

Code 007: LifeAtHere Proposal

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Executive Summary

Bucknell University has thousands of different people on campus every day. Each of these individuals, whether they are students, faculty, staff, or visitors, need to navigate a busy schedule of daily tasks and events on campus. Each of these groups need access to varying services, many of which exist in different portals across the web. The lack of integration of the vast digital landscape of Bucknell can lead many to be confused or even forgo many of the applications available to them. This fact is not lost on Bucknell's Department of Enterprise Systems, who have commissioned our team to build the framework for a lifestyle application for Bucknell. In this document, we outline the necessary features required to create this lifestyle application, as well as several solutions for different user groups. All of our proposed solutions adhere to the goal of integrating as many data points as possible and present them in a useable webapp; each also focuses on providing a useable backend for mobile development.

Background

Life at Bucknell's campus is vibrant and full of opportunities for students to engage in. Yet students often don't know what these opportunities are, or don't know how to integrate them into their busy schedules. Similarly, faculty and staff have many obligations and duties that may require the use of several clunky and unintuitive systems. Additionally, visitors to campus often need to know about the events that are happening campus, as well as information on parking and navigation. Throughout all these activities on campus, Bucknell's community uses a multitude of tools, from Moodle to Facebook groups, to assist them. This can lead these separate groups to become confused and overwhelmed by the number of applications that require their attention. There is an obvious need for an all around campus assistant that visitors, students, and faculty can use to stay on top of their busy lives on Bucknell's campus.

In order to understand the needs of this large group of people, our team has consulted with students, faculty, staff, and the wider community to determine the parts of Bucknell's campus life that can be managed by a digital assistant. We found that they all had different opinions on how a digital application could assist them. From the large scale of campus events management to the more mundane necessity of a laundry assistant, we found that students requested a plethora of features to assist them in their day to day activities. Furthermore, in our

discussions with faculty our team found entirely separate requirements like classroom management tools. These features as well as those suggested by staff and visitors must all fit into a unified application. Only then can we insure ease of use.

Our Process

In order to identify our problem space our team as well as a mobile application team met with our clients, Leo Botinelly and Daniel Mancusi from Enterprise Systems. We asked them the following questions to get a better understanding of their requirements -

- What problem are you trying to solve with this Campus Assistant?
- What specific features did you have in mind?
- How do you imagine the web app to be different from the mobile app?
- Do you hope to help people schedule and learn more about events on campus? What kind of events do you want to schedule (how big, how small)? Who can schedule events?
- Is there an admin for these mobile and web applications?

We also had two features prepared to give more insight into the solutions that we were hoping to build -

- Context-based (via geolocation, time, ongoing events, etc.) notifications and information
 - Parking and traffic information and updates
 - Changes based on construction, large events etc.
- Use Bucknell APIs to pull in events from different calendars
 - Integrate into user's personal calendars if they sign in
 - Give users the ability to create new events and share it with campus

While speaking to our client, we realized that the range of problems that they wanted to tackle varied significantly in their target audience and use of technology. They wanted to primarily serve students but also include other external and internal users related to Bucknell, i.e. they wanted a generic tool that serves everyone but with specialization for certain groups. We thought our first step should be to find out what these different groups needed, and then choose one group to cater to through these applications. We also considered using the data available through Enterprise Systems to see what features users requested, but our clients never provided this information. During our meeting, our clients said that they would be able to prepare a list of the API's and databases that our teams might use.

After this meeting, both teams decided to interview different target audiences - students (Greek life, full-time, engineering, non-engineering, american, international etc.), faculty

(tenured and untenured), staff, alumni, and visitors (potential students, parents of current students). Our goal was to pool together all the information we could and then identify the needs of different groups of people. We used a mix of surveys, informal conversations and interviews to collect our data. As we categorized our responses, we realized that, unsurprisingly, it had been the easiest for us to identify the needs of the student population on this campus and thus, we felt that our application would be best suited for catering to students in the initial stages of its development.

Goals

Our foremost goal is to create a useful application that will be beneficial for the entire Bucknell population. Specifically we strive to create an expandable application that will have a working release by the end of the Spring 2018 semester. In that application we look to include fully flushed out event management tools, as this fits the the needs of our largest user group, students. In the end, we wish to pass off a framework that our client will be able to use to create new applications that serve campus life.

Criteria

The most important criteria is to create a web application as well as a collection of data endpoints that our web application can access. With this criteria in mind, we identified features necessary for a useful campus life application. To this end, we used user research to identify a core set of requirements that are necessary for our application's success. See the last page of the document to see a more detailed table of user stories.

1. Security - user data should be safe
2. Event Management
 - a. Creating Events
 - b. Booking Spaces
 - c. Advertising/Discovering/Sharing
 - d. RSVP
 - e. Calendar integration
 - f. Personal events + calendar integration + ability to create deadlines/todo lists
 - g. Sporting events
3. Parking + traffic
4. Map (Interactive)
5. Food
 - a. Ordering
 - b. Info
 - c. Traffic

6. Health service integration
7. Bucknell Technology Integration: Students and Faculty (such as logging into the Web App. with their Bucknell Credentials)
8. Contact Info - offices and Public Safety
9. Amenities
 - a. Library book reservation
 - b. Laundry View
 - c. Ride Board

It should be noted that not all of these features are relevant for all target groups. For example, an interactive campus map will most likely not be a useful feature to a 4th year student, but would be invaluable to a first time visitor to campus. On the other hand, a Bucknell student would see health service integration as much more valuable than a first time campus visitor. This aspect of our project scope gives us a unique situation. Instead of proposing multiple solutions to this single problem space, where each solution caters to the entirety of our feature list, our solutions will each take a target group (students, faculty, or visitors) and design a backend and web-app that caters to that target group.

Constraints

The scope of this project is very broad and thus we created a list shown below that summarizes the constraints we are considering -

- Identify the sections that we would be able to complete over a semester
- Plan a trajectory for the continuation of this project after we graduate
- Target all the different users, so creating many different customizations to tend to each User will have a time constraint
- Code we write and the documentation we create will have to be maintainable, extensible, reusable, and scalable for future consideration
- How easily we can integrate and use Bucknell's API since our client is interested in integrating features such as moodle, and myBucknell features
- Ease of use and integration of Google API and Facebook API will also be constraints because criteria include integrating Facebook and Google Maps into our application
- Learning curve of full stack development and the limited amount of time we have to learn

Proposed Solution Number 1: Students

Our first proposed solution is a web application that mainly serves the needs of students. The features of this solution will focus on effectively communicating events on campus and connecting students with each other. The website will allow students, organizations, Bucknell faculty, and Bucknell affiliates to post events occurring on campus. With this feature included, users of the application can use the application and invite other users to events they wish to attend or are interested in. They will also be able to search for specific events based on category or name as well. Organizations will have a way to estimate how much people are going ahead of time and will be able to thoroughly prepare for the event knowing the estimated attendance.

One more main feature of this proposed solution is the integration of Facebook's API. The reason we want this feature is so that students can see which of their friends are going to which event, making it more likely that they would go if they knew which people were going. Along with will be a chatting feature which will allow users to chat whoever about miscellaneous things. A user can chat the host of an event, chat other users going to the events, etc. We believe this will be very beneficial since users may have questions about the events, may wish to chat their friends to attend, etc.

However our web application will have many constraints. None of us on the team has ever used Facebook's API. We do not know if it is even possible to integrate the Facebook API with Bucknell's API as well since they can be incompatible. Speaking of major constraints, our web application will definitely rely on the Bucknell API. Since one of our goals is to allow students to log in using Bucknell credentials, it would be fairly impossible to avoid the Bucknell API. We also took into consideration of using Bucknell's API to log in to the app using the user's credentials. This way, the web application can be somewhat secure only to those affiliated to Bucknell. We didn't want just anyone being able to post events, message other users, without some sort of validation of the user's identity. This will help prevent malicious users from using the web application and disrupting the community.

How well we understand and can integrate the Bucknell API will be vital to the success of our project. The obvious constraints will be time and our ability to handle the learning curve.

We do not have much experience in full stack development so there will be obstacles in the future that we will have to conquer.

Proposed Solution Number 2: Faculty

We were able to interview a couple of faculty and get suggestions for creating a web application that better targeted faculty members. Some ideas that came up were to integrate the application with moodle and also be able to schedule and keep track of meetings using one platform. There were also some suggestions on the application being able to create worklists and deadlines that were separated based on deadlines and requirements based on the classes they're teaching, their academic and career pursuits, and other projects that they helm at Bucknell. This could be integrated with their google calendar and send them notifications via email when the due dates are coming up. They would also like an all encompassing calendar of the events happening on campus that they could filter through based on their academic (E.g. What talks are happening around campus that they want to go to) and familial interests (E.g. Is Weis Center doing a show for children that they might want to go to with their family?). They would also like to be able to approve add and drop forms online and there must exist a way in which students can request signatures from the professor, the department chair or the academic dean before they add or drop a class. The system should prevent the Department Chair from signing if the professor teaching the class hasn't done it and similarly for the Academic Dean. Another feature on this application for professors would be the ability to mark attendance by choosing who is not in the classroom (which is a smaller number than the students in class, hopefully).

Proposed Solution Number 3: Visitors

Proposed solution 1 is designed to cater to students. Solution 2 is supposed to cater to the faculty and staff of Bucknell. Solution 3 is a proposed solution that, instead of catering to people of Bucknell, will fit the needs of people that visit Bucknell university. Through our discovery process, we interviewed a number of people that didn't fall into our categories of students or faculty and staff. These people include potential students, parents of potential students, people from around the area, and anybody else that would visit the campus that isn't an alumni (visiting teams, parents, guest speakers, etc). Some features that we found to be important to this target audience included multiple login options, information about public Bucknell events, information about Lewisburg local events, Bucknell fun facts, and important Bucknell dates like application

opening and due dates. With these important features in mind, we would like to propose a LifeAtHere app that is targeted towards visitors that has the following features:

- Multiple login options: login with Facebook or Google (high priority)
 - This would encompass student login as well
- Calendar integration (high priority)
 - Calendar will include public Bucknell and Lewisburg area events
 - Calendar will include reminders for important application dates
- Parking and Map (medium priority)
- Fun facts page (low priority)
 - Similar to main Bucknell webpage

We will be using Bucknell's existing servers and APIs for our backend development. Accessing these servers can be done using REST API. Leo also specified that Bucknell development also relies heavily on C# and the .NET framework, so these development tools will be used. Another technology that we will have to use will (most likely) be Angular JS for web development. We are not completely sure if we will use Angular JS at this point, as there are plenty of Javascript libraries that are free to use for web development.

The cost of this project should be free. APIs that we will use are internal to Bucknell, so these should all be free to use. We also don't have to buy any server space because we will be using Bucknell's existing server space due to the fact that this is an internal Bucknell project.

There will be two major modules that have to be developed for this project: backend server development and frontend web app development. Our team is working closely with another team that will be doing mobile development for LifeAtHere. Because of this dependency, our backend development will be the most highly prioritized task to implement. This development will include research into exactly what we can do with existing APIs, research about what possible server endpoints we can create, and implementing any new server endpoints. We estimate that the researching phase will take one week from when we start, and that implementing new APIs will take around a week. However, that second estimate is truly a guess because we don't know just how much we will have to do until we complete the research process. The implementation of the webapp is estimated to take around three weeks and can be developed while working on the servers, except the functionality will have to wait until the backend work is complete.

Our Selected Solution

After reviewing the criteria of time and our client's clear emphasis on students we will be implementing the solution that centers students as the primary user group. We chose this solution because students form a majority on this campus and we are a part of that demographic. Thus, we have easy access to the different types users within this demographic (first-years, upperclassmen, international students, domestic students, engineering majors etc.) and we can also attest to the viability and importance of our product. This way we hope to avoid overcommitting on individual features, meet our goals of creating an expandable application based on a robust framework and have a working release by the end of the Spring semester without sacrificing quality.

Conclusion

Our clients want to build a common platform which students, faculty, staff and visitors can access for all their Bucknell related inquiries and tasks. In response to the broad scope of the project we came up with three solutions. Our first solution targets students and would cater to 3/4ths of Bucknell's population. Our second solution is designed for faculty to help them keep track of their busy schedules. Our third solution caters to visitors and could help draw more people to campus. Each solution has its benefits and drawbacks, and within the scope of this class, it will be impossible for us to meet the needs and requirements for each of these groups. Thus, we hope to focus on creating an events management web application that primarily serves the Bucknell student population. However, we also hope to deliver a product that will be easily extendable to include new features for other user populations.

User Stories

Priority (1 is the highest)	User Story
1	As a president of the Environmental Club, I want to be able to post events on the application to advertise club events.
2	As a student, I want to be able to see a board with events including time and location.

3	As a student, I want to be able to filter the events on the board based on category such as sports, uptown events, etc.
4	As a student, I want to be able to invite my friends to events hosted on the message board.
5	As a club secretary, I want to be able to see how many people want to attend my event in order to plan adequately.
6	As a student, I want to be able to see who is going to events hosted on the board to see if any of my friends could be going.
7	As a student, I want to be able to RSVP for an event to reserve my spot.
8	As a student, I want to be able to easily pick a date, such as a calendar shown, and the event board will only show events on that date I selected.
9	As a student, I want to be able to chat with the host of an event in case I have any questions and/or suggestions.
10	As a student, I want to be able to integrate a chosen event with my google calendar.
11	As a student, I want to be able to message my friends on the application.