Husky Navigator

Specification by

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DESIGN PROBLEM

Through interviews made with University of Washington students, we noticed that many new and transfer students have a difficult time getting to their classes on time. Getting lost on campus is time consuming and contributes to a stressful college life. The first week of every quarter is a challenge to many people who struggle to find their classrooms. On the article “How to avoid getting lost on a college campus”, there are variety of recommendations students need to do including walking around the campus, bringing a mobile phone, noting down key directions and to even “take down the room numbers nearby”. Students have to take down the room numbers because online and physical maps do not provide any instructions once students are inside of a building. This is extremely time consuming. When people have busy schedules, it is hard to find time to walk around a large campus. Lam Kit Sai, who is a new transfer student, mentioned he had to walk around the floor to find his classroom during the first week of the quarter.

The fear of getting lost on campus haunts many students. For students who are on their own for the first time, getting lost is especially scary. The young freshmen often have no idea of what they should do navigationally and that causes an increase of emotional stress. As McReynolds stated, “What happens when you uproot an 18 year old from their family, friends and familiar surroundings? Often (as was the case with me) they get lost”.

UW campus does provide some instructions for navigating around the school; however, they are insufficient. There are only a few physical maps that are old and contain minimal instructions. The official UW campus map does not deliver useful information about buildings such as open hours, majors, or events which can be what most students seek. The current UW map takes students to the departments’ websites and students have to find additional information by themselves. Jerissia, one of our student interviewees, mentioned that she has trouble navigating even if she has a map on hand since she doesn’t know where she is or which way she should go. Even when there is a symbol indicating “You’re here” it is not helpful since people do not where they are in relation to other places. Some places on a blueprint are just too hard to recognize since they look different on a drawing

compared to their physical appearance. The result of that can be very irritating and time consuming.

Consequently, students come late to classes, events and appointments. They miss lectures and important information from the events. If students are late for campus interviews, it would definitely make a negative impression to the employers. College students are prone to stress. Getting lost seems to be a small problem in college life; nonetheless, small factors may add up to a big problem, especially with students who are susceptible to stress. Surviving college is hard, and “suicide is the second biggest killer of kids in college” (Kelly).

We are inspired to develop an app that helps students locate their classrooms more easily. Even those people with bad navigation skills can get to their ultimate destination using this simple app. As a result, students can save time to get more things done in their busy schedules and have less stress in their college life. This mobile app works like a mapping service application. The app distinguishes itself from other mapping service applications by showing indoor maps and giving particular information about buildings. This mobile app is Husky Navigator. The following design explains and showcases Husky Navigator features.

THE PROJECT SCOPE

Husky Navigator is a mobile application developed to display step-by-step instructions on how to get from one place to another on the University of Washington campus. Overall, Husky Navigator has two main features that make it different than other existing mapping services. Husky Navigator includes instructions for directions within buildings. The app also provides important information about buildings without directing students to other websites. The app also has other small features that make locating places easy and efficient. One feature would be the “Drop Pin” (to save locations in memory) and “Resource Pins” (to display locations of common places).

The first page of the app shows the map with the user’s current location. If the user is inside of a building, the app displays

the indoor map which is the building's blueprint. If the user is outside of a building, the application simply displays the UW campus map. A user's current location is always indicated on the map by a green arrow whether the user is inside or outside of a building.

The "Indoor Map" feature of the app allows the user to see a building's blueprint. The blueprint contains details of rooms on each floor of the building. Only one floor's blueprint is shown on the mobile screen; however, user navigates through other floor's blueprint by the floor number panel. When the user is inside of a building, they also have various resource options such as the computer labs, ATM, and vending machines that they can choose to view.

The "Resource Pins" feature lets users see locations of commonly needed resources. These include libraries, cafés, dining areas, ATMs, computer labs, Visitor Centers, and parking lots. These features are available both inside and outside of the building. If the user chooses the "ATM" resource option on the Campus Map, they will see the locations of ATMs on the Campus Map. If user chooses the same resource option in the indoor map of a building, the user sees locations of ATMs on the floor's blueprint.

In addition, the Husky Navigator has the "Drop Pin" feature that allows users to save a location into the app's memory. The app stores all saved locations and displays to user when he/she wants to access them.

Furthermore, our app can display step-by-step instructions inside and outside of buildings. If users type in a room number, as soon as user enters the building, the app shows step-by-step directions to go to the specific room. There is also a red route on the map to show user where they are heading. The user can switch between the map and the step-by-step instructions screen through a navigation panel.

Finally, Husky Navigator selects particular data about buildings to display to the users. The app does not simply display all data or take users to the departments' websites to search for information. Our app delivers information about building hours, events, and majors. This information is likely to be sought for by most students. Users see additional information of the building by clicking on the "More Info" button.

The application will be updated frequently in order to avoid problems such as construction sites or unavailable routes. The app will reroute if the user heads in a different direction.

Assumptions

The following is what we will not cover in this specification:

- Sources of data for buildings' information, blueprints, and directions will not be included in the specification.
- The acquiring of step-by-step instructions in "Direction Lists" screen is handling by other underlying programs and software.
- The underlying algorithm used to recognize invalid user inputs, to correct a location's name, to show users other names of a location should be implemented by other programs.
- Features for disabled people.

THE TARGET AUDIENCE

As mentioned in the design problem, we try to help students save time and have less stress in their college life. Our users range from freshman to new and transfer students to the visitors of the UW campus. According to our interviews with students, there are two main groups of users who can utilize Husky Navigator. The first group would be students with a bad sense of navigation. These people have often found themselves lost, even in familiar places. They can make their way to places along well-rehearsed routes but they become lost if they have to take a detour. These people have a difficult time navigating through places even with a map on hand because they do not know where they are in relation to other places. They have trouble pointing out which way is north, south, east or west.

The second group of users would be new and transfer students. These people are not familiar with UW campus. They are students that are prone to stress and have problems managing their time. The reason for these consequences might be the fact that this is the first time they are on their own on a large campus. These students spend a large amount of time finding out where specific buildings, organizations, and events are around the UW campus. The following personas stem from people who exhibit specific characteristics of our targeted users.

Profile: Sharon Lin

Sharon, 24, is a senior student who majors in Environmental Studies. She has been at UW for 4 years, but she gets lost sometimes. She can make her way through familiar places through the same routes. However, if she takes a detour, she becomes lost in an instant. Once during winter, an icy road forced her to turn around and seek a new path to get home from school. She spent 50 miserable minutes driving in circles before she recognized her front door. Sharon just stepped inside her house, and hoped that she would find the way faster next time.

Hypothetical Scenario:

Sharon wakes up early to prepare for her first day of winter quarter in UW. She opens her laptop, and checks for directions to go to her Music class in the Art building. She checked the route last night, but she wants to make sure since she often get lost even in familiar places. Sharon packs up and drives to UW. After parking her car, she continues to walk to her classroom. There is a construction site on the road that forces her to find another route to the Art building. She uses her smartphone to access UW campus map but she has no idea where she is. After looking around, she knows that she is near the Benson Hall building, but which side of Benson Hall building? Sharon observes the buildings around her and realizes she is at the south entrance. She is supposed to head west to go to the Art building, but where is the west? Sharon spends 30 minutes walking around before she finds the entrance of the Art building. She walks inside with frustration. The instructor has handed out the syllabus and given some lecture. Sharon has to stay back after class to ask for the syllabus and information given during lecture.

Profile: Bob Kane

Bob, is a full-time transfer student from a community college in Boston. He is majoring in Computer Science at the University of Washington and currently taking 15 credits. He is a freshman, 18 years old, and lives near Northgate Mall. He commutes by bus on rainy Seattle days, otherwise he likes to bike to campus. He has a smartphone with a Verizon wireless plan with 3G capabilities, but tries to use WiFi as much as possible.

Bob stands at 5'6" and is color-blind. He wanted to be a pilot, but finding out that he was color-blind, he had to change his career path. His Italian heritage makes him a passionate eater, but it's easy for him to stay fit. Bob does not have good time management skills. He is a chronic procrastinator and can often be late to class.

Hypothetical Scenario:

It is Bob's first day of his second quarter here at the UW and he has gotten a new schedule with 4 classes scattered around campus. His first class is at 8:30 in the morning and gets up at 7:45. It takes him about 15 minutes to get ready and 30 minutes to get to campus by bus, so he is stressed about getting to class on time. He doesn't have time to pull up a map on his computer or print out his schedule, so he runs out the door with just his phone.

He arrives on campus but doesn't know where his classes are. This is his second quarter at UW campus; thus, there are many places that he does not know. He sees people pass by, but doesn't want to bother them as they are also in a rush to get to their classes. He can't find any campus maps to look at so he pulls out his phone to pull one up. After some time, he makes it to the right building, but class started 10 minutes ago and he can't find the classroom. He limps around aimlessly in circles searching for the classroom. Eventually, Bob finds his classroom, but he is late. Bob uses the rest of class time to search for directions to go to his other classes since the second class starts right after his first class. He hardly has time to pay attention to the lecture.

STUDENT INTERVIEWS AND TESTS

Interviewees

Jace Sherill	Ramin Nechirita	Ashley Retzlaff
Jesse Nguyen	Jerissa Lumansoc	Courtney Dutton
Howard Lin	Sai Kit Lam	Augustus Yuan

Script

Thank you for participating in this test. Before we begin you should know that any failure to complete a task in our experiment is strictly our fault. We are here to test the design of our product, not the user. Any error that might occur will only be design based.

We would like you to talk your way through every step of the process. Every time you click a button or use a certain feature talk about it. Tell us why you are using it and what you might expect from that particular feature. Again, this helps us with the design of our product so we would like you to inform us about it.

Our product addresses the problem of time management from transportation around the UW campus. Some people get lost or can't find their classroom so we created a mapping system to inform the user about the campus. This also extends to information about the building such as open hours, the majors housed in that specific building, and events going on for that day. One of the most distinct features about our prototype is that it gives a blueprint of each building. Specific classrooms can be found much easier this way along with bathrooms, fire exits, stairs and elevators. People who commute can find where the best parking is on campus in comparison to their classes. Places to eat and libraries are also readily available through our mapping product.

A specific scenario that our product would come in handy for would be finding your way to specific buildings around campus for your next class. Your next class is at 10:30 a.m. in Mary Gates Hall, room 231 and you have no idea where that is. Use our product to find out how to get there using the shortest route from the
Chemistry Building.

Insight from critique:

The page that shows directions to get to certain places doesn't have many critiques about the overall layout. However, users cannot guess the functionality of the "get other directions" below the search box until they click on it. It shows boxes to type a different start-address. The right side can be made larger to improve visual experience. In addition, the map has to warn users when they are heading toward a wrong direction compared to the directions shown on the map. The map has to be updated frequently because there may be constructions on UW campus which make certain routes unavailable.

Some work is needed on the blueprint portion of the product. It would be helpful if user knew where they were inside the building. We also need to add the room numbers. The blueprint should show user's current position.

Another small problem that we ran into was the ability to actually access the blueprints of the buildings. If the user did not already know that there was a blueprint option then they would have had no idea the extra services the app offered. A possible solution would be to make the button or link larger to take up more space that way the user would have a higher chance of seeing it. Another option would be to have borders surrounding certain grouping to make them clearly stand apart from each other.

An idea that was brought up by Jace was the fact that once the blueprint page has opened up, there would be no need to search for the building, only the room number. This forces us to consider what the search options would be in special scenarios. We also need to consider what features are fixed on the page, such as the detail pane on the right hand side. When does that feature stay on the screen and when should it completely be replaced by a whole new page? A reasonable solution would be to keep the pane during any mapping scenario while removing it when someone goes to research a building or looks for extra information without a visual guide.

The app has a lot of polishing up to do but a lot of design issues have been faced. The app should be able to detect the user's current position inside a building and provides directions of how to get out of the building and heading toward a certain location. After the user reaches the building, the app shows instructions of how to get to the specific room. Also, warning and construction sites will be shown. There will be some labels to instruct user of the

functionality of ambiguous features. Since the app may become less useful once users get used to the building's location, the app will extend the audience to UW campus's visitors who are not necessarily current students.

APPLICATION DETAILS

Overview of Main Screens

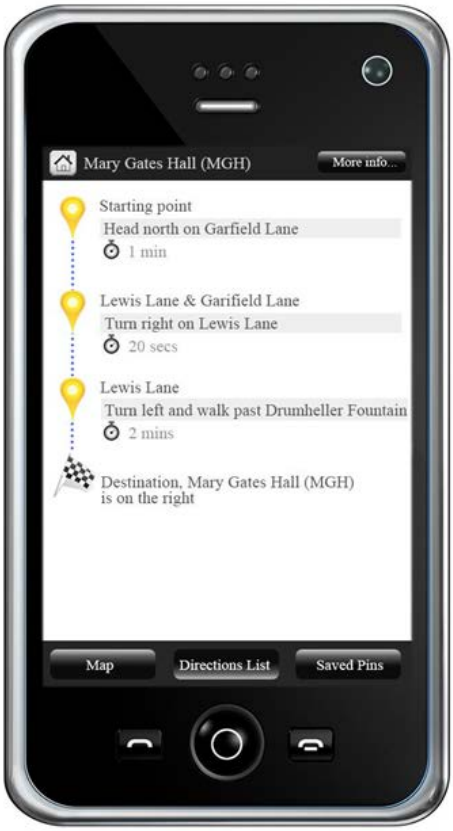
The details will be referring to these screens quite a bit, specifically the Campus Map and Blueprint Map. To avoid confusion and time waste, this section is a quick overview of each of these major screens that our application uses. Pictures are included of what they look like in an example of how they would be used.

When the user first opens the app, he or she will be given a quick tutorial. The screen will display the diagram below. With this, the user will be able to see the various screens and be exposed to the tab features which otherwise may not have been noticed.

The Campus Map - This is the front screen of the app. Users see the screen when users enter the app. The screen either shows the campus map or a building's blueprint depending on the user's current location. If the user is outside of a building, the screen displays UW campus map. If the user is inside of a building, the building's blueprint will be displayed. The top grey panel lets user know the name of his/her current location. Routes where the user will go will be displayed here. Most of the mapping will be done on this screen. The three bottom buttons allows easy navigation between screens of the app. The "Map" button navigate user to the campus map page. The middle button is "Direction List"; however, this button doesn't show in the front page because the user does not have any destination address filled in. The "Saved Pins" button let the user to access his saved locations. These three buttons will be covered in detail later in "Application Details" section.

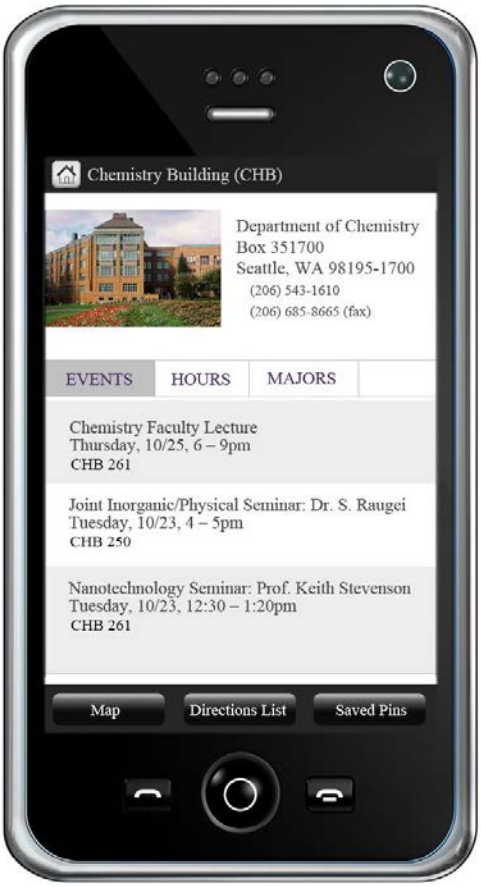
Indoor Map- This is the second mapping screen which displays visual blueprint information about a specific building. The indoor map is shown when user selects a building on the campus map, and click on the "Indoor Map" button. The screen shows the blueprint of a building's first floor which is the default floor. Then, the user can navigate through other floors' blueprints by clicking on the vertical panel at the top left corner.

In the case that user is inside of a building, and accesses the application, user will also see the blueprint of the building. However, they will see the blueprint of the floor they are currently stay in instead of the default first floor.



Directions List - The screen gives step by step directions from a specific location to a desired destination. This is an alternative form of communication that the Campus Map does not give. The Campus Map is a visual map; the Directions List is a map that communicates through text. The "Directions List" screen is displayed when user fills in their starting and ending addresses in the search boxes. Then, user can switch between the campus map and the "Direction List" screen by the buttons at the bottom panel.

Saved Pins – the screen illustrates a list of user's previous saved locations. A user may have several locations that he/she constantly access. This feature allows user to save their locations in the app's memory and access them any time. People do not need to remember their favorite locations as long as they have Husky Navigator. The list of locations is arranged alphabetically.



Additional Building Information - This feature shows additional information about a building. When user selects a building on the campus map, there is a small label with building's hours and name. User can get the building's additional information by clicking on the blue arrow on the small label. Additional information includes a building's events, hours, and majors. The tabs "EVENTS", "HOURS", and "MAJORS" allow users to switch between lists of events, hours, and majors.

Details

1.0 – CAMPUS MAP SCREEN

The Campus Map takes up the entire screen to display an aerial-view of campus. This includes labels of all major buildings, landmarks, streets and paths. This is the default screen that the user will first see when he or she opens the app. Other sections that the user can interact with displayed on the same screen are the Pull Out Tabs, Top Bar, and Bottom Bar.

This default map is a major mapping screen and the blueprint layout of an individual building is the other major mapping screen. The Campus Map is mostly used for display purposes.

The user will be able to pinch or stretch their fingers across the screen to zoom in and out. This will make the map larger or smaller. With this feature, the user will be able to take a closer or broader look at the map to see more detail or more perspective in relation to the greater field of campus. There will be a minimum and maximum distance the user can zoom so they don't get too far out or too close where they cannot make sense of what they are seeing.

The campus map gives the user an idea of where buildings on campus are related to each other. It puts the scale of campus in perspective and allows the user discover their orientation to the rest of campus. There will not be a compass to show which way North is because the map will not rotate and North will always be at the top of the screen. When asked if a compass would help the experience of the user, our test subjects responded that the help would be very minimal and would be more a distraction if anything.

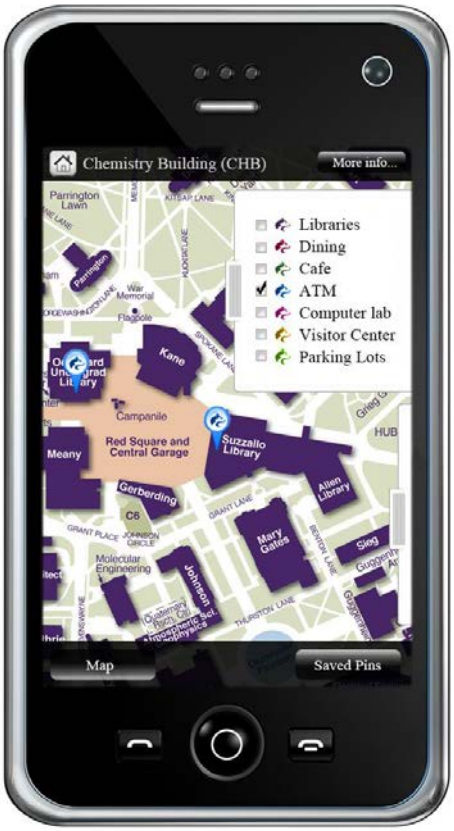
1.1 – Pull Out Tabs

The Pull Out tabs are on the right hand side of the Campus Map's screen. There are two of them, equally spaced apart that stretch out most of the length of the screen. The user has the ability to swipe one or both of the tabs to bring up the Resource Pins option or the navigation options. The navigation options include the Search Bar to Get Directions to a location, to look at the Indoor Map of a building, or Drop Pins to a desired location the user wants to save. The Pull Out tabs are there only to hold the options that come with the application.

Pull Out tabs are used because there is not enough space to place the additional options and features since mobile applications have a very limited amount of screen to use. Pull Out tabs are chosen over a separate screen because they are easier to access. The swipe motion does not need to be as precise as a click. Also, to get rid of the options and go back to the map takes less time and precision because of the swipe motion again. Pull Out tabs in this application also give a small amount of room to view the map. When a user makes a change they are able to see a small preview on the left hand side. User testing agreed with these assumptions where the tabs are the most dynamic and easiest to use. Users also responded that they are intuitive and they had very little trouble in successfully using them.

2.0 – FIRST PULL OUT TAB

2.1 – Resource Pins



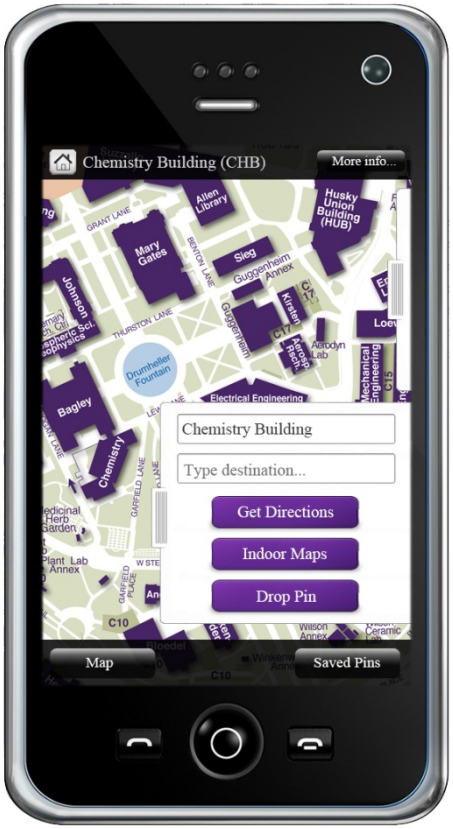
The resource pins feature indicates the various locations of specific resources on campus by dropping color coded pins. Options include libraries, dining areas, cafes, ATMs, computer labs, visitor center, and parking lots. By checking the checkbox next to each of these options, you specify the pins to show those particular things. If you check ATM, all the ATMs on campus show up with a blue husky pin. The color of the husky next to the label transfers to the color of the pin so they match. The various colors serve the purpose of distinguishing between the different labels if more than one is checked off. For example, if the user would like to know where all the cafes *and* libraries are, they can check off both corresponding boxes and the map will show a red pin where the cafes are and a purple pin where the libraries are. The user will then be able to identify where they can find a library in close proximity to a café. The map will not zoom if the use clicks one of the Resource Pin's checkboxes. Since these pins could show every single ATM on campus it would be unreasonable to zoom out to show every single one. Instead, the user can manually zoom out to find the nearest resource to them.

This feature is helpful in our product since our goal is to help navigation. The Resource Pins visually aids the user in finding the locations of a specific resource(s) all at once, helping the user save time and energy to find what they need. We want the user to have a pleasant experience with our application, which should include any sort of navigational issue that they might come across.

3.0 – SECOND PULL OUT TAB

3.1 – Search Bar

In the picture below there is a search bar that is pre-filled with “Chemistry Building”. This is automatically inputted according to the user’s current location. If the user is not directly next to or inside a building, then the application will use the user’s current location of wherever that might be. If they are at an intersection of two roads, then the input would automatically be those two roads. The user also has the option to change it though in case they want to start from a different location. This text box works the exact same way as the Search Bar, explained in the next paragraph. In reality, this top bar is basically the same as the Search Bar. The only difference is that the top bar is a starting place compared to the bottom bar which is an ending destination.



The Search Bar allows the user to search for a specific location on campus. In the picture below, the Search Bar is the second text box from the top pre-filled with “Type destination...”. An example of a legitimate search with the room number would be “Mary Gates Hall 420” or “MGH 420”. A search with only a building name is also acceptable. The user can specify an individual room in a building which can be seen in the Indoor Map feature once the user walks into the building. When the search bar is selected by clicking on it, a keyboard at the bottom of the screen shows up for the user to input their data.

When the user types in a building and the room number, they get directions to that building in the default Campus Map view. When they get to the building it switches to Blueprint View for the user to complete their path to the mapped out classroom.

The search bar will recognize popular nicknames for various places on campus (e.g. “Suzz” or “The Ave”) and will change the name to the official equivalent so that the user knows the correct term.

The search bar incorporates the dynamics of user input to easily access and navigate our mapping product. Instead of specifically looking through the entire map for various labels, the user can type in a certain destination and our product will point them in the correct direction. The search bar can specify the room that the user is looking for. If you type in the building and room number, then the system can display the correct location within the building layout system. Nicknames of locations are not labeled on campus maps, so our search bar allows the user to search for these and identify their official names on the map.

An interesting point we got through feedback from a subject that tested our product involved the Blueprint Map inside a building. Would it be necessary to search the building's name and room number if the user was already inside the building? This leads us to the intuitive sense of the search bar that if the user only types in a room number and is already in a building, then the application will assume that the user means in the building they are already in and find the room in that building.

Another small detail that came up when we had users test our product was the idea that the search bar needed to have automatic input when a building was selected. When a building is selected in the Campus Map by clicking on it, the building that the user selected should automatically be put into the destination search bar. This does not mean that when a user selects a building the Pull Out tabs automatically show up also. The Pull Out tabs stay hidden, it is only when the user slides it out that they will see that the building they had previously selected has shown up as the destination. At this point, if they do not want that building to be their destination they can delete it and change it.

3.2 – "Get Directions" Button

This button appears as part of the Second Pull Out tab and is activated when a location is selected in the Search Bar that is not the user's current location. Once this button is clicked, the mapping system will display the recommended route from the current location of the user to their destination. This can also include going inside the building to the specific room that is desired. The route will be laid out so the user has a visual destination of the exact route they can take to get to the room. Both of the Search Bars need to have a location in them for this button to do anything. If one of the Bars is empty and the user clicks this button, a quick error message will pop up telling the user that there needs to be a valid starting and ending location.

This is also one of our biggest features because this provides the user detailed directions to their destination from their current location. At first we represented this as a link, but we found that our test subjects did not notice it or was not expecting it to be of much help. After doing this, our test subjects could find the link with far less hesitation. Because this is one of our more prominent features, we turned this into a button instead of a link to be more noticeable and intuitive.

At first we used a second button to "Get Other Directions" but this seemed inefficient since the user can just type in a new location into the search bar and click the "Get Directions" button again. Using a second button was redundant and it caused confusion to users during our testing periods so we eliminated it.

3.3 – “Indoor Maps” Button

Clicking on this button will bring the user to the screen of the Indoor Map that shows the floor layouts of the selected building. The selected building is specified at the top of the screen in the Top Bar. That bar will always have the current building or the searched building displayed. The current building is calculated by the closest building to the user. That could signify any distance, whether it is one foot away or twenty miles. It just reads the closest building on campus to that user.

When the button is clicked, the destination from the Search Bar is taken as the building that should be looked into. Take note that the Search Bar automatically updates when a user selects a building at any given time.

Using our “Get Directions” feature, the user finds a classroom inside the building they selected as a destination. This was initially represented as a link; however, this leads to one of our most important features. To make the feature more prominent, we made this into a button. Also, there was some trouble with deciding on the wording to make the button seem more applicable to users. During user testing, people were confused on what the button actually did. Instead of using the label of “Blueprint” or “Blueprint Map” we decided that “Indoor Maps” was the most desirable wording for the button.

3.4 – “Drop pin” Button

Drops a pin in the currently selected location and automatically saves each one into a list which the user can access by clicking on the “Saved Pins” on the Bottom. The user selects a location by selecting a building or area. When they select this place, they can Drop Pins by clicking this button. Multiple pins can be dropped and saved. There are two places that the dropped pins can be accessed. One will be the visual representation on the Campus Map which can be accessed through the Resource Pins on the First Pull Out Tab. The other way to access the dropped pins will be the Saved Pins button on the bottom bar. Through these options the user can see their pins and have the option to delete them. When a pin is dropped, then the default option will be to display only the newly dropped pin.

This feature allows the user to save a location for quick and easy reference during future references. This saves the user the time of searching for a previously queried location.

4.0 – ICONS AND ROUTING

4.1 – "You Are Here" Icon

This is a label on the map indicating the current location of the user whenever the application is in use. The "You Are Here" icon is a green double arrow and it is always on the map. When the user moves, the position of the label on the screen will move along with the direction that the user is moving in. If the user is moving directly North, then the arrow will point North to display the direction the user is currently traveling to. This feature saves time by eliminating the need to figure out where the user is on the map and what direction they are going.

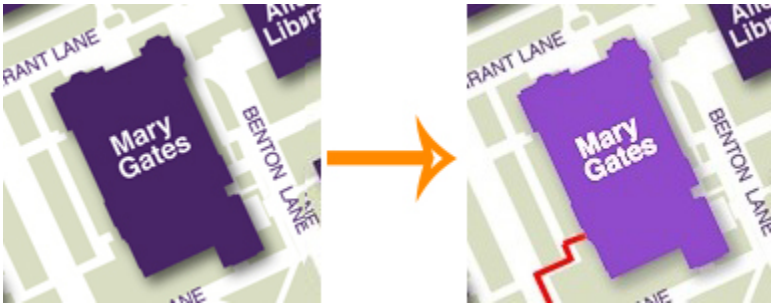
The application knows where the user is by using various WiFi networks to triangulate the current position. There are plenty of WiFi networks around the University of Washington campus so there is little worry of going to a location where triangulation is not a reasonable option.

When the user is moving, the arrow will point in the direction they are traveling in. This is done by comparing the position they are currently in to the position they were previously in. If the user was in a hallway at a standstill, then moved forward ten feet, the application would be able to compare the spot they are currently in to the spot that was a couple feet back. From this method, the direction that the user is moving would be calculated and accurately displayed on the application. If the user first loads the application and they have not moved, the default direction would be exactly North. Once they started moving, the application would continually update to point to the current direction the user is moving. In the Indoor map, the icon will only appear if the user is viewing the current floor he or she is on.

We are incorporating this feature because the advantage of knowing where you are is more beneficial than the small confusion that this might give to try to identify where you are. With a small amount of observation, users that we have interviewed replied that "it would be helpful if they knew where they were inside the building".

4.2 – Highlighted Destination

When the user searches for a building and presses the “Get Directions” button, the map will show the location and highlight the building. A building is highlighted by changing its color from dark purple to light purple as shown below.



There can only be one highlighted destination on the map at a time. If the user already has directions to a location which caused the highlighted destination to show up, then the highlighted destination only changes when the user gets directions to a different location. If the user searches for a room number, then the highlighted destination will be the building the room is in and when the user gets to their destination, the Campus Map will switch out to the building Blueprint Map, and the route will continue to the specified classroom.

The icon gives the user a visual aid to where the location is in relation to their current location as well as the building’s relation to other buildings on campus. The checkered flag not only stands out on the map, but also gives the impression of a finish line or destination showing that the user is at the end of their journey.

4.3 – Red Route

A red route leads the user from the “You Are Here” icon to their highlighted. It shows the path that the user is recommended to take to get to their destination. This path is calculated out to follow paths and streets.

The Red Route is created after the user has both a starting point and a destination point and clicks the Get Directions button. Once the user clicks that button, all the Pull Out tabs become hidden and the Red Route displays itself.

The special thing about the Red Route is that it continues to map once the user is in a building. The room is specified is when the user types in the room number in his or her original search with the building. Examples of legitimate searches with a room number would be “Mary Gates Hall 420” or “MGH 420”. The blueprint will have a route laid out from the entrance the user is at to his or her classroom. The path will default to lead to the stairs if it is under four stories to climb, otherwise the path will lead to the elevator.

The path is dynamic because it adjusts as the user moves. When the user moves forward, there is not a trail left behind but instead the red path updates so it erases where the user has already travelled. To clarify, one end of the path will always be the destination and the other end of the path will always be the current location of the user. Also, if the user moves away from the recommended path then the route will recalculate and reroute from where the user is.

At first we considered a warning message in a pop up box in case the user was heading in a direction that was not on the recommended route. We decided that this was unnecessary since the user might know some short cut that they like to use or decide on visiting an alternative location that they did not type in. In this case, simply rerouting without bothering the user was determined to be more effective than making them read a message and wasting a click to close it.

5.0 – INDOOR MAP SCREEN

Displays the floor plan within a building with classroom numbers. To get to this page the user needs to click the Indoor Map button after they selected a destination. The Indoor Map only gives the blueprint of the building that is in the Search Bar. This brings up the blueprint page. If the user already got directions and has a destination selected, the Indoor Map button would automatically bring up the blueprint of the destination's building. The blueprint shows floors in the building and includes restrooms, stairs, elevators and specific room numbers. If there is more than one floor on the building, a floor selection option is available to manually select which floor to look at. There is a Top Bar in this screen that can give additional information about the building the user is currently looking at.

5.1 –Resource Pins is updated

Some pins are taken off from the default screen. General places like libraries, parking lots, and visitor center would not apply to the inside of all buildings. Instead, a couple of more specific features are added such as restrooms, elevators, and stairs. Other pins such as dining, cafe, ATM and computer lab would still stay there.

The Resource Pins are changed because some pins are not applicable to individual buildings such as parking garages or visitor centers. Other options fit better with the inside of a building such as restrooms or stairs.

5.2 – Floor Selections

Panel on the left side of page allows user to navigate through the various floors of the building. If the Red Route leads the user to stairs or an elevator, the app will automatically update the floor view once the user reaches the next floor. This is determined using the triangulation method mentioned earlier in the "You Are Here" icon section. The Red Route will only appear on the floors involved. If a floor is selected that the Red Route does not recommend, then the route will not be seen. Similarly the "You Are Here" icon will only show up on the floor the user is currently on.

This feature is needed because the user needs to be able to look at other floors to determine where they need to be. Also, when the user utilizes the Resource Pins, he or she will be able to see what resources are on which floors.

6.0 – BOTTOM BAR

The Bottom Bar will always be at the bottom of the screen. The bar helps navigate between different pages such as the Campus Map, Saved Pins, and Directions List.

6.1 – Campus Map Button

The Campus Map button will lead the user back to the Campus Map view. This button does not actually change any information in the application, it is only for the user to view the map from the last information they put in. When this button is selected all the Pull Out tabs becomes hidden.

This button is necessary because it leads the user back to the default home page, the Campus Map. Since this is where all the outside routes are located, it is essential that the user be able to access it at any given time. We do not have a Indoor Map button on the Bottom Bar because it can be accessed through the Campus Map and is more specific about its purposes by staying under the Search Bar.

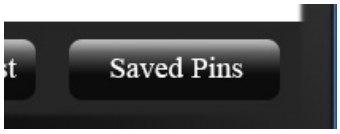
6.2 – Directions List Button

This button will be shown after the second location is selected and the user clicks on the link to get to the step-by-step directions. If the user has not selected a destination and clicked the button, “Get Directions”, then this button does not show up. The button is located at the bottom of the screen and leads the user to the Directions List screen. This feature navigates the user to their destination using turn-by-turn directions, street/path names, distances, and time estimates.

The button is delayed to show up because if there is no route determined, the screen would be blank. This is unnecessary for the user so we only let them access it once it would actually be useful to them.

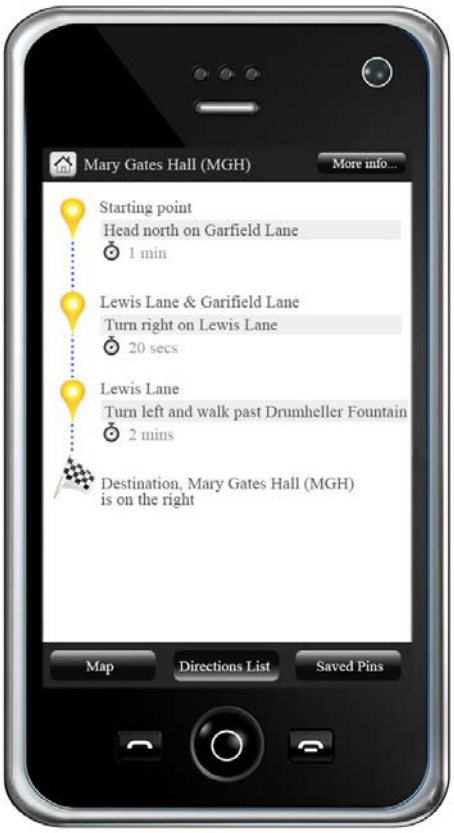
6.3 – Saved Pins Button

The Saved Pins button is located on the right side of the Bottom Bar. This button will lead the user to the Saved Pins screen.



The Saved Pins screen needs its own specific button so the user can easily access it at any given time. We wanted this to be easily accessed because we intend for the user to keep track of common places they go to with these pins. Since they would be using these often enough, then they should be able to access it easily.

7.0 – Directions List Screen



Detailed step-by-step directions assist the user, in addition to visual aid, with textual instruction like turning right or left. This also allows for more specific descriptions such as “keep Drumheller fountain on your right” or “walk up towards Red Square”. There are yellow points on the left side of the screen which shows major points on where to turn or change direction to follow the correct path. Each step is divided up into three different parts. There is the intersection the user is coming up on, the direction and path the user should turn to, and a time estimate of each step. The time estimate is calculated by the average person’s walking speed and compared with the distance the user needs to travel. The very top text that is displayed when the user has not started moving yet is stated as “Starting point”. The final destination will be described as being on the right, left, or directly in front of the user.

This feature is set aside as a screen because of the use of space within the application. Since there is very little space in an application, the feature needed to be on a separate screen to stay organized and clean.

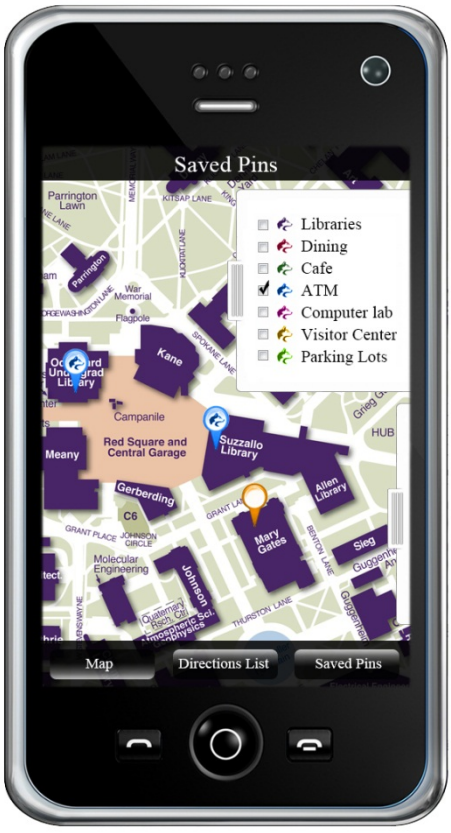
8.0 – Saved Pins Screen

The saved pins screen allows the user to see the list of pins he or she has saved. When one is selected, the user will be brought back to the campus map and will show the pin on the map. After the pin gets dropped, if the user opens the Second Pull Out Tab, then the Search Bar will automatically be filled in with the Saved Pin's location.

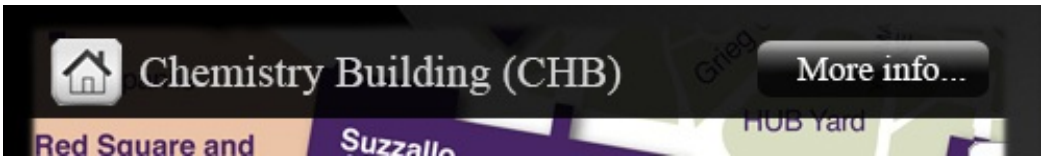
The map will be automatically oriented so that the user's current location and the saved pin's location can both be seen in the screen. The delete buttons will remove the saved pins from the list and move the list up.

When viewing the map, unlike the pins for the Resource Pins features, saved pins will show up as an orange pin with no husky icon in the center.

A couple of our interviewees thought this was useful so that they would not have to manually enter in a search every time they looked for a location. This is especially useful when getting used to a new class schedule or when someone joins a new club and needs reminders of where it is.



9.0 – TOP BAR



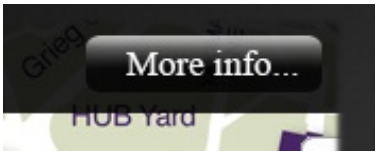
Text in the Top Bar appears when a building is selected or searched, or the user's current location when nothing else is selected or searched. The user selects a building by clicking on it on the Campus Map view. If they search a building through the Search Bar and press the Get Directions button, then that building will show up in the Top Bar.

9.1 – Building Title

Identifies the name of the selected building that the user either clicks on from the campus map or when a building is searched. The building name is shown at the top next to a building button to show that it is a building. Here, the abbreviated version of the building's name is also listed, which in this case is "MGH" for Mary Gates Hall.

9.2 – "More Info..." Button

This button leads the user to the Additional Building Information Screen. The building that is currently selected will have a variety of extra information.



The button is well placed in the Top Bar since the More Info button only applies to the currently selected building. When the building is not selected then this button does not show up either.

10.0 – ADDITIONAL BUILDING INFORMATION SCREEN

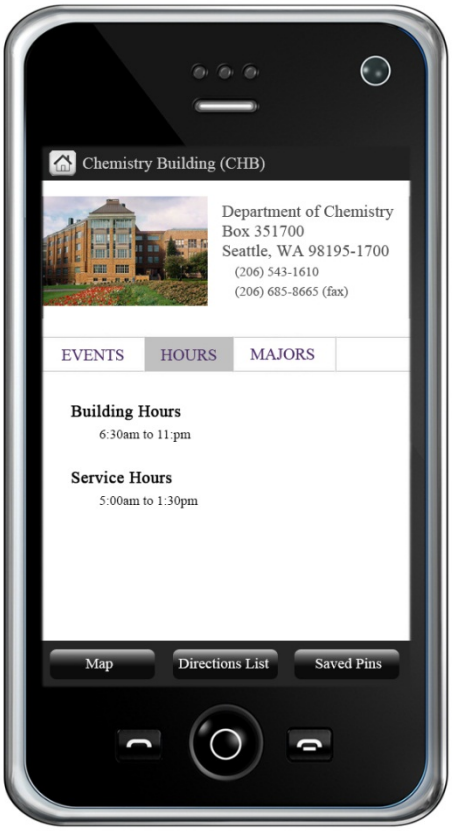
The Additional Building Information Screen gives information on the building the user selected from the Campus Map and after they clicked the More Info button from the Top Bar. The Top Bar stays visible while in the Additional Building Information Screen. There is a picture of the building, address, zip code, and phone number all towards the top of the screen. There are then three tabs that the user can go between while the top of the screen information stays the same. The tabs are Events, Hours, and Majors.

10.1 – Building Events

Events are listed here with three different lines of information. There is the name of the event, the day and time, and the building and room number. The name of the event tries to include the name of the presenter or group. An example of the day and time would be “Thursday, 10/25, 6-9pm”. The building is abbreviated so an example would be “CHB 261” for the Chemistry Building at room 261. Rare happenings are considered events. For example, regular classes will not be listed, but events that do not happen regularly, like special lectures, will be listed.

This feature allows users see important events he or she may want or need to attend. One of our test subjects found this to be a very useful feature and had a great example of being able to know when/where a career fair could be occurring.

10.2 – Building Hours

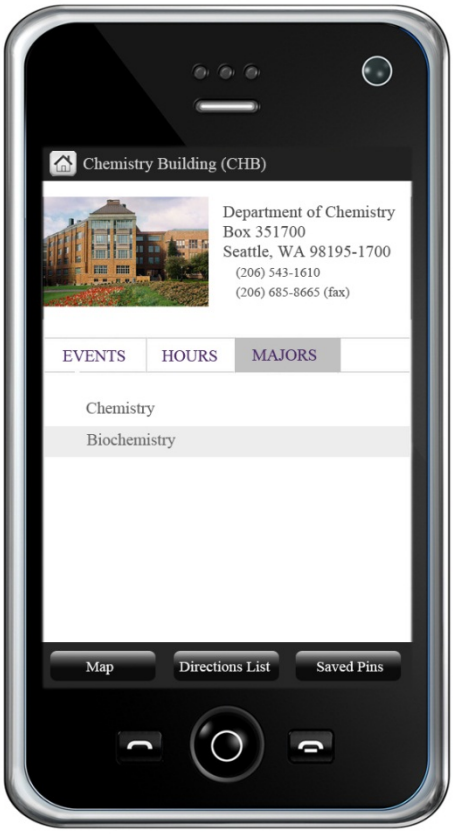


Displays the location's hours of operation. The user will be able to tell if the building is accessible at a specific time.

This will prevent the frustration of going to a location and finding that it is closed, leaving the person needing to find an alternate location or even waste all that travel time only to return to their original location.

10.3 – Building Majors

The majors in the building are listed here. This feature was also liked by one of our interviewees. He noted it would be especially useful for visitors and helpful to new students to identify the significance of each building.



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