C. Ideate:
Conceptual Models & Storyboard

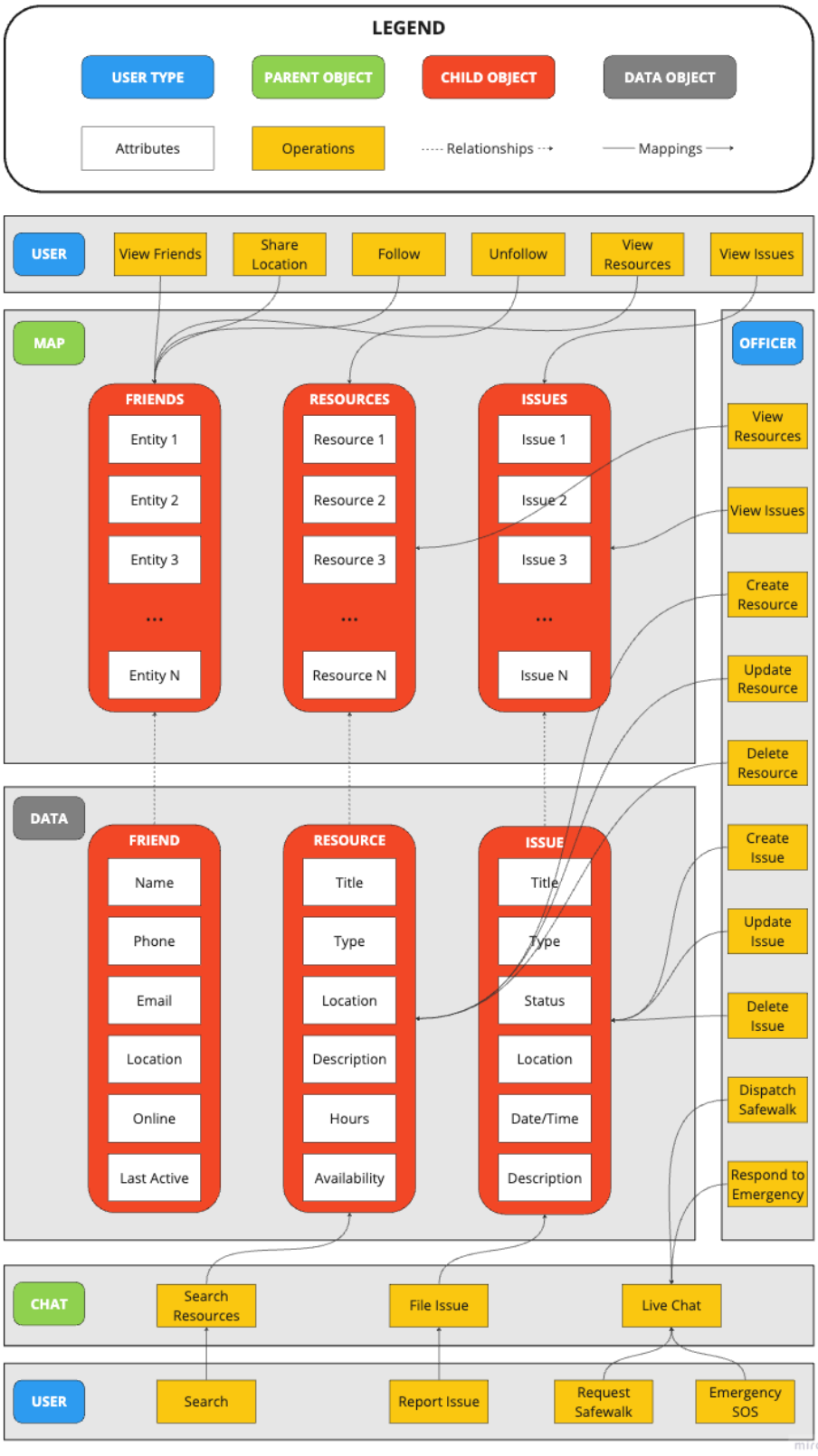
Conceptual Model

Our conceptual model centers on the “Safety Hub”, abbreviated as “UHUB”, to serve as a comprehensive safety system for the university community. The term UHUB encapsulates three key concepts: “University”, “Unified”, and “You”. This emphasizes that UHUB aims to provide a personalized, yet universal safety solution. UHUB serves as an all-encompassing portal where students, staff, and campus security can access and interact with a range of safety resources in real-time. Key features like “Real-Time Safety Resource Accessibility”, “Dynamic Areas of Concern Mapping”, and “Person-to-Person Live Location Sharing” are woven into UHUB’s framework. The Unified Safety Platform, diagrammed below, stands as our highest-value illustration. This platform is the gateway to real-time safety information, dynamic mapping, rapid emergency response, and location tracking, providing users a centralized and intuitive control center for all their safety needs.

Elements

Object	**Attributes**	**Operations**	**Relationships**
Map	- Location - Zoom	- View Entities - View Resources - View Issues	- Map-to-Resources (1-to-*) - Map-to-Issues (1-to-*) - Map-to-Friends (1-to-*)
Chat	N/A	- Search Resources - File Issue - Live Chat	N/A
Resources	- Title - Type - Location - Description - Hours - Availability	- View - Create (Officer) - Update (Officer) - Delete (Officer)	- Map-to-Resources (1-to-*)
Issues	- Title - Type - Status - Location - Date/Time - Description	- View - Report - Create (Officer) - Update (Officer) - Delete (Officer)	- Map-to-Issues (1-to-*)
Friends	- Name - Phone - Email - Location - Online - Last Active	- View - Share Location - Follow - Unfollow	- Map-to-Friends (1-to-*) - Friends-to-Friends (*-to-*)

Unified Safety Platform



Description

The UHUB user interface is a mobile application comprising multiple elements: **Map**, **Chat**, **Resources**, **Issues**, and **Friends**. At the heart of the interface, the **Map** allows users to visualize all essential elements related to safety: **Resources**, **Issues**, and **Friends**. The **Chat** system is not merely a text-based communication channel, but a lifeline that users can use to search for **Resources**, report ongoing **Issues**, or request Safewalk or emergency services. The duality of this interface provides two means of user interaction: exploring via the **Map** and conversing via the **Chat**. **Resources** represent a comprehensive collection of all safety resources available on campus. This includes everything from bike storage options to the locations of fire extinguishers and defibrillators. Officers have the ability to add, update, or delete **Resources**, ensuring that the data is both accurate and up-to-date, whereas students can simply view them. **Issues** serve as the dynamic reporting tool where any safety-related incidents or concerns can be filed by users. Officers can verify and update the status of **Issues**, with these updates occurring in real-time, ensuring everyone is kept in the loop. Lastly, **Friends** bring a social element to safety. Users can share their location with trusted **Friends**, ensuring their journeys are monitored in a safe manner.

Justification

This conceptual model uniquely integrates disparate safety features into a single unified platform, fulfilling our initial design requirements for an integrated, real-time safety system. It builds on the metaphor of a hub, creating a cohesive, digestible, and user-centric system. By considering other models, we felt the UHUB system provides the most comprehensive, real-time safety solution for the university community; balancing complexity with user needs. The map seemed most appropriate given all of the conceptual elements we identified - Resources, Issues, and Friends - were location-centric and best interacted with in an exploratory manner. Furthermore, the chat system provides a way for less technically savvy individuals, who aren't comfortable with map interfaces, to conversationally interact with the system. Initially, the team considered a kiosk conceptual model, however we felt that in emergency situations individuals require a tool which they can interact with instantaneously. The team also considered an augmented reality conceptual model, where individuals would view an augmented campus through their phone's camera. The downside with this approach was that it would create a steep learning curve, potentially hurting the model's adoption. We have summarized the potential strengths and weakness of the model below:

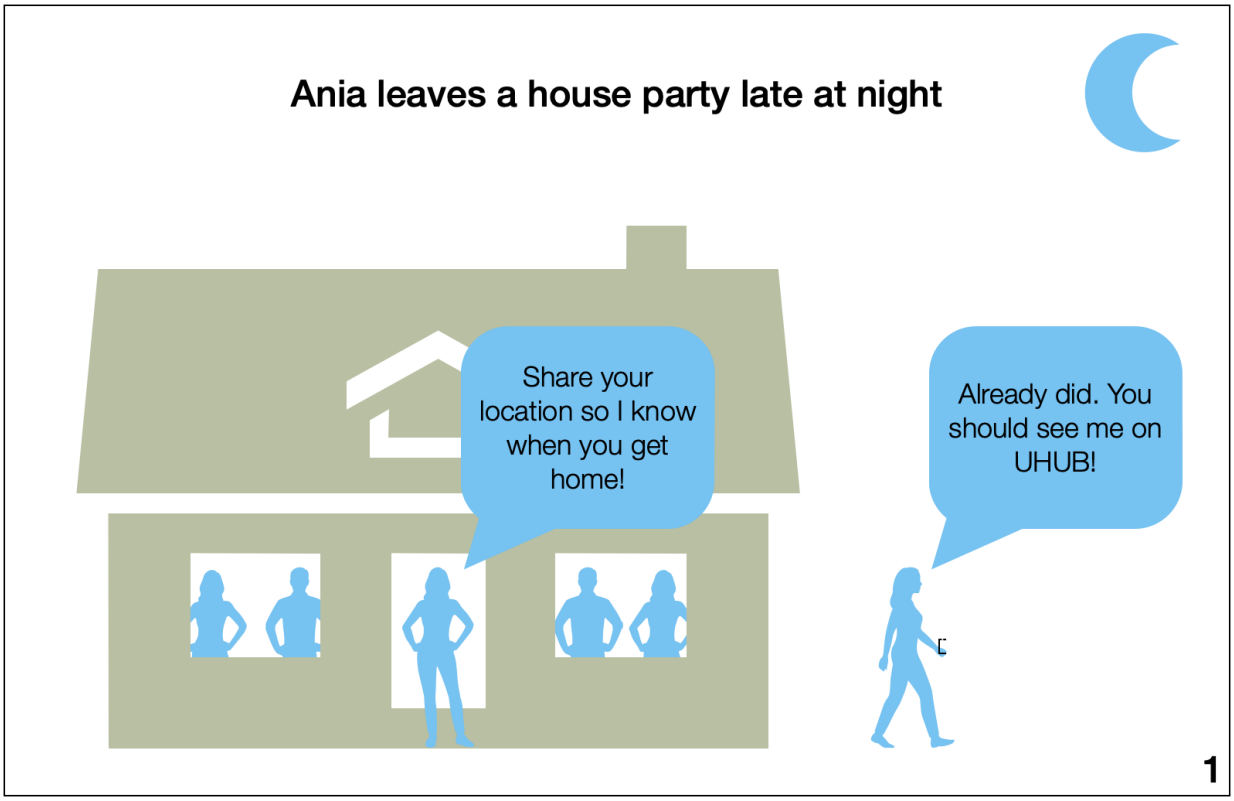
Potential Strengths

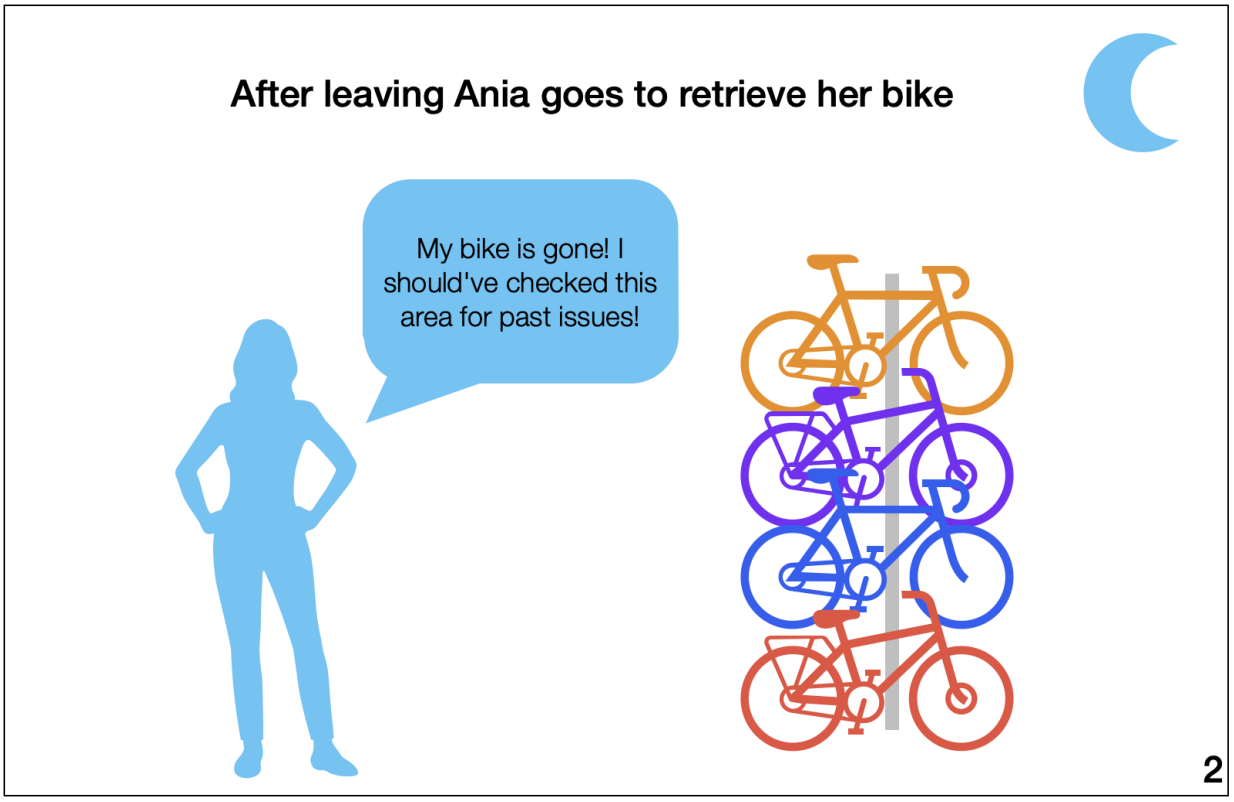
- Unifies several ideas into single platform
- Provides two modalities for searching
- Scales through crowdsourced information
- Interface is customizable via map filtering
- Users already familiar with map interfaces

Potential Weaknesses

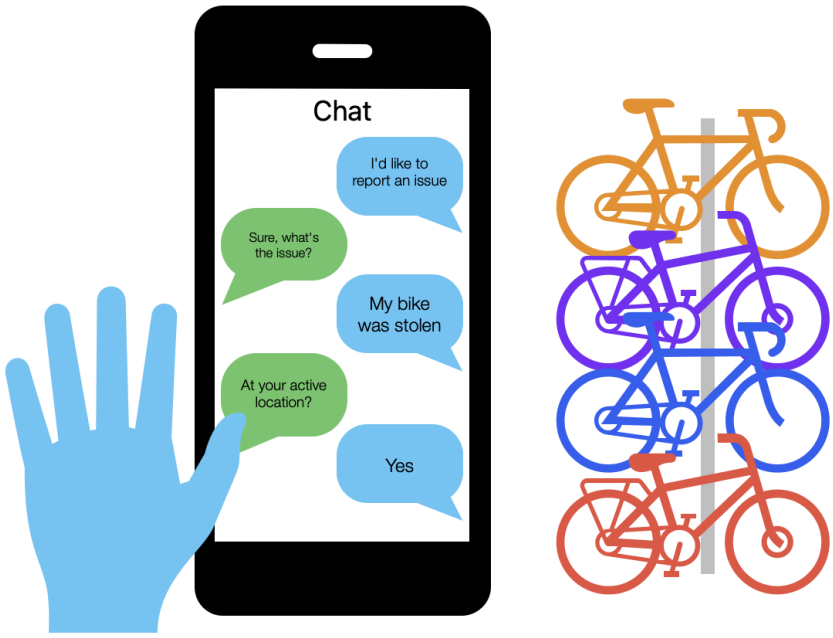
- Slight potential for information overload
- Dependent on up-to-date information
- Not accessible for the visually impaired
- Similar applications may already exist
- Requires medium-level of technical savvy

Storyboard


Ania leaves a house party late at night
Share your location so I know when you get home!
Already did. You should see me on UHUB!
1

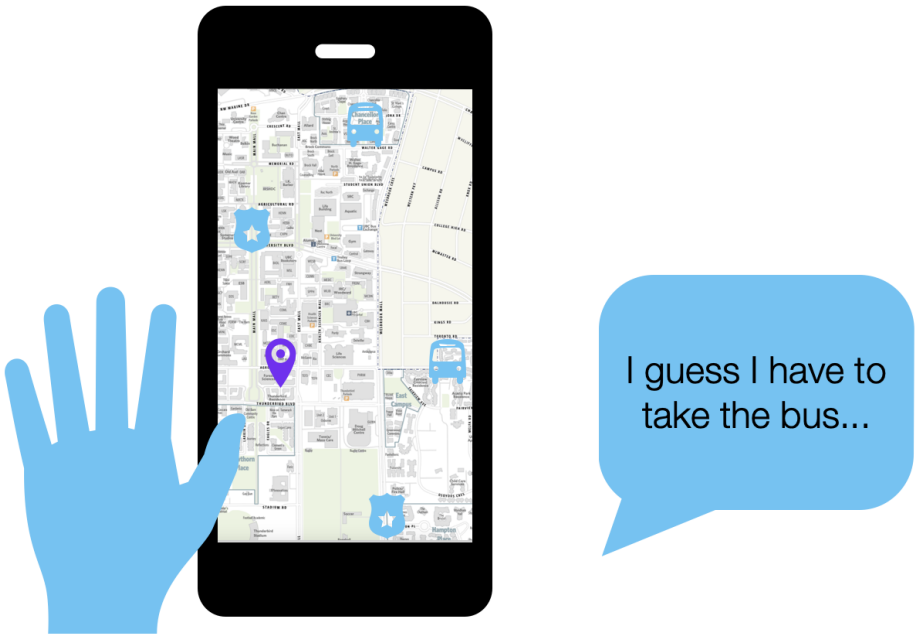

After leaving Ania goes to retrieve her bike
My bike is gone! I should've checked this area for past issues!
2

Using UHUB's Chat Ania reports the Issue



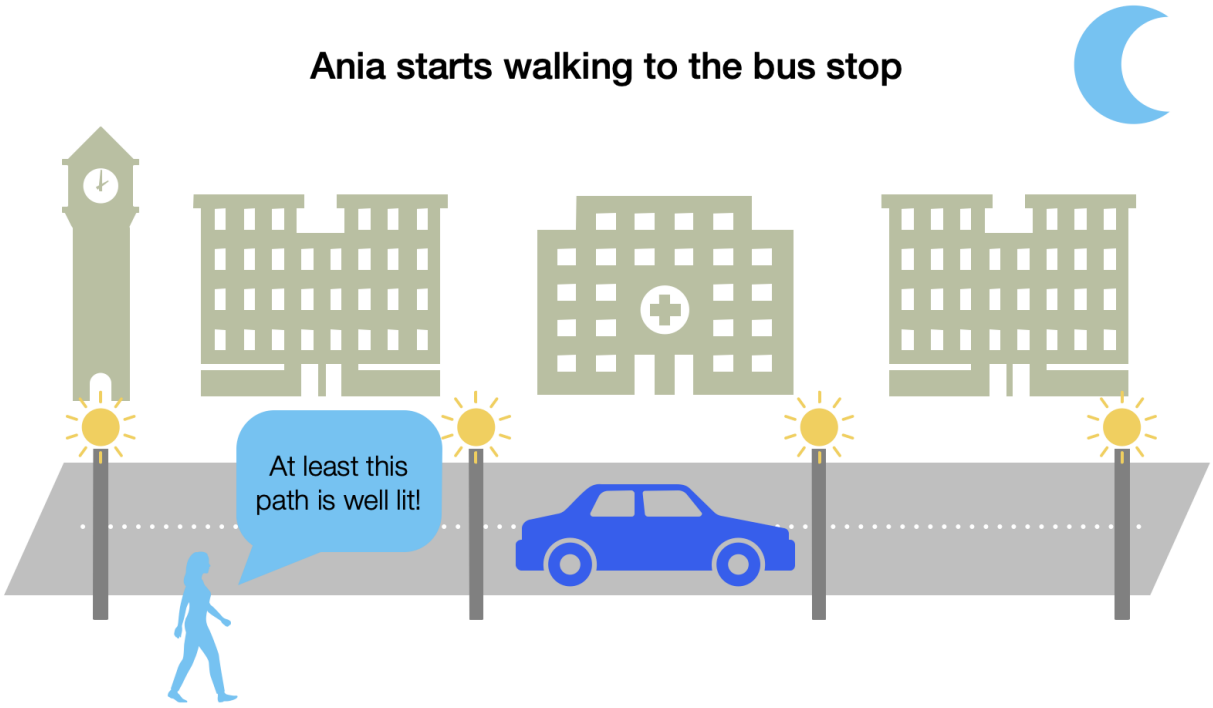
3

Ania searches nearby Resources for a bus stop



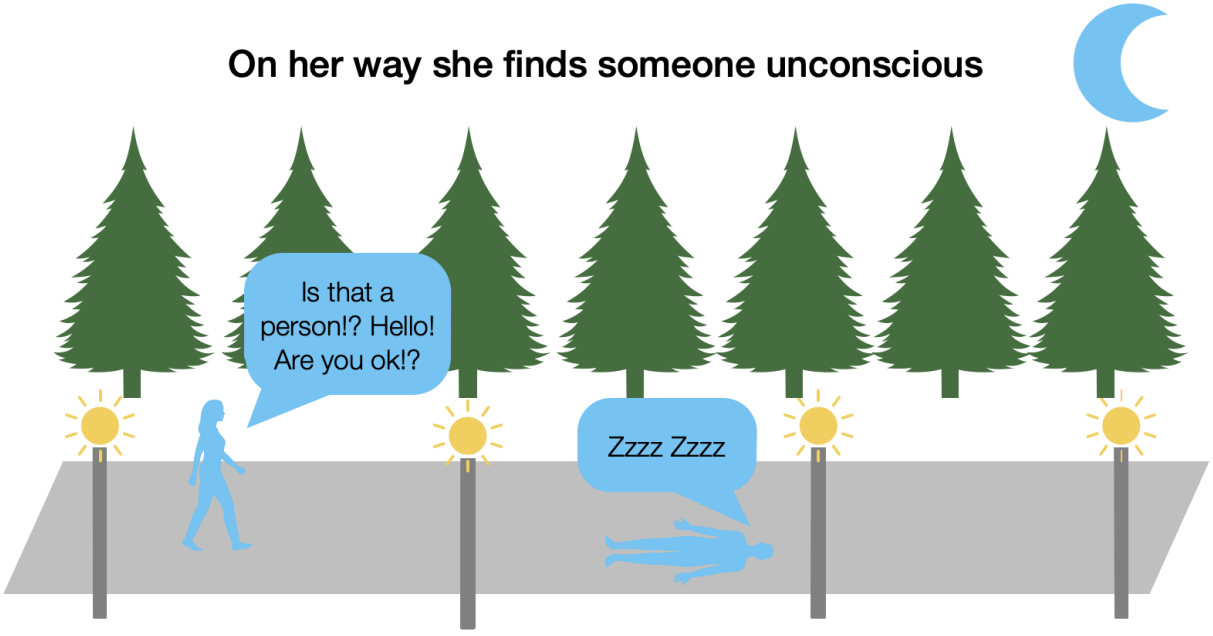
4

Ania starts walking to the bus stop



5

On her way she finds someone unconscious

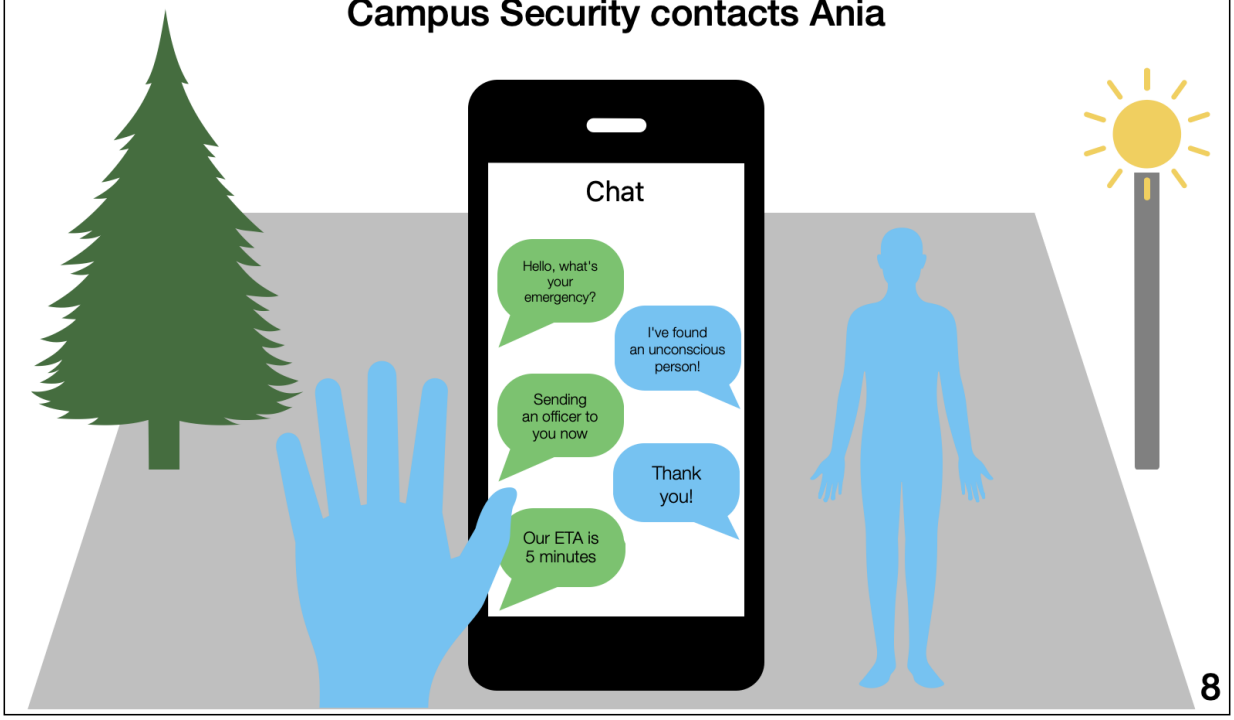


6

Ania uses the SOS feature on UHUB

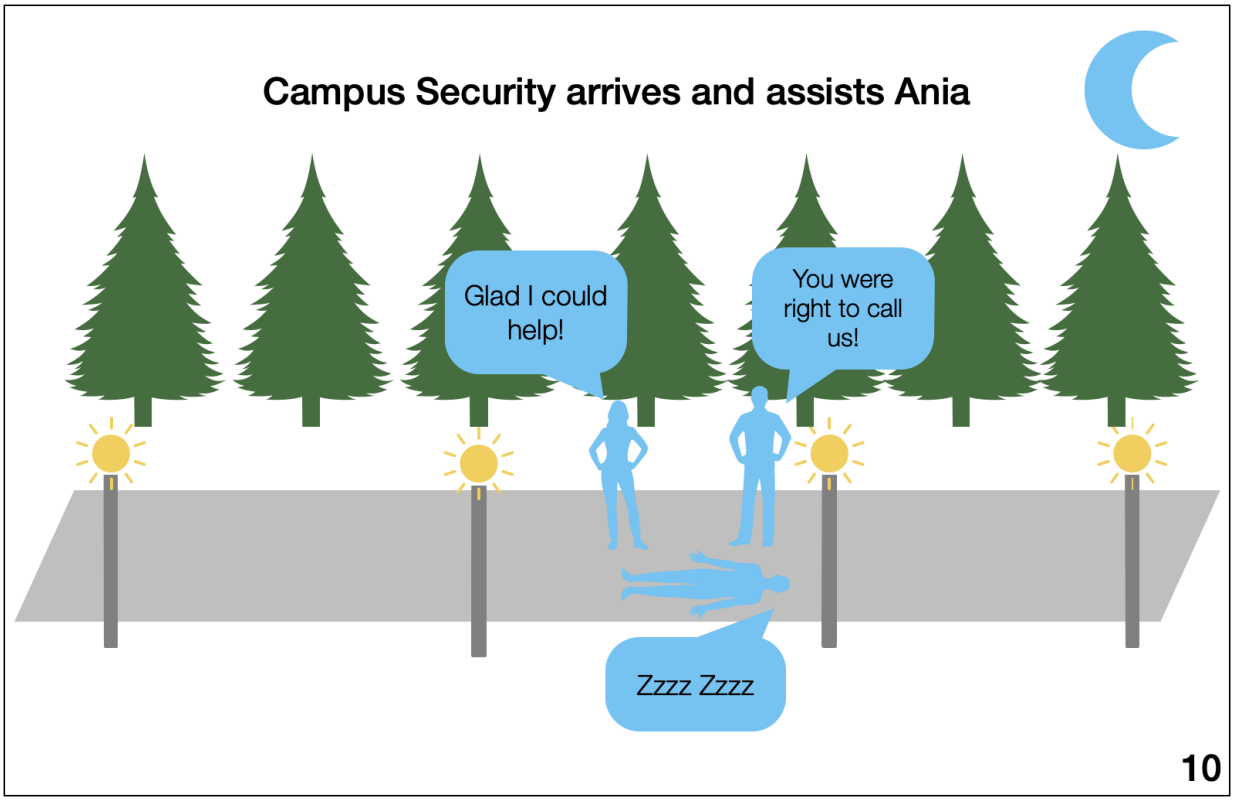
7

Campus Security contacts Ania

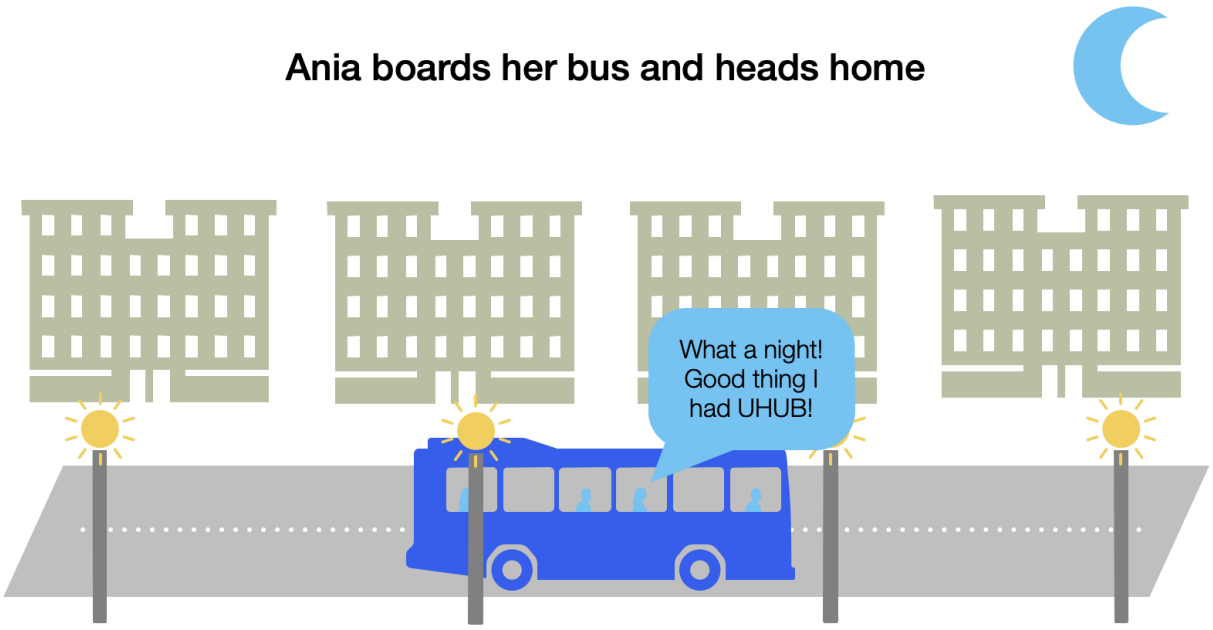


8


Ania monitors Campus Security's journey
Zzzz Zzzz
Help is on its way, hold on!
9


Campus Security arrives and assists Ania
Glad I could help!
You were right to call us!
Zzzz Zzzz
10

Ania boards her bus and heads home



11

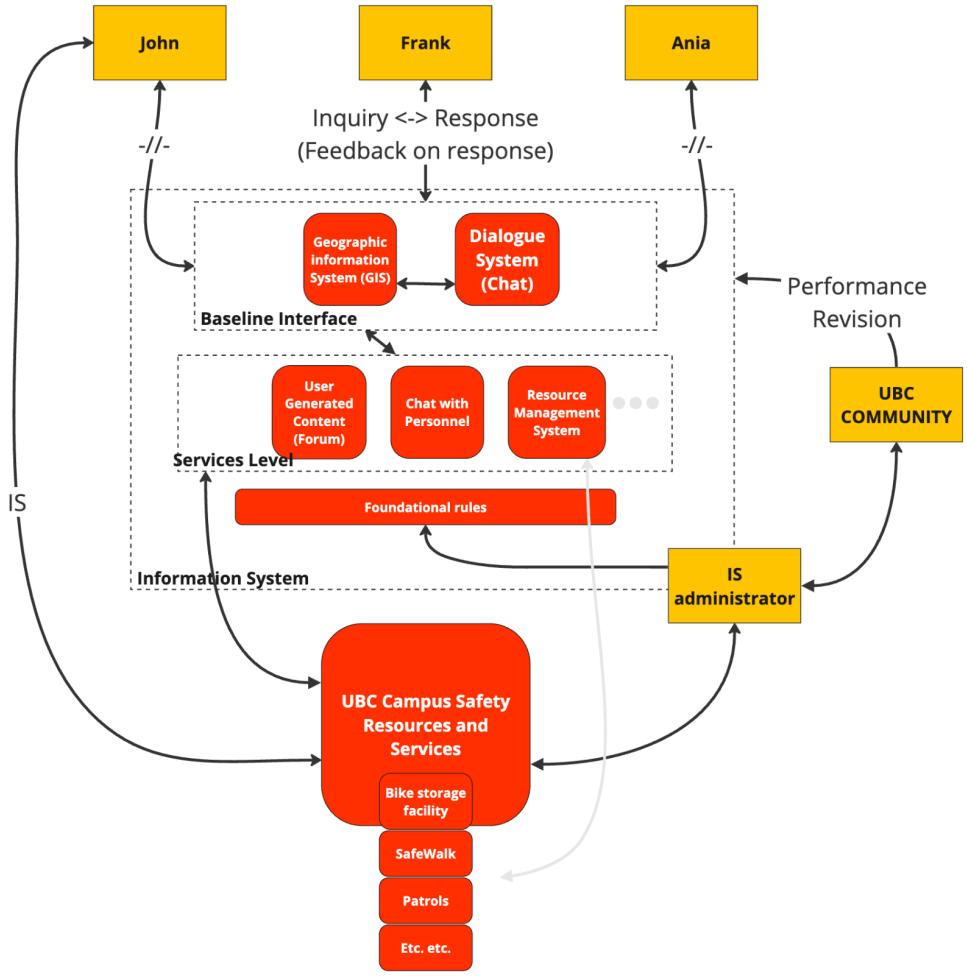
Ania's friend is alerted when Ania gets home

12

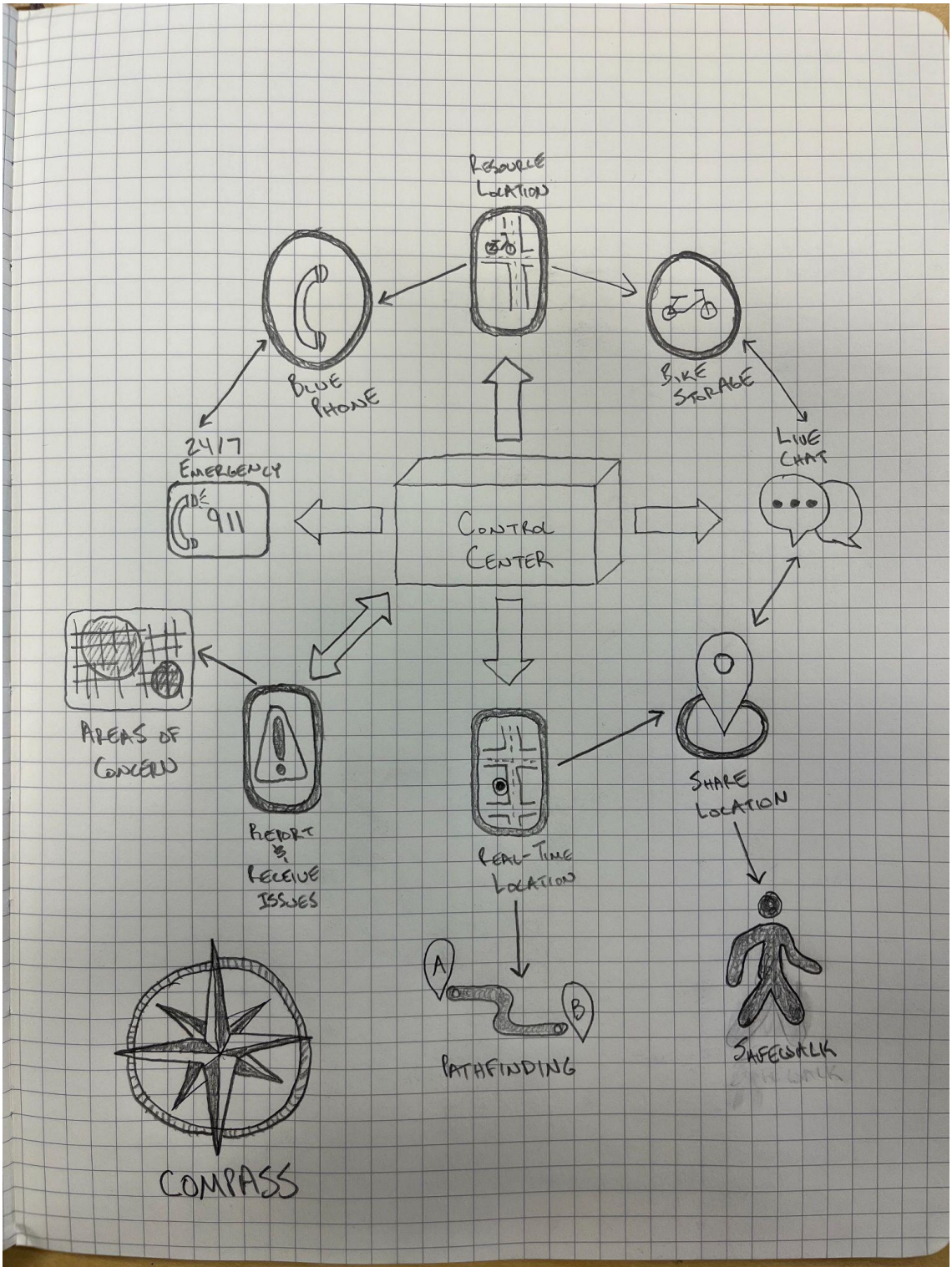
Appendix

Appendix A. Conceptual Models

Aleks' Conceptual Model



Luke's Conceptual Model



Timo’s Conceptual Model

Element	Sub-Elements	Description	Importance	Justification
Metaphor	Safety Hub	The app serves as a centralized platform for all safety-related activities	High	Simplifies understanding of the app’s function
Concepts	Unified Dashboard	The central screen that provides a summary of safety resources	High	Directly addresses requirement #1
	Real-time data	Up-to-date information on available safety resources and locations	High	Satisfies requirement #1 and #3
	Dynamic Map	Map that is continuously updated with “areas of concern”	High	Directly correlates with requirement #2
	Emergency Response	A quick way to trigger an emergency alert	Critical	Essential for requirement #3
Relationships	User-to-Map	Users can interact with the map to mark unsafe areas or view them	Medium	Enhances community-drive n safety updates
	User-to-SOS	Users can activate the SOS function for immediate help	High	Aligns with immediate response needs
Mapping	Safety-to-Map	Safety resources are plotted on the map as icons	High	Enables real-time decision-making

	SOS-to-Alerts	Activating SOS sends alerts to designated emergency services	High	Enables swift action in case of emergencies
Terminology	Areas of Concern	Locations marked as risky or unsafe	Medium	Standardizes how users describe risky areas
	Safety Resources	Various campus safety measures available to users	Medium	Sets expectation for what the app provides
	Emergency Response	The action taken following an SOS activation	High	Standardizes the emergency process

Appendix B. Tasks & Requirements

Task #1: Safe Bike Storage on Campus

Once Frank arrives on campus it is imperative that he finds a safe place to lock his bike. He does a search and determines that there are three options near his class: lockers, cages, and racks. Worried about bike theft, he opts to store his bike in a cage, for which he already has the appropriate permit. Frank then does a search to determine the best bike path to take to get to his chosen bike cage. When he arrives, he scans his UBCard to unlock the cage and stores his bike.

Task #2: Getting Across Campus Safely

Ania lives on campus and has to walk quite far to get groceries two to three times per week. She does a search to determine the on-campus transportation options that are available to her. Discovering that there are shuttle and Safewalk services, she decides to take the shuttle. Before leaving for the shuttle stop, she finds a walking path along a well-lit route. As usual, Ania shares her current location with friends so that they can monitor her progress to and from the grocery store.

Task #3: Seeking Assistance on Campus

Ania, a new student unfamiliar with UBC's safety resources, finds herself intoxicated at a party. Her and her friend would like to go home, however her friend is too drunk and isn't capable of walking. She decides to do a search to see if someone can help them. Eventually she successfully contacts John, a Campus Security officer who is on-call. After explaining the situation and where they're located, John makes his departure. John assesses the situation and decides to drive them home.

Requirement #1: Real-Time Safety Resource Accessibility

The system must provide real-time information on the availability and location of campus safety resources, such as security patrols, Safewalk programs, shuttle services, emergency call stations, and bike storage options. This information should be readily accessible through numerous channels such as mobile applications, websites, and physical maps located around campus.

Requirement #2: Dynamic "Areas of Concern" Mapping

The system must include a feature that allows for the dynamic mapping of "areas of concern" on the campus. Both security officers and students should be able to mark these areas in real-time on an interactive campus map. For instance, if Frank's bike gets stolen, he could report an issue in that area for theft. Campus Security officer John could corroborate this data with security footage and take appropriate measures. Once the issue is confirmed it will be visible to all other users.

Requirement #3: Person-to-Person Live Location Sharing

The system must provide the ability for individuals to share their live location with one another for a fixed set of time, or until the feature is disabled. This is to alleviate the workload from other on-campus escort services such as Safewalk. Once enabled, an individual permits others to view their location in real-time. Observers are notified when the individual reaches their destination.