained traction and been adopted by web site, smartphone and tablet developers and designers alike, companies like Adobe are paying attention to these game-changing design trends. Adobe, which designs software for web
and print designers, Flash developers and programmers is focusing on solving a key problem that many mobile app developers and mobile app designers encountered. And that problem would be ability to design and develop one layout in HTML5, CSS3 (Cascading Style Sheets) and Javascript that can be seamlessly converted into a web app or native app that works on devices like the iPhone, iPad, Microsoft Windows 8 smartphone, or the Android smartphone. Some of Adobe’s recent mergers and acquisitions will help those native app developers and designers who, in the past, may have had to make a tough decision on which platform they would support, i.e., iPhone, iPad, Windows Phone, or Android. Indeed, one of acquisitions that Adobe made that will help app developers as a result was the purchase of Nitobi, Inc. Author Stephen Shankland emphasized these points in his article about Adobe’s purchase of Nitobi:

Nitobi makes PhoneGap, an open-source programming tool for creating Web apps that run on a variety of mobile phones. That aligns well with the cross-platform approach Adobe has favored with Flash: give programmers the ability to create what they want, and let the tools worry about the differences from one system to another. (2012)

The fact that Adobe and now Nitobi PhoneGap have combined as one separate entity so that PhoneGap Build can work seamlessly with Adobe Dreamweaver CS 5.5 or CS 6.0 software to help developers, is a novel move for many reasons. Now those developers and designers who were too intimidated to learn to use the Android Eclipse IDE software or the iPhone XCode software to develop native apps, they can now create web and native apps without having to
using object oriented programming like JAVA or Objective C.

In terms of how IT departments are currently deciding how to tackle the decision of choosing how to go about the process of creating mobile apps, author Kurt Marko emphasized in his article, “The App Flap” that it's no longer enough for IT to let employees do quick email checks or Web searches. IT needs to stake out an application development strategy and take the lead in optimizing business processes for mobility. (2012) Companies that want to gain a competitive edge and bring value and admiration from potential employees as well as the leaders of the technology like Apple should be cognizant of the mobile app trends. Indeed, Marko emphasized some interesting points regarding his thoughts on what IT department leaders should not do:

What IT can't do is stand back and passively let each business unit do its own thing with mobile development. There are several viable app dev platform choices: native client apps, mobile- optimized browser apps, and a hybrid approach that places a native user interface around an HTML application. (2012)

IT departments that are just starting out on a new app development project should realize that there will be many trials and errors with the development lifecycle.

And author Jessica Dye notes in her article that according to Peggy Anne Salz, chief analyst and founder of MSearchGroove, [d]esigning suitable content for an increasingly diverse array of devices and platforms requires a comprehensive upfront strategy that brings together delivery and context to create more value for the user. (2011) With regards to the issue of
smartphone screen sizes and the common perceptions about them, Dye goes on to quote Salz about this topic. And according to Dye, Salz stated the following:

People shouldn't believe it's just another screen. . . . You have to consider the experience. If we're going to be consuming content across time, space, and platforms, what are you going to do with the platform? You also have to think about how to slice and dice the content for various experiences - you can't just put all the content on mobile the same way it looks on the website. You have to think about how people are going to want to interact with it.

(2011)

For developers and designers, this is great advice provided by Salz; and it should be heeded accordingly. As the technology and smartphones evolve so will the need to adapt. Furthermore, without a keen understanding of who's consuming the content, companies can overwhelm users with too much clutter and too little integration between features and functions. (Dye, 2011) More importantly, people weaned on slick app store fare may spurn small-screen browser apps, but thanks to HTML5, browser technology looks increasingly promising. Whether mobility means a return to native development for your shop largely depends on the audience. (Marko, 2012)

Along with the strong focus needed by IT departments regarding the preparation and planning for the development of native, web or hybrid apps, there also needs to be a well thought out approach in dealing with the issue of “high availability” for smartphone users. Thus, mobile applications require high availability because end users need to have continuous access to IT and IS systems. More importantly, high availability is designed to protect mobile users against
both planned and unplanned service interruptions. Unplanned service interruptions are typically triggered by technical problems within the system. Planned service interruptions, such as upgrades, are often necessary for maintaining peak performance and service. (Understanding High Availability for the BlackBerry Enterprise Server, 2009) Some of the ways that smartphone app developers and designers can plan for and implement solutions that will address the high availability quandary is to create partnerships with third-party companies that would be able to monitor transactions 24/7 and provide back-end support for data storage like Blackberry maker, Research In Motion Limited (RIM) has done.

Indeed, companies such as (AWS) or Amazon Web Services, LLC provide unique and reliable services that mobile app developers can utilize. In regards to how AWS can help in lifting the potential roadblocks regarding high availability issues, Peter De Santis, Vice President of Amazon EC2 had this to say about the benefits of EC2: "With the launch of High I/O instances, customers can take advantage of SSD-based instances to run their most demanding applications on AWS, whether it's running databases that support high-transaction enterprise applications or powering massively popular social, mobile or gaming apps for consumers." (Amazon Web Services Introduces New Amazon EC2 High I/O Instance Type, 2012) This new EC2 High I/O Instance Type of AWS can help those IT departments that are striving to make the issue of high availability less dangerous in terms of causing major disruptions in transactions and daily processes for the mobile app user. Furthermore, high availability requirements can vary depending on the organization’s business and mission. A brokerage firm might need high availability during trading hours only, while a seller of gift merchandise requires it 24/7 during the holiday season. (Understanding High Availability for the BlackBerry Enterprise Server, 2009)

Yet, even though “high availability” needs to receive a lot of discussion from IT
departments, mobile app developer and designers, the issue of security should be at the forefront. Because mobile devices are subjected to hacking at a higher rate than non-mobile devices, the issue becomes more prevalent as the adoption rate of smartphones increases. Indeed, [n]ew data from ABI Research estimates that employee smartphone usage is increasing by 17 per cent [sic] a year and that within five years 2.4bn employees - nearly three times the number today - will be using smartphones. (Taylor, 2012) And because of these high adoption rates, the chance of fraud also increases. According to Lookout Inc., the leading mobile security company, [m]obile malware has now become a profitable industry. Because of its global ubiquity as a phone payment mechanism, premium text billing is the most common tactic used by malware writers to commit financial fraud on mobile. (Lookout's State of Mobile Security Identifies Malware Designed for Profit and Privacy as 2012 Growth, 2012)

The issue of privacy also ties in with security issues. Indeed, [p]rivacy is one of the biggest issues people face on mobile devices. In 2012, a significant portion of privacy problems arose from aggressive advertising techniques, including pushing out-of-app ads and accessing person-ally identifiable information without user notification. (Lookout's State of Mobile Security Identifies Malware Designed for Profit and Privacy as 2012 Growth Areas, 2012) But there are ways to make smartphone use more secure: Use caution when downloading apps. Only down-load apps from trusted sources like Google Play and the App Store. Read user reviews and verify the developer is trusted. Be wary of apps that promise a paid app for free. (Lookout's State of Mobile Security Identifies Malware Designed for Profit and Privacy as 2012 Growth Areas, 2012) Here are some other techniques suggested: Check for suspicious activity. Review your phone bill regularly to confirm you haven't been charged. (Lookout's State of Mobile Security Identifies Malware Designed for Profit and Privacy as 2012 Growth Areas, 2012)
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