

The West Point Mobile Application: Connecting the West Point Community

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Abstract: West Point relies on Facebook pages, email, and word of mouth for distribution of desired information to relevant personnel. Cadets and the surrounding community suffer from a lack of awareness as a result. The garrison commander, this project's main stakeholder, desires a mobile application to solve this problem. This mobile application allows users to access information concerning events sponsored by West Point organizations in a single place. Meetings with stakeholders, a literature review, and survey results drive the content of the app. It includes a directory for West Point personnel and locations, a consolidated calendar of community events, and notifications for inclement weather and live events.

Keywords: Mobile Application, User Interface, Text Mining, Data Transformation

1. Introduction

Focus groups with post residents and meetings with the garrison commander show that West Point suffers from a lack of awareness concerning events on the post. In response to this issue, the garrison commander wants to consolidate information to a single location. There are two major target populations for the app: community members and the Corps of Cadets. Each population has an important stakeholder to represent them. The garrison commander speaks for the community, consisting of Active Duty personnel and civilians living and working on post, as well as their Families. The Associate Dean for Policy and Communication represents the Corps of Cadets. The original West Point App was created by the Dean of the Academic Board and is currently funded through their department. The project's top priority is to bring attention to the information valued most by the garrison commander. However, academics must also be involved in important ways. The purpose of the West Point app is to more effectively distribute information at West Point in accordance with the desires of community residents, cadets, and academy leadership.

2. Stakeholder Analysis

The garrison commander believes the West Point community has difficulty finding information it needs with respect to post facilities and events. He thinks that a mobile application can consolidate the information of multiple organizations to assist residents. The garrison commander cares about five organizations at West Point more than any others: The Office of the Director of Intercollegiate Athletics (ODIA), Morale and Welfare Recreation (MWR), Association of Graduates (AOG), Directorate of Cadet Activities (DCA), and Army and Air Force Exchange Service (AAFES).

The idea for a mobile application comes from the garrison commander's vision. Through this guidance, the group discovered The West Point App on the app store. The app is maintained by Straxis, a company who also designs mobile applications for other service academies. The group contacted Straxis asking for a Point of Contact (POC) for the West Point App. Discovery of the app led to the second major stakeholder in the project, the Associate Dean for Policy and Communication. Working in the office of the Dean, this stakeholder manually controls the West Point App. The group met with her and shared the garrison commander's intent for the project. From this meeting, the group discovered the app was funded by the Dean's department with the intent of allowing cadets to access academic information. After this meeting, the group agreed with this stakeholder that the current West Point mobile app could be modified to also meet the desire of the garrison commander. Any changes made, however, must also consider the intent of the Dean.

The group continued by hosting two focus groups with spouses of officers living and working at West Point. Information from the focus groups allowed the project to verify the garrison commander's description of the problem. Spouses spoke of trouble finding links for sports signups and introduced the group to multiple Facebook pages used by community

residents to share information. Another spouse also spoke of a website used at Virginia Tech called “The Next Three Days.” This website allows residents to see events occurring on campus in the next three days, as well as further into the future.

Both focus groups confirmed the garrison commander’s description of an information problem at West Point. From this understanding, the group created and distributed two surveys. These surveys asked members of the community and cadets what they desired in an improved West Point mobile application. The cadet survey was distributed through email by members of the group and featured 254 respondents. The survey focused on information the cadets cared for most. Figure 1 displays the results of the cadet survey.

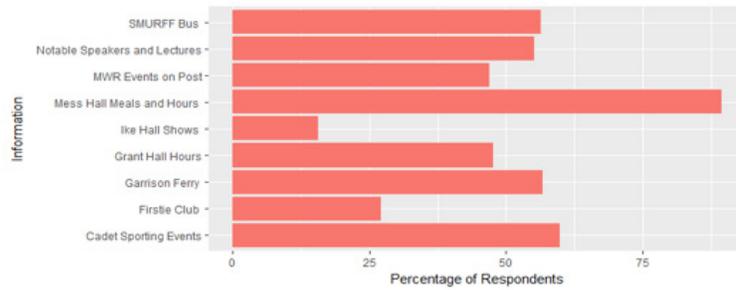


Figure 1. Cadet Desired Information

From this survey, the group concluded that cadets cared most about Mess Hall meals and hours, Cadet Sporting Events, and the Ferry to Garrison train station. The cadet survey’s final section was a free response question asking cadets for additional features they desired. 226 cadets responded to this question. From Text Mining this data in R-Studio, the group concluded that cadets were also interested in accessing Cadet Information System (CIS) functions on the West Point app. Cadets spoke mainly of applying for weekend leave, scheduling haircut and medical appointments, and checking their grades. These functions currently require both a Common Access Card (CAC) and connection to the West Point network.

The community survey was distributed through two commonly used Facebook pages mentioned in both focus groups. 185 members of the community responded to the survey. This survey also asked respondents about information most important to them and features of the app they cared for most. Figure 2 displays the results of the community survey.

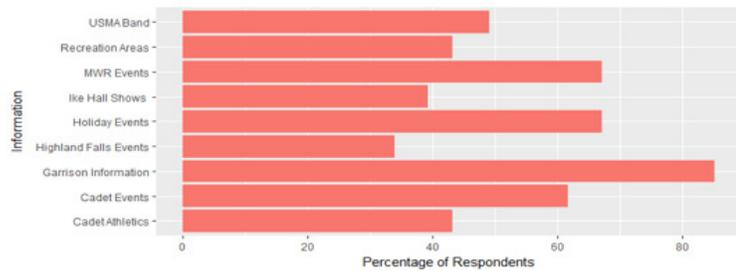


Figure 2. Community Desired Information

From this survey, the group concluded the community cared most about garrison weather and road closure information, MWR events, and post-sponsored holiday events. In addition, the community expressed the desire for an events calendar, a directory for people and places on post, and an interactive map. The community survey also featured two free response sections. From Text Mining each section in R-Studio, the group determined that the community emphasized its desire for garrison information. This includes knowledge of special weather codes, school closures, and weather updates. From both surveys, most cadets (65.9%) and community members (90.8%) also expressed approval of filtered notifications to the app for information they desired. The Cadet and Community surveys helped the group better understand what potential app users wanted in the West Point app.

3. Literature Review

During this project, the group researched various papers to better understand the elements of a helpful mobile app. From the review conducted, the team learned two important lessons about successful mobile apps. First, the team redesigned the user interface of the West Point app in response to an understanding that users can form impressions of technology quickly. Next, the group learned that information overload can lead to negative perceptions of the app because the human mind has a limitation on information reception over short amounts of time.

To begin, someone's first impression of a mobile application can have large effects on their inclination to use it again in the future. In the Behavior & Information Technology journal, researchers Gitte Lindgaard, Gary Fernandes, Cathy Dudek & J. Brown (2006) wrote a paper titled "Attention web designers: You have 50 milliseconds to make a good first impression!" Published through the Human-Oriented Technology Lab at Carleton University, this paper studied the importance of first impressions on a user's conceptions of a website. It began by highlighting the importance of confirmation bias on a user's first impression. For example, if a webpage appeared poorly designed at first glance, users often looked for other negative aspects to confirm their initial perceptions. The study concluded that it was even possible for a website user to come to a first impression in as little as 50 milliseconds. This paper and its insights led the group to redesign the user interface of the West Point app. Specifically, the updated user interface more closely resembles the design of the new West Point website, launched in January 2019.

The second lesson derived from the literature review emphasized the negative impacts of information overload on the app. The West Point app has a powerful notification feature that must not be abused by app administrators. *An in-situ study of mobile phone notifications*, conducted by Martin Pielot, Karen Church, and Rodrigo de Oliveira (2014), studied the effects of notifications on users' smartphones. The paper found that participants experienced an average of 63.5 notifications per day. Additionally, an increase in notifications was often associated with an increase in negative emotions from users. This fact has important implications on the use of the West Point app's notification system. On one hand, users deserve important information they want to make their lives easier. However, if consumers receive too many notifications, this paper shows they will see the app in a less favorable light. Additionally, the significance of a notification decreases as the amount of notifications increases. From the stakeholder analysis conducted through the community and cadet surveys, the team decided to push notifications to users for a single important piece of desired information.

4. Methodology

Changes made to the West Point app throughout the project were driven by lessons learned from the literature review and results of both surveys. The literature review led the group to redesign the app's outdated user interface to more closely resemble West Point's new website. In addition, survey results drove other changes and additions incorporated into the updated app. The new app features an events calendar, updated directory, notifications sent to users, and a section titled "Mess Hall" that features the meals served and serving hours for the cadet mess hall. Working directly with the app developer Straxis, these changes were incorporated into the app.

To begin, information gathered from the paper titled "Attention web designers: You have 50 milliseconds to make a good first impression!", provided important insight to the development of the West Point app. Much like a webpage on the internet, it is possible for app users to quickly determine their thoughts about something they download. After first downloading the West Point app, the group quickly agreed it appeared outdated and marginally useful. Unfortunately, most of this negative perception came from looking only at the app's home page. As an example, the original West Point app featured a wheel tool to scroll between its main functions. The group agreed it looked like an outdated feature. The most significant change inspired by the literature review was a complete redesign of the app's user interface. The team wanted the improved app to impress users at first glance. Most importantly, the group decided to design the user interface to mirror the new West Point website. Figure 3 shows the changes made to the user interface.

Results from both surveys also led to updates to the West Point app. To begin, 80.8% of the community placed "Events Calendar" in their top five desired features. Much like the Next Three Days website mentioned previously, the events calendar on the West Point app incorporates information from the garrison commander's three most important organizations, ODIA, DCA, and MWR. This calendar informs users of upcoming events from each organization. Next, 78.6% of the community placed "Directory" in their top five desired features. The original West Point app had a directory with the contact information and physical location of significant places at West Point. With the survey feedback, the group screened the contents of the current directory and added new locations and people.

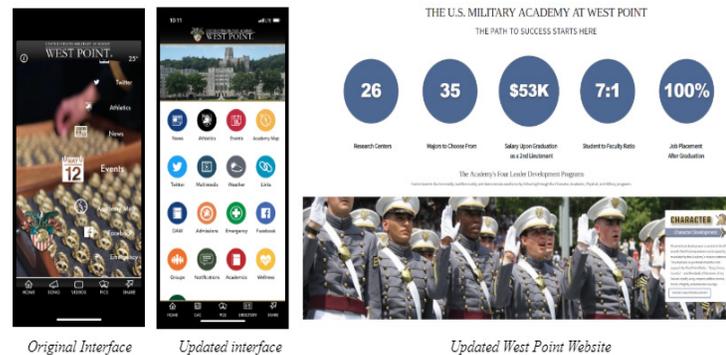


Figure 3. Updated App User Interface and the new WestPoint.edu

For the “Desired Information” question on the community survey, 85.2% of respondents placed “Garrison Information” in their top five. Garrison information includes live updates on road closures, weather code updates, and school cancellations. This information is currently published on the Garrison and Community Facebook page. This page is followed by many residents living and working at West Point. With the garrison commander, the group identified a POC in garrison headquarters to push similar notifications to the West Point app. The team provided this POC with administrative access to the West Point app’s notification feature. With garrison commander support, this individual can send live weather and road closure updates to app users.

In the cadet survey, 89.4% of cadets wanted to know the mess hall meals and hours. Specifically, this included menu information for every day of the week and the hours of service. Currently, each week’s mess hall meals are posted to the mess hall Facebook page as pictures from a PowerPoint. With this feedback from the cadets, the group asked Straxis to create a new “Mess Hall” feature on the updated app. In the future, this feature will allow users to view this information on the app instead of scrolling through Facebook posts to find out the menu for lunch. In summary, all changes made in the updated West Point app come directly from the project’s literature review or results from both surveys.

5. Model

The West Point app project was pulled in many directions by different interest groups. One of the largest challenges faced was the prioritization of tasks based on the desires of each client. The garrison commander’s goals were most important, however, the intent of the Dean also had to be satisfied. Finally, all feedback from the community and cadet surveys needed to be considered and ranked among the desires of the previous two stakeholders. To accomplish this challenging task, the group created a model to grade project completion and properly rank all tasks according to the requests and importance of each client. A large part of this model relies on the weights of stakeholders. The group developed a working model that could be continuously adjusted throughout each phase of the project. It ultimately served as a project management tool.

To quantify the importance of each task, the group first asked the garrison commander for his ranking of community interests to cadet interests. He told us he cared 70% about the community app needs and 30% about the cadet app needs. This first variable became one third of the model equation and was called “stakeholder weight”. “Priority index”, the second variable, was the percentage of each project task ranked from one to twelve, based on the results of the community and cadet surveys. The final multiplier was the percentage of each project task complete at the given moment. When these multipliers were combined, they yielded a percentage for overall app completion. By replacing each completion quantity with a factor of one, the model showed the project at ideal completion. Summing the current weights divided by the ideal weights yielded an average score for project completion. This grade told the team leader if the group was on target. Figure 4 shows the app’s current progress compared to the intended end state.

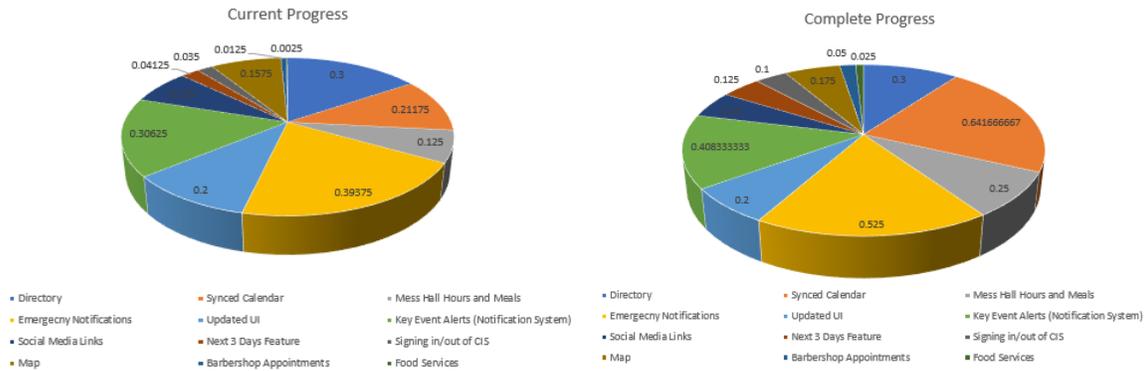


Figure 4. Current and Complete App Progress

This project was characterized by intense work production, followed by lulls in progress from meetings with clients and work on the app. Project progress over time took the shape of these “S” curves and could also be compared to step function increases in progress. At the time of this writing, the group predicts that 65% of project goals were met. While some of this comes from ongoing tasks, another challenge is transforming information to a suitable format for the app. Several organizations at West Point create information that is unusable to anyone except for them.

6. App Data

A significant goal of the project is to automate the flow of information onto the app. If information on the app is linked to a live webpage, its contents can be updated automatically. As an example, the app’s Athletics feature is linked directly to the ODIA website and its various pages. This data is easily converted through an iCal format to populate the Events feature of the app. In contrast, other aspects of the app require manual updates from app administrators.

Getting data onto the West Point app was a significant challenge for the group. Some organizations, like ODIA, have excellent data and resources that allow easy connection between the app and their website. Other organizations, like the cadet mess hall, post information in remote locations virtually inaccessible to the app. Maximizing the amount of data pulled continuously onto the app is a large obstacle future groups will also face. Figure 5 visually represents the flow of information to the app. Green categories are automatically updated through links to various web pages and their content. The app relies heavily on direct links to USMA and ODIA websites. Yellow categories require manual input of information to update the app. Features in the yellow category include the Directory and Academy Map. The red category describes the Mess Hall feature. Mess hall meals are currently posted as pictures of PowerPoint slides on Facebook. The group is still searching for a way to get this information onto the West Point app. One proposed solution is to create a new page on WestPoint.edu for the Mess Hall to post information regarding meals and hours. This will establish a connection between the app and the Mess Hall’s information.

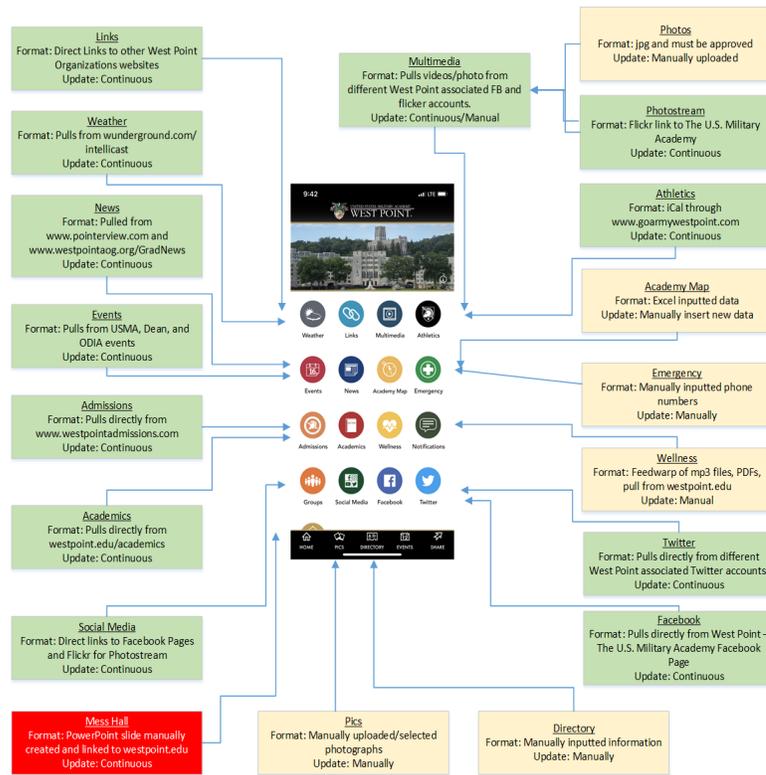


Figure 5. Data on the West Point App

7. Conclusion

The West Point app has unlimited potential for future growth. As the project continues, the group hopes to provide new teams with tools and insight to create a useful resource for cadets and the community. Throughout the project, the group faced several challenges. The most significant challenges included managing stakeholder expectations and transforming data for the app. The complicated nature of this project's stakeholders made setting goals more challenging. The group often struggled to balance the needs of the garrison commander with the desires of the Dean, the cadets, and the community. This fact emphasizes the importance of the model to prioritize tasks according to relative importance. Next, the group faced many obstacles taking data from organizations and transforming it for the app. Some organizations put their data into easily accessible formats. Others used Facebook, PowerPoint, or PDF formats to share information. This made it challenging to include these organizations on the app. Despite these setbacks, the group also experienced successes with stakeholder analysis and building a strong relationship with Straxis. Almost half the project consisted of focus groups and surveying potential app users. Each survey provided crucial insight to what each population wanted in the app. In addition, after completing stakeholder analysis, the group used its relationship with Straxis to make informed changes to the original West Point app. This year's work built a foundation for the app. Future students can further improve the relevance and functionality of the new West Point mobile Application.

8. References

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