SAFE FRANCISCO

Designing Process & Game Manual

Preface

You are invited to a journey in San Francisco. Inspired by the User Manuals of the greatest plumber of all times - Mario, we, the Safe Francisco team, built this user guide to present you all the (crazy) stuff that happened behind the scenes during our game development.

In this manual, you will find an Introduction, which you will learn about the reason behind this project, our partners that helped during several stages and the problem-solving process that led us to this specific topic. The next section, 'Research & Development' explains how this game is built using the design thinking process, and the evidence that supports the scenarios in the game. Lastly, 'The Game Manual' is will guide you through the game, exploring the scenarios and decisions that a player faces, and also assess the game in more technical terms.

We hope you will have fun and learn a lot with this manual.

Cheers,

SAFE FRANCISCO Team

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Finding the Right Problem

Big Question

We were first introduced with the Big Question 'How Might We Evolve Human Technology Interaction For Improved Personal Safety In The San Francisco Bay Area?' submitted by Gensler. During the Fall semester, Safe Francisco team explored different aspects of this broad topic on four individual papers.

Research

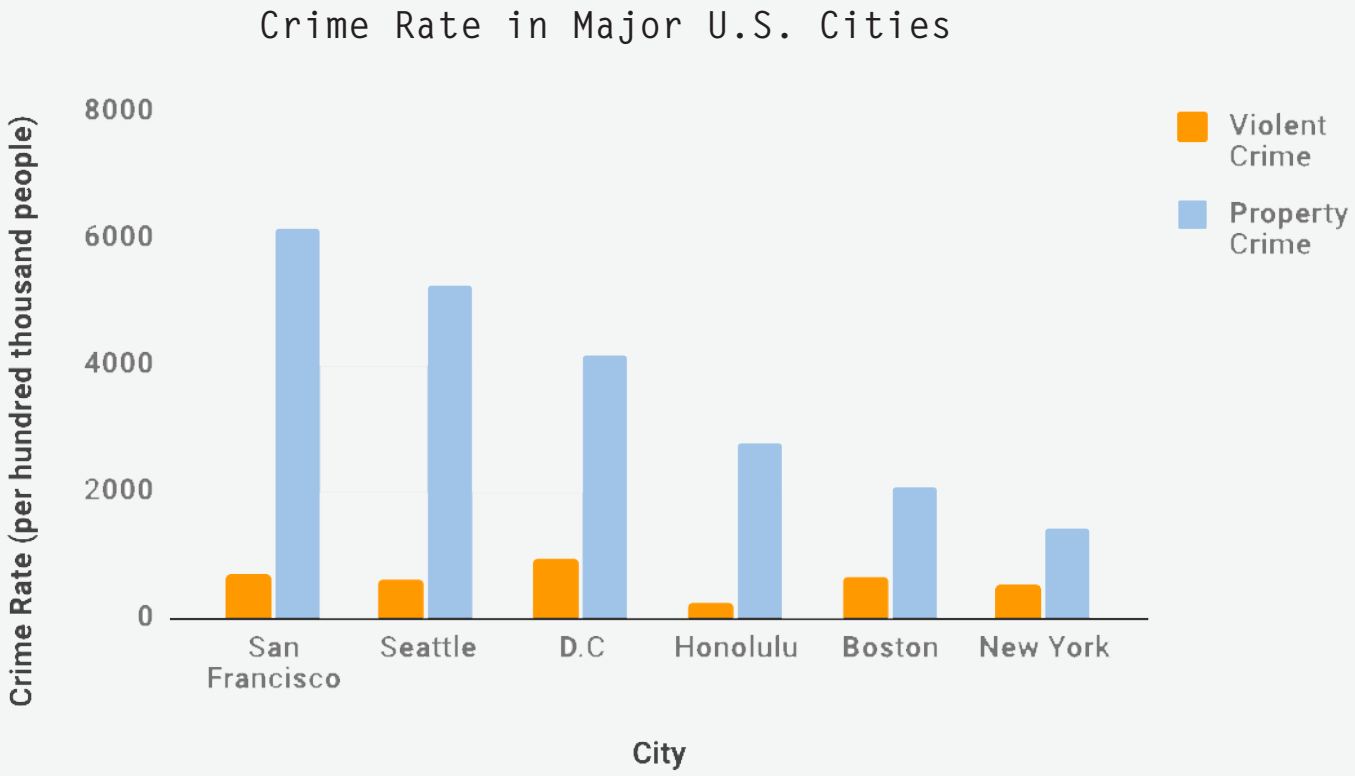
After converging our ideas and research, we recognize a lack of awareness about personal safety among individuals. As Schneier (2010) pointed out, in the modern age, people tend to look at personal safety as a trade-off, which often put the responsibility for their safety on the hand of others (i.e., companies, government), so that they do not need to be concerned about it.

Furthermore, drawing our research' focus to the city of San Francisco specifically, FBI crime reports data shows that the city has the biggest crime rate among the nation's top 50 cities (FBI, 2015); and that individuals below the age of 25 are 60% more likely to be victims of violent crimes (SafeAndJust.org, 2018) .

In what regards college students specifically, the San Francisco State University 2017 Annual Security Report published survey results answered for students about their perceived confidence dealing with unsafe situations on the campus area. The report shows that students who shows higher levels of perceived confidence, also reported experiencing crime or knowing someone who did so (SFSU, 2017).

In addition, students who reported no personal experience with unsafe situations at all, rated their perceived level of safety higher than the average,

although they were not aware of all resources provided by the campus in case of a security emergency. (SFSU, 2017)



The Right Problem

Nonetheless, the unsafe statistics about San Francisco and the lack of awareness most concerning for youth, lead us to recognized that a certain portion of college students are not aware of how to avoid danger or how to behave in unsafe situations once they are faced with one (initial stage). Hence, our goal is to enhance the number of college students that are aware of how to avoid unsafe situations in San Francisco and how to react during such an event, if it comes to happen.

Notwithstanding, some obstacles need to be overcome to reach the goal state, for example, personal bias that lead individuals to underestimate the risk of unsafe situations in environments which they feel familiar with; hence, they tend to not look for means to improve their perceived self-awareness related to safety. #rightproblem

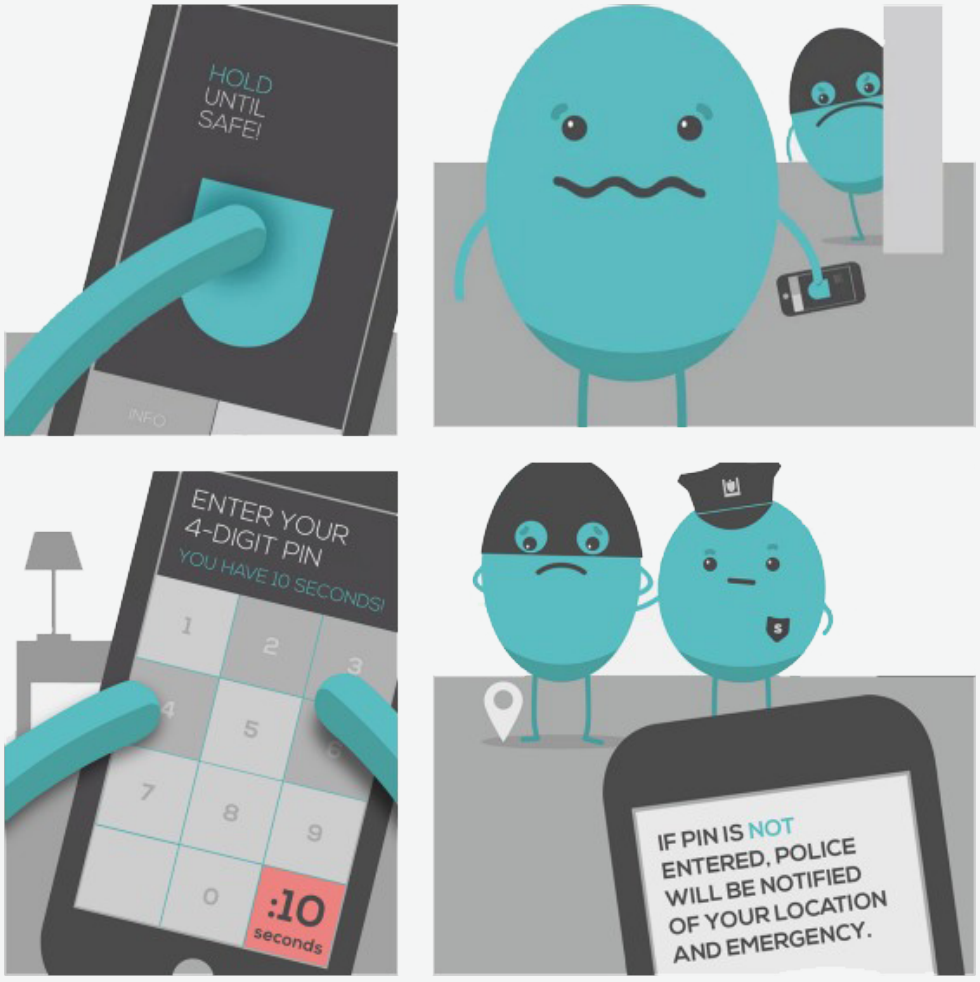
Civic Partner

During this project, we had the unique opportunity with professionals from Gensler, the biggest design company in the world. Gensler shares similar values and purposes with Minerva; they believe in transforming communities, by "enduring change through social responsibility and civic engagement with them" (Gensler, 2019a).

Following its purpose and values, the company created the Gensler Research Institute, which they describe as the "intersection of design, business, and behavior in pursuit of solutions that improve the built environment and enhance the human experience" (Gensler, 2019b). Design thinking is the key component employed in creating products by Gensler, and as this project is an extension of the Gensler Research Institute, in partnership with Minerva Schools at KGI, we had the chance to learn with experts about the design thinking process when building a product/experience, which are displayed in this project.

Choice of Medium

Working with personal safety is a complex task, many factors contribute to one's perceived self-awareness regarding their safety, such as personal experiences and believes, cultural background, and biases. Thus, there is no such perfect solution that would be 100% accurate to improve how people face safety-related topics [Schneier, 2010].



Therefore, before defining the media for the deliverable, we started with a gap analysis among the existent solutions. Droege (2018) created an app to facilitate people's access to supporting resources when they feel unsafe, by clicking in a button on the main screen, the user's phone calls to a list of numbers (including emergency services and relatives). However, this solution can only help the victim when they are experiencing a dangerous situation and it does not instruct how to avoid one.

For college students, the University of San Francisco (USFCA) noticed that paper bulletins and lectures about crime prevention were not effective to engage students, thus, they switched to only e-mails and text messages, a method that ranked more engaging. However, text messages can still be ignored and it communicates only facts/instructions and does not generate emotional impact, which is less memorable [Lerner et al., 2015]

Furthermore, we identified a gap in interactive solutions, which is to create an experience that would inform the audience how to prevent danger and how to behave during unsafe situations. A game, however, would check all criteria, as explained by Griffiths (2002), games are powerful tools that reach individuals from many backgrounds, ages, and educational status, although they are significantly more common among individuals less than 30 years old. In addition, the author pointed out that games can be effective to generate simulations and enhance long-term memory and stimulate learning. #gapanalysis

However, game developing is a process that can be time and resource consuming. Given our constraints of time, expertise and resources we acquired the platform RPG Maker MV® to leverage our skill set, since it only requires logic and algorithmic thinking, as well as design skills, to build our deliverable product. #constraints

Game Development

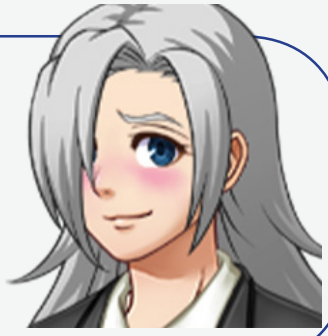
Character Types

The player. A character, who is controlled by the user playing the game, interacts with the other characters and explore the surroundings of San Francisco in the game. To represent more diverse realistic situations, users are able to name the character and choose different personality and background.

The police. Example of friendly character that provides instruction to the player after a crime scene. Other friendly characters serves the purpose of making the game engaging to the users.

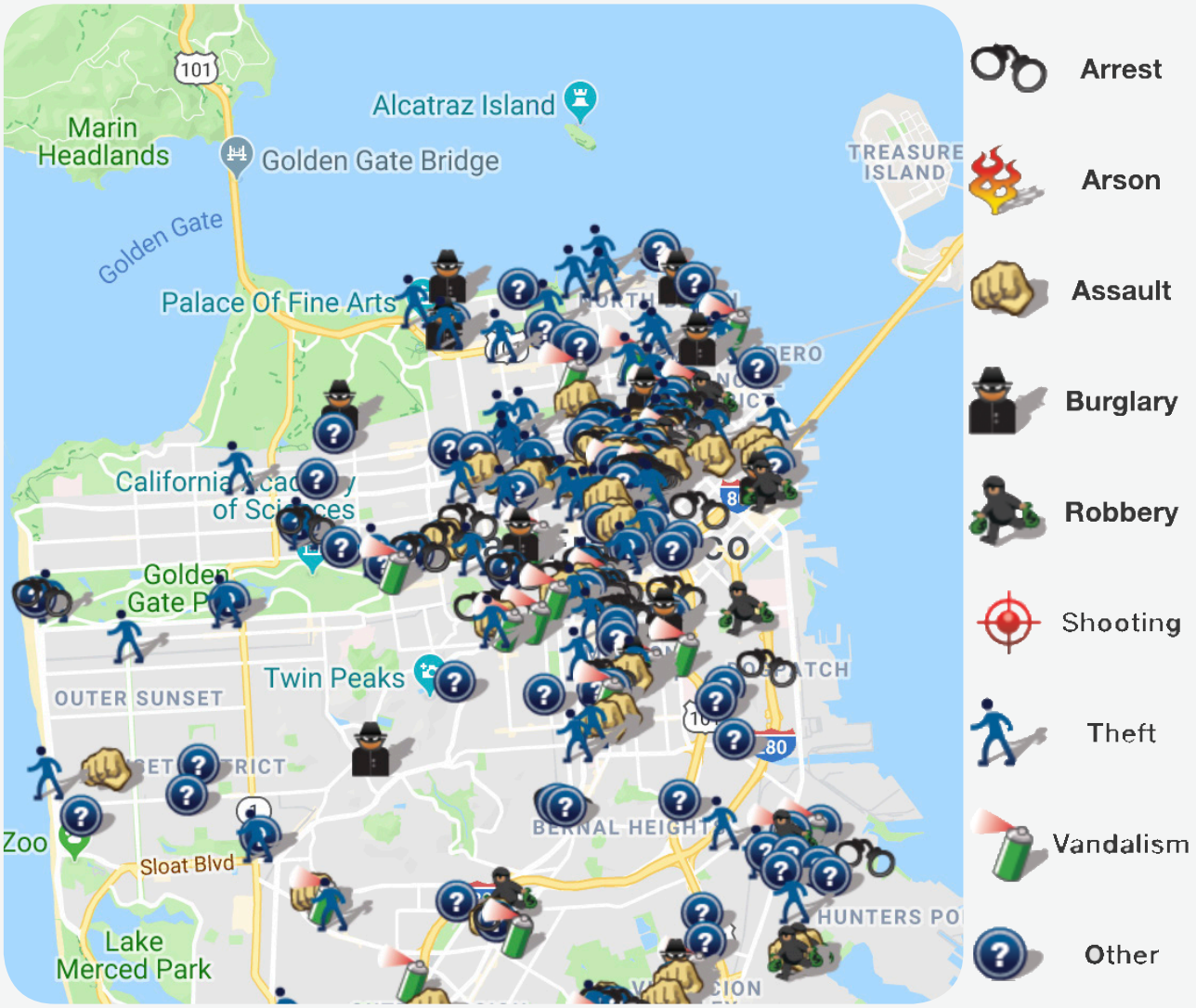
Shelterless person. Example of enemies and threats to the player, who is dangerous when interact improperly (i.e. fighting back when being stolen).

College friend, who complains to you about the unsafe experience she heard on campus. Characters and their interactions build up the complex in-game world that the whole gaming experience can be different depending on user's choice.

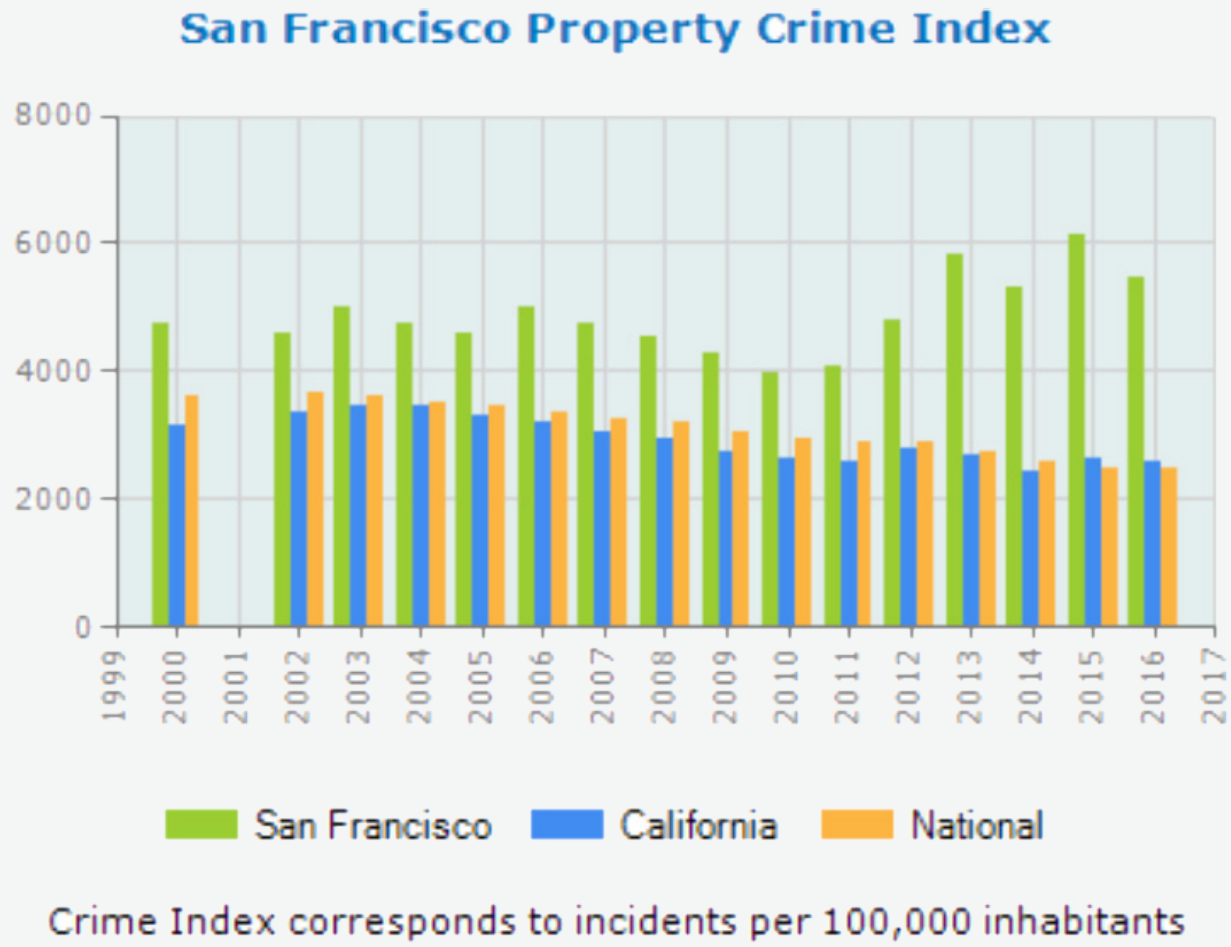


Location and Space

The way that the characters behave and their locations are fully based on real-life experiences gathered from various evidence sources and interviews with Minerva Students. For instance, the crime map in San Francisco State University displays that the most common crime on the campus is petty theft (Campus Crime, 2019). This is why the college friend character in the game conveys a campus story about petty theft. Similarly, the phone theft scenario is based on one true case of phone theft in Dolores Park, San Francisco that has been captured by the cameras (Yu, 2018). Moreover, the policeman is intentionally located in front of the Bart Station as the number of Bart Police has increased, SF Gate shows (Cabanatuan, 2017).



The locations of the characters are deliberately chosen from San Francisco crime map used from the Police Department, Spot Crime, whereas the types of crimes that are presented in the game are chosen based on the statistical results from San Francisco Crime Reports. From the interviews with Minervans, we have gathered information about the most frequent characters in San Francisco they encountered, and their communication means, specifically for the scenarios with shelterless people.



We obtain most of the images with photography ourselves, but some are also from public domains. The whole game employs 3D + 2D graphics, as well as both retro pixel style and realistic image to create a mesmerizing yet simple world. We also employed the Cognitive Dissonance Theory, when the two styles conflict with each other, the players are more likely to resolve this dissonance by ignoring the details and feel the big picture.

Modeling the locations

The map is made of 30*47 tiles. Each tile is a 48*48 pixel image, creating a simple and role 90s game style.

We recreated the Pier, Financial district, Chinatown, Civic Center, Yerba Buena, and South of Market (SOMA) based on Google Earth images.

The Pier of San Francisco and the Ferry Building

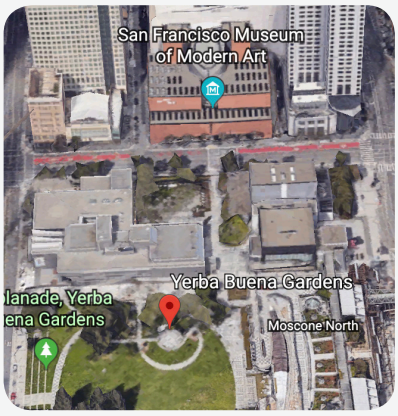
Parts of the Financial District and the Transamerica Pyramid.

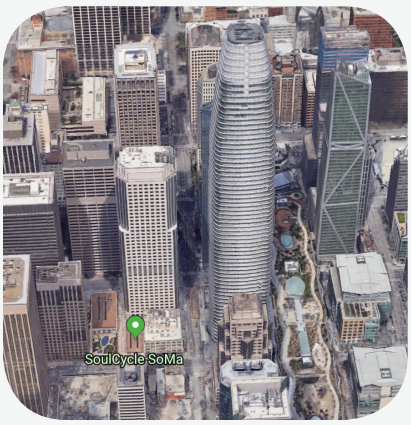
The Chinatown

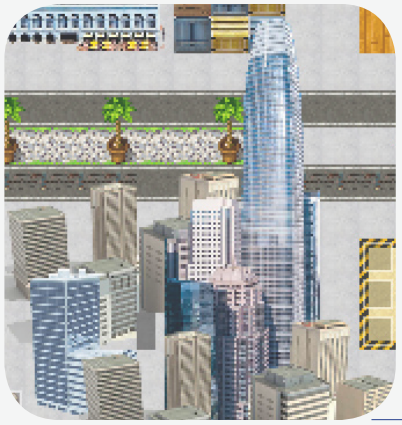
The map contains three levels: the city, the districts, and the buildings. We chose the most representative ones such as Salesforce Tower, Transamerica Pyramid, Civic Center, and Chinatown, which creates a mental image of the real San Francisco, therefore reinforces the immersive gaming experience.

Civic Center, and UN Plaza

Yerba Buena

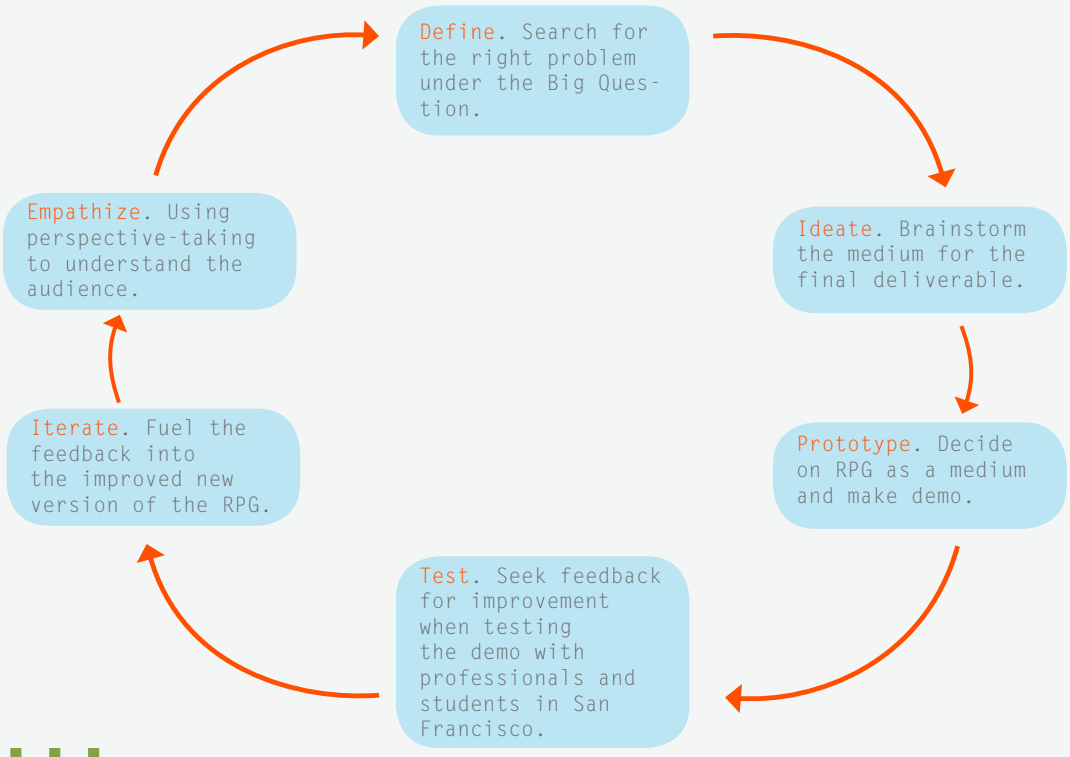






Parts of the Financial District and the Salesforce Tower.

Design Thinking Process



Empathize

From individual research during the Fall Semester, we had chosen college students as our audience. We facilitated conversations with the students in Minerva to see how they feel about safety in San Francisco. From these conversations, we saw a pattern of fear from shelterless people and pickpocketing; some of the students had been victims of theft during the year. In most of the cases, they would not believe that they are in danger. Furthermore, as a team made of college students, we input our own observations about encounters with danger in the city. #interpretivelens

Define

From these discussions, we identified the need for providing a product which increases safety awareness. However, the conversations uncovered that the problem of not being aware of threats in the city turnt out to be broader than only for college students. Therefore, the product should have features which can be more generally used.

Ideate

This when we started to think about the product. We had several ideas about the toolkits, flyers, and websites, but all of these existed and have proven to be inefficient. The user is able to retain memorable information more easily, thus an interactive game would be a good solution.

Prototype

Given the constraints of time and resources, we decided to use RPG Maker MV, a software designed to create games. RPG Maker MV supports several types of interactivity such as challenge, narrative, discovery, etc. (Sniezak, 2016), which are crucial to implicitly raise users' awareness about safety. In order to reinforce safer behavior in the game, we decided to provide Health Points, Mental Points, and Money. Each wrong decision made in the game will produce a decrease of any of the points. When the player loses all the points, the game will be over and the player will lose. By making the right decisions the player will be able to win the game, so they are incentivized to make the right decisions. #carrotandstick

Test

Once we finished the demo version of the game, we presented it in front of around thirty Gensler employees, a group consisted of designers and architects. By that time, we had only 7 interactions in the game so they suggested having more interactions with the characters in the game and adding borders to specific locations. They particularly like the real imagery of San Francisco and felt alike the real-life experiences.

Iterate

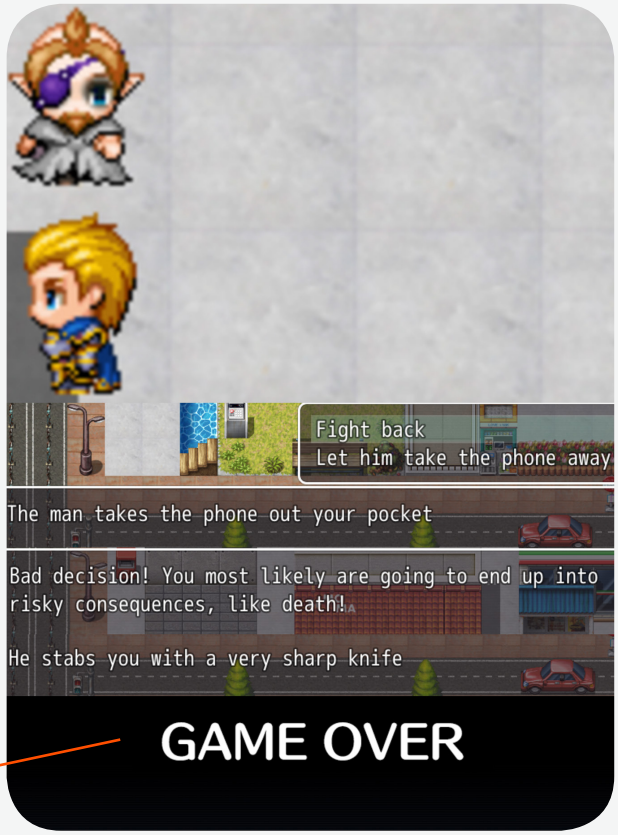
We underwent a similar procedure of defining the problem, ideating and prototyping, and ended up having around 20 interactions in the game and putting borders in all the locations so that the user knows where they can move. We added more real images from the buildings in San Francisco, as well.

Rules

The user can control the game with keyboard and mouse.

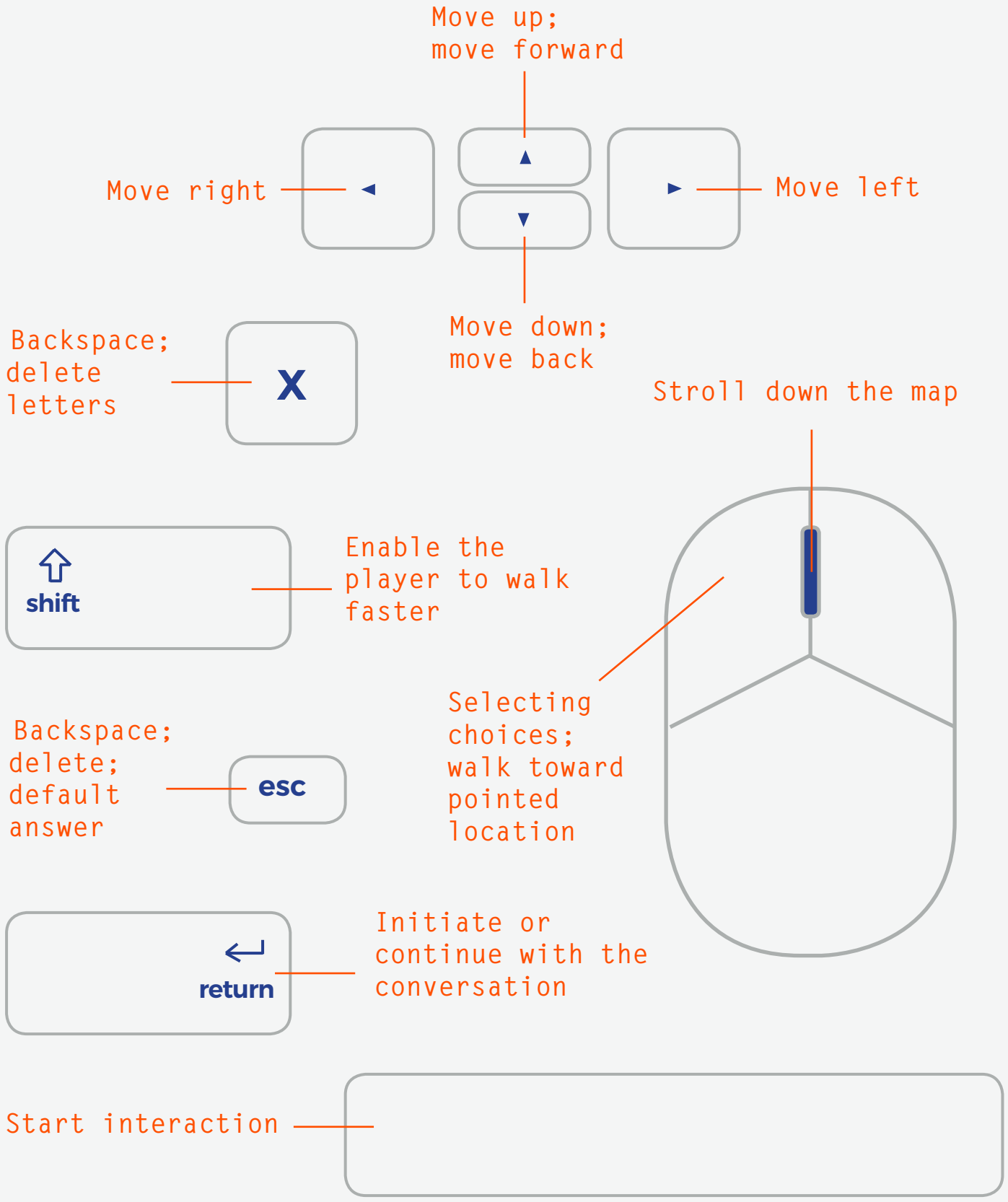
The game has two types of events: voluntary and passive.

In a voluntary event, the user has to touch the character or object to activate interaction or conversation. For example, the merchant only talks to you when you initiate the conversation.



Passive events are those coming to you. For example, a robber running after you cannot be avoided by your own will.

Controls


Move up;
move forward
Move right
Move left
Move down;
move back
Backspace;
delete
letters
X
Stroll down the map
shift
Enable the
player to walk
faster
Backspace;
delete;
default
answer
esc
Selecting
choices;
walk toward
pointed
location
return
Initiate or
continue with the
conversation
Start interaction

Mechanisms

Player Status

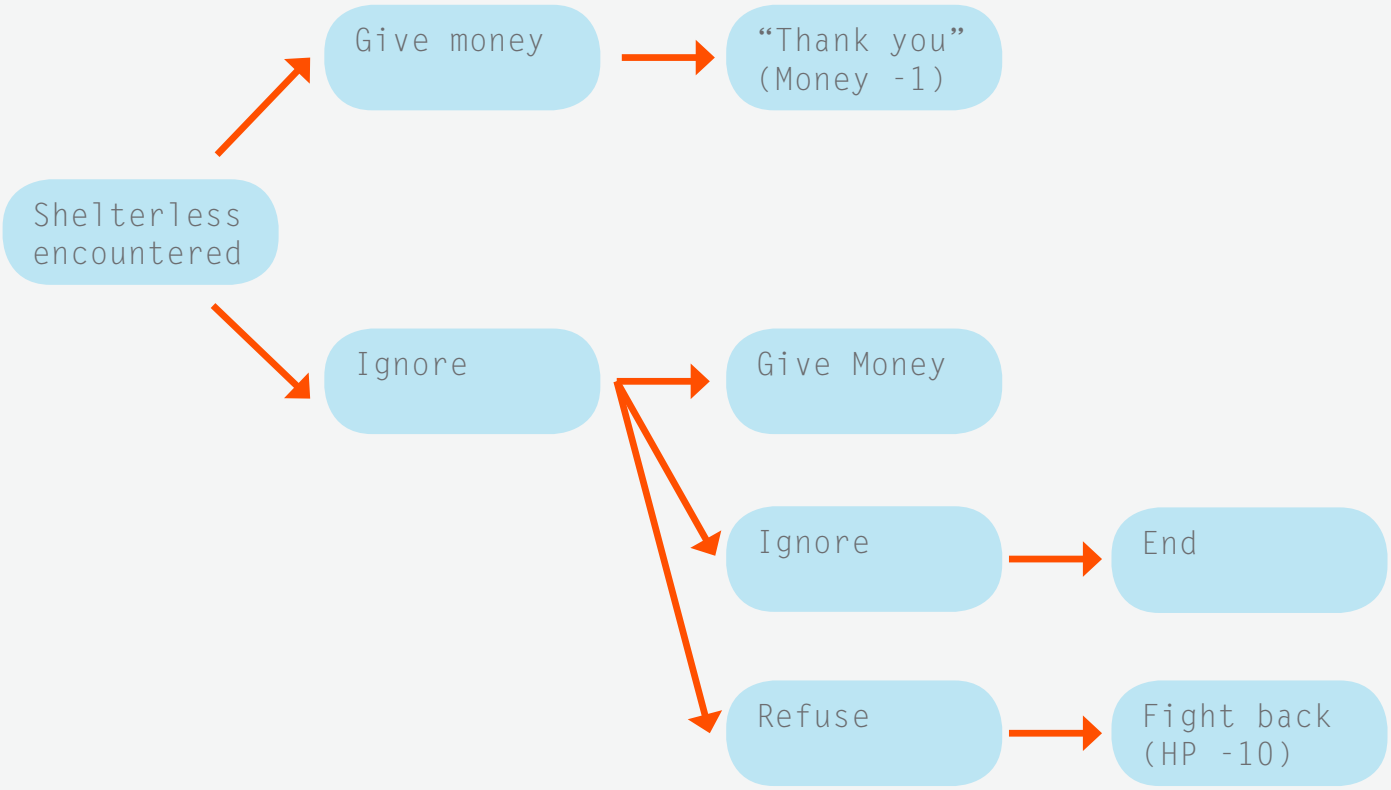
The game works mainly on three value: HP (Health point), MP (Mental point), and Money. Each decision can alter these degrees to some degree.

For example, giving money to a shelterless person will cost you one gold, and fighting with a dangerous robber may cost all your HP, which in that case the player will die.

Decision Trees

The interaction between the characters can be seen as a decision tree. Take the shelterless person as an example, the first decision was give-money or ignore. The person will gratefully thank you after you give the money, and if you ignore him, there's another decision: give-money, ignore, or refuse.

Similarly, giving money will lead to a warm-hearted 'Thank you,' but this time after ignoring him, he will give up on asking for money. However, if you refuse it with hostility, you are asking for conflicts, and in the game, the end is a fight.



This tree analyzes the player's risk/loss preferences. For example, a risk-aversive person is less likely to refuse the shelterless explicitly because the outcome is uncertain and could potentially lead to a fight, while loss-aversive person tends not to give money because it is a certain monetary loss. If we would analyze this tree only looking using Expected Value, a rational individual that only want to maximize their own personal utility would ignore the shelterless person. However, once we add utility functions, there is no such easy way to look at this complex decision. For example, some individuals might perceive helping others with higher payback, thus, generating more satisfaction even though it still represents a loss in monetary terms for the player.

In the end, the game will determine the preference of the player given all the decisions made, and advise appropriately.

Simulation and Modeling

Although this game is unlike any example explored during CS51 classes (i.e., the Lotka-Volterra model, NetLogo simulations) we can still classify and analyze it using the same concepts that we used during class. First of all, our game is an Agent-Based Model (ABM) in which the player, and other actors, have a defined set of rules to follow and all the interactions occur at the player level. Even though it is not identical to traditional ABMs, for example, the Non-Player Characters (NPC) would only interact with the player if the player starts the interaction process. In addition to the system behavior, our game also portraits a conceptual model of the city of San Francisco, portraiting some well-recognized buildings and neighborhoods in the city.

Furthermore, in terms of simulation, the game is classified as a discrete one, given that the simulator used (RPG Maker MV) manage the events on time, keeping a queue of events sorted by the time which their occur. Thus, one can only access the player's information, for example, in certain specific time-stamps. It is not the case that one can look at the system using different time-steps, because those values are determined by the device's clock which is running the game.

Lastly, the game is classified as a stochastic simulation for three main reasons: (1) the player has the freedom to interact with events in any order they want, and with as much as they want thus, different players can follow completely different paths; (2) The events which the player has already interacted with would change their interaction with the following events, giving that the player's statuses (MP, HP, gold) are manipulated on interactions; (3) Within one interaction with an NPC, some of their actions are assigned with probabilities, hence, the same initial interaction with the same NPC would not always lead to the same outcome. #simulation #modeling

Goals

There are two main parts to ‘win’ the game. First, the player has to maintain a basic level for all three points, that is greater than 0. It corresponds to the physical, social and mental aspect of safety, as long as you are above the line, it is okay. The other requirement is specific to the player’s character. Each character may have unique objectives. Someone may want to make a large fortune in San Francisco, while someone wants to have really good health. There are also non-stats goals. For example, there’s a goal of collecting a certain number of items in the city.

The two goals serve as the short-term and long-term goals of real life, and both are necessary.

For example, the college students come to San Francisco to study, and startups come here to make money, but on this far-reaching goal, this game is educating them the necessity of being safe while chasing your dream.

Division of Labor

We have diverse skills and personalities. In the beginning, without a clear idea of game development, we decided that Alma and Rachel would design, whereas Shukai and Lucas would write the scripts and put them into the game. We dynamically changed roles as the development went on.

Since Alma is more extroverted, she devised the scripts and justified them with evidence from multiple websites and interviews. Shukai, as more of a technical person, developed the scenes in the RPG Maker MV based on the script. Rachel, who is skilled in designing, modeled the city and created the map. Lucas, as more of a communicative person, helped throughout the whole ideation process and organized in-group discussions and meetings with Civic Partner.

Expected Division of Labor

	Script	Design	Production	Data Analysis
Alma	0%	50%	25%	25%
Lucas	50%	0%	25%	25%
Rachel	0%	50%	25%	25%
Shukai	50%	0%	25%	25%

Actual Division of Labor

	Script	Design	Development	Evidence	Coordination
Alma	90%	0%	0%	70%	0%
Lucas	10%	0%	10%	10%	100%
Rachel	0%	100%	0%	10%	0%
Shukai	0%	0%	90%	10%	0%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Resources

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