

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE FEB 2011		2. REPORT TYPE		3. DATES COVERED 00-00-2011 to 00-00-2011	
4. TITLE AND SUBTITLE U.S. Army Mobile Application Development: A Coder's Perspective				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army, School of Information Technology, Fort Gordon, GA, 30390				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES ARMY Magazine February 2011, pages 23-24					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 24	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

U.S. Army Mobile Application Development: A Coder's Perspective

By LTC Gregory Motes

Seven months ago, none of us here at the School of Information Technology, Fort Gordon, Ga., knew how to develop applications for smartphones. Now we have more than 100,000 downloads of our apps in the public app stores. Such is the fast pace of technology.

The small application development team at Fort Gordon started with a question from LTG Mark P. Hertling, deputy commanding general of Initial Military Training. To the 15th Signal Brigade commander, COL Mark Horoho, LTG Hertling wrote:

I'm wondering if you have any smart captains or majors in the Signal community down there who might be proficient at writing applications, or who might be interested in forming part of a small team of experts to take a look at this for basic training. I'm looking for a smart guy who might help push the envelope on implementing CSDA [Connecting Soldiers to Digital Applications] in the training base.

You know of anyone?

As a result, a pilot test with the CSDA program was established to seek the effectiveness of instruction in iPhone and Android application development for Functional Area 53 (Information Systems Management) officers.

On March 1, 2010, the Army Chief Information Officer/G-6 announced the "Apps for the Army" application-development challenge. Billed as a test of the "rapid-acquisition process for software applications," the 75-day competition sought the person who could write the best apps in a variety of categories, including training, location awareness and mission-specific apps. My boss asked if I wanted to give it a try, so I set out to find a team.

At the time, a number of people at Fort Gordon, myself included, had written code before, but no one had ex-

perience writing smartphone applications. As chief, Information Dissemination Management Division, at the School of Information Technology, I had access to a few "snowbirds" (students who are waiting for their next class to begin) to see if we could write some apps. Only two, CPT Chris Braunstein and CPT Stacey Osborn, had the aptitude and inclination to attempt to learn to write iPhone apps in a couple of weeks. A few more would help with data creation, but the job of coding fell



As shown on the iPhone, The Soldier's Blue Book is available as a smartphone application.

on the shoulders of these two captains.

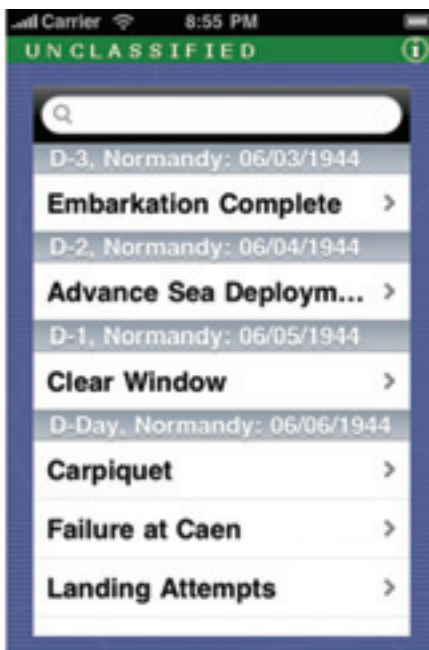
Our first stop on the journey of learning this skill was iTunes U. We found that several universities uploaded videos from lectures on iPhone app development that were available for free download. Several gigabytes of bandwidth later, we had the entire contents of classes at Stanford University, the University of California at Davis and the University of Utah downloaded and installed on our computers, iPhones and iPod Touches. (In the beginning, our use of Apple products rather than Android was one of convenience—we had access to iPod Touches for testing, and the iTunes U classes were exclusively for iPhone.) These classes taught the fundamentals

of programming for phones to computer-science students (like both of my snowbirds) and provided a wealth of invaluable knowledge from instructor examples and student responses.

We initially set out to make two applications, but soon thought we might be able to complete four in the time allocated. We called the first Mobile Learn, which provided us with a way to import quiz data from the Blackboard learning system into a mobile-phone app. We would export instructor-generated quizzes to the phone to allow students the opportunity for self-paced checks-on-learning on topics within their curriculum. We dubbed the second app Fort Gordon 411, which would help soldiers, family members and visitors find various locations on Fort Gordon. We envisioned a future module to assist with in-processing and out-processing at military installations.

As our learning progressed, I received a note from my boss that LTG Hertling had described the (then-pending) training circular for the new physical readiness training program to conference attendees in Virginia and wistfully suggested that someone should turn it into a smartphone app. A few e-mails later, I had a digital version of the finalized Training Circular 3-22.20 in CPT Osborn's hands, with some rough ideas for how we could turn a 400-page document into a compelling application that we simply called PRT. We wanted the app to be interactive and user-friendly, and we worked with Fort Jackson, S.C., to provide 35 videos on the exercises.

For our fourth app, we wanted to start a discussion of what an app would look like on the tactical network. In my previous job, I had worked intimately with the Command Post of the Future and envisioned an app that connected to the Berkeley database on the Battle Command Common Services stack of servers to display significant activities on a smartphone. We called this app Sigacts.



Gunther Kainz

The Sigacts application is designed to allow soldiers to quickly view significant activities on the battlefield.

As my captains worked on their coding and I prepared some graphics for them, I decided to see if I could write a very simple app that we could publish in the App Store. Seven lines of code later, I had the Army Creeds app written for the iPhone. The Creeds app contains those things soldiers might need to memorize in their careers: the Soldier's Creed, Creed of the NCO, Army Song, Ranger Creed, General Orders, phonetic alphabet and eight others. On April 1, we published that app to the App Store. Two weeks later, I wrote the same app for Android and published it to the Android Market.

A week before the competition ended, Mobile Learn was complete, Fort Gordon 411 required only some additional data points, and Sigacts was nearing completion. CPT Osborn's PRT app had come a long way, but still required quite a bit of work—she had nearly 700 images to resize, tag and assemble into structured data lists. On a Friday, I told her that LTG Hertling was visiting Fort Gordon the next week and I was going to show him the PRT app. By Monday, her app had been transformed from an incomplete product into something very near final production. LTG Hertling praised the app and the developers.

After submitting the apps to the

competition, we were tempted to sit back and rest on our laurels, awaiting judgment from the competition committee. Both of the snowbirds started their classes, causing the collapse of the app development team. Then my boss forwarded me a copy of an e-mail that LTG Hertling had sent to GEN Martin E. Dempsey, Training and Doctrine Command (TRADOC) commander, describing the finalization of the new *The Soldier's Blue Book: The Guide for Initial Entry Training Soldiers*. The e-mail said:

A few months ago, while walking through a reception battalion, I picked up a copy of the book we give all our new soldiers ... "The IET Soldier's Handbook." It was outdated, it was obviously "cut and pasted" (with skills, tasks, values and history all over the landscape), and it had been "informed" by the staffing process (in other words, there were a lot of staff agendas). It wasn't something that captured the imagination—or contributed to the skills and knowledge—of our new soldiers.

The e-mail then described the guidance LTG Hertling gave to COL Craig Currey to rewrite the book, and the hard work of another snowbird, 2LT

Denise Macia, to help write it. He closed the e-mail, writing: "We're printing it now, and, for the first time in our history, the *Blue Book* will also become a smartphone app."

The book was finalized on June 3, 2010, and by June 6 (less than 72 hours), I had an Android app complete and on the Android Marketplace. Three weeks later, with the help of CPT Braunstein, the iPhone version was submitted and approved by Apple. These apps beat the print-and-release date of the manual by more than 100 days (and didn't cost nearly as much).

By the time the Apps for the Army competition results were released, we had written and published 20 apps in 17 weeks to either Android or iPhone and were nearing a remarkable 40,000 downloads. I was very proud of the hard work of my two snowbirds when the CIO/G-6 announced that the PRT app won in its category, while the Fort Gordon 411 and Sigacts apps earned second place in their categories and Mobile Learn received an honorable mention.

The success of this program has led the Signal Center to create a new organization that has a charter to develop applications for Army training. This team immediately yielded dividends with the stunning Army Values app for iPhone and iPad (Version 1.0 took less than a week to complete). This app was showcased at the TRADOC booth at the Association of the United States Army Annual Meeting and Exposition in October and is a shining light for things to come. □

The majority of our apps have been published directly to the public markets. Search "FA53" on Android or iPhone to download the current applications.

LTC Gregory Motes is in charge of providing instruction of application development on Android and iPhone to the Functional Area 53 course. He has developed and published more than 30 applications for both devices, with nearly 200,000 downloads.