

Mobile Strategy Plan for Higher Education

A **Master's Thesis**

Presented to

School of Arts and Science

State University of New York  
Institute of Technology

Utica, New York

In Partial Fulfillment  
of the Requirements for the  
Master of Science Degree

by

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August 2011

SUNY IT

DEPARTMENT OF ARTS AND SCIENCE  
CERTIFICATE OF APPROVAL

Approved and recommended for acceptance as a thesis in partial fulfillment of the requirements for  
the degree of Master of Information Design and Technology

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Kathryn Stam  
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## ABSTRACT

The study investigates what is involved in the development of a mobile strategy for a college. In addressing this question, the thesis contains three parts. First, was a request for proposal (RFP); next, was a consultant's proposal in response to the RFP; and the third part was an evaluative document explaining and reflecting on the writing process.

There are four key issues in developing a mobile strategy. The first issue is to create a device-agnostic mobile framework capable of supporting multiple mobile platforms. Next is focusing on building mobile applications that take advantage of device-specific features on the vast majority of devices. The third issue is facilitating a consistent mobile identity with one outward presence comprised of links to essential college information systems. Finally, developers must conform to mobile Web standards such as W3C Mobile Web Best Practices.

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## Introduction

Mobile devices are likely to be the most important digital channel for accessing information for the foreseeable future. We are in the era of mobile Internet. Mobile devices have had a significant impact on the way people communicate and retrieve information. The fact that almost every mobile phone is capable of much more than simply making phone calls is one of the primary reasons that mobile applications and mobile websites have become more common. Analysts predict that within five years more users will access the Internet with mobile devices than with desktop PCs (Meeker). Due to this shift, many organizations are developing mobile strategies and services in order to engage and better serve their customers. Colleges are one of the sectors that have begun implementing strategies to deliver information to staff and students via mobile devices.

This thesis addressed developing a mobile strategy from the perspectives of a College seeking a mobile strategy and the consultant proposing a solution.

## Review of the RFP Writing Process

The idea for this thesis evolved through personal involvement in a mobile strategy at Tompkins Cortland Community College (TC3). The process began by searching the Internet for community colleges who had created a request for proposal (RFP) for development of a mobile strategy. Though no such document was found, a search did find an RFP created by Eastern Maine Community College (EMCC) who sought proposals for development of a robust website to be used primarily as a marketing tool. Because EMCC appears to be very similar to TC3, EMCC seemed appropriate to use as a client seeking a mobile strategy. Part of a mobile strategy includes development of a mobile website. Because EMCC's RFP included some of this information, it was an ideal document to use as a basis for development of the mobile strategy RFP document.

The major components in the RFP were the ability for the mobile website to provide to the College community alerts and announcements, access to student information system (SIS) data, and access to Blackboard learning management system (LMS) content in a way that optimally displays the information on mobile devices, such as smart phones and iPads.

The first guideline in the RFP required direction for development of a mobile user interface that aligned with College branding and was compatible with iPhone/iPad, Blackberry, Android, and Windows Mobile browsers. The interface also needed to include icon and tab links to the SIS, LMS, and other essential information systems.

## Review of the Consultant Response Writing Process

The Consultant Response writing process involved addressing the requirements of the RFP. The process began by creating the non-collusion affidavit. Background information was then provided about the consultant's qualifications as well as information about design, implementation, support, and costs. Next, the document defined what a good mobile strategy should consist of and the intended goals of the strategy.

The next part of the consultant's response addressed specific requirements of the RFP beginning with development of the mobile site. Part of the concern was that the mobile site needed to be developed so that it was compatible with a number of different mobile browsers. In order to properly address this issue, it was essential to interview a mobile site developer. He said that though there is no perfect solution to design mobile sites and for them to render the same on all mobile devices, the ideal approach is to develop following HTML/CSS best practices guidelines. He also said that in order to align with the College brand he would have to follow the color theme provided by the College's graphic artist. This is the same theme used on the portal site and SIS user interface.

## Use Cases

Preparing the consultant's response to the RFP required including use cases. A use case is a possible scenario related to a particular goal. It is a methodology used to identify and organize system requirements in system analysis. A use case is lists a set of interactions that occur between systems and users in a particular setting and related to achieving a particular goal. It consists of a group of elements. The use case should contain all activities that are significant to the users (SearchSoftwareQuality.com).

A use case is initiated by a user with a specific goal in mind, and completes successfully when that goal is achieved. It describes the sequence of interactions between the system and users in order to deliver the activity that satisfies the goal. It also includes possible deviations of the sequences that may that may lead to failure to complete the activity because of errors, etc. Therefore, use cases capture what the user does with the system in order to achieve a desired goal (Bredemeyer Consulting).

## How the Use Cases Were Developed

The use cases were based on the most common information that students access at Tompkins Cortland Community College. This was based on the number of hits of each system.

## Use Case One

The first use case was based on a user seeking information on class cancellations using a mobile device. This information is posted on the main TC3.edu site. One of the first requirements of the RFP was the development of a mobile site that featured the same content found on the main College site. When using their mobile devices, students are able to select an icon that displays a list of class cancellations. This information displays on their mobile devices exactly as it is on the main website. The College website manager indicated that this is one of the most visited links on the main site home page. One reason is because many of the students commute from nearby towns and this information will save them time and gas if they find out their classes are canceled before they leave their homes. Another reason is because faculty has the discretion to cancel classes.

## Use Case Two

The second use case was based on students' desire to access midterm or final grades. This information is stored in the SIS. The information is supposed to be input by faculty by deadlines designated by the College. Students check this data to see their academic status in their courses. It is especially important to them as their academic standing has a direct impact on whether or not they will retain their final aid award. Due to the importance of this information, it is imperative to provide student access to the SIS via the mobile site. This aspect of the mobile site had to be programmed to display the information in a format that displays properly on mobile browsers.

## Use Case Three

The third use case describes the way a student would register his or her mobile device to receive text notifications from instructors for specific courses. Today, text messaging is the most widely used mobile data service. Text messages can be used to interact with automated systems such as ordering products and services, paying bills or participating in contests. Organizations send mobile users text notifications about promotions, payment due dates and for a number of other reasons. Services that provide the sending of bulk text messages are also becoming a popular way for clubs, associations, and advertisers to reach a group of opt-in subscribers quickly.

On a related note, the U.S. Department of Education requires colleges and universities to have a way to communicate with students in a timely manner in the event of an emergency. In today's world, the definition of a timely manner has changed and now every second counts. Sending bulk text messages is one way these institutions have addressed this requirement. Rave Mobile Safety is the third party company that was recommended to provide this service in the consultant's proposal. It was selected because TC3 has contracted with Rave to send mass text and email notifications to the campus community and it has been affordable and effective. Classes, student groups, clubs, and teams all have the ability to use the system to communicate with their members. The Rave system invites students to join text lists to receive emergency alerts, event reminders, meeting reminders and class reminders.

In this use case, the student begins by using a mobile device to login to the College SIS to register his or her mobile number to receive text notifications from instructors. The notifications may be new announcements, due date reminders or other types of messages. It describes how the user registers his or her device to receive class-related text notifications from instructors.

#### Use Case Four

This use case describes the process of a user accessing a class schedule in the SIS via a mobile device. The user navigates to the main site with a mobile device, is redirected to the mobile version of the main site, selects the my mobile tab which is the SIS login screen, logs in, then selects the class schedule icon. This is one of the items almost every student logs into when registering for classes for upcoming semesters. They login again just before the semester begins in order to confirm that the class is still running and that they are still registered.

#### Use Case Five

Local media covers only the College's major sporting events and news, but many in the campus community want more information, such as scores and game recaps. The only source that provides this much information is the College athletics website, which is a link on the main College website. Using a mobile device, when users navigate to the main site, they are redirected to the mobile site and select the athletics link. The External Relations department provides regular daily, detailed updates about athletics so that the campus community is fully informed.

#### Use Case Six

The ANGEL 7.4 learning management system (LMS) is the most accessed system at TC3 by a large margin. Many users access this system every day. Because it sees such heavy traffic, it was appropriate to include the LMS as a use case in the consultant's proposal. The proposal itself mentions Blackboard because EMCC uses that system as its LMS. However, the Blackboard Mobile Software Development Kit allows the integration of the Blackboard Mobile Learn application into both ANGEL and Blackboard learning management systems, so the functionality would essentially be the same in both systems.

The application allows users to access the different elements of a course using mobile devices. An essential communication tool in an LMS is the discussion board. It is one area of a course where students can ask and answer questions, and instructors can respond to one student for the benefit of all. Students can access audio, video, and image files uploaded by instructors and experience the content directly from their mobile device if the content is provided in a compatible format for the device used to access it. Students can also read course announcements, upload media, comment on blogs, check grades, and more all on their mobile device.

## Reflection

Developing the use cases forced me to truly think about the most critical elements in a mobile strategic plan. In order to develop the use cases I needed to talk to website developers, website content providers, and programmers. This helped me to get a sense of which systems are accessed the most and what information users seek. I also learned that there are many variables to consider when designing a mobile device user interface.

Though TC3 was used as the basis for developing the use cases, different or additional perspectives may have been attained if developers, content providers, and programmers from other community colleges had been interviewed. Though most community colleges are very similar in their mission, services, processes, and student populations, there are undoubtedly distinctions between them and the systems they might use. In order to enhance my professional growth in this area, I intend to talk to more of my counterparts within SUNY to collect this information so that I can learn more about the similarities and differences between the institutions.

## Challenges

In my role as instructional designer and instructional technologist, I have developed a solid foundation in the use of technology in teaching and learning. However, I lack more traditional IT knowledge such as programming and systems administration. Lack of understanding made developing the consultant's response to the RFP a bit challenging. In order to accurately address the requirements of the RFP, it was necessary to learn about programming languages and the integration of systems and applications. This required reading articles and asking programmers about the type of code they were writing. It also required learning about development best practices and why programmers use certain programming languages over others. However, the time spent learning about the types of languages used was not nearly enough in order to understand the differences. A valuable lesson learned was that programming as a profession requires a great deal of self-teaching. Teaching oneself about programming involves more than just reading books, talking to others, and copying and pasting code from web pages. It requires taking time to play around with code, not shying away from something that seems difficult to understand, and persisting until you discover why it makes sense.

Though my programming experience is minimal at best, I am gaining a better understanding of it by reading books and practicing on the job when between projects. I also plan to take a couple of programming courses at TC3. Once I gain a better understanding of basic programming concepts, I will ask for additional basic projects to take on at work. I have recently taken on and successfully completed integration projects using Microsoft Access 2007. In order to accomplish this, I worked closely with a programmer, took an Access 2007 course at TC3, and practiced building queries and forms. Consequently, I am more knowledgeable now and am better able to assist our programmers in troubleshooting problems.

## Patterns That Emerged

In reflecting on my professional growth, I noticed some patterns emerge that define me as an educator and learner. One pattern is that I have become more empathic in approaching learning from the student's perspective. I became more aware of this when I began inquiring about what is involved in developing a mobile strategy. I went into this project confident that I had a solid understanding of what it takes to develop a mobile strategy. Though I have significant HTML experience, I quickly realized that my web development knowledge was very limited compared to the knowledge programmers possess. I found myself unaware of basic steps involved in developing a mobile site. I learned that the first step in the process is to simplify the information and minimize left/right navigation, which is difficult on a phone. Instead, the content should be presented in a single column and the use of tables should be minimized for easier reading. The next step is to be sure to include only the most important content, make it easy to read and navigate, and use a font size that does not require users to zoom. Other steps include coding using either XML or XHTML and providing back buttons and links, because browsing on mobile phones is difficult, especially because many are not equipped with back buttons.

While developing the use cases, I noticed that I began thinking more in-depth in my problem-solving process. Until I began this thesis, I was used to thinking as a trainer of the individual systems. But, as I began drafting the use cases, I was forced to think about all of the steps involved in the processes in order to accomplish the respective tasks. I was also forced to think about how the systems respond and how they are all integrated. Thoroughly thinking through each step in these processes will help me to design solutions that create simple, but positive user experiences.

Developing the use cases also helped me to focus on building strong relationships with customers (students). Students are more likely to succeed if they feel the College is genuinely interested in their well-being and success. Strategies from an information technology perspective by which this goal is accomplished include providing the necessary tools to easily retrieve vital information and developing systems that communicate information to them in ways they are familiar with and comfortable with.

Finally, I realized how technology goes hand-in-hand with curriculum and standards. That is, the primary goal of the teacher is to ensure that College standards and expectations are being covered in the classroom. The teacher's goal is to deliver instruction that not only covers standards and expectations, but does so in ways that allows the student to retain the information. Teachers accomplish this by using a variety of methods in their instruction that will appeal to all of the different learning styles. This is often accomplished through the use of instructional technology and user-friendly information systems. I will continue my professional development in this area by learning more about the information systems used at the College and how they integrate with other systems. I also plan to take courses in programming and advanced courses in Microsoft Access, which will enhance my abilities in designing system integrations and user interfaces.

## Conclusions

The above discussion has evaluated the processes of developing a request for proposal for a mobile strategy and a consultant's proposal to develop the strategy. Through this analysis, an understanding was gained in developing a system that viewed the needs and expectations from the user's perspective. It can be concluded that development of such a strategy has a major opportunity to help users succeed in their College work if the strategy discussed above is developed effectively and efficiently.

## Works Cited

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# Eastern Maine Community College

July 6, 2011

Tony DeFranco  
DeFranco Consulting Services  
3 Harmony Circle  
Cortland, NY 13045

Dear Mr. DeFranco:

Eastern Maine Community College (EMCC) invites the submission of proposals for the preparation and implementation of a mobile development strategy for our campus community.

EMCC seeks to redesign its main website and create a user interface that is accessible and compatible with mobile devices in order to meet the current and future needs of the campus community. It is the organization's objective to identify development opportunities and make all data from our web-based information systems available on mobile devices by way of a single mobile app or user interface. A more complete scope of requirements is outlined in the following pages. EMCC will use the information gained from the development strategy to develop and implement a mobile development program.

The selected consultant will contract with EMCC, under the supervision of the EMCC Office of Information Technology.

Proposals are to be submitted by July 31, 2011. The projected date for contract commencement is October 1, 2011.

All correspondence pertaining to this proposal should be directed to my attention at the address below. If you have any questions, please contact me.

Sincerely,

Elizabeth Clayton

354 Hogan Rd, Bangor, Maine 04401  
Phone: (515) Tel: 207.974.4817  
Fax: 207.974.4888

# Eastern Maine Community College

Request for Proposal

for the

CONSULTATION ON CREATING A MOBILE STRATEGY

July 6, 2011

# Eastern Maine Community College

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# Eastern Maine Community College

## Summary

Recognizing that mobile technology is a medium that incoming freshman are most actively involved with and most comfortable with, we seek to provide better service through that medium. According to studies conducted by Pew Research, 32 percent of Americans have used a conventional mobile phone or a smart phone to access the Internet. Morgan Stanley analysts believe mobile web browsing will surpass desktop browsing by the year 2015.

There are many ways mobile technology is being used on today's college campuses. Some of these academic uses include:

- listening to or watching lectures in place of or in addition to classroom lectures
- receiving course work announcements via text
- communicating with professors
- participating in class forums

Mobile technology is also being used on college campuses to conduct business.

Some of these uses include:

- mobile safety alerts
- tuition due reminders
- class scheduling
- class attendance and grades
- deadline reminders
- athletic schedules
- ability to purchase athletic event tickets

## Vision

Eastern Maine Community College envisions launching a new mobile website that offers instant access from nearly any smart phone to its portal site ([my.emcc.edu](http://my.emcc.edu)). The portal site serves as a single point of entry to access our student information system, learning management system, and other essential College information. Mobile users need information quickly and with easy-to-navigate links to important information. When a user goes to [my.emcc.edu](http://my.emcc.edu) from a smart phone, the site should detect how it is being accessed and automatically redirect the browser to the new mobile site (<http://m.my.emcc.edu>).

The College will be one of the first college or university sites to offer 95-percent of its portal website content through a mobile version. The mobile site should feature easy access to the most used links on [my.emcc.edu](http://my.emcc.edu), including admissions, financial aid, grades and attendance, and contain fewer graphics than the full website, allowing for pages to load quickly on mobile devices. The site should be designed to be compatible with browsers found on Android, BlackBerry, iPhone, and Windows Mobile devices. The developer(s) must keep in mind that slow mobile networks will impact the performance of the mobile content. The College wants a mobile website that provides the same functionality as the main College website, but at the same time be optimized for mobile devices, thus offering users an optimal viewing and navigation experience.

# Eastern Maine Community College

## How the Mobile Site Will Be Used

### Alerts and Announcements

Users of the mobile site will learn about any campus emergencies, closings, and other important announcements. Students can also opt in to receive text notifications from instructors about course-related issues, such as due date reminders and class announcements.

### Student Information System (SIS) Access

Users will be able to track their attendance, access midterm and final grades, financial aid information, billing, and class schedules.

### Learning Management System

The interface will provide access to lessons, announcements, discussion forums grades, roster, and personal tasks. Students and instructors will be able to create content and upload media as attachments to discussions or blogs directly from their mobile device.

## Proposal Guidelines and Requirements

Eastern Maine Community College is requesting proposals for to hire a consultant to provide direction for creating a strategy for enhancing and enriching the overall campus experience and conducting business through mobile technology. The project specifications include:

1. Advising the College on designing a strategic, innovative mobile website optimized to allow students to access all College systems. Factors to include in the mobile site recommendations should provide:
  - Compatibility with iPhone/iPad, Blackberry, Android, and Windows Mobile browsers
  - A simple, but professional design that aligns with College branding
  - A well-conceptualized homepage that provides an interface for single sign-on
  - Administrative control over users with password protected pages
  - Is easily editable so that College programmers can update content as needed
  - The ability to search
  - A smooth interface with the College's student information system
  - Easy clickable links to academic departments, such as financial aid, admissions, student email, schedules, and grades
  - Compliance with Statute 508 of the Rehabilitation Act
2. Recommendation for implementing text messaging for emergency and academic notifications. This system should provide:
  - The ability for the College to send emergency text notifications to students who opt in
  - The ability for students to select different levels of notifications to receive via text (closings, class cancellations, coursework reminders, and clubs/activities notifications)
3. Providing direction on how to design and integrate student information system alerts into the Mobile website application. Alerts might include tuition is due, holds on financial aid, class cancellations, college closings, and registration confirmation.

# Eastern Maine Community College

4. Providing direction on how to integrate learning management system (LMS) notifications so that students receive them via text messages
5. Providing a description of your company. Provide the name and experience of the person who will manage this project for the College, as well as names and experience of the staff that will support the project. Provide resumes for each of these staff.
6. Providing list of three references including names, contact information for clients, including those in higher education
7. Providing recommendations on which web application framework to use for programmers who will build a dynamic mobile application
8. Providing a tentative project timeline
9. Providing your firm's pricing proposal for consulting this project
10. Include at least six screenshots in the proposal showing how pages and notifications will be displayed on mobile devices

## Contract Terms

Eastern Maine Community College will negotiate contract terms upon selection. All contracts are subject to review by Eastern Maine Community College legal counsel, and a project will be awarded upon signing of an agreement or contract, which outlines terms, scope, budget and other necessary items.

## Evaluation/Selection

The evaluation committee consists of various College personnel who represent the diverse population would visit the mobile site daily to conduct their business.

General evaluation procedures will be:

- The committee will be provided the responses that met the minimum mandatory items,
- Committee members will then read, review and score the responses,
- Responses will be ranked in order according to the scoring (point assignment).

Bidders must obtain 75% of available points in order to advance in the evaluation process.

Cost component will be evaluated and rolled into to the committee scoring for those firms that have passed the 75% threshold.

The College reserves the right to either award directly to the firm with the highest points and lowest cost, presenting the best overall value to the College,

# Eastern Maine Community College

...Or,

The College may develop a finalist pool of any number of respondents, and conduct a finalist evaluation step, or steps. This part of the evaluation process may include, but is not limited to, interviews with potential awardees, live reviews of peer-institution sites, etc.

In either case, the College will award this contract based upon the best interests of the College, as determined by the College.

Proposals need to address the following:

- Experience consulting mobile technology plans for Colleges or Universities.
- Auditing the current College portal website.
- Describe how you set measurable goals, and providing specific goals you would introduce to measure in this project.
- Describe your firm's project management approach to this project.

PROPOSAL TO

EASTERN MAINE COMMUNITY COLLEGE

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INVITATION TO QUALIFY FOR  
CONSULTATION ON CREATING A MOBILE STRATEGY

July 6, 2011

Client:  
Eastern Maine Community College  
Eastern Maine Community College  
354 Hogan Rd  
Bangor, ME 04401

Contact: Elizabeth Clayton  
Phone: (515) Tel: 207.974.4817  
Fax: 207.974.4888

Researched and Prepared by:  
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3 Harmony Circle  
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Elizabeth Clayton  
Eastern Maine Community College  
354 Hogan Rd  
Bangor, ME 04401

Dear Ms. Clayton:

Thank you for considering our company for participation in your invitation to qualify for providing consulting services to create a mobile strategy.

DeFranco Consulting specializes in services for the mission-critical needs of our customers. DeFranco Consulting is experienced in consulting mobile technology plans and web-based solutions for colleges and universities. Current clients include small and medium customers throughout New York.

Our team here at DeFranco Consulting works hard to provide quality business technology solutions by understanding our customer's needs. We deliver innovative and supportable solutions within our customer's time frame and budget, while focusing on the true return on investment and total cost of ownership.

We at DeFranco Consulting understand the requirements of Eastern Main Community College to qualify providing consulting services to create a mobile strategy and are capable of providing quality services. We set measurable goals including eliminating inefficiencies and costly redundancies, defining what services should be restructured or eliminated, and evaluating the complexity and risks of managing a complex distributed computing environment.

Our firm's project management approach includes five phases: initiation, design and planning, execution, monitoring and controlling systems, and completion.

We agree to be bound by the timeline stated in this response for one calendar year. This proposal shall remain valid 120 days after submission.

Once again, thank you for considering DeFranco Consulting. If you should need additional information, please let us know.

Sincerely,

Tony DeFranco  
President, DeFranco Consulting Services



DeFranco Consulting is built on the following principles: Strength of our knowledge and capability, Speed at which we respond and implement, and a commitment to maintaining our Integrity. These values have allowed us to attract and retain talented and highly skilled employees in an extremely competitive market.

### Project Management

DeFranco Consulting considers project management an integral part of any project. DeFranco Consulting Project Managers are certified by the Project Management Institute (PMI) as Project Management Professionals (PMP). These project managers are proven professionals with experience leading successful projects of all sizes. We believe that our Project Managers have the experience and background to manage complex resources, timelines, and process requirements.

### Design/Planning

DeFranco Consulting designs for all aspects of mobile systems, where a strict adherence to security and multi-vendor standards is required.

### Implementation

Implementation by DeFranco Consulting includes matching the precise skill level requirements of the project with one of many qualified engineers, tracking of project deadlines, and documentation as requested by the customer. Complex implementations will include a detailed scope of work with an acceptance document reviewed and approved by both DeFranco Consulting and the customer. Knowledge transfer is a key component in ensuring the Client is able to support the system upon successful deployment of the solution. In every project, our consultants focus on sharing their knowledge and experience with client staff. The documentation produced during the project also serves as a great means to transfer knowledge.

### On-going Support

Our wide bench of technical and project professionals are available (with service level agreements) for a variety of support services. DeFranco Consulting can provide On-Call and Onsite Support. If required, response time, escalation, and coverage hours can all be defined within a service level agreement.

### Administration

DeFranco Consulting provides short-term administration consultation for most mobile systems, networking, and storage systems. Many activities can now be administered remotely through secure software tools.

The logo for DeFranco Consulting Services is located in the top left corner. It consists of three overlapping circles of varying shades of blue, with the text "DeFranco Consulting Services" centered within the innermost circle. A thin blue line extends from the right side of the circles across the top of the page.

DeFranco  
Consulting  
Services

For most projects, we employ our own methodology for the project life cycle based on the processes and standards put forth by the Project Management Institute (PMI). A change control process is also implemented once the project begins.

Cost Data Sheet – Developing

COST DATA SHEET for Creating a Mobile Strategy

COMPANY NAME: DeFranco Consulting

DESCRIPTION OF SERVICE	RATE PER HOUR NOT TO EXCEED
Available by project and hourly	
<b>DEVELOPER</b> Builds solution components based on technical specifications.	\$115.00
<b>SR. DEVELOPER</b> Builds solution components based on technical specifications. Extensive experience.	\$125.00
<b>ENGINEER</b> Builds infrastructure solutions based on technical specifications.	\$115.00
<b>SR. ENGINEER</b> Builds infrastructure solutions based on technical specifications. Extensive experience.	\$125.00
<b>Help Desk Support</b> Provide required technical support via phone	\$115.00
<b>Onsite Support</b> Provide required technical support working at the customer's site.	\$125.00
<b>On-Call Support</b> Provide required technical support on an as needed basis, normally associated with a service level agreement.	\$100.00

## MOBILE STRATEGY

A Pew Research Center report, “58% of adult Americans have used a cell phone or personal digital assistant to do at least one of ten mobile non-voice data activities, such as texting, emailing, taking a picture, looking for maps or directions, or recording a video” ([Horrigan](#)). A 2009 survey by the Pew Research Center’s Internet & American Life Project found “32% of all Americans have gotten online with a mobile device” and 25% of mobile users who are 18-29 years old are accessing the Internet on a typical day (Horrigan, 2009a, p. 3).

Any college mobile strategy must involve handheld devices. The first step in the strategy is to design a smart phone application that is compatible with iPhone/iPad, Blackberry, Android, and Windows Mobile browsers.

A mobile strategy should align to strategic objectives. It should increase brand awareness with a custom app branded to your institution and available for download. A good educational mobile strategy should also increase student retention through modules that keep students apprised of and engaged with college events, news, and athletics. It should also foster student engagement by allowing participation in courses from anywhere in the world. It could also improve graduation rates by enhancing communication and collaboration with faculty both inside and outside the classroom.

Mobile technology can be leveraged on campus by all departments including faculty, admissions, athletics, campus marketing/external relations, and administration.

A good mobile strategy provides anytime and anywhere access to course content from smart devices. Students are also able to personalize and choose information delivered to their devices. Another important consideration is integrating technology solutions so that students can login with a single sign-on rather than with discrete logins. The strategy should also provide the opportunity for collaboration with peers and faculty and tie the mobile environment to the physical campus.

### Mobile Site

We will begin by building a mobile site that is compatible with iPhone/iPad, Blackberry, Android, and Windows Mobile browsers. This will be accomplished by developers following HTML/CSS best practices guidelines for design. There is no perfect solution to make a site work for all available browsers as they all render pages in different ways depending on how they are developed. Testing your site on as many devices and platforms as possible is the best method.

The mobile site would be designed with a simple, but professional design that aligns with College branding. This will be accomplished by following the color theme provided by the College graphic artist. The theme would be consistent with what is used on the portal site and the student information system (SIS) user interface. The mobile site home page will be designed to provide an interface for single sign-on. Because not all of EMCC’s integrated systems have mobile offerings,

single sign-on will be something that will be worked on as we can figure out how to use what the systems have or as their offerings evolve. The initial design will have links to email and Blackboard, but as these systems are likely to change in the near future, the current focus should be on the SIS content for now.

As a password protected page is developed, users and roles that will have access will be defined and continue to be managed by system administrators. We will begin by using the currently defined roles and user administration systems from the College's SIS and active directory. User authentication and authorization will be done through the SIS.

In the early stages of development, there will be only two or three people that will be able to update content. These people will be a programmer from my staff and one or two of the College's programmers. This is necessary because currently there is no content management system in place, so updating the content will require programming knowledge. When we can ensure that the site is functioning properly (retrieving and displaying information correctly), we will move from beta test mode and officially launch the site. At the point we will employ the use of XML/RSS feeds to allow users other than the two or three programmers to add content to the pages via these feeds. The design of the mobile site will have a search feature built in by our programmers. This will work by tying into the main site's current search function.

Bannerweb SIS does not provide a mobile offering. In order to provide a smooth interface with your Bannerweb system, your mobile pages will be completely custom designed and reside inside the SIS application. Our programmers will reuse as much of the content that we can such as SQL procedures and code for customizations your programmers have already created such as signing up for text alerts and finding out who your advisor is. We will create clickable links to academic departments, such as financial aid, admissions, student email, and Bannerweb. Most of the accessibility requirements have become standard practice in programming. However, we will test the site when it is complete to ensure that it meets current statutes. It is important to note that these statutes are still changing and it unknown at this time how they will affect mobile devices. Review of the mobile site and further research will need to be conducted by the individuals responsible for accessibility policy at your campus. If statutes change and future programming modifications are needed we will work with your programmer(s) at the contracted hourly rate.

## Text Messaging

The mobile strategy includes a platform for implementing text messaging for emergency and academic notifications. The system will provide the ability for the College to send emergency text notifications to students who opt into the system. We recommend using Rave Alert provided by Rave Mobile Safety. Based on our experience Rave Alert is one of the best priced and best performing, easiest to use, and most reliable broadcast alerting solutions available. Its straight-forward interface allows for quickly sending emergency notifications and important announcements via text messages, email or

recorded voice messages. Rave can even send alerts to digital signage, Facebook, public address systems, Twitter or any RSS feed the EMCC is using.

Messages are sent from your external relations/communications department using the Rave system. They use the Rave online application to compose and send the messages. The distribution lists of users that receive the messages are compiled and updated daily from a list of all current students and staff that have opted to receive the messages. The lists are pulled from your SIS and files are created from an Access database. The files are then uploaded to Rave via a secure URL. Rave then imports the files into their systems. Students and staff can opt in for this text service by logging into their myEMCC site, selecting the myMobile tab which is connected to the SIS, and then registering their mobile numbers. Currently, they are only able to receive campus broadcast text alerts. However, your programmers may wish to add additional notification levels in the future, such as receiving text alerts for coursework reminders and club/activities notifications.

### Receiving SIS Mobile Alerts

When your students and staff login to the SIS through the main myEMCC site, they are able to retrieve information on class schedules, grades, financial aid, and registration information, among other things. This information will also be available to them through the EMCC mobile site because of the Rave system. Rave has an application programming interface (API)/Web service that we will program to. It will allow you to send messages and alerts to any user included in the Rave system.

### Receiving LMS Mobile Alerts

We recommend that the EMCC mobile site provide access to the College's Blackboard learning management system (LMS). This would be accomplished by integrating Blackboard's Mobile Learn 2.0, which is fully functional with Blackboard's LMS. This system offers good usability and has several features that leverage new device capabilities. Students and instructors can create content, upload media as attachments to blogs, journals and discussions directly from their mobile device. The system also supports threaded hierarchy as used in discussion forums. Courses can also be marked as favorites so students and faculty can easily manage the Blackboard courses and groups that they access most frequently. The interface provides access to lessons, announcements, discussion forums grades, roster, and personal tasks. Students and instructors will be able to create content and upload media as attachments to discussions or blogs directly from their mobile device. Blackboard Mobile Learn is available as a free mobile Web services building block. This will enable your Blackboard LMS implementation to power its Mobile Learn in native mobile applications on most mobile devices.

Blackboard Mobile Central is available on any wireless network on an annual subscription basis for the iPhone, iPod touch, Android, BlackBerry and Palm webOS devices. Users on all other browser-

enabled mobile devices can access the Blackboard Mobile Central solution via mobile web. You do not need to license the Blackboard Learn platform or any other Blackboard products to license and use Blackboard Mobile Central.

In order to implement the LMS piece of the your mobile strategy, we will use Blackboard Mobile Software Development Kit (SDK). The Blackboard Mobile SDK provides programmers with a set of tools that aid in developing new, custom applications or integrating existing apps you may already have into your Blackboard Mobile Central springboard. The SDK is available as part of the Blackboard Mobile Central product, and can be accessed by our company or by a project manager designated by EMCC.

### **DeFranco Consulting's Experience in Mobile Strategies**

Our programmers have many years of training and experience in creating HTML pages using server side languages and connections to databases. Specifically, we plan to use and have used in other similar projects standard HTML/CSS and Javascripts running on Windows servers. Jim is our senior programmer and will manage your project. Tim will also be supporting the project. You will find their credentials posted on our Web site.

We have worked with a number of colleges, universities and corporations in providing consulting and support services for mobile strategies. Below is contact information for three higher education institutions that we have worked with over the past twelve months.

Tompkins Cortland Community College  
Marty Christofferson  
Dean of Campus Technology  
607-844-8211

State University of New York at Cortland  
James Durr  
Senior Programmer/Analyst  
607-753-2354

SUNY Learning Network  
Doug Cohen  
Applications Services Manager  
800-875-6269

### **Recommended Framework**

We have found that in order to build the most dynamic mobile application, the best Web framework to work with is ASP.net C#. We will require a connection to your SQL Server 2005 database. ASP.net

allows programmers to develop dynamic content on Web pages that HTML cannot accomplish. C# is the programming language that allows a Web page to access and retrieve database information.

## Project Timeframe

In creating the following development timeframe, we began by considering an experience that supports existing behaviors and the EMCC brand. We don't expect users to change their behaviors to accommodate a mobile site or application that has been built. Instead, we will begin with an experience that supports existing behaviors and is consistent with your brand. To ensure that your organization is ready to support experiences of the future, we need to make sure you have the infrastructure in place to make content easy to syndicate or repurpose for new devices and to share between devices. Although setting up the architecture for a highly configurable system like this can be a significant time investment, it's much easier to repurpose content for new devices, additional languages, or alternative interfaces once the architecture is in place. We also took into account that your IT team will be managing various phases of the implementation and will be able to add additional features as the College sees fit.

A project such as this managed and developed exclusively by our firm would take 120 hours to complete from inception to launch. The project would be completed within one month and cost \$15,000 based on our hourly rate. However, we realize that this timeframe should remain quite flexible as we will be serving in a consultative and support role as much of the design work will be done in house by your programmer(s). In this case, we estimate that the total investment for this project by our team will be approximately 40 hours or \$5,000. Obviously, this figure is subject to change based on your needs. If you devote one programmer to the project and he or she is able to invest at least 12 hours per week, the project should be completed within three months. We will begin the process within one week of receiving your signed agreement.

We will work with your programming team to complete the first version of the mobile site within two weeks. This version will be functional, stylistic, integrate with your SIS, and be completely branded. Your team will then be able to revise the site, add additional pages, publish, and make it available for use based on a launch date of your choosing.

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## USE CASES

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### Cancellations

Description – Mobile users looking for a list of class cancellations are directed to mobile site

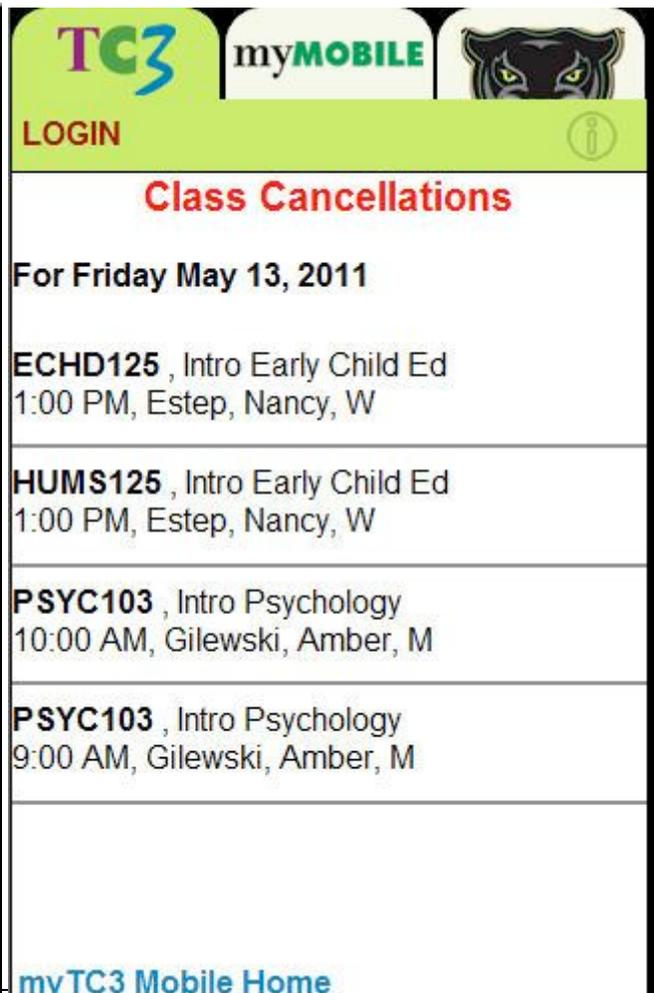
Scenario	A mobile device is used to access the myEMCC.edu main site and is redirected to a mobile version of the site.
Triggering event	The user accesses the browser on his or her mobile phone, navigates to the Current Student page of EMCC.edu and is redirected to the mobile site m.EMCC.edu
Actors	EMCC student or instructor wishing to access the Current Students page on the EMCC.edu main site with his or her mobile device to see a list of class cancellations
Stakeholders	Students and faculty seeking information from the EMCC main site, external relations staff supplying the information via the main website, and IT staff responsible for connecting the information from the main website to the mobile site
Pre-condition	In order for this use case to execute, a user must have a browser-equipped mobile device with WIFI, 3G or 4G service. The IT staff must ensure that the correct databases and systems are integrated and linked properly in the mobile site.

<p>Post-condition</p>	<p>The myEMCC site will display content more plainly on mobile devices than on computer screens. Also, some functionality may be limited through the mobile site.</p>	
<p>Flow of events</p>	<p>Actor</p>	<p>System</p>
	<ol style="list-style-type: none"> <li>1. A student or instructor with Internet access on his or her mobile device navigates to the myEMCC site, which provides nine links and three tabs.</li> <li>2. The user taps the Class Cancellations link.</li> <li>3. A list of that day's canceled classes appears</li> </ol>	<ol style="list-style-type: none"> <li>1. The myEMCC site immediately detects a mobile device and redirects the user to the mobile version of the myEMCC site.</li> <li>2. The link connects to the main Current Students page of the main EMCC site where the College's external relations staff has entered the information.</li> <li>3. Class cancellations are displayed.</li> </ol>
<p>Exception</p>	<ul style="list-style-type: none"> <li>• If the server for the mobile site goes down, information will not display and a blank page may appear</li> </ul>	

Exhibit 1



Source: <http://www.tc3.edu/mobile2/>  
<http://www.tc3.edu/mobile2/classCancel/>



Source:

## Grades

Description – User accesses EMCC mobile site via a mobile device and selects myMobile tab to see midterm or final grades

Scenario	User is prompted to sign in to myMobile tab to get access to midterm and final grades	
Triggering event	User logs in to emcc.edu via mobile device, selects the myMobile tab, and logs in with single sign-on username and password	
Actors	Students	
Stakeholders	Students wishing to see midterm or final grades, instructors who post the grades in the SIS, and IT personnel responsible for connecting the SIS information to the mobile site.	
Pre-condition	Midterm or final grades need to be entered by faculty	
Post-condition	Student login will be recorded in website analytics data	
Flow of events	Actor	System
	<ol style="list-style-type: none"> <li>1. User with wifi, 3G or 4G enabled mobile device activates device browser and enters EMCC.edu site in the address bar</li> <li>2. User selects the myMobile tab</li> <li>3. User enters single sign-on username and password</li> <li>4. User selects the Grades icon</li> <li>5. User accesses Year/Term drop down menu to look at final grades from a previous semester</li> </ol>	<ol style="list-style-type: none"> <li>1. EMCC.edu main site is accessed which quickly rolls over to the mobile version of the site's main page</li> <li>2. SIS login screen appears</li> <li>3. Student information system is access and displays information unique to the logged in user</li> <li>4. Midterm or final grades for most recent term are displayed</li> <li>5. Midterm and final grades data for a previous semester is displayed</li> </ol>
Exception	<ul style="list-style-type: none"> <li>• If the user enters the wrong single sign on username or password or if the SIS is down, data will not display.</li> </ul>	

Exhibit 2

The screenshot displays the myMOBILE interface for a student named J Anthony. The top navigation bar includes the TC3 logo, the myMOBILE text, and a tiger head icon. Below the navigation bar, a green banner says "Welcome J Anthony" with an information icon. The main area is divided into two sections. The left section contains a grid of icons for various services: Class Schedule (calendar with '9'), Grades (A+ icon, circled in red), Contact Instructors (apple), Contact My Advisor (@ symbol), Class List (clipboard), Teaching Schedule (calendar with '9'), Advising List (graduation cap), TC3 Text Alerts (SMS bubble), myMAIL (envelope), and a partially visible icon for a person. The right section is titled "Your Grades" and features a dropdown menu for "Year/Term" set to "2009/Spring". Below this is a table of grades for the 2009/SPRING term. The table has columns for Course, Sec#, Mid, and Final. The row for CAPS131 shows a grade of X in the Final column. Below the table, the following statistics are listed: Attempted Credits: 0.000, Earned Credits: 0.000, Term GPA: 0.000, and Cumulative GPA: 0.000. At the bottom of the right section are links for "myMOBILE Home" and "Logout".

**Your Grades**

Year/Term: 2009/Spring

**Grades for Year/Term: 2009/SPRING**

Course	Sec#	Mid	Final
CAPS131	ME50		X

Attempted Credits: 0.000  
Earned Credits: 0.000  
Term GPA: 0.000  
Cumulative GPA: 0.000

[myMOBILE Home](#)

[Logout](#)

Source: <https://myinfo.tc3.edu/SelfService/Mobile>

Source: <https://myinfo.tc3.edu/SelfService/Mobile/student/>

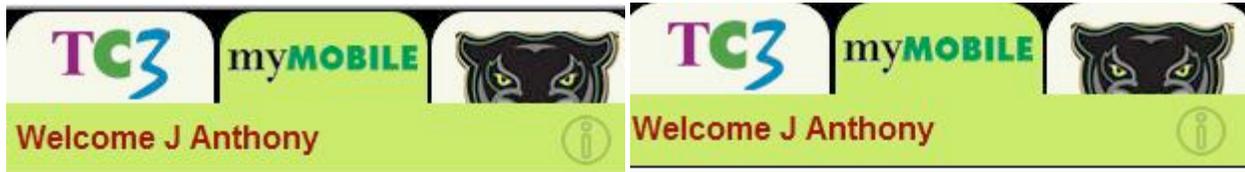
## Text Notification

Description – User logs in to SIS to opt in to receive course-related text messages from instructors.

Scenario	A mobile device will be used to login to the SIS. Once logged an icon will be selected that will navigate to a page that provides the ability to register a mobile phone number to receive text notifications for specific courses sent by respective instructors.	
Triggering event	The student with a mobile device on 3G, 4G or WIFI navigates to EMCC.edu and is then automatically redirected to the EMCC mobile site.	
Actors	Student with a mobile device	
Stakeholders	Student wishing to receive text notifications from instructors, instructors who send text notifications, IT staff responsible for ensuring the student has the ability to register his or her mobile device to receive text messages from instructors.	
Pre-condition	The main site must be able to detect a mobile device and redirect it to the mobile site. Before the student can login to the SIS, he or she must have an active account with the College.	
Post-condition	A new record will be entered into the SIS database for another mobile number to receive texts.	
Flow of events	Actor	System
	<ol style="list-style-type: none"> <li>1. Student with 3G, 4G or WIFI activates the browser on his or her mobile device and navigates to EMCC.edu</li> <li>2. Student selects the myMobile tab at the main menu on the mobile EMCC.edu</li> <li>3. Student logs in to the SIS</li> <li>4. Student selects EMCC Text Alerts</li> <li>5. Student checks the box, enters his or her mobile number, and selects “Make Change”</li> <li>6. Student logs out</li> </ol>	<ol style="list-style-type: none"> <li>1. The main EMCC.edu site is accessed, detects the mobile device and redirects the mobile browser to the mobile site</li> <li>2. The main menu of the SIS is displayed prompting the user to login with his or her assigned username and password</li> <li>3. The text notification system database is accessed and displays the user’s name</li> <li>4. The user is prompted with a menu to check a box, enter</li> </ol>

<b>Flow of events (con't)</b>		his or her mobile number, and click “Make Change” if they wish to receive text notifications 5. SIS records the mobile number in the text notification database 6. SIS ceases access to the student’s personal information
<b>Exception</b>	<ul style="list-style-type: none"><li>• The student has not yet activated his or her single sign-on username and password and does not have an active account in the SIS</li></ul>	

Exhibit 3



**Register for TC3 Text Alerts**

**Your Current Registration Status:**

You **are** currently registered to receive text message alerts from TC3.

Your Registered Mobile Number: **607-261-0335**

**Make a change?**

**Unsubscribe from TC3 Text Message Alerts:**

(check box)

**Send Alerts to a different Mobile Number:**

(enter new mobile number, numbers only ex, 6075551234)

Make Change

[myMOBILE Home](#)

[Logout](#)

Source: <https://myinfo.tc3.edu/SelfService/Mobile/> Source:  
<https://myinfo.tc3.edu/SelfService/Mobile/>

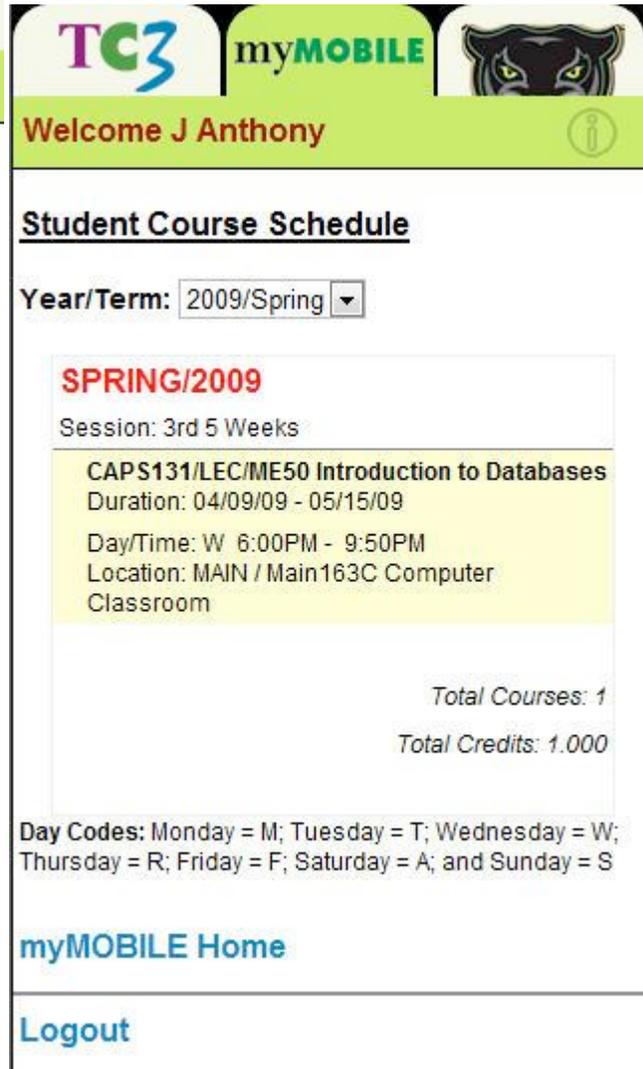
## Class schedule

Description – User accesses the SIS via a mobile device to access a class schedule

Scenario	A mobile device is used to access the SIS via a mobile site in order to view a class schedule	
Triggering event	User accesses the Web with his or her mobile device, navigates to EMCC.edu and is redirected to the mobile version of the site	
Actors	Student with the mobile device	
Stakeholders	Students who want access to class schedules, enrollment services personnel, and IT personnel responsible for connecting the SIS information to the mobile site	
Pre-condition	Students must be registered for classes in order to access schedules	
Post-condition	Analytics data will be recorded of the student and date and time he or she accessed the SIS	
Flow of events	Actor	System
	<ol style="list-style-type: none"> <li>1. Student with 3G, 4G or WIFI activates the browser on his or her mobile device and navigates to EMCC.edu</li> <li>2. Student selects the myMobile tab at the main menu on the mobile EMCC.edu</li> <li>3. Student logs in to the SIS</li> <li>4. Student selects the Class Schedule icon</li> <li>5. Student selects the year and term from the dropdown menu</li> <li>6. Student logs out</li> </ol>	<ol style="list-style-type: none"> <li>1. The main EMCC.edu site is accessed, detects the mobile device and redirects the mobile browser to the mobile site</li> <li>2. The main menu of the SIS is displayed prompting the user to login with his or her assigned username and password</li> <li>3. The SIS is accessed successfully and a personalized welcome message is displayed for the user</li> <li>4. The SIS Student Course Schedule menu is displayed prompted the student to select a year and term</li> <li>5. The SIS displays the user's</li> </ol>

		course schedule specific to a year and term 6. SIS ceases access to the student's personal information
Exception	<ul style="list-style-type: none"><li>The student forgets his or her myEMCC username and password and is unable to access the system</li></ul>	

Exhibit 4



Source: <http://www.tc3.edu/mobile2/>

Source: <https://myinfo.tc3.edu/SelfService/>

### Athletic news

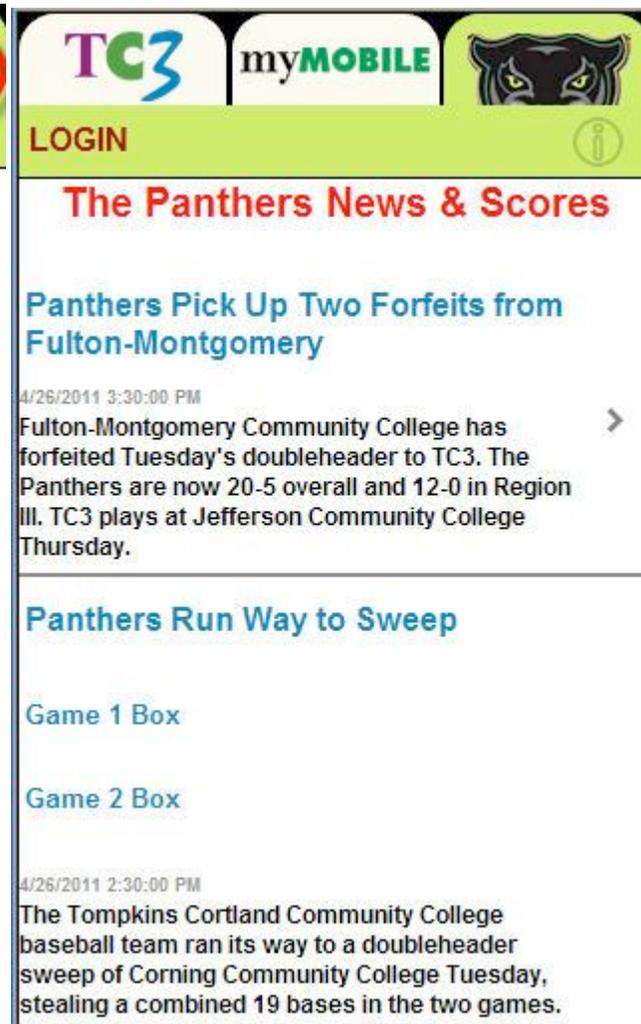
Description – user accesses EMCC athletics scores and game recaps through mobile device

Scenario	Mobile device will be used to access main EMCC athletics page to get a recap of games and scores	
Triggering event	User accesses the Web with his or her mobile device, navigates to EMCC.edu and is redirected to the mobile version of the site	
Actors	Student with mobile device	
Stakeholders	Student with the mobile device, external relations department responsible for providing athletics information to the athletics site, and IT personnel responsible for connecting the main athletics site to the mobile site	
Pre-condition	The main EMCC athletics site must contain current content	
Post-condition	none	
Flow of events	Actor	System
	<ol style="list-style-type: none"> <li>1. Student with 3G, 4G or WIFI activates the browser on his or her mobile device and navigates to EMCC.edu</li> <li>2. Student selects the mascot (Golden Eagles)tab at the main menu on the mobile EMCC.edu site</li> <li>3. Student selects the News &amp; Scores icon where most recent game scores and recaps information appears</li> </ol>	<ol style="list-style-type: none"> <li>1. The main EMCC.edu site is accessed, detects the mobile device and redirects the mobile browser to the mobile site</li> <li>2. The main mascot menu of the EMCC.edu site is accessed</li> <li>3. The athletics news page is accessed</li> </ol>
Exception	<ul style="list-style-type: none"> <li>• External relations staff must update the Web site with current information</li> </ul>	

Exhibit 5



Source: <http://www.tc3.edu/mobile2/>



Source: <http://www.tc3.edu/mobile2/>

## LMS Content

Description – student uses mobile device to access course content on EMCC’s Blackboard learning management system (LMS) instance.

Scenario	A mobile device will be used to access the myEMCC main site. After authenticating the user will then access the College LMS where content will be displayed in a format compatible with mobile devices.	
Triggering event	Student using a mobile device with 3G, 4G or WIFI capability opens the browser and navigates to the EMCC.edu main site	
Actors	Student registered for courses that are using Blackboard, faculty using Blackboard, IT staff responsible for connecting the LMS to the myEMCC website	
Stakeholders	Students who wish to access Blackboard content on their mobile device, faculty responsible for providing the content in Blackboard, and IT staff responsible for connecting the LMS to the mobile site	
Pre-condition	Mobile site and LMS sites need to be available	
Post-condition	User tracking data will be recorded in the LMS indicating when the student logged in, which content was accessed, and when the student logged out	
Flow of events	Actor	System
	<ol style="list-style-type: none"> <li>1. Student with 3G, 4G or WIFI activates the browser on his or her mobile device and navigates to EMCC.edu</li> <li>2. Student selects the myMobile tab at the main menu on the mobile EMCC.edu</li> <li>3. Student logs in to the SIS with his or her single sign-on credentials</li> <li>4. Student selects the myWeb Courses icon</li> <li>5. Student selects the course he or she wishes to access</li> <li>6. Student selects content item (discussion, announcement,</li> </ol>	<ol style="list-style-type: none"> <li>1. The main EMCC.edu site is accessed, detects the mobile device and redirects the mobile browser to the mobile site</li> <li>2. The main menu of the SIS is displayed prompting the user to login with his or her assigned username and password</li> <li>3. The SIS is accessed successfully and a personalized welcome message is displayed for the user</li> <li>4. The LMS recognizes the</li> </ol>

<p><b>Flow of events (con't)</b></p>	<p>syllabus, etc.) 6. Student logs out</p>	<p>user's single sign-on credentials and loads the student's personal home page 5. The LMS navigates to the main menu of the course selected where options appear for the user to access lesson materials, course syllabus, course mail, and course announcements 6. Content item appears in mobile device browser window 7. LMS access is cut off</p>
<p><b>Exception</b></p>	<ul style="list-style-type: none"> <li>• The myMobile or Blackboard host server is down</li> </ul>	

Exhibit 6



Source:  
<https://myinfo.tc3.edu/SelfService/Mobile/>

Source:  
<http://www.Blackboard.com/getdoc/381f6652-d757-4c2d-b089-ed359bb51bf2/Demos.aspx>

## WORKS CITED

Horrigan, John. "Mobile internet use increases sharply in 2009 as more than half of all Americans have gotten online by some wireless means." 22 July 2009. Pew Internet & American Life Project. 12 April 2011 <<http://www.pewinternet.org/Press-Releases/2009/Mobile-internet-use.aspx>>.