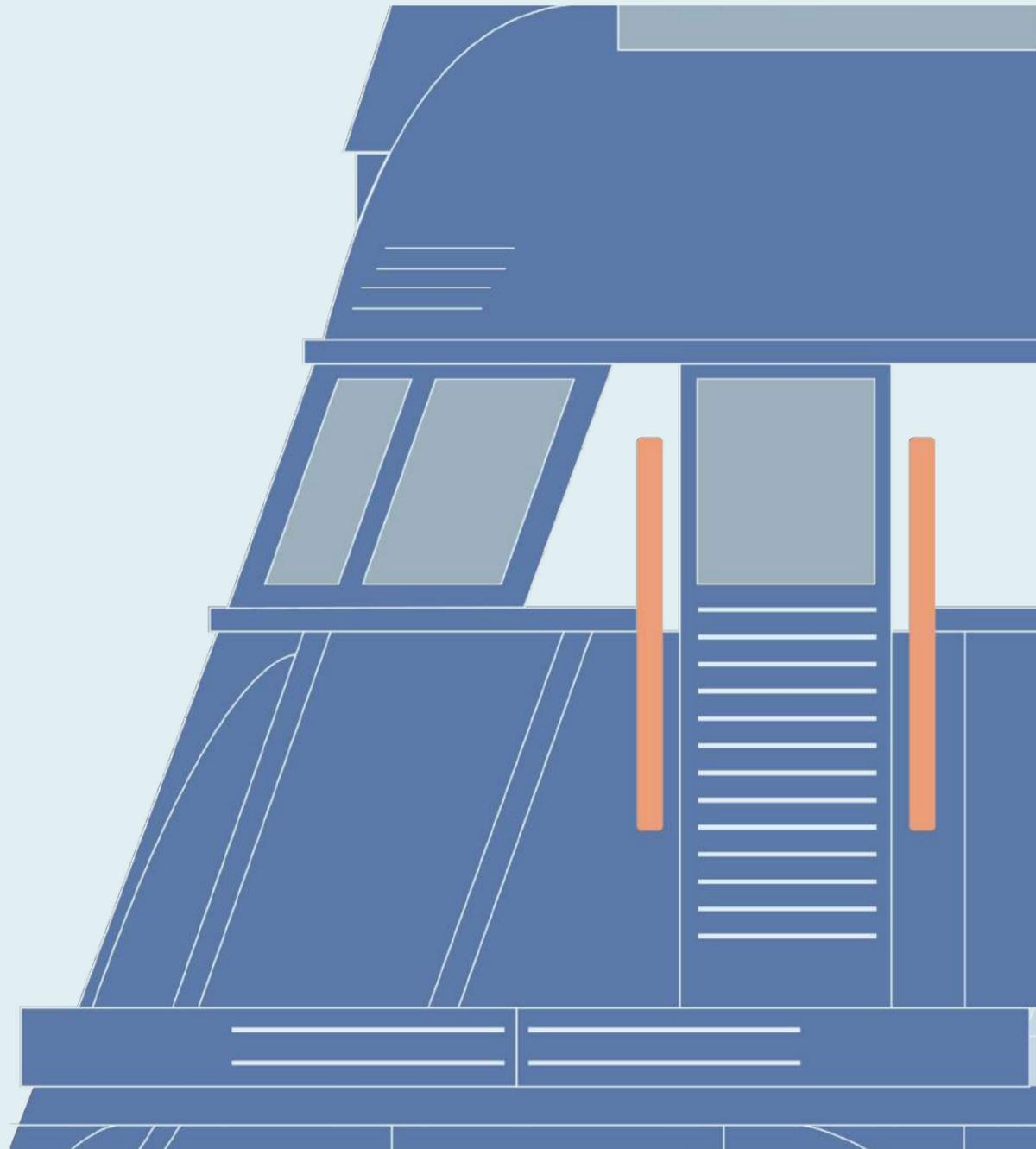


SIGNAL

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CONTENT



1. FIELD OVERVIEW

Summarize selected field
Research: Safety issues in public transportation around the world
Research: How police react to safety issues in public transport
Technical report: What can we use

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2. BACKGROUND RESEARCH

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Competitor Analysis 2:
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Target Users and Persona
User Story Map

3. CONCEPT DEVELOPMENT

Define problems
Idea sketches
User case scenario (Storyboard)
UI flow
Wire-frames (For interaction design)

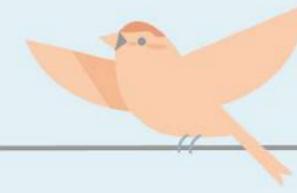
4. DESIGN

Blue print of train
Final 3D representation of design
Final screen design for interface
Arduo Circus
Presentation board design



“If public transport services were improved, more people would use the safer system There is no reason why Melbourne can't do this.”

- Professor Martin Mogridge



PART ONE

FIELD OVERVIEW



FIELD OVERVIEW



Summarize Selected Field

Public transport is a necessary element in daily life. In the busy city like Melbourne, it also means about dealing efficiently and more sustainably with traffic congestion. Therefore, the safety of the public transport in Victoria has become more and more important. Only when the transport being **100%** safe, people can choose to use them **24 hours 7 days**.

Public transport is not gender-neutral. Women's safety problems with public transport are over the world. The differences between men and women in travel patterns in relation to the trip purpose, frequency, and distance of travel. These differences stem from the differences in the social and economic roles. More than **2/3** of trips made by men are for work, compared to only **1/2** of trips made

by women. In contrast, almost **1/3** of trips made by women are for household chores while only **1/8** of men's trips relate to household responsibilities. Yet women's safety is most often overlooked.

However, the research about male facing violence problem has also existed, but it is seldom be reported. From the research, we seldom saw the data about men's safety problem.

In this project, we are willing to focus on the environment on the public transport by using interactive technologies to improve the users' feeling about safety. It might not directly remind people about safety, but by improving the services of public transport to make passengers feel comfortable. Also, this project may focus on the problems about male's violence in public transport.

1. Transportation & Bus Surveillance, Power Over Ethernet. Retrieved from <http://blog.comtrol.com/2012/08/29/bus-surveillance-power-over-ethernet/>

2. Select Transportation and Bus Surveillance. Retrieved from <https://comtrol.com/solutions/security/security-solutions/transportation-and-bus-surveillance>

3. Select Aditya Infotech Secures Prtc Buses with Cp Plus Mobile Surveillance. Retrieved from <https://telecomdrive.com/aditya-infotech-secures-prtc-buses-cp-plus-mobile-surveillance/>

FIELD OVERVIEW

Data Research: Safety Issues in Public Transport



This is Australian in **2016**, and you've got one in three young women saying they're afraid to be out in public spaces after dark... and as a result they're curbing their behaviour. Some **80%** of women are afraid of being harassed while using public transport.



In China, the most frequent occurrence of female travel violence occurred in public transport, with a rate of **28.33%**. The maximum time is between **7pm** to **8pm**. And **94.17%** of perpetrators are males. Even when women travel together, the rate of violence continues to reach **32.5%**.



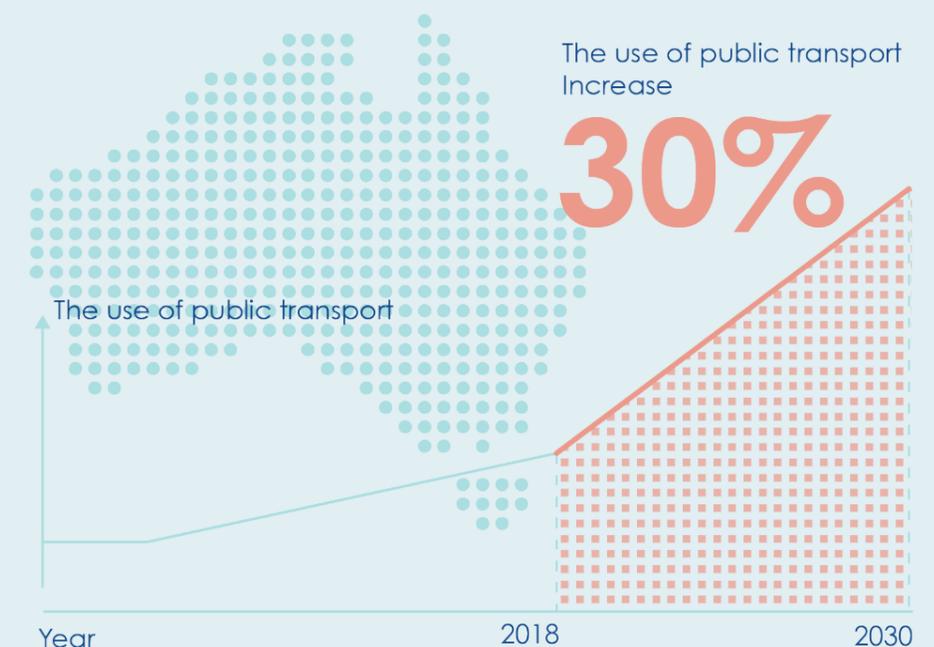
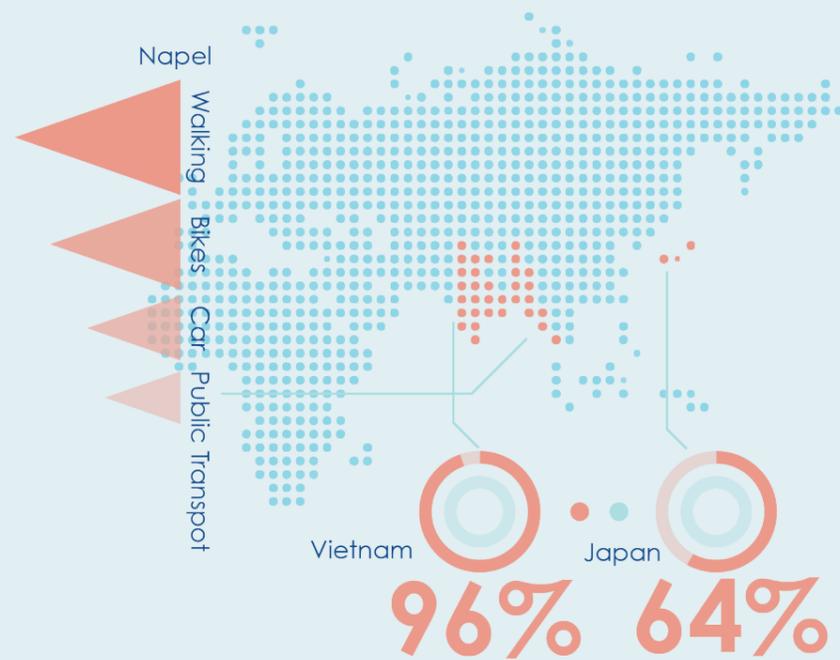
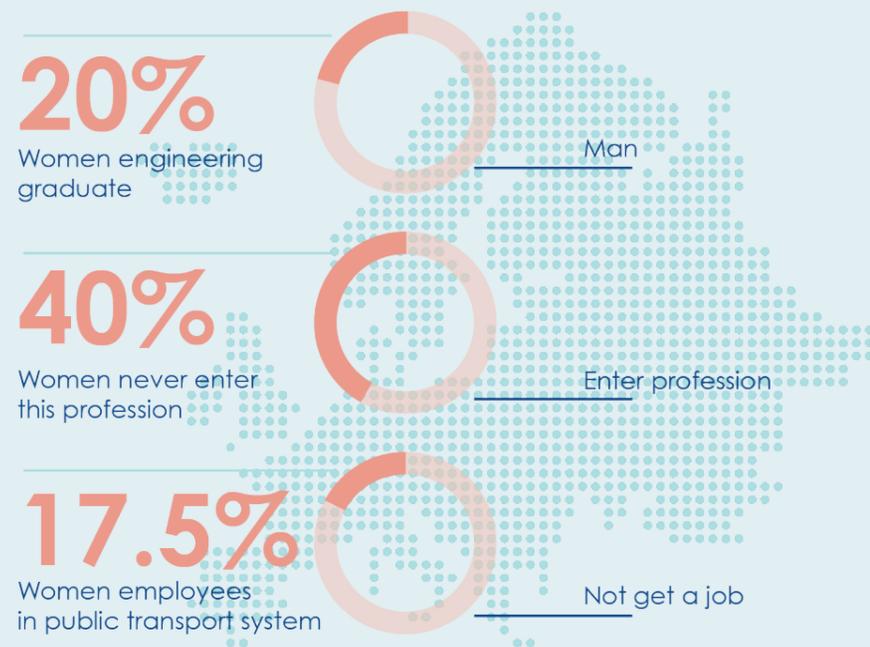
Every **51 minutes**, a woman faces harassment or assault in India's public spaces. Staggering numbers of reported and unreported cases of violence and harassment make transportation difficult and dangerous for women and girls, especially after dark.

1. ABC News. (2018). Third of young women afraid in public places after dark: report. [online] Available at: <http://www.abc.net.au/news/2016-05-12/nearly-a-third-of-young-women-dont-feel-safe-in-public-places/7405434>.

2. Sohu.com. (2018). How is the situation of women in public transport. Is it going to be worse? [online] Available at: http://www.sohu.com/a/134085974_599320 [Accessed 2 Jun. 2018].

FIELD OVERVIEW

Data Research: Safety Issues in Public Transport



women make up **20%** of engineering graduates, but nearly **40%** of them either quit or never enter the profession. Within the EU only **17.5%** of urban public transport employees are women, and the proportion is even lower when looking at decision-making roles.

In Nepal found **96%** women prefer to sit or stand next to another woman in public transport. And **64%** of women had reported being groped on the Japanese train and subway networks... This result shows that there are similar result all around the world that women prefer to stay together on the public transport.

By **2030**, public transport use is predicted to grow by **30%** in Australia. So it's crucial to create gender-sensitive, safe and accessible public transport spaces. Until that time, if this problem still not the solved, the situation about gender safety on public transport will be more serious.

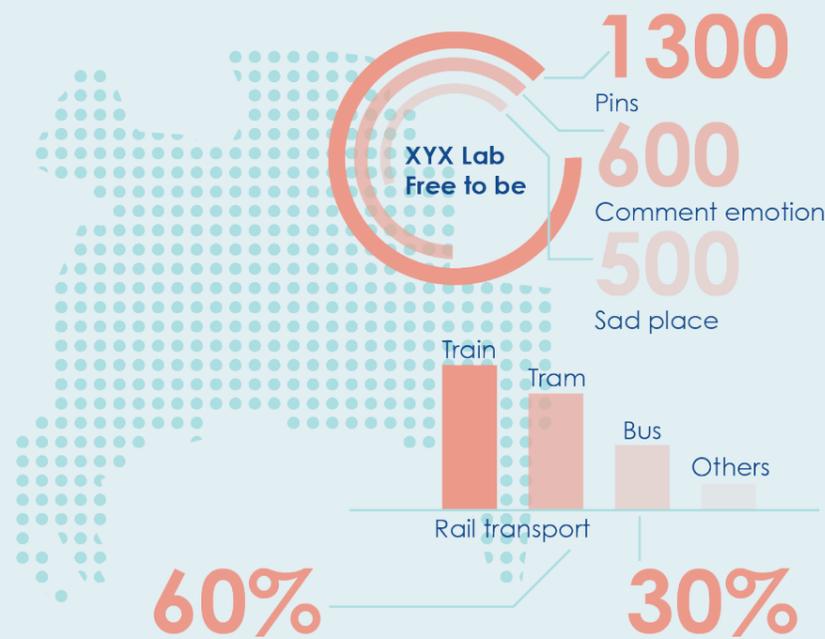
1. Transport for Development. (2018). Transport is not gender-neutral. [online] Available at: <https://blogs.worldbank.org/transport/transport-not-gender-neutral> [Accessed 2 Jun. 2018].

2. Voices. (2018). Are women traveling into a safer 2015?. [online] Available at: <https://blogs.worldbank.org/voices/are-women-traveling-safer-2015>.

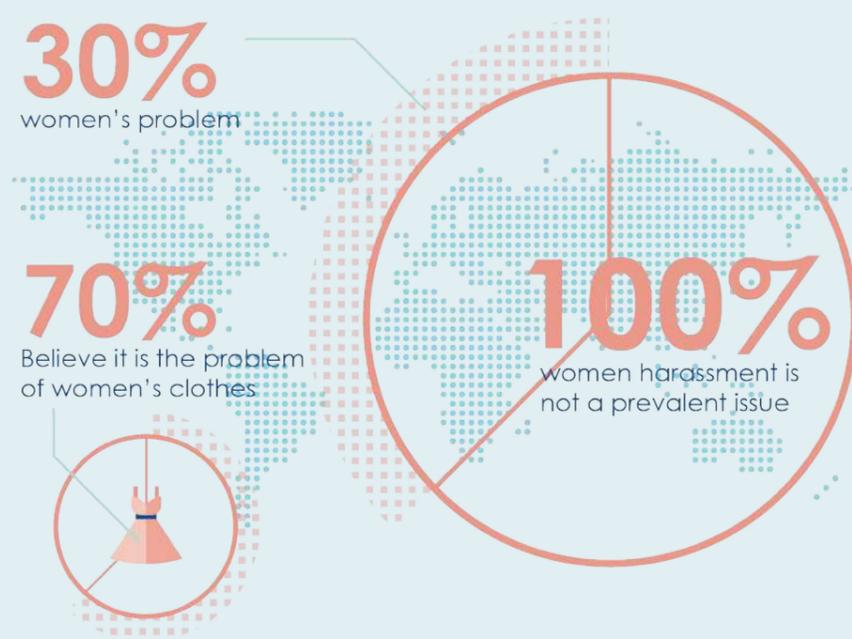
3. Globalpolicyjournal.com. (2018). GLI at the G7 - Japan's Gender Segregation: A Forward-Looking Policy or an Education Failure? | Global Policy Journal. [online] Available at: <https://www.globalpolicyjournal.com/blog/02/06/2016/gli-g7-japan%E2%80%99s-gender-segregation-forward-looking-policy-or-education-failure>.

FIELD OVERVIEW

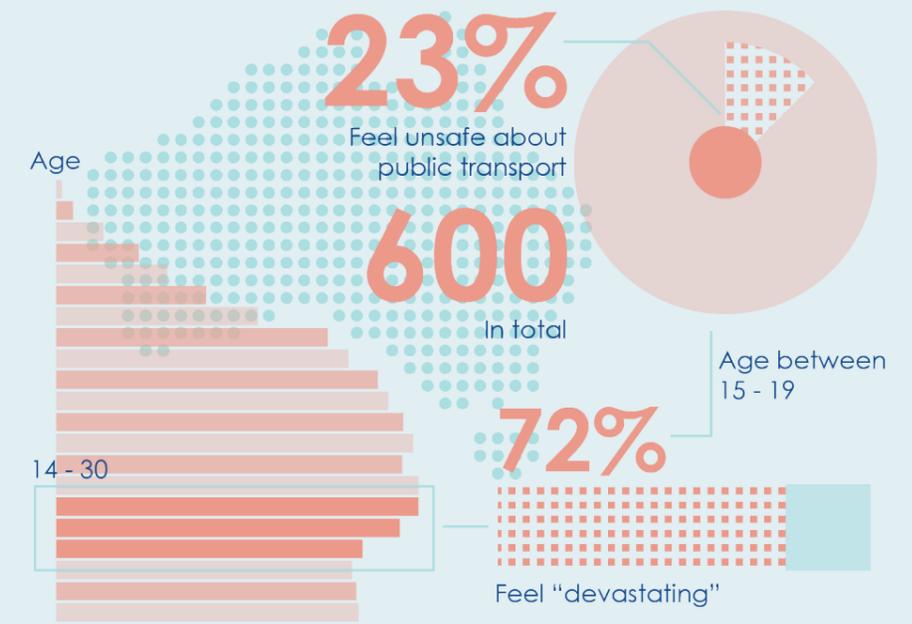
Data Research: Safety Issues in Public Transport



XYX lab examined more than **1300** pins and **600** comments left on “happy” and “sad” places in station in and around the Melbourne. The map mostly centred on the inner Melbourne suburbs. More than **60%** of pins and comments referred to rail transport, and **around one third** mentioned issues with trams. Very few pins referred to buses.



The most sad part is **100%** believe women harassment is not a prevalent issue, **30%** of them believe women should responsible for harassment committed against them. **70%** agreed that when a girl wears revealing clothing, she is partially responsible for unwanted attention or harassment.



A Plan International Australia survey published last year that surveyed **600** Australian girls aged **15-19** found **23%** believed it was unsafe to travel alone on public transport after dark. “devastating” of being sexual harassed was especially the case for young women under the age of **30** who made up **72%** of the respondent.

1. XYX Lab (2017). Free 2 Be Melbourne: Report on public transport.

2. ABC News. (2018). Third of young women afraid in public places after dark: report. [online] Available at: <http://www.abc.net.au/news/2016-05-12/nearly-a-third-of-young-women-dont-feel-safe-in-public-places/7405434>.

3. “What Causes Sexual Harassment? | The Women's Code”. 2018. The Women's Code. <https://thewomenscode.com/causes-sexual-harassment/>.

FIELD OVERVIEW

Data Research: Safety Issues in Public Transport



It's reported that sexual harassment to affect one in ten women. And more seriously, **40%** of them face this on a regular basis. However, the actual figure is likely to be much higher, as over **80%** of sexual crimes against Melbourne women go unreported.

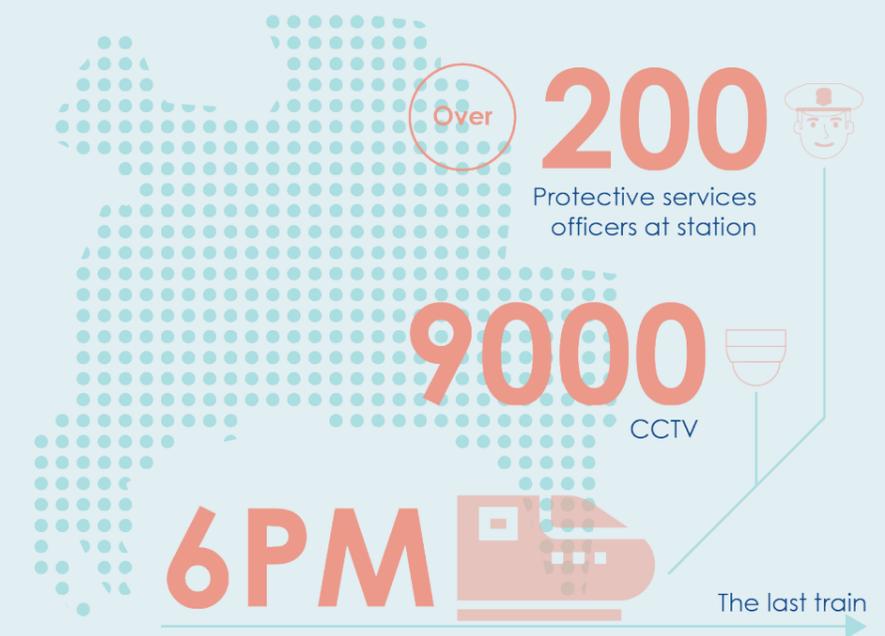
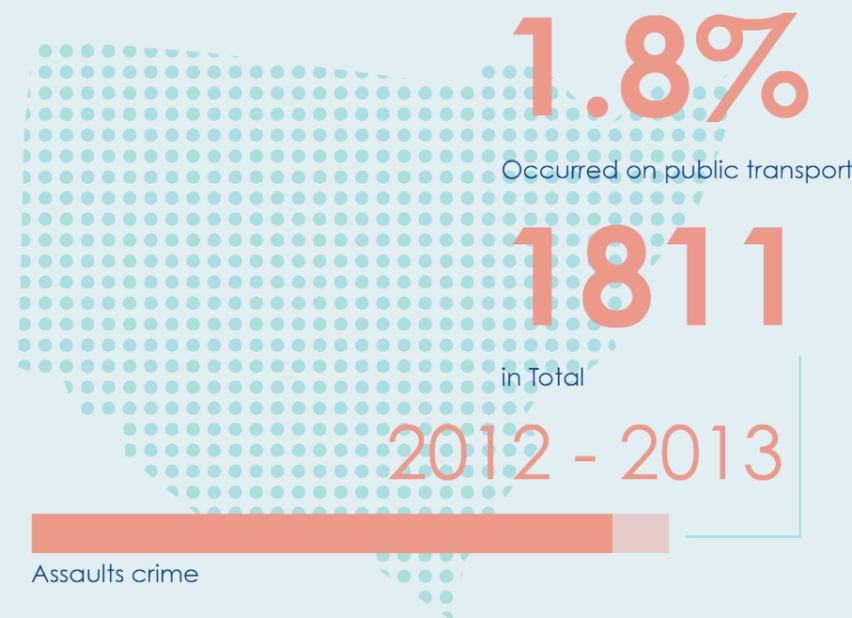
Data from the Queensland Police Service shows that **1379** offence were recorded for transport locations in the Gold Coast region in **2012-2013**, with an average of **41** assaults per annum over **the past three years**. This is only the part of reported one and some of them may even not be reported.

Examination of the most recent Queensland Police data from **July to November 2013** demonstrates that offences against the person, such as assault and sexual assault, account for only **5%** of all reported offences on public transport. The majority of offences are against property or good order.

1. Globalpolicyjournal.com. (2018). GII at the G7 - Japan's Gender Segregation: A Forward-Looking Policy or an Education Failure? | Global Policy Journal. [online] Available at: <https://www.globalpolicyjournal.com/blog/02/06/2016/gli-g7-japan%E2%80%99s-gender-segregation-forward-looking-policy-or-education-failure>.
 2. Vic.gov.au. (2018). Health, safety and wellbeing. [online] Available at: <https://www.vic.gov.au/women/gender-equality/a-victorian-gender-equality-strategy/working-together/health-safety-and-wellbeing.html>.
 3. Wrirosscities.org. (2018). [online] Available at: http://www.wrirosscities.org/sites/default/files/Final_Report_30072015.pdf.

FIELD OVERVIEW

Data Research: Safety Issues in Public Transport



Victorian statistics reveal a total of **9745** recorded offences on public transport in **2012-2013**. Importantly, the Victorian statistics show that public transport crime, on average, has increased by only **1.7%** per year since **2009-2010**. There is a similar pattern in Queensland accounting for **12%** of total crimes in public.

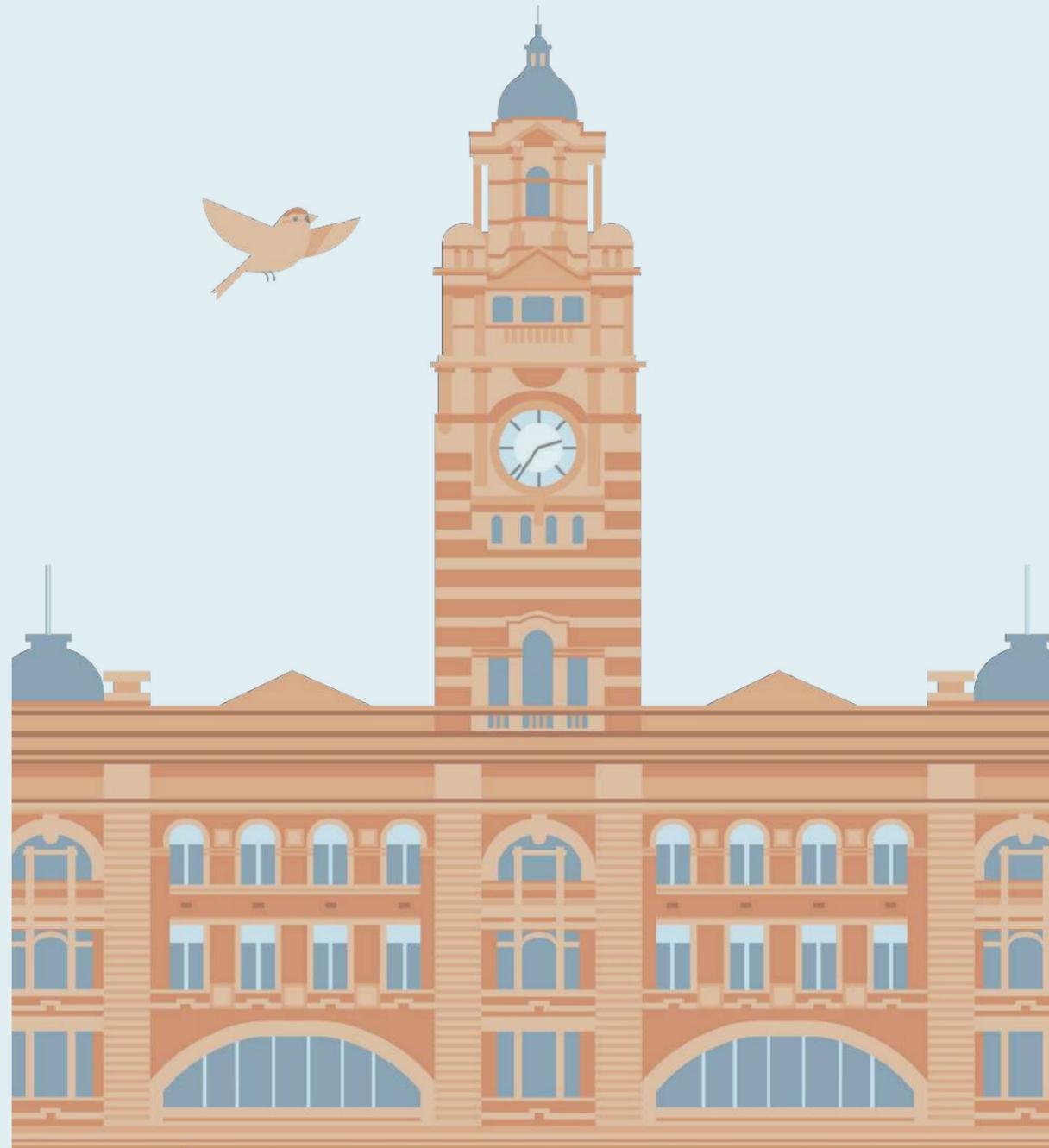
New South Wales recorded a total of **1811** assault crimes in **2012-2013**. According to the Davey's research about Melbourne Survey, an analysis of the NSW Crime Map data reveals only **2.8%** of all assaults occurred on any form of the public transport.

The police in Melbourne have protective service officers patrolling the network at over **200** stations on the metropolitan network every night from **6pm** until the last service, as well as more than **9000** CCTV cameras on our metropolitan network around the station, but it still work harder to make our passengers feel as safe as possible.

1. Davey, M. (2018). Melbourne survey reveals the public transport stops women find least safe. [online] the Guardian. Available at: <https://www.theguardian.com/australia-news/2017/aug/10/melbourne-survey-reveals-public-transport-stops-women-find-least-safe>.

2. Cities (2018). Women's Safety in Public Transport - Transforming Transportation 2016. [online] Slideshare.net. Available at: <https://www.slideshare.net/EMBARQNetwork/womens-safety-in-public-transport-transforming-transportation-2016>.

FIELD OVERVIEW



Research: Ranking of the Train Station in Melbourne Australia

The top 7 unsafe train station in Melbourne

1. Flinders Street
2. Richmond
3. Brunswick
4. Box Hill
5. Footscray
6. Jewell
7. Jacana

The top 7 safe train station in Melbourne

1. Melbourne Central
2. Glen Waverley
3. Hawksburn
4. Southern Cross
5. South Kensington
6. Eaglemont
7. West Footscray

Stations with the most negative responses included Flinders Street, Richmond, Brunswick, Box Hill, Footscray, Jewell and Jacana. Although the station like Flinders Street Station is huge and has a lot people in and out 24 hours 7 days. Respondents still spoke of men who called out to them or followed them off the train at the inner-city stations. In this kind of station, due to the current environment, the unsafe situation still happens every day. Passengers feel uncomfortable in such a main station already, they will not willing to get into station in remote area, especially at night time.

1. "City'S Most Unsafe Train Stations Revealed". 2018. HeraldSun.Com.Au. <http://www.heraldsun.com.au/leader/news/melbournes-most-unsafe-train-stations-for-women-revealed/news-story/f86612eb5a6f74fa330b685f97724faa>.

2. "Melbourne'S 10 Most Dangerous Train Stations". 2018. Nova 100. Available at: <https://www.nova100.com.au/latest/melbournes-10-most-dangerous-train-stations>.

3. "Melbourne'S Train Lines Definitely Ranked From Best To Worst". 2018. Time Out Melbourne. Available at: <https://www.timeout.com/melbourne/blog/melbournes-train-lines-definitively-ranked-from-best-to-worst-011917>.

FIELD OVERVIEW



Research: How police react to safety issues in public transport Victoria

Victoria Police will target drunks, drug-users and people carrying weapons in a special three-week safety blitz on public transport.

Police will run nine separate operations across the train, tram and bus network, which will include help from the operations response unit and the dog squad.

They will also concentrate on anti-social behaviour and opportunistic crimes like theft, on trains, trams and buses from tomorrow. Part of the blitz involves a crackdown on liquor stores that sell alcohol to under-age drinkers near some suburban train stations.

Police will also search for weapons and drugs at targeted railway stations. There will be a highly visible police presence at the end of train lines to prevent crime. Trams and

regional rail lines will also be included in the crackdown.

Assistant Commissioner Andrew Crisp says the operation is aimed at sending a strong message to those who commit crimes or behave badly on public transport.

“Police will be targeting those people who think it’s okay to drink on a train or intimidate other passengers,” he said. “We are taking a hard line on this behaviour and we don’t want to hear any excuses.”

Premier Ted Baillieu says the crackdown sends a clear message to the community. “That is designed to send a very clear message that we’re not going to put up with anti-social behaviour with drugs, with alcohol on the public transport system or around the system,” he said.

1. COMMUNITY SAFETY STATEMENT. (2017). [ebook] Victorian Government. Available at: https://www.vic.gov.au/system/user_files/Documents/css/DJR001_G_css01_LR.pdf.

2. Personal Safety and Security on the Metropolitan Train System. (2010). [ebook] Melbourne: Victorian Auditor-General’s Report. Available at: <https://www.parliament.vic.gov.au/papers/govpub/VPARL2006-10No310.pdf>.

3. ABC News. (2018). Police launch major public transport safety blitz. [online] Available at: <http://www.abc.net.au/news/2011-08-10/police-launch-major-public-transport-safety-blitz/2832908>.

FIELD OVERVIEW



Research: How police react to safety issues in public transport Victoria

The Melbourne police's reaction has a bad feedback from the passengers, although they try to improve it. Currently Melbourne has about **350** authorised officers operating across the network who work closely with the Victoria Police Transit Safety division. With the growing use of the railway we welcome any increase in transit police numbers and support the growth of Metro staff numbers, including station staff and authorised officer.

The new version of train in Melbourne has changed a lot and focus on the safety solutions for all the passengers. There's been extensive consultation with train drivers, and the entire console got a thorough redesign. Emergency evacuation ladders will make it easier to get everybody out of the train if ever

necessary. There's also lots of CCTV, accessible by the driver, and recording constantly. The connecting section between carriages is **1/3** wider than existing trains, making it easier to move between carriages. They tried different designs for the internal displays, and settled on white on black - feedback from stakeholders showed it's clearer than the colour options they tested. Doors have yellow highlights to assist the vision impaired.

The other thing is that the emergency button has been trying connect to the police control centre to let police can react quickly. The previous one only has one emergency button near the door and it only connect to the drivers' room. This will let some of the signal even may not be receive by the police.

1. Parliament.vic.gov.au. (2018). [online] Available at: https://www.parliament.vic.gov.au/file_uploads/20160224-Public-Safety_0txmKvBZ.pdf.

2. Danielbowen.com. (2018). New metro train design finalised – Daniel Bowen dot com. [online] Available at: <https://www.danielbowen.com/2018/01/24/new-train-design-finalised/>.

3. Getty Images. (2018). Australia, Victoria Melbourne Flagstaff Railway Station press button timetable emergency assistance. Available at: <https://www.gettyimages.com.au/detail/news-photo/australia-victoria-melbourne-central-business-district-cbd-news-photo/543536154#/australia-victoria-melbourne-central-business-district-cbd-flagstaff-picture-id543536154>.

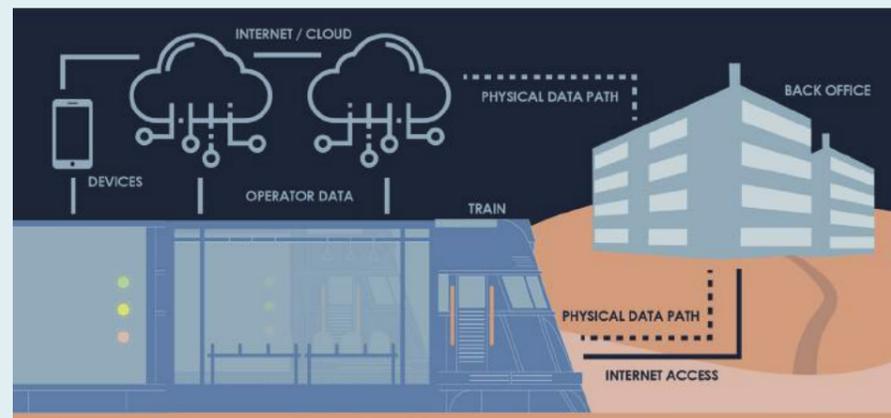
FIELD OVERVIEW

Advanced Technical Report: What We Could Use for This Project



Vehicle-to-everything

Vehicle-to-everything (V2X) communication is the passing of information from a vehicle to any entity. It is a vehicular communication system that incorporates other more specific types of communication. The main motivations for V2X are safety and energy savings. The main obstacles to its adoption are legal issues and the fact that, unless almost all vehicles adopt it, its effectiveness is limited. British weekly "The Economist" argues that autonomous driving is more driven by regulations than by technology.



Smart IoT-Connected Railways

SADEL provides communication systems for all types of rolling stocks in 1991. It offers train manufacturers, train operators, and their staff integrated on-board solutions to facilitate effective remote operations management and smart passenger infotainment services. They have designed and built an integrated infotainment system, including audio, video, and entertainment devices, that is continuously connected to the control room and connects trains to the Internet of Things (IoT).



Crowd Management

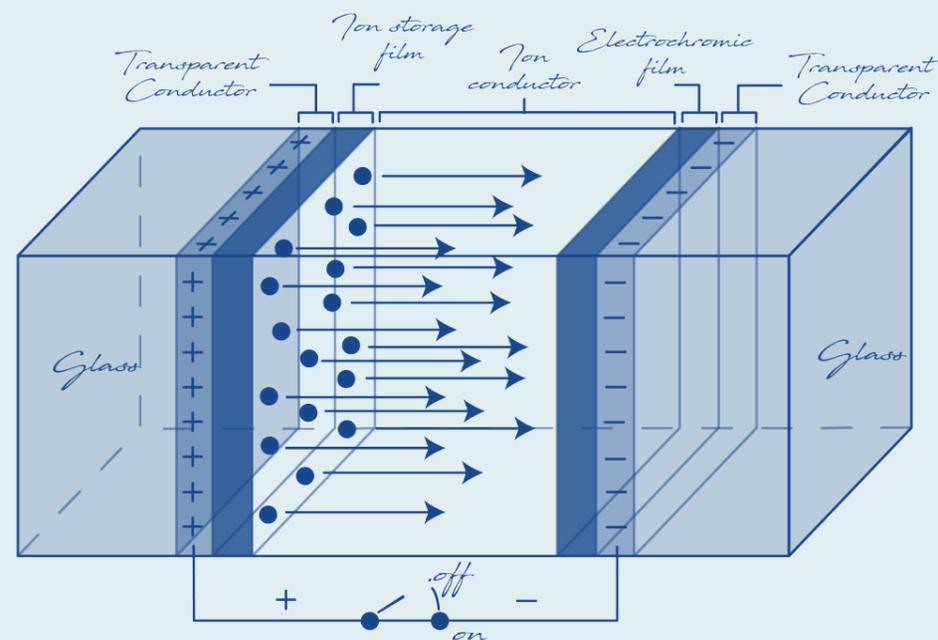
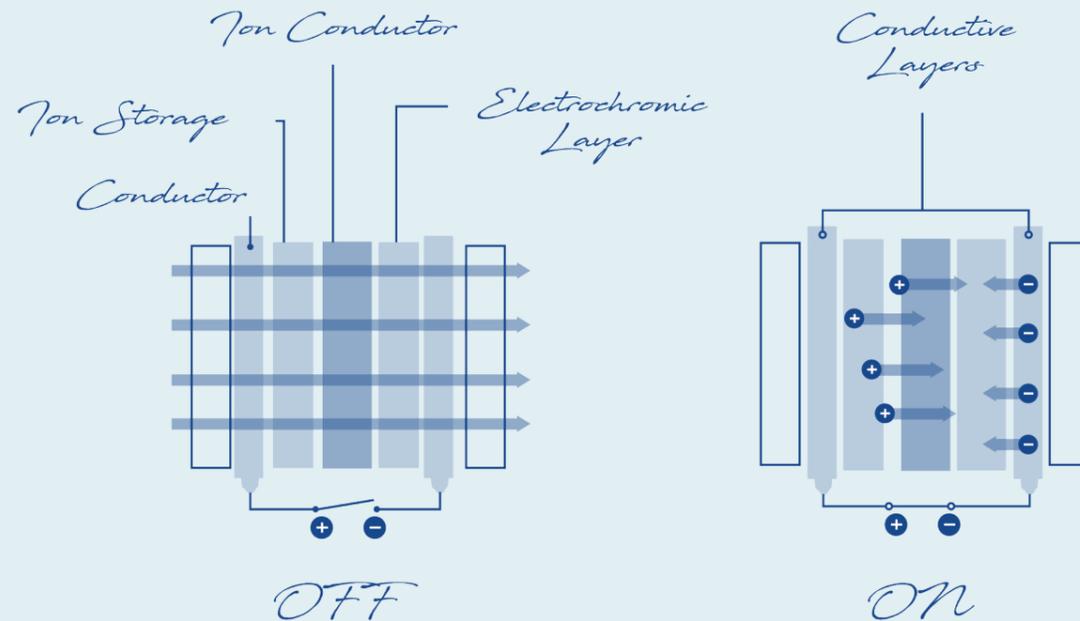
Locating where public transportations are is a very important part to achieve crowd management. According to the research, to locate public transport better, the policy maker should locate where the people are and how those people move, rather than try to locate the public transport itself. In this case, by locating people, they can easily know the level of crowding on the public transport and manage the whole public transport system.

1. Internet of Things. (2018). Automotive | Internet of Things. [online] Available at: <https://www.gsma.com/iot/automotive/>.

2. Internet of Things. (2018). Smart Cities Transport | Internet of Things. [online] Available at: <https://www.gsma.com/iot/smart-cities-resources/smart-cities-transport/>.

3. Gsma.com. (2018). [online] Available at: <https://www.gsma.com/iot/wp-content/uploads/2017/03/Traffic-Management-guide-webv2.pdf>.

FIELD OVERVIEW



Electrochromic Conducing Device Inside the Glass

In response to a small electrical voltage, electrochromic materials will change, evoke or bleach their color. The electricity induces in the material a process of either reduction or oxidation. A chemical has a characteristic range of energies over which it will interact with wavelengths in the electromagnetic spectrum, but these reduction or oxidation processes alter the energy bands the chemical will absorb. In electrochromic materials, the change corresponds to the visible region of the electromagnetic spectrum.

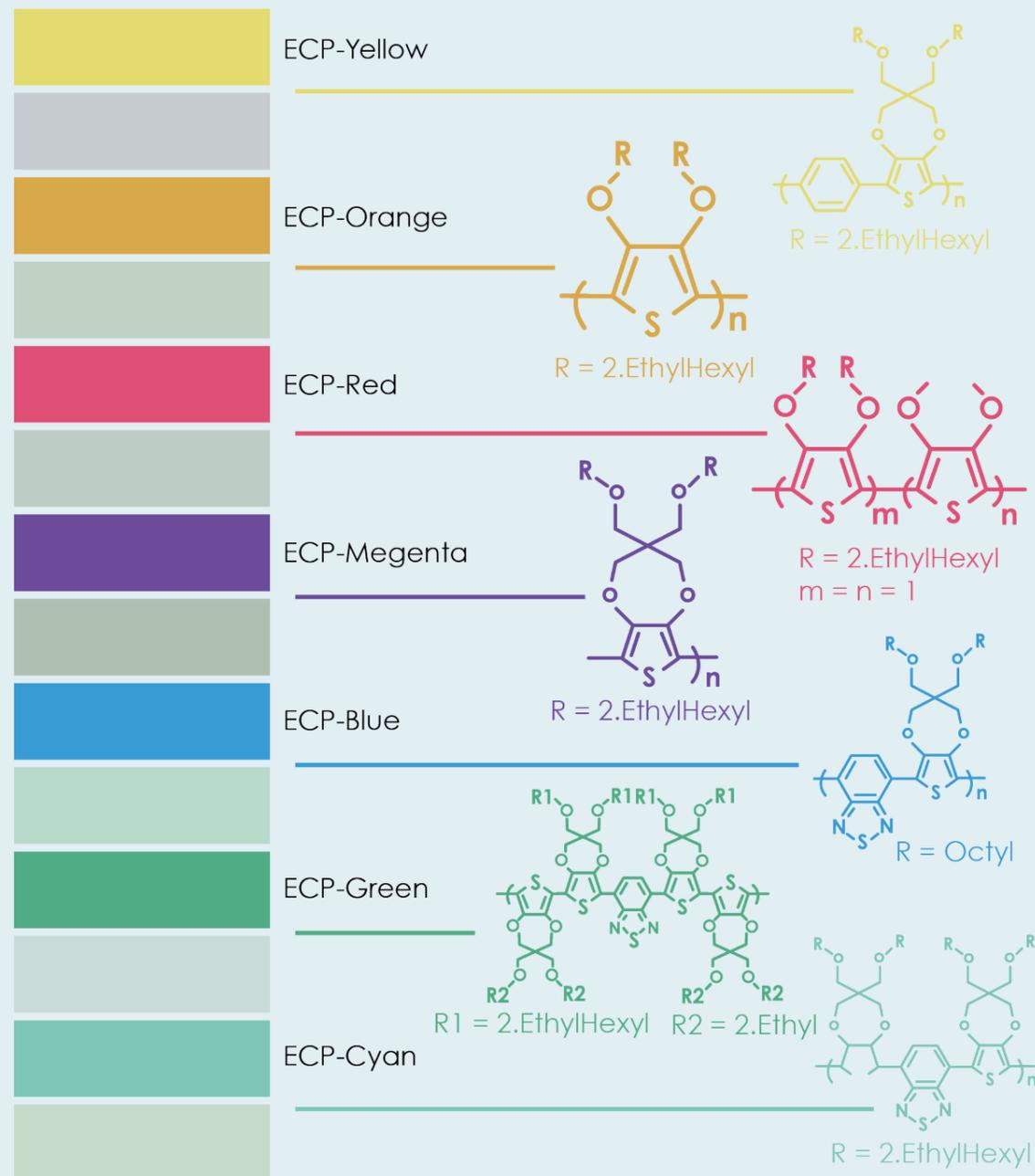
Molecules are said to be conjugated when they have alternating single and double bonds, and the electron orbitals of their constituent atoms are

connected in such a way that they allow electrons to be delocalized, moving freely throughout the molecule. Certain aromatic molecules, which have an evenly distributed electron density, are resonance-stabilized from this electron delocalization. A class of these molecules is largely based on five-carbon rings with one substitution. Examples include thiophene, pyrrole and furan. Other chemicals are based on six-carbon rings combined with five-carbon ones, with various substitutions. Another member of this class is aniline, a six-carbon ring joined to NH₂. Chemical or electrochemical oxidation of these substances produces electroactive conjugated conducting polymers.

1. "Switching Colors With Electricity". 2018. American Scientist. <https://www.americanscientist.org/article/switching-colors-with-electricity>.

2. Aldawoud, Abdelsalam. "Conventional Fixed Shading Devices in Comparison to an Electrochromic Glazing System in Hot, Dry Climate." Energy and Buildings 59 (2013): 104-10.

FIELD OVERVIEW



Electrochromic Conducing Device Inside the Glass

Many of these materials are electrochromic as thin films, with polymers of thiophenes and pyrroles receiving the most attention in recent years. In the conducting oxidized state, conjugated conducting polymers have positive charge carriers, are charge balanced with counter-anions and have delocalized electron band structures. When placed in an electrolytic solution, electrochemical reduction - with concurrent counter-anion egress to, or cation ingress from, the electrolyte - removes the electronic conjugation, resulting in the undoped, electrically neutral, insulating form.

For the undoped polymer, the energy difference between the highest occupied electron band and the lowest unoccupied band determines the electrochromic

properties. The color change or contrast between doped and undoped forms of a polymer depends on the magnitude of the bandgap. Thin films with a gap of about 400 nanometers are colorless and transparent in the undoped form, whereas in the doped form they generally absorb visible radiation. Those with a bandgap of 650 to 730 nanometers are highly absorbing in the undoped form; after doping, the absorption of free charge carriers is relatively weak in the visible region because it is transferred to the near infrared. Polymers with intermediate bandgaps have distinct optical changes throughout the visible region and can exhibit several different colors.

1. Kraft, Rottmann, and Heckner. "Large-area Electrochromic Glazing with Ion-conducting PVB Interlayer and Two Complementary Electrodeposited Electrochromic Layers." Solar Energy Materials and Solar Cells 90, no. 4 (2006): 469-76.

FIELD OVERVIEW



Case study 1: Japaness Women Only Train

Beginning in 1912, one Japanese train company provided women with the ability to travel in women-only carriages on the country's train network. In 2000 this optional segregation for women spread to the subway as well.

Target User

Women who need to take the train but don't like too much skin touch, especially for who need to travel alone at night time or go to the remote areas.

Purposes / Functions

Try to protect the women from the other dangerous passenagers they might meet in the public transport. So the women will feel safe when they take the public transport

Interaction Flow

The whole interaction flow of this case study is based on how to seperate the women with bas man in public transport.



1. "Women Only Cars In Trains | Japan Experience". 2018. Japan-Experience.Com. <https://www.japan-experience.com/to-know/visiting-japan/women-only-cars-in-trains>.

2. Cohen, Claire. 2018. "Women-Only Train Carriages: Keeping Women 'Safe' By Separating Them From Men Is Handmaid's Tale Territory". The Telegraph. <https://www.telegraph.co.uk/women/life/women-only-train-carriages-keeping-women-safe-separating-men/>.

FIELD OVERVIEW



Case study 1: Japaness Women Only Train

Strgenth

Women will feel safe enough with the similar people in one train car. It is a good opportunity to reduce the possibility of skin touch from the male passenagers. The whole environment actually improved a lot by using this kind of gender specifilly train in certain time.

Weakness

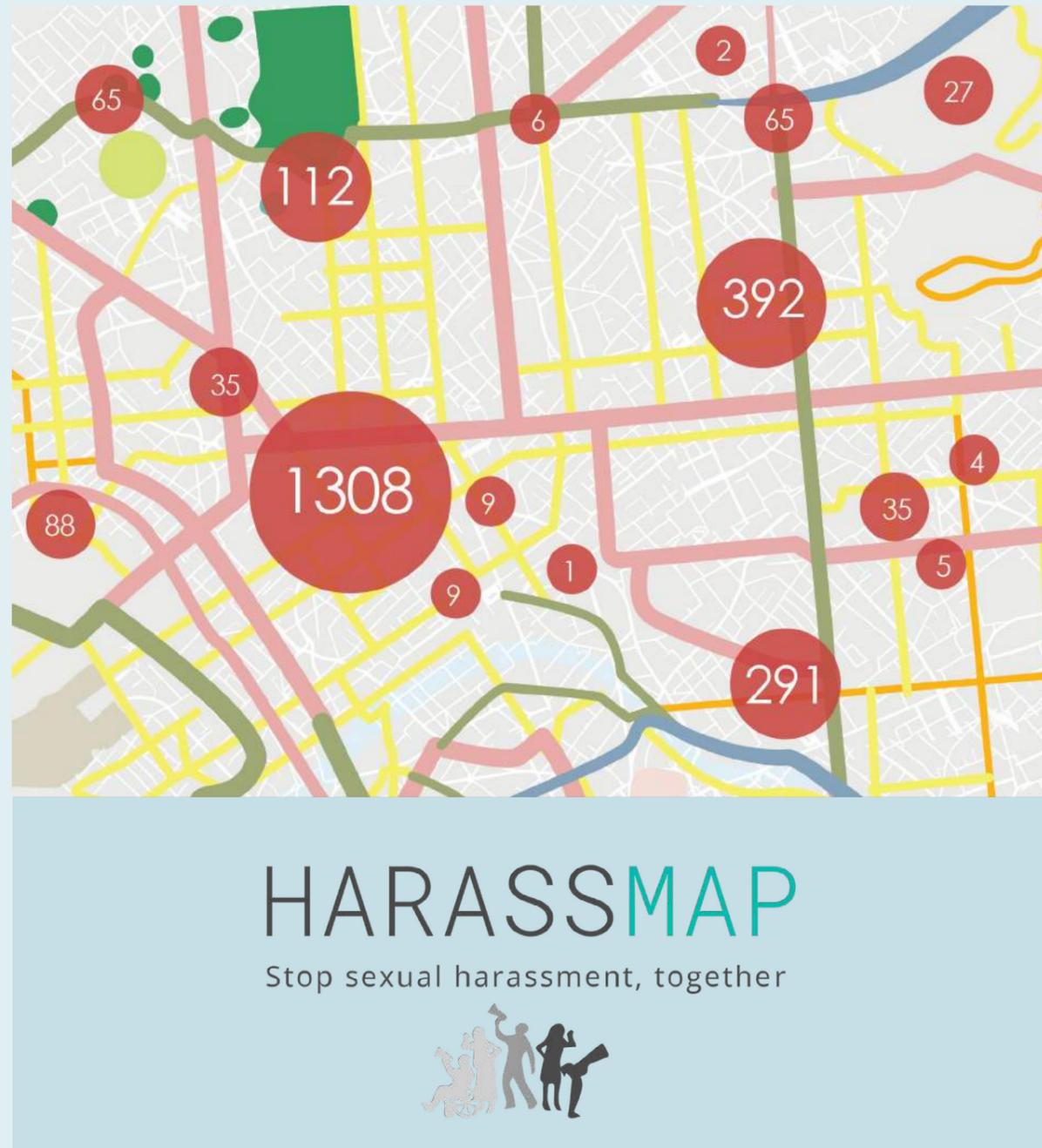
Sperate women from other gender may cause the result that women become more clear target after they leave the train, even they will be safe enough in the train. Also, this may let some of women feel they are too special and may think about gender discrimination.

What I can learn from this project

The women only train is a good experiement to seperate the women with other people. This result could be good based on the research about the difference travelling pattern between women and man. It can be said thay the safty problem about women in the public train can be solved in some degree. However, this also cause the problem of gender discrimination. Most of man may feel uncomfortable and be regard as suspect before they do anything. The gender is a serious problem. The project can not consider men or women only. Only when both men and women are considered clearly, the safty will improve in the end.

1.Ferra, Nan, Aly Rustom, and Burning Bush. 2018. "Majority Of Japanese Men In Their 20S Say They Want Men-Only Train Cars: Survey". Japan Today. <https://japantoday.com/category/features/lifestyle/majority-of-japanese-men-in-their-20s-say-they-want-men-only-train-cars-in-survey>.
 2. "I Used The Women-Only Train Carriages In Tokyo - For Good Reason". 2018. The Independent. <https://www.independent.co.uk/voices/i-used-the-women-only-train-carriages-in-tokyo-for-good-reason-and-id-welcome-them-in-the-uk-too-10472514.html>.

FIELD OVERVIEW



Case study 2: India Harass Map

HarassMap is based on the idea that if more people start taking action when sexual harassment happens in their presence, we can end this epidemic together. We support individuals and institutions to stand up to sexual harassment before or when they see it happen. By taking a collective stand against sexual harassment, reestablishing social consequences for harassers – and making role models of people who stand up to them.

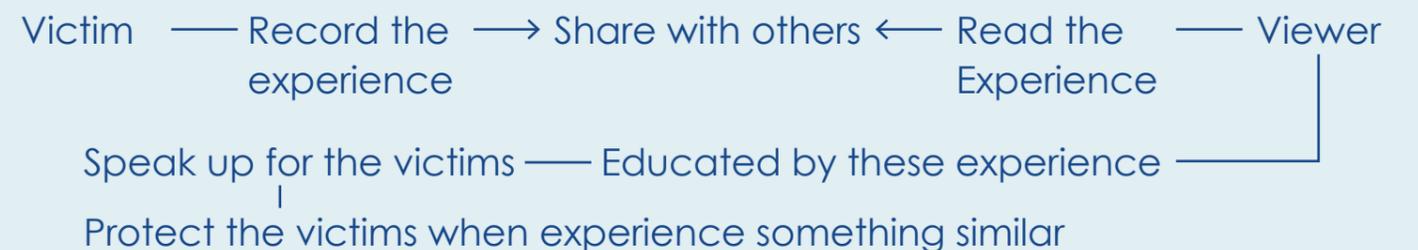
Target User

People who need help after they experience the sexual harassment. And people who need to be educated before those things happen in public.

Purposes / Functions

Speak up for those who experience the sexual harassment in public. In the meantime, remind the others be careful and learn how to face those thing once it happen in the future.

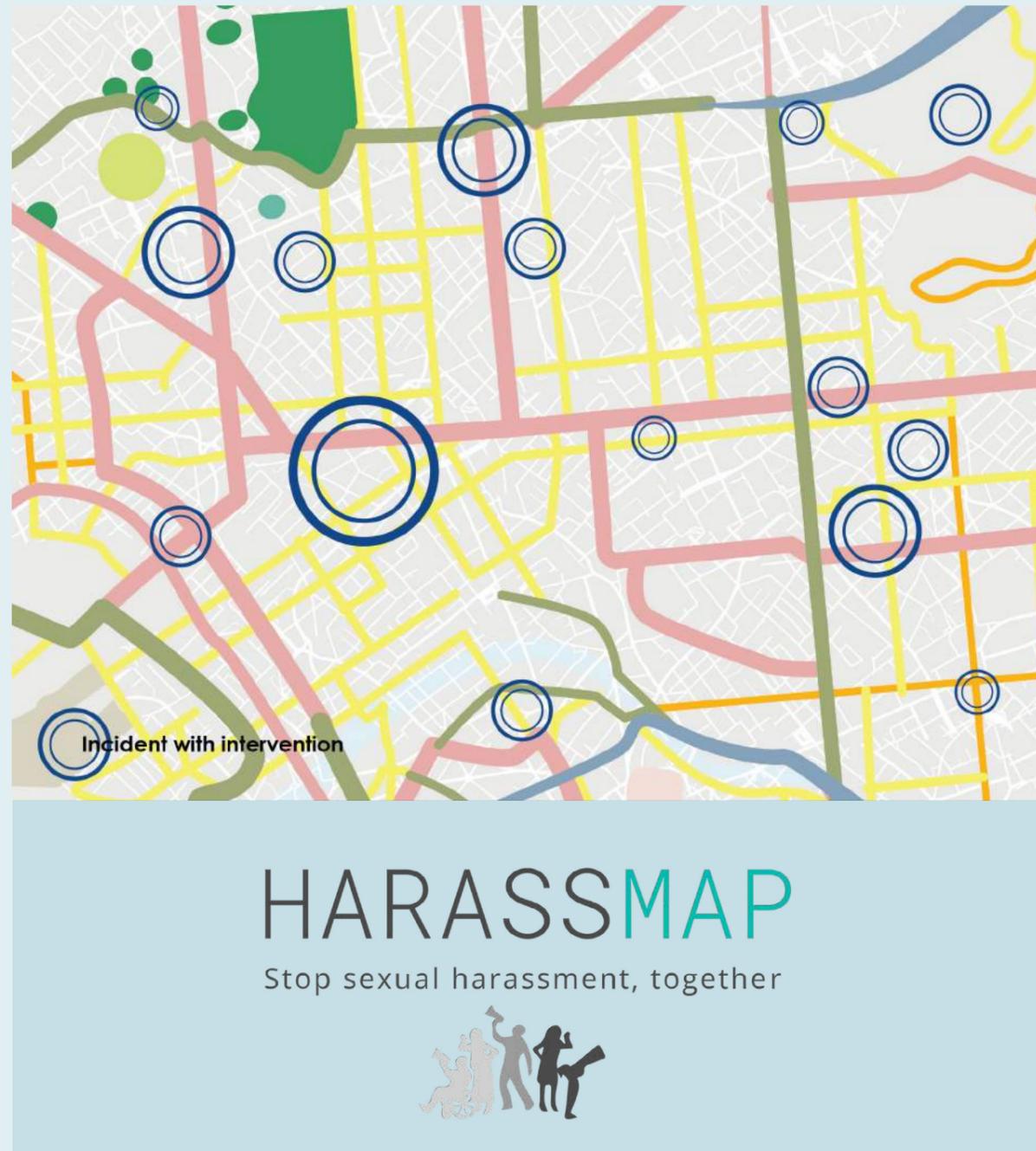
Interaction Flow



1. "The App That Wants To Make Egypt'S Streets Safer For Women". 2018. Quartz. <https://qz.com/434606/the-app-that-wants-to-make-egypts-streets-safer-for-women/>.

2. "Around The World". 2018. Harassmap.Org. <https://harassmap.org/around-world>.

FIELD OVERVIEW



Case study 2: India Harass Map

Strength

It is a good opportunity to speak out about those awful experiences and make people focus on the safety problem such as women's sexual harassment in public transport. In the meantime, when these experiences turn into data, people will notice how serious the problems are.

Weakness

This is an application recording the experience but cannot avoid what already happens. The possibility of crime still does not decrease by using this app. When there are too many bad things, it also influences the user's emotion to be more worried about the safety in public transport.

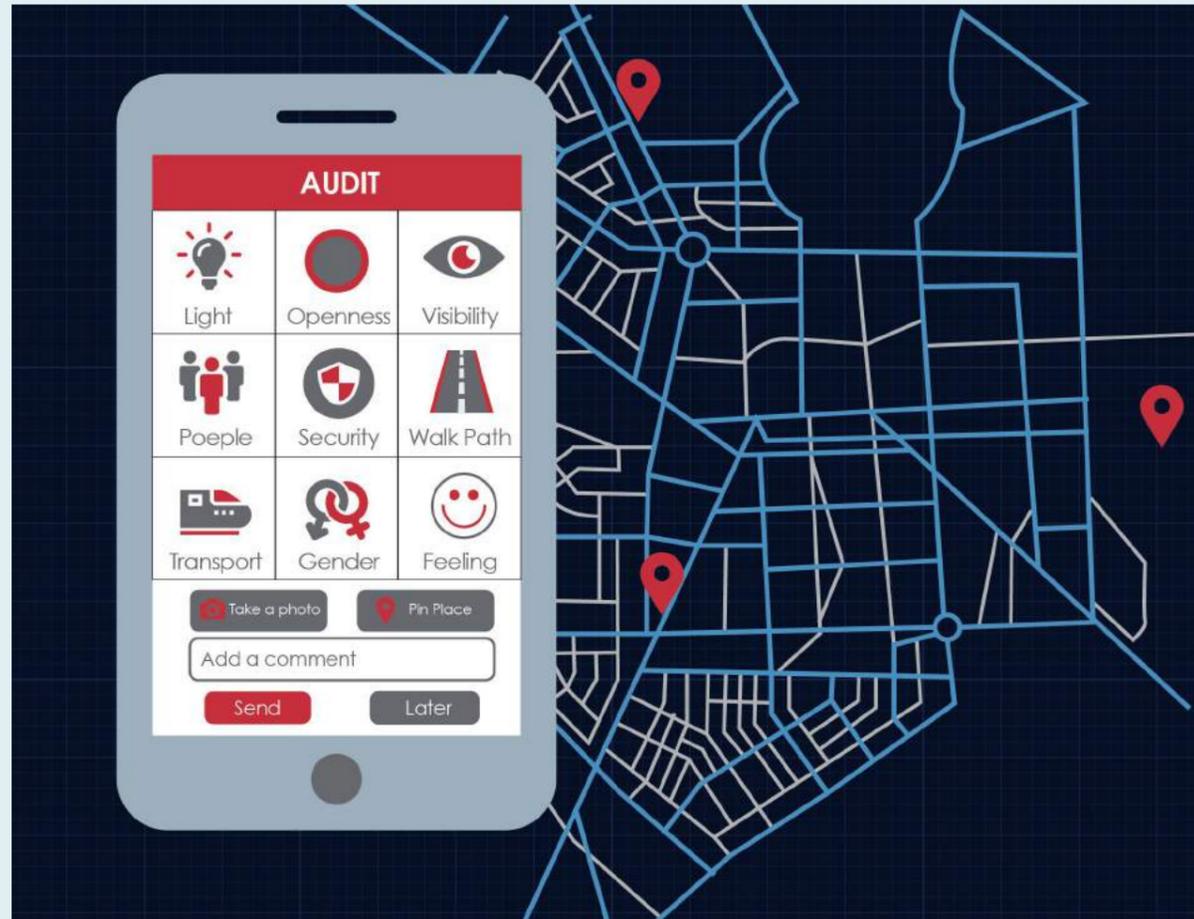
What I can learn from this project

This application is a fabulous opportunity for those who experience safety problems in public transport to speak out. This mobile application is actually like a campaign to let people focus on these problems and educate them with others' experiences. The data can help the policy maker to find out how serious the problems are and try to solve them. But this application may only be useful after bad things happen; it will not be helpful for the user who is facing the safety problems. Another problem is that some users may not want to record the data in this application, so some of the data may not be strong enough as evidence to improve the environment.

1. "Harassmap Mumbai: Mapping The Unsafe Zones In Mumbai | Chances". 2018. RESET.To. <https://en.reset.org/blog/harassmap-mumbai-mapping-unsafe-zones-mumbai>.

2. "Mapping Unsafe Areas For India's Women". 2018. BBC News. <http://www.bbc.com/news/world-asia-india-24619988>.

FIELD OVERVIEW



Case study 3: South Africa Safetipin

SafetiPin is a tool that works to enable cities to become safer through collection of data through crowdsourcing and other methods. The Safety Audit, that forms the core of SafetiPin, assesses different parameters linked to safer and more inclusive public spaces. We were fortunate to have an exceptional advisory board that provided us with comments, experience and ideas to make the Safety Audit rubric a strong and precise tool. We also believe that quantification will help in creating more safety.

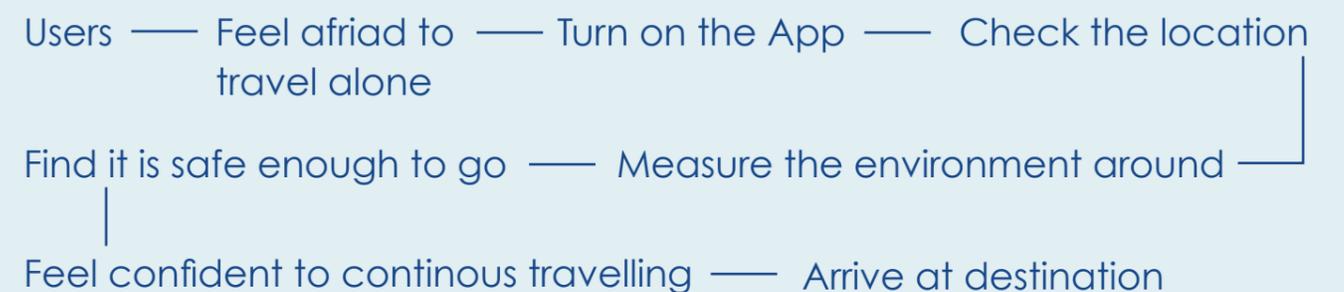
Target User

Those users, for example, women, who do not have enough confidence to travel alone, especially at night time or going to the remote areas.

Purposes / Functions

Measure the environment to build confidence for the users and let them have enough confidence to travel in the city, even at night time.

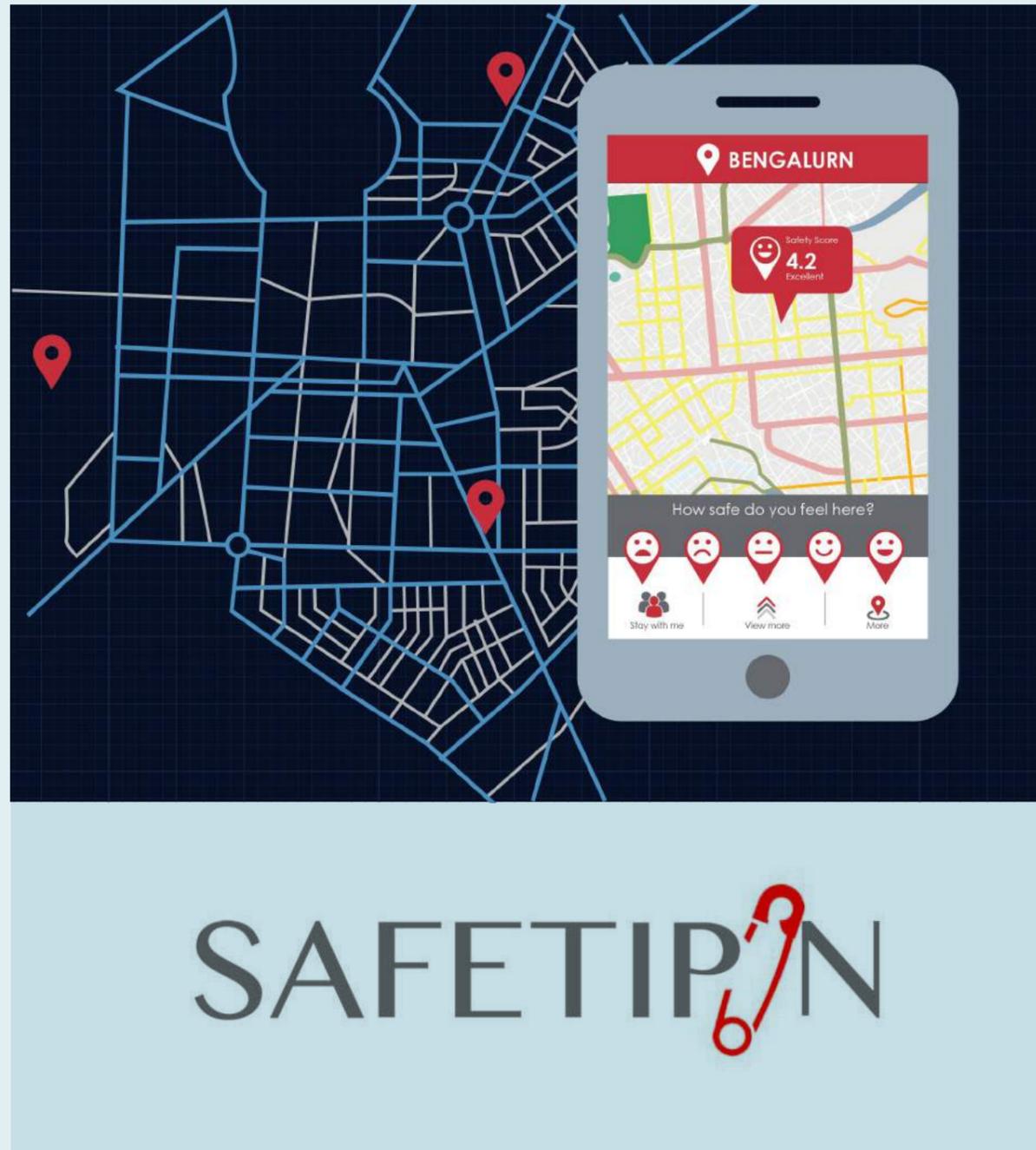
Interaction Flow



1. "Safetipin". 2018. Safetipin.Com. <http://safetipin.com/index.php/community>.

2. Rustagi, Geetika. 2018. "Mapping The City For Safety With Safetipin". <https://www.livemint.com/Industry/ZdR2UfwaNZHE1UCCRL3CwN/Mapping-the-city-for-safety-with-Safetipin.html>.

FIELD OVERVIEW



Case study 3: South Africa Safetipin

Strength

The data about the environment is in details. So the confidence of the user will be built through these processes. This app works because it changes the emotion of the users and tries to build a positive attitude about traveling through the public transport in South Africa.

Weakness

This mobile application only records the emotion of the users in the environment. However, it does not help for what is happening there. The possibility of crime still does not decrease by using this app. When there are too many bad things, it also influences the user's emotion.

What I can learn from this project

It is fabulous for this mobile application can record all kinds of data about the environment from the users. When there are thousands of users in this application, it will be easy to find out why some places are good or bad. And it will be easy to find out the reason why users feel unsafe and improve the environment according to the data in the application. But this application may only be useful after bad things happen, it will not be helpful for the user who is facing safety problems. And the problem about some users may not want to record the data in this application. So some of the data may be not strong enough as an evidence for improving the environments.

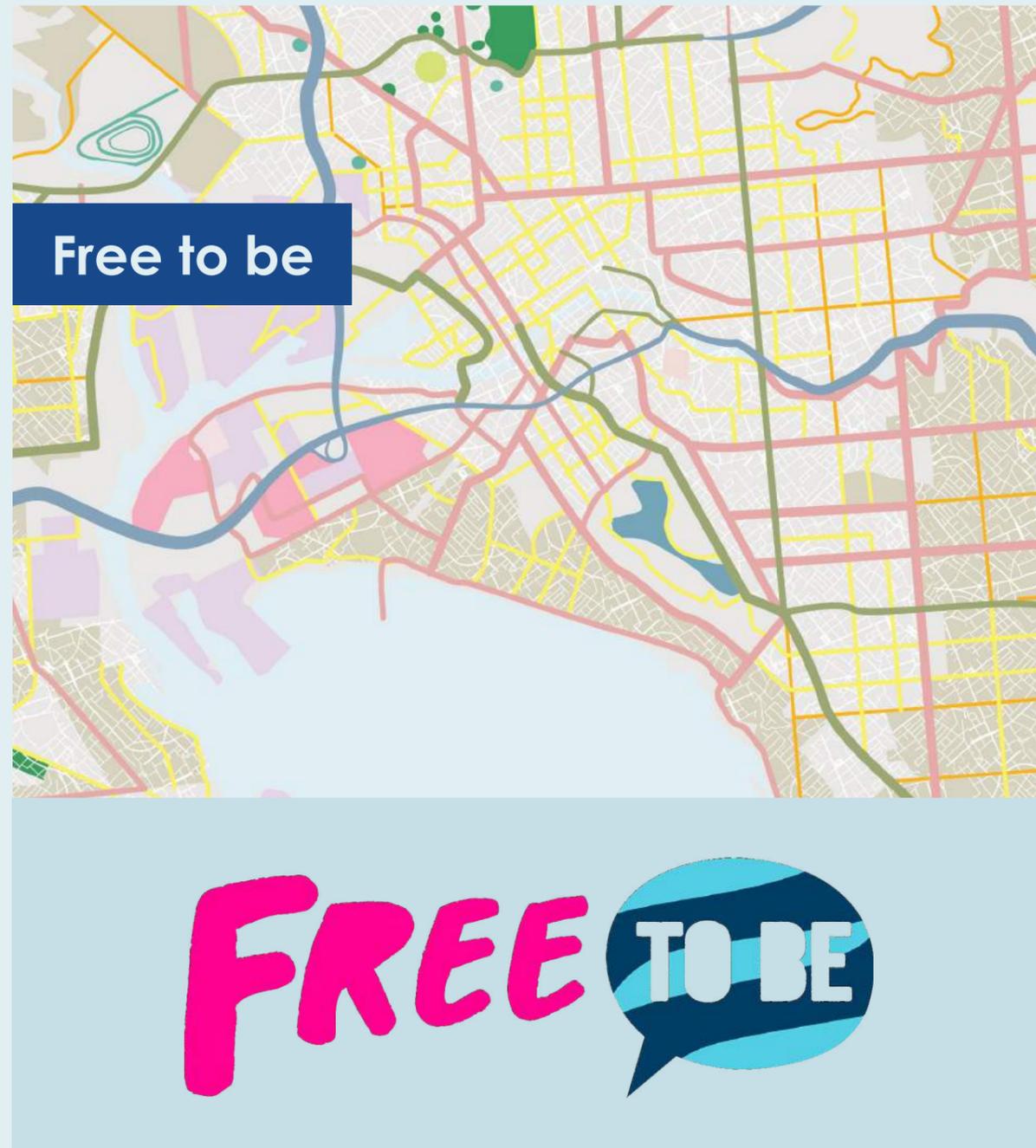
1. "Safetipin - A Mobile App That Measures The 'Safety Score' Of Locales". 2018. Global Citizen. <https://www.globalcitizen.org/en/content/safetipin-app-measures-safety-scores-of-areas/>.

2. "Using Safetipin To Build Safer Cities For Women". 2018. Policytransfer.Metropolis.Org. <https://policytransfer.metropolis.org/case-studies/using-safetipin-to-build-safer-cities-for-women>.



PART TWO
BACKGROUND
RESEARCH

BACKGROUND RESEARCH



Competitor Analysis 1: Australia Free to Be Website

Free to Be was designed in collaboration with Crowdsplot, Monash University's XYX Lab and, crucially, young women. It's a crowd-mapping website that enables young women to identify and share public spaces that make them feel uneasy, scared or happy and safe. It empowers young women to call out unsafe experiences and geographically identify spaces where change needs to occur.

The map unearths real stories of women and makes them visible to people in positions of power to advocate for change. In Melbourne, more than ten thousand people visited the website, with thousands dropping a pin – happy or sad - on places they loved,

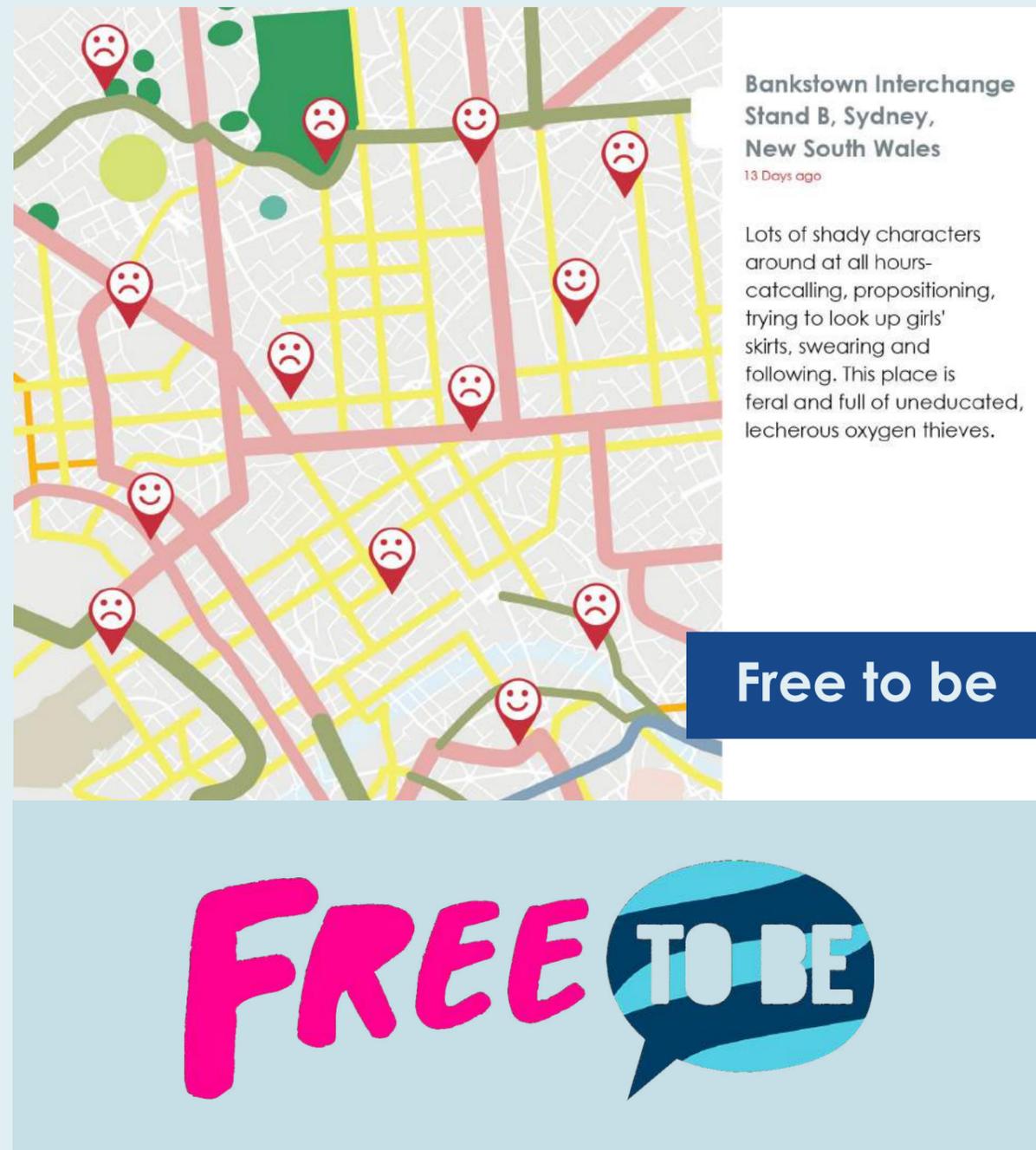
avoided, felt safe or unsafe in. Once the map closed, we presented data to key decision-makers including the City of Melbourne, Victoria Police, Metro and Public Transport Victoria. Plan International's Youth Activists have been working closely with these organisations to make change and we've had some amazing responses. We look forward to making some announcements on the outcomes later in 2018.

Now Free to Be will let young women in Sydney, Delhi, Kampala, Lima and Madrid share their stories. Places they love, places they avoid, places they feel safe and those that could be improved. We worked with young women to make sure the map is fun and makes it easy to share their stories.

1. "Free To Be". 2018. Plan.Org.Au. Available at: <https://www.plan.org.au/freetobe>.

2. "Sydney'S Most Dangerous Spots For Women". 2018. Newscomau. <https://www.news.com.au/lifestyle/real-life/news-life/these-are-the-most-dangerous-spots-for-woman-in-sydney/news-story/e57bee0a837e-d219411366e94c476f0d>.

BACKGROUND RESEARCH



Competitor Analysis 1: Australia Free to Be Website

Strength

It is good opportunity to speak out those awful experience and make people focus on the safety problem such as women sexual harassment in public transport. In the meantime, when these experience turns into data, people will notice how serious the problems are.

Weakness

Separate women from other gender may cause the result that women become more clear target after they leave the train, even they will be safe enough in the train. Also, this may let some of women feel they are too special and may think about gender discrimination.

What I can learn from this project

This application is a fabulous opportunity for those who experience the safety problems in public to speak out. This mobile application is actually like a campaign to let people focus on this problems and educate them with others' experience. The data can help the policy maker to find out how serious the problems are and try to solve them. But this application may only be useful after the bad things happens, it will not helpful for the user who is facing the safety problems. And the problem about some users may not want to record the data in this application. So some of the data may be not strong enough as an evidences for improve the environments.

1. "New Free To Be Map Lets Women Mark 'Unsafe' Spots To Warn Others". 2018. SBS News. Available at: <https://www.sbs.com.au/news/new-free-to-be-map-lets-women-mark-unsafe-spots-to-warn-others>.
2. "Online Map Shows Where Women Feel Unsafe In Melbourne". 2018. ABC News. <http://www.abc.net.au/news/2016-12-08/free-to-be-online-map-shows-where-women-in-melbourne-feel-unsafe/8103410>.

BACKGROUND RESEARCH



Competitor Analysis 2: Transportation and bus surveillance: mobile security

As public transportation is becoming more popular in North America, following successful models used in foreign transportation systems can help guide our decisions and processes concerning public safety initiatives, especially working well on the school bus.

Adding surveillance to improve the safety of public transportation is one such example. A European bus company was looking for an industrial Power over Ethernet (PoE) switch to connect critical components of its mobile security system.

Installations on the bus included six security cameras, a network video recorder (NVR)

and a Wi-Fi router, that all required communication and power. Devices used in transportation surveillance systems such as on buses or trains have a unique set of requirements and specifications that are crucial to their operability and efficiency. Devices must be compact and rugged to maximise available space, reduce crowding and survive extreme temperature conditions and harsh environments.

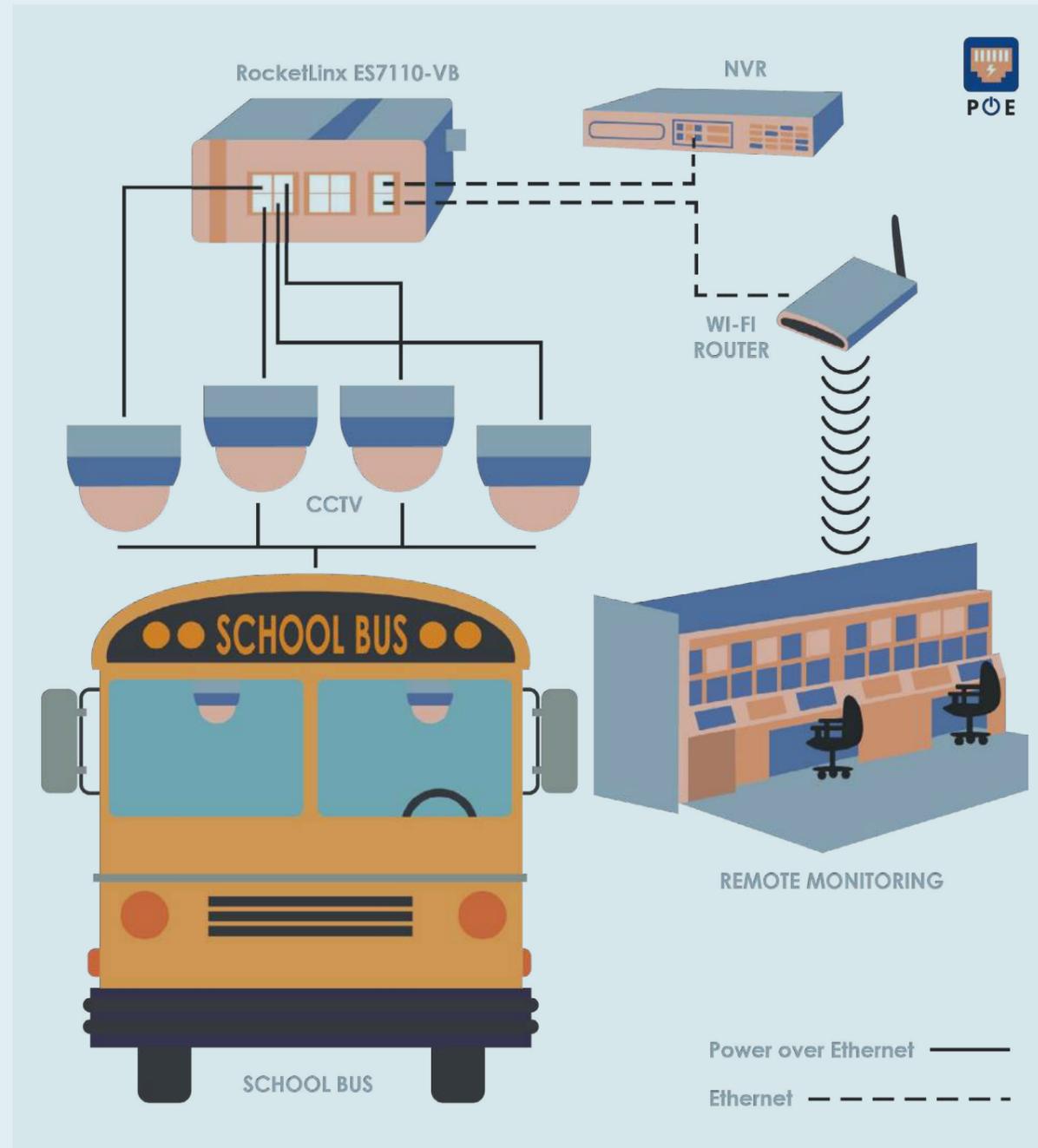
With both managed and unmanaged models available, the RocketLinX ES series of switches provide cost-effective networking solutions delivering the industry's best rugged Ethernet switch technologies.

1. Transportation & Bus Surveillance, Power Over Ethernet. Retrieved from <http://blog.comtrol.com/2012/08/29/bus-surveillance-power-over-ethernet/>

2. Select Transportation and Bus Surveillance. Retrieved from <https://comtrol.com/solutions/security/security-solutions/transportation-and-bus-surveillance>

3. Select Aditya Infotech Secures Prtc Buses with Cp Plus Mobile Surveillance. Retrieved from <https://telecomdrive.com/aditya-infotech-secures-prtc-buses-cp-plus-mobile-surveillance/>

BACKGROUND RESEARCH



Competitor Analysis 2: Transportation and bus surveillance: mobile security

Control's RocketLinx ES7110-VB switch is used in this security configuration to ensure quality system performance. As cameras send data and video to the NVR, it is transferred wirelessly from the bus to a remote monitoring room via the Wi-Fi router. The RocketLinx ES7110-VB has eight 10/100BASE-TX PoE injector ports for directly powering remote equipment, and two Gigabit uplink ports for megapixel video transmission and highquality streaming data and video. Featuring a DIN rail mount and measuring less than two inches in width, the ES7110-VB works well with limited space and other equipment placement in a surveillance system.

Dual redundant independent power inputs for potential power loss enables a backup power supply to compensate for loss of main power and maintain camera operation. The rugged IP30 enclosure protects the switch from vibration and shock. Control's RocketLinx Power over Ethernet switches are engineered for industrial applications such as IP video surveillance or wireless broadband, where the power source is not conveniently located. With rugged, drip-proof housings, redundant power inputs and performance command-line interfaces, these PoE switches provide reliable solutions.

1. Transportation & Bus Surveillance, Power Over Ethernet. Retrieved from <http://blog.control.com/2012/08/29/bus-surveillance-power-over-ethernet/>

2. Select Transportation and Bus Surveillance. Retrieved from <https://control.com/solutions/security/security-solutions/transportation-and-bus-surveillance>

3. "How To Maximize Your Transit Video Surveillance System Investment - Apollo Video". 2018. Apollo Video. <https://www.apollovideotechnology.com/support/white-papers/how-to-maximize-your-transit-video-surveillance-system-investment/>.

BACKGROUND RESEARCH



Competitor Analysis 2: Transportation and bus surveillance: mobile security

Strength

This device is really easy to use and does not cost much. It is based on the monitors in the public transport and can be used in any kind of public transport. The view around the whole transport makes it more safe when is driving. Also, it will be quick to get to know the situation.

Weakness

This kind of technology relies on the internet and cloud connect to the police and other policy maker. In Melbourne, some of the place may have poor signal and the messages may delay for some reason. So the police and other policy maker may not get it in time.

What I can learn from this project

This technology looks at a new perspective of solving the safety problems in public transport. The positive point of the mobile security is that it will be limited by the devices and can be put on any kinds of the public transport and it will work the same way. The negative point of mobile security is that it requires really good signal to convey the information. If this technology need to be on the public transport in Melbourne, the internet around the public transport, even on each station should be improved.

1. Select Aditya Infotech Secures Prtc Buses with Cp Plus Mobile Surveillance. Retrieved from <https://telecomdrive.com/aditya-infotech-secures-prtc-buses-cp-plus-mobile-surveillance/>.

BACKGROUND RESEARCH



Competitor Analysis 3: “Stay polite all down the line” Campaign Poster Design

In France, the “Stay civil all down the line” campaign employs posters comparing inappropriate behaviour with animal behaviour, thus ridiculing it. “Stay polite all down the line” Campaign.

The RATP uses lowstatus animals for its educational communication campaign. She hopes that the offenders, thus associated with toads or chickens, overcome by their misconduct, become aware of their sins and convert to civility to become courteous travellers.

Like riddles, each poster solicits the competence of a reader returned in childhood. Playing on a recognition effect, it creates a proximity that reinforces the realistic

decor and line numbers (like the polysemy of the phrase “all the way”). The insertion of these posters in the daily recalls the process of the mirror, a distorting and parodic mirror tended to the public transport user. Doubly creative distancing, this campaign seduces the recipient, without questioning. In fact, the actors of these skits do not help identification; Hybrid creatures, they are neither the allegory of a temperament, of a human type, nor the encrypted representation of an individual. Photographed in the act of committing a reprehensible act, these beings of another species do not designate anyone in particular.

1. Le Monde. (2016, March 10). Un premier centre de déradicalisation ouvrira «avant l'été». Le Monde.fr. Retrieved from www.lemonde.fr/societe/article/2016/03/10/un-premier-centre-de-deradicalisation-ouvrira-avant-l-ete_4880551_3224.html

2. Melzer, R. & Serafin, S. (2013). Right-wing extremism in Europe. Country analyses, counter-strategies and labor-market oriented exit strategies. Retrieved from <https://bibliographie.uni-tuebingen.de/xmlui/handle/10900/64182>

3. Preventing crime on urban public transport. Retrieved from http://www.crime-prevention-intl.org/fileadmin/user_upload/Publications/International_Report/CIPC_5th-IR_EN_Chapter-4.pdf

BACKGROUND RESEARCH



Competitor Analysis 3: “Stay polite all down the line” Campaign Poster Design

Strength

The poster of this campaign has a strong visual effect and after passengers look at it, they will have a strong memory about it. This kind of visual effects is long term and give passengers a new perspective to understand the violence in the public transport.

Weakness

Some of the information may not convey in time from this kind of poster, even if put in public transport for a long time. The campaign is for education, but it is not strong enough sometime, because for the violence passengers, this kind of poster even does not matter to them.

What I can learn from this project

Visual elements is an important part in the public transport for passengers to think about their action before they make any decision. The animals in this poster represent the violence and other impolite activities, passengers will be easy to think about their activity and stop doing this before it starts. But this campaign may be easy to be destroyed and it will not be helpful for the user who is facing the safety problems. Because when the violence man starts their activities, the poster cannot stop them at all.

1. “Safetipin - A Mobile App That Measures The ‘Safety Score’ Of Locales”. 2018. Global Citizen. <https://www.globalcitizen.org/en/content/safetipin-app-measures-safety-scores-of-areas/>.

2. “Using Safetipin To Build Safer Cities For Women”. 2018. Policytransfer.Metropolis.Org. <https://policytransfer.metropolis.org/case-studies/using-safetipin-to-build-safer-cities-for-women>.

BACKGROUND RESEARCH



Competitor Analysis 4: Pink Taxis - Her Ride

A taxicab stand in central Turkey was given the green light to introduce “pink taxis” in the city which would be driven by women and only be available to families and female passengers. The mastermind behind the plan, the manager of Terminal in Sivas province, Gökhan said that he thinks women will feel more at ease with other women and have comfy rides without fear of harassment.

The female driver of the taxi stand, Gamze also said the new practice was very important for women and could help shield women against possible harassment. The taxi stand stated that it plans to recruit more women drivers for its fleet of taxis, while calling on others to join the ‘pink

taxi’ practice. many women tend to feel uncomfortable in taxis, which are predominantly driven by men.

This idea has been taken by many countries. For example, Her Ride is a private hire taxi company dedicated to taking the women of Oxfordshire to their destination of choice. Not only do we cater exclusively for ladies, but we also use only female drivers – and we’re run by women too. A taxi company that is truly for women, by women.

Safety, reliability and trust. That’s what Her Ride stand for. That’s what we drive for. With Her Ride you’ll get exactly what you expect and much more. A professional taxi service that is always on time, easy to book, nice to deal with and ultimately safe.

1. Taxi Service Pink & Cosmopolitan Armenia, dvarstudio. Retrieved from <https://www.youtube.com/watch?v=gqgNaPdr7Fs>

2. ‘pink Taxis’ To Hit the Streets in Central Turkey. Retrieved from <https://www.dailysabah.com/turkey/2016/02/11/pink-taxis-to-hit-the-streets-in-central-turkey>

3. Cairo To Get Pink Taxis To Combat Sexual Harassment, Travel News. Retrieved from <https://www.lonelyplanet.com/news/2015/10/08/cairo-soon-to-get-pink-taxis-to-combat-sexual-harassment/>

4. “About Us - Oxford Taxi Company For Women | Her Ride”. 2018. Her Ride. Available at: <http://herride.co.uk/about/>.

BACKGROUND RESEARCH



Competitor Analysis 4: Pink Taxis - Her Ride

Strength

Red taxi is a strong visual representation for protecting the women and it also gives a warning for the man who does not behave well. Also, this kind of taxi can build the confidence of women to going alone, even at night time or go to the remote areas.

Weakness

This mobile application only record the emotion of the users in the environment. However, it does not help for what happening there. The possibility of crime still not decrease by using this App. When there are too many bad thing, it also influence the users emotion.

What I can learn from this project

Just like the women only train, pink taxi is also a good experiment to separate the women with other people. Women are easily feel unsafe even two of them going somewhere together. It can be said that the safety problem about women in the public train can be solved in some degree. However, this also cause the problem of gender discrimination. Most of man may feel uncomfortable and be regard as suspect before they do anything. The gender is a serious problem. The project can not consider men or women only. Only when both men and women are considered clearly, the safety will improve in the end.

BACKGROUND RESEARCH

Persona - Violence Man

Name: Peter
 Gender: Male
 Age: 40
 Nationality: Australia
 Occupation: University Professor
 Archetype: Stressful

Brands Represent My Life



About Me

I am a University Professor who works in Design and Architecture faculty at Monash University. My family and I are live in a beautiful area but it is far away to the place I work. I would like to stay alone sometimes, since I stay with my students all day. I am easily feel stressful after a long time working and easily get angry after that, so sometimes I need to do something exciting to release this kind of stress. In other words, I continuously need some change in my normal life style. I love all kinds of sports and I like to do some sports at weekends, especially boxing.



Violence Man on the Train

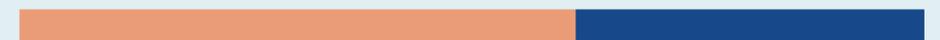
Level of Stress



Ability of Self Control



Level of Power



Ability of Communication



A Day in My Life

Every morning, I get up earlier than my wife and children. I will have a quick breakfast and get to the work by train. I would like to go as early as possible, because there are not many people on the train. However, after I finish my work at night time, I have to take a crowded train back to home, which I never find a seat. I am easily feel stressful after work. When there are too many people on the train. The noise and small space make me feel really uncomfortable and want to get off the train before I get angry. So I would like to go back home late, after the traffic jam.

1. "Metro Trains Interview Questions | Glassdoor.Com.Au". 2018. Glassdoor.Com.Au. <https://www.glassdoor.com.au/Interview/Metro-Trains-Interview-Questions-E588593.htm>.

2. "Melbourne Is The WORST In The Country At One Thing". 2018. GOLD104.3 - Pure Gold. <http://www.gold1043.com.au/newsroom/a-new-major-survey-has-show-melbourne-is-the-worst-in-the-country-at-one-thing>.

BACKGROUND RESEARCH

Persona - Victim

Name: David
 Gender: Male
 Age: 25
 Nationality: Australia
 Occupation: Programming Engineer
 Archetype: Timid

Brands Represent My Life



About Me

I am a programming engineer and I always work late at night. I like to stay alone and be quiet, so I can easily get some ideas under such a situation. I never talk to the people I am not familiar with. I don't like doing sports since I was a little boy. Comparing with the sports, I prefer sit there and read some books. I like all kinds of digital devices. I can play with them for the whole day without eating, drinking, sleeping sometimes. I take public transport to the work everyday and I like to sit near the door way and read or watch something during the travel time.



Victim on the Train

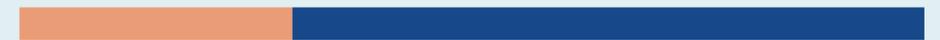
Level of Courage



Level of Enthusiasm



Level of Power



Ability of Communication



A Day in My Life

I work late at night, because this is the time i can get a lot of ideas. I live far from the company and I will take the train alone at night time. Usually the train is almost empty at that time, but on Friday night, some of the drunk people will get on the train. I don't like this kind of situation, so I will choose somewhere in the corner and read my own book quietly. I can concentrate on my book for the whole way and don't know what happen during thr whole trip. Every night, I get off the train quickly and leave this place that I am not familiar with so I can feel safe to continous my work.

1. "Metro Trains Interview Questions | Glassdoor.Com.Au". 2018. Glassdoor.Com.Au. <https://www.glassdoor.com.au/Interview/Metro-Trains-Interview-Questions-E588593.htm>.

2. "Melbourne Is The WORST In The Country At One Thing". 2018. GOLD104.3 - Pure Gold. <http://www.gold1043.com.au/newsroom/a-new-major-survey-has-show-melbourne-is-the-worst-in-the-country-at-one-thing>.

BACKGROUND RESEARCH

Persona - Witness

Name: Sara
 Gender: Female
 Age: 20
 Nationality: China
 Occupation: International University Student
 Archetype: Introverted

Brands Represent My Life



About Me

I am an international university student who is studying at Monash University. I go to school by train every day. As a new student just arrived at Melbourne, I worry about the trip to school a lot. Sometimes, I am afraid of not finding the right train and sometimes I will be concerned about the time. I like to go out with my Chinese friends on weekends. But the traffic situation will let me try to get back earlier. During my spare time, I only play with the people I am familiar with. And as an introverted girl, I don't like talking and I really hate some strange people who talk to me suddenly outside.



Witness on the Train

Level of Courage



Level of Enthusiasm



Level of Power



Ability of Communication



A Day in My Life

Every morning, I get up to take the train to school. I never find a seat at that time and I feel really uncomfortable when the skin touch happens on the crowded train. After school, I try to get back home as early as possible, because when the light goes darker, there will be some dangerous people on the train. I heard a lot about unsafe situations on the train before. So when I see those people, I feel like something similar will happen to me every time. I will go shopping with friends on weekends, but every time, I have to leave early so I will not miss the last train.

1. "Metro Trains Interview Questions | Glassdoor.Com.Au". 2018. Glassdoor.Com.Au. <https://www.glassdoor.com.au/Interview/Metro-Trains-Interview-Questions-E588593.htm>.

2. "Melbourne Is The WORST In The Country At One Thing". 2018. GOLD104.3 - Pure Gold. <http://www.gold1043.com.au/newsroom/a-new-major-survey-has-show-melbourne-is-the-worst-in-the-country-at-one-thing>.

BACKGROUND RESEARCH

User Story Map

User Activities (backbone)	Go to station		Get on the train	On the way (Journey)		Get off the train	
User Tasks (walking skeleton)	Walk to station	Waiting on the station	Get on the train	Sit on the train	See violence happen	Get off the train	Walk to the destination
User Stories	Get out of the house	Stand on the platform	Stand in front of the train	Walk into the carriage	Hear the noise	The train back to normal again	Walk to the exit of station
	Walk to station	Find information board	See the train car is full	See the empty chair	See to people are fighting	The train continues running	Touch off the myki
	Find Myki in the purse	Check the train departure time	Notice it is too hard to get on	Walk towards the chair	Push the red button	The train stop	Walk to the destination
	Touch on myki	Look toward to the train track	Walk to the other train car	say excuse me to people around	Emergency signal is sending	Get off the train	
	Get into the station	See the train is arriving	Find other chance to get on	Take off the bag	Police get signal in the office		
	See information board	Prepare to get on the train	Wait in line	Sit on the chair	The train stop at next station		
	Find the platform		Wait for the door open		Police wait on the station		
	Go to platform		Get on the train		Police take away the people		

BACKGROUND RESEARCH

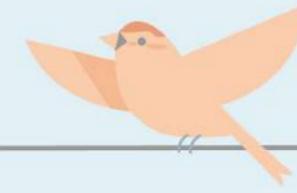
User Journal Map (Women Verison)

Stage	 On the way to station	 Waiting at station	 The moment get on the train	 Trip in the train	 On the way leave the station
Doing (Positive)	 <ul style="list-style-type: none"> - Stangers walk beside closely - Many Dunkers talking loudly about dirtythings 	 <ul style="list-style-type: none"> - Dark space - Strangers pretend to be close friends to you - Waiting too long 	 <ul style="list-style-type: none"> - Push and squeeze - Skin touch - Dangers to stand on the edge of the door way 	 <ul style="list-style-type: none"> - Couldn't find seat - Satnding in a crowded area for a long time - Crazy people around 	 <ul style="list-style-type: none"> - Walking alonein the small path - No CCTV at night - Strangers followed - Sexual harssements
Doing (Nagative)	 <ul style="list-style-type: none"> - The station is near at home - Good journey planning 	 <ul style="list-style-type: none"> - The station has a comfortable environment for waiting ling time 	 <ul style="list-style-type: none"> - Get on the public transpoet in order - Get on the public transport quickly 	 <ul style="list-style-type: none"> - Thanks for gentleman giving the seats - CCTV on the train 	 <ul style="list-style-type: none"> - Get off the public transport in order - Clear out way to leave the station
Thinking	<ul style="list-style-type: none"> - Feel annoying when someone unfamiliar around you 	<ul style="list-style-type: none"> - Feel undafe when the environment is bad - Prefer to go with own car next time 	<ul style="list-style-type: none"> - Feel really uncomfotable about the skin touch 	<ul style="list-style-type: none"> - Feel more safe when have CCTV - Feel frustrated by crowded passengers 	<ul style="list-style-type: none"> - Fear of strangers stalking - No one on the road - Living in remote location
Opportunities	<ul style="list-style-type: none"> - Set uo better journey planning - Going together with someone familiar 	<ul style="list-style-type: none"> - Buidling more comfortable environemnt with light, sound and other interior elements 	<ul style="list-style-type: none"> - Create better order for getting on the train - Adding amount of train 	<ul style="list-style-type: none"> - More better quality CCTV on the train - Build comfortable environment 	<ul style="list-style-type: none"> - Going together with someone familiar - Calling someone immediatly when bad things happen

BACKGROUND RESEARCH

User Journal Map (Man Verison)

Stage	 On the way to station	 Waiting at station	 The moment get on the train	 Trip in the train	 On the way leave the station
Doing (Positive)	 <ul style="list-style-type: none"> - Violent angry men near to you - Many dunckers talking loudly about dirty things 	 <ul style="list-style-type: none"> - Dark space - Strangers pretend to be close friends to you - Waiting too long 	 <ul style="list-style-type: none"> - Push and squeeze - Robber / Stolen / Violence activities - Dangers to stand on the edge of the door way 	 <ul style="list-style-type: none"> - Couldn't find seat - Satnding in a crowded area for a long time - Violence problem 	 <ul style="list-style-type: none"> - Walking alonein the small path - No CCTV at night - Strangers followed - Violence activities
Doing (Nagative)	 <ul style="list-style-type: none"> - The station is near at home - Good journey planning 	 <ul style="list-style-type: none"> - The station has a comfortable environment for waiting ling time 	 <ul style="list-style-type: none"> - Get on the public transpoet in order - Get on the public transport quickly 	 <ul style="list-style-type: none"> - Be treated nice by other passengers - CCTV on the train 	 <ul style="list-style-type: none"> - Get off the public transport in order - Clear out way to leave the station
Thinking	<ul style="list-style-type: none"> - Feel annoying when someone unfamiliar around you 	<ul style="list-style-type: none"> - Feel undafe when the environment is bad - Prefer to go with own car next time 	<ul style="list-style-type: none"> - Feel really uncomfotable about the violence activities on the public transport 	<ul style="list-style-type: none"> - Feel more safe when have CCTV - Feel frustrated by crowded passengers 	<ul style="list-style-type: none"> - Fear of strangers stalking - No one on the road - Living in remote location
Opportunities	<ul style="list-style-type: none"> - Set uo better journey planning - Going together with someone familiar 	<ul style="list-style-type: none"> - Buidling more comfortable environemnt with light, sound and other interior elements 	<ul style="list-style-type: none"> - Create better order for getting on the train - Adding amount of train 	<ul style="list-style-type: none"> - More better quality CCTV on the train - Build comfortable environment 	<ul style="list-style-type: none"> - Going together with someone familiar - Calling someone immediately when bad things happen



PART THREE

CONCEPT

DEVELOPMENT



CONCEPT DEVELOPMENT



Define Problems

Feel unsafe to travel at night time

The dark environment will cause the fear to go to the public transport station. This also cause the amount of passenger decreases at night time, which make the night time trip even much more unsafe.

Feel unsafe to travel alone

Even when two girls getting together to the station, this is still an unsafe activity for them, especially at night time and remote areas.

Feel unsafe to travel to the remote area

Remote area has less amount of people. The quiet environment may cause people feel unsafe. And when dangerous things happen, they cannot call help on time.

Don't know what to do to avoid this kind of danger

Lack of knowledge about how to avoid dangerous happening. Will be nervous and afraid of these situation when it happened. As a result, forget to call for helping is common.

Bad design of public transport spaces

Some of the public space is lack of light and lack of Shielded space. These are all the elements may cause the unsafe feeling about public transport.

CCTV is missing in the corner of the path

CCTV is the only evidence to solve the problem after the bad things happened. However, it cannot protect the passenger and avoid the things happened earlier.

Most sexual crimes against Australian women go unreported

Widely-held beliefs that women has their responsibility to modify their behavior after dark. The public commonly to ask two questions to these kind of women. "why was she out after dark?" and "what was she wearing?". This perception, along with a pervasive culture of victim-blaming.

Most violence crimes against Australian male go unreported

Due to the most of police's attitude, they think only one person report the violence is not serious, they won't notice about this problem unless more than three people report that.

1. "Policies: Safety On Public Transport – Public Transport Users Association (Victoria, Australia)". 2018. Ptua.Org.Au. <https://www.ptua.org.au/policy/safety/>.

2. "Principles Of Gender-Sensitive Care". 2018. Www2.Health.Vic.Gov.Au. <https://www2.health.vic.gov.au/mental-health/practice-and-service-quality/safety/gender-sensitivity-and-safety/principles-of-gender-sensitive-care>.

3. Currie, Graham, Alexa Delbosc. 2012. Perceptions And Realities Of Personal Safety On Public Transport For Young People In Melbourne. Ebook. http://atrf.info/papers/2010/2010_Currie_Delbosc_Mahmoud.pdf.

CONCEPT DEVELOPMENT



Define Problems

Long term goal for this project

Minimise man to man violence in the public transport Victoria.

Sprint questions

1. Can we redesign the public transport system? (Train/Bus/Tram/)
2. How to build safer public environment through technology solution? (App/Website/Poster/Projection/TUI...)
3. Can we update the data of male violence every seconds?
4. Should we consider the ethnicity of male?
5. Should we consider the gender of male? (GBLTQ)
6. Can we find a better way to help male who faced violence?
7. Can we stop violent man making violence behaviour?
8. How about time? Location? Transportation methods?

According to the research, it is easy to find this long term goal is only a small part of the whole safety problems in the public transport Victoria. However, if this project can achieve this long term goal, any other safety problems such as women sexual harassment can be solved in a similar way. There are many ways can solve this problem. But most of them only focus on how to deal with the problem after the negative feedback happened. So there is the possibility to design something based on the technologies to solve this problem before it happens.

1. "Police Warn 'Hands Off' On Public Transport As Sexual Assaults Rise". 2018. ABC News. <http://www.abc.net.au/news/2017-10-23/sexual-assaults-on-victorian-public-transport-continues-to-rise/9076334>.

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CONCEPT DEVELOPMENT

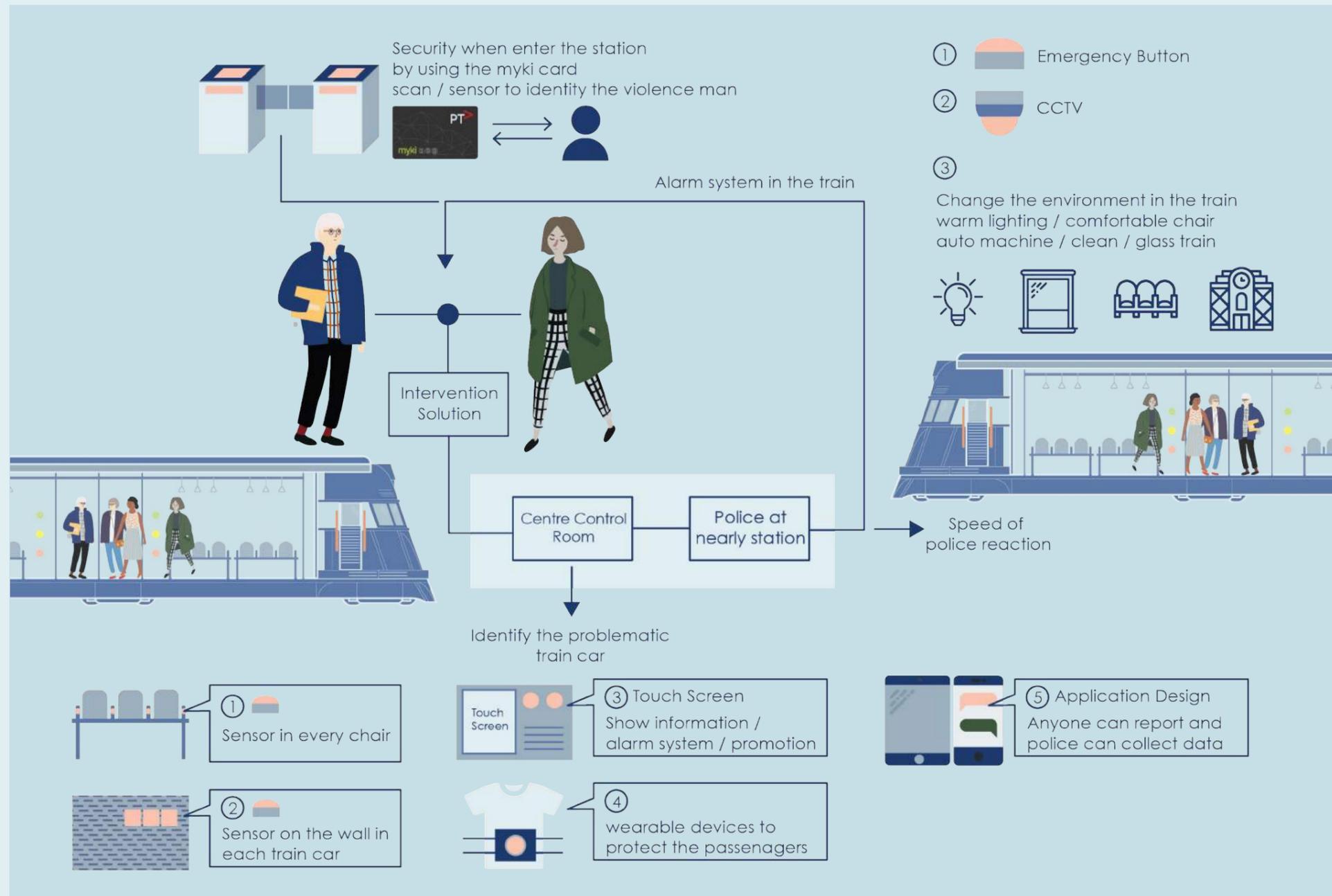
Idea Sketch - Brainstorm

By analysis and brainstorm from the research, the long-term goal and target user of this project, the ideas related to this project is showing in this page. There are seven main areas we can explore to improve the safety in the public transport. And each area can have different approach to this topic.

Proactive		Policy Maker	Alarm System	Education	Report	User	Promotion
Avoid violence people before it happen?	How to keep violence man before police arrive	Tag Violence people that police can follow	Everyone can push the button	Environment	How to prevent fake reporting?	Know when violence man calm down?	How to promote this programme
How to be really proactive?	Stop violence man get on train	Intervene U/O police?	What can be created other than the emergency button?	Set system on the station?	How to collect data every second?	Difference between violence man and normal man	How to expose the campaign
Create some protect things for everyone	How to get people to stop violence as it accurs	How police can react quicker?	Create an App for collecting data?	How this work when the train is too crowded?	How to let report goes on time?	Is there are culture difference to identify the violence man	How to make people know this project
Give more space between passenagers	How to identify the level of violence?	Only non violence people can catch train	Other ways to prevent violence?	Create a safe feelings	How to identify the problematic train line?	Totally change violence man's mind?	How to promote to whole Australia
Real time sensor to detect violence man on train		Use government resources?	How to notify other people?	Change the encironment inside the train	How to prevent the cancel from violence man?	Not specify the male's violence	
Make some people feel uncomformatble by identify gender		How to collect data through police?	Make button available?	How to cover this with whole train system		Make some people feel uncomformatble by identify gender	
		How to deal with violence people who don't have record		How to protect victims on train?			

CONCEPT DEVELOPMENT

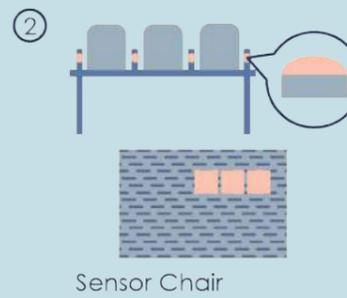
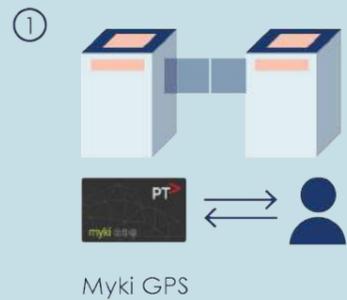
Idea Sketches



After the brainstorming, the idea of this project is based on how the relationship between the passengers and the public transport. Other than designing one interaction result, we think the whole system of how to detect the violence passengers and how to let police react quicker is important. Therefore, the environment, which also include the station and train are need to be improved based on this brainstorm result.

CONCEPT DEVELOPMENT

Idea Sketches



After the dicussion, there are three main elements we think it is improtant to apply into our project. The first on is the Myki card and how it identify the violence man. The second one is how emergency button works on the train and can be useful for anyone. The third one is the environment of the train, which is not only inside the train, but also how the environment in and around the station. The image in the left indicate how these three elements could be work in this project. This security system is important in this project, because the emergency button can prevent what happens on the train, and the speed of police reaction can help the train back to normal and countinuous running qucikly.

CONCEPT DEVELOPMENT

User case scenario (Storyboard)

Based on the idea sketch, here is the final storyboard as user case scenario. This user case scenario is based on the research we made before, which also includes the target users and the long term goal we want to achieve. In the meantime, this user case scenario includes all the elements we want to design for this project and showing how it works during the train is running. The user case scenario will indicate how the passengers interact with the train during their whole trip to create a totally new but much more comfortable environment.



CONCEPT DEVELOPMENT

User case scenario (Storyboard)



CONCEPT DEVELOPMENT

User case scenario (Storyboard)



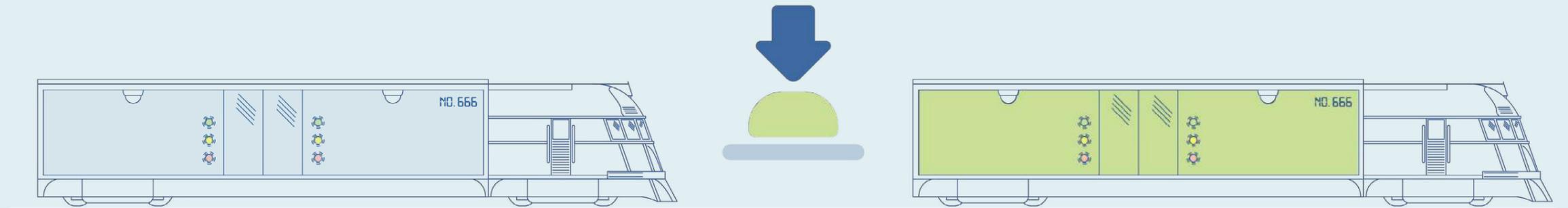
Users experience a wonderful trip on the train...

DESIGN

Wireframe for Glass Window

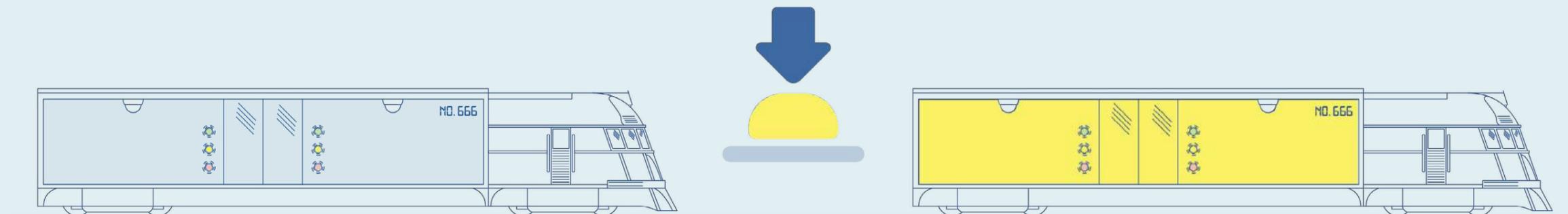
Green Button

For safe status



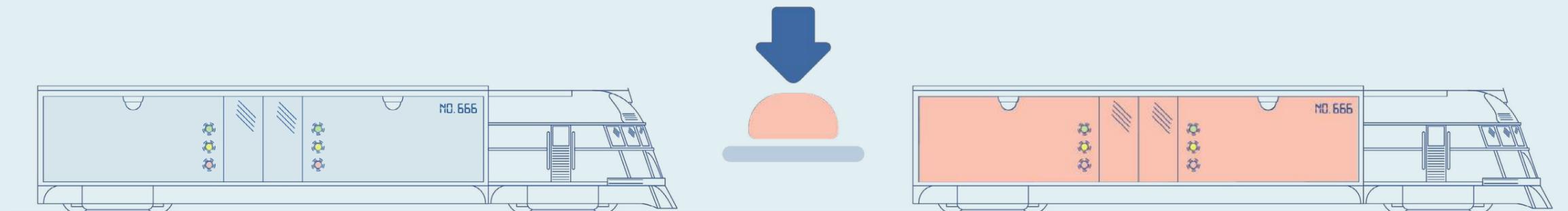
Yellow Button

For crowded status



Red Button

For emergency status

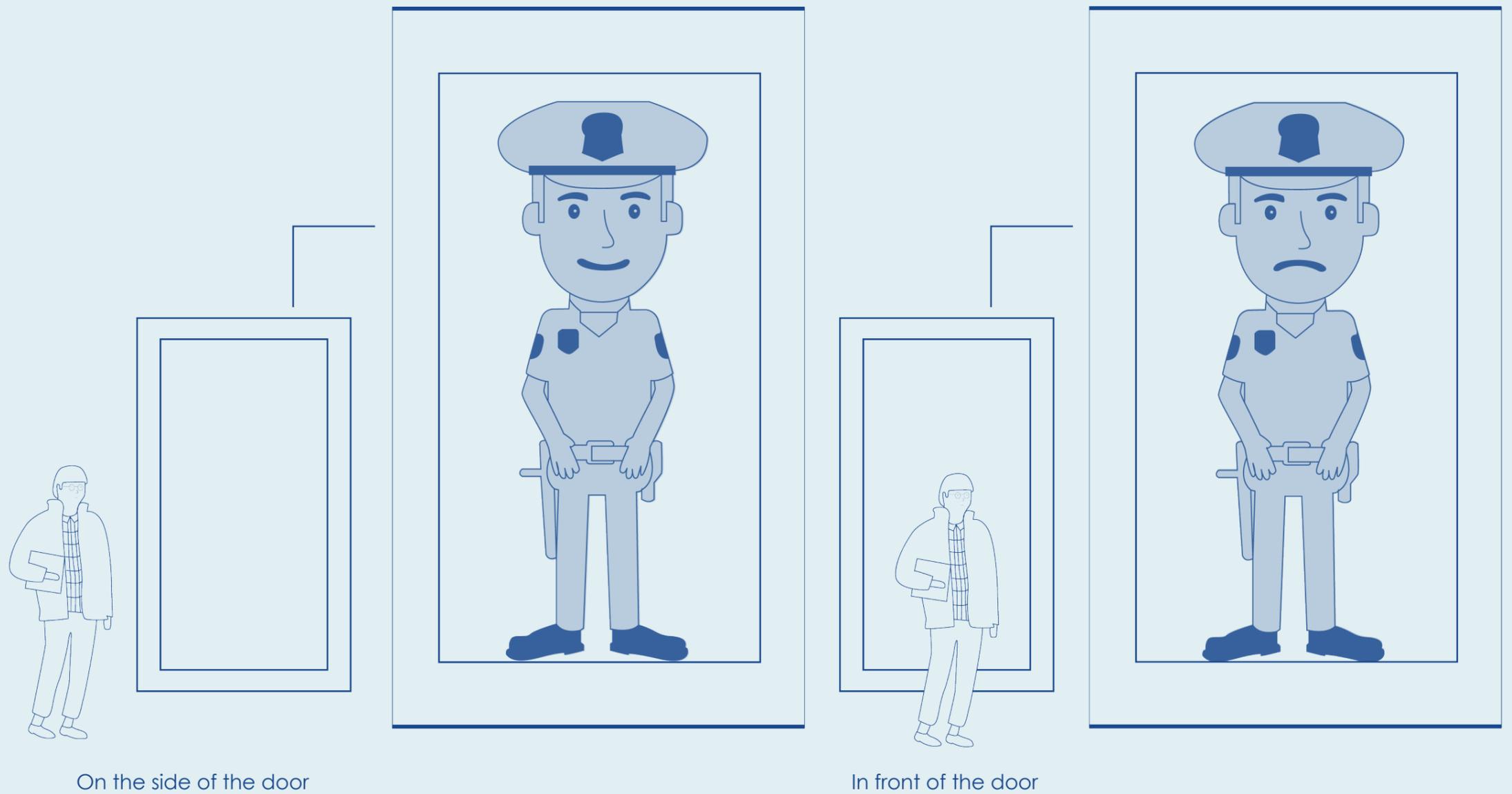


DESIGN

Wireframe for Glass Window

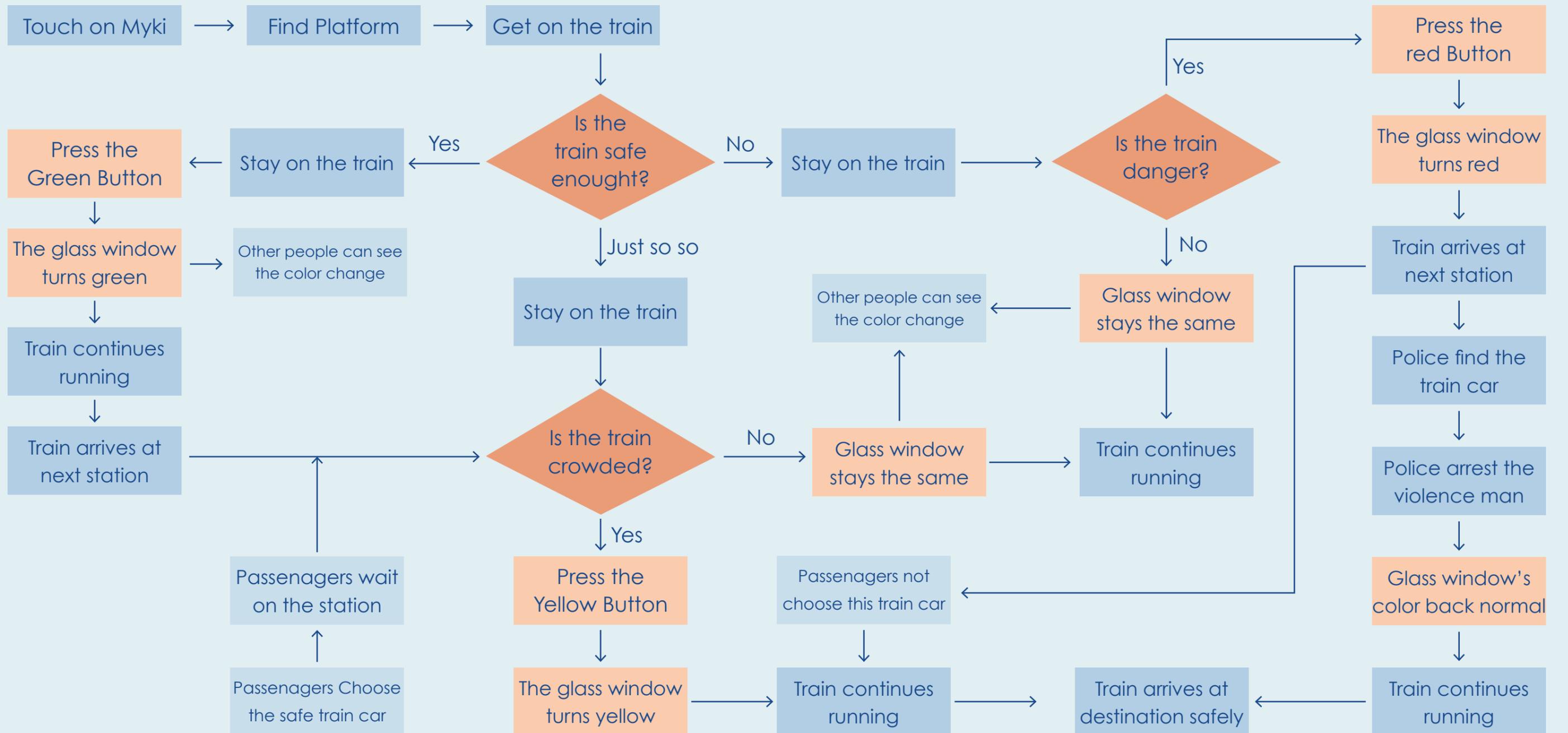
Fake police

Changing the emotion of the police when the passengers stand at different position.

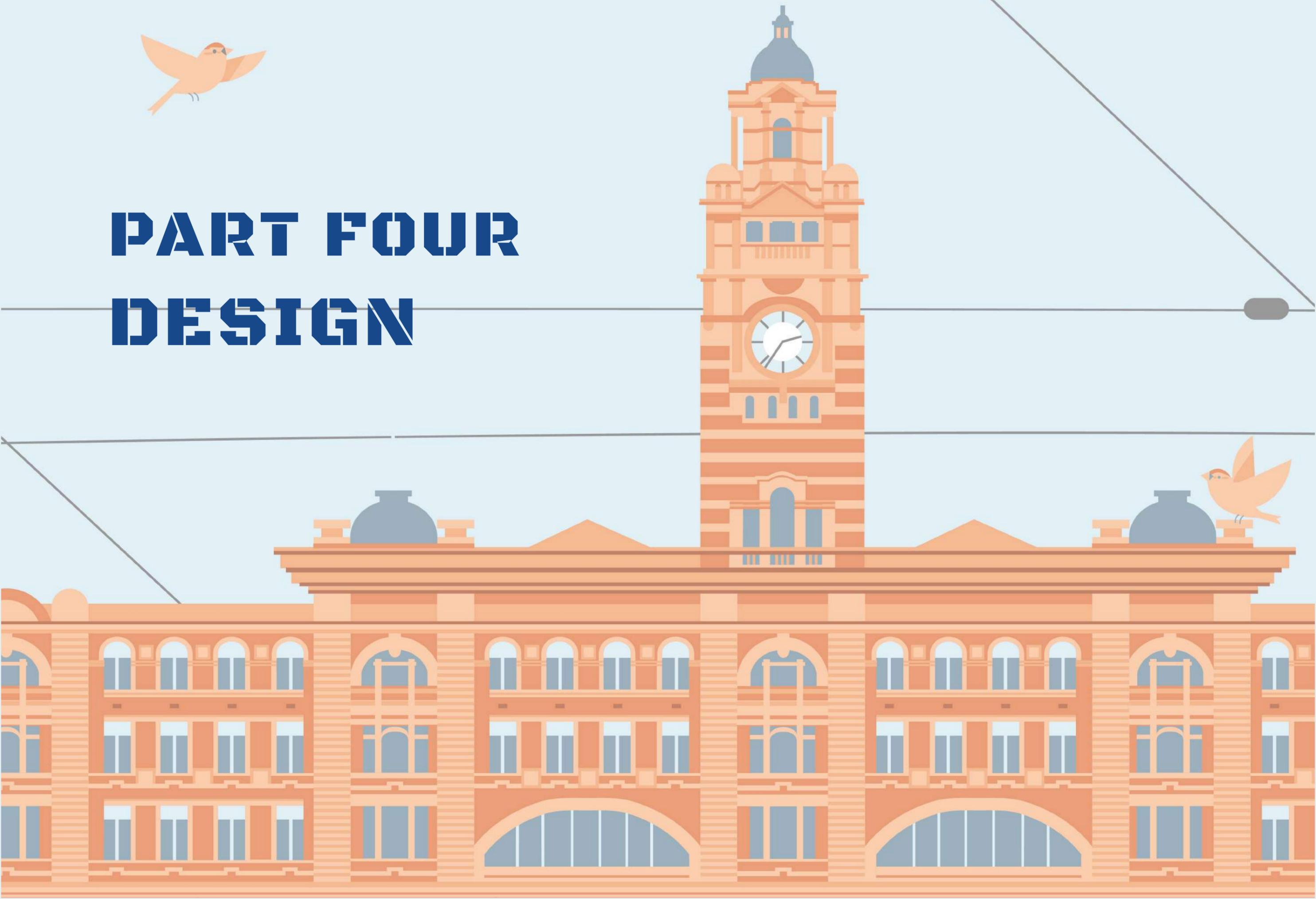


CONCEPT DEVELOPMENT

UI Flow

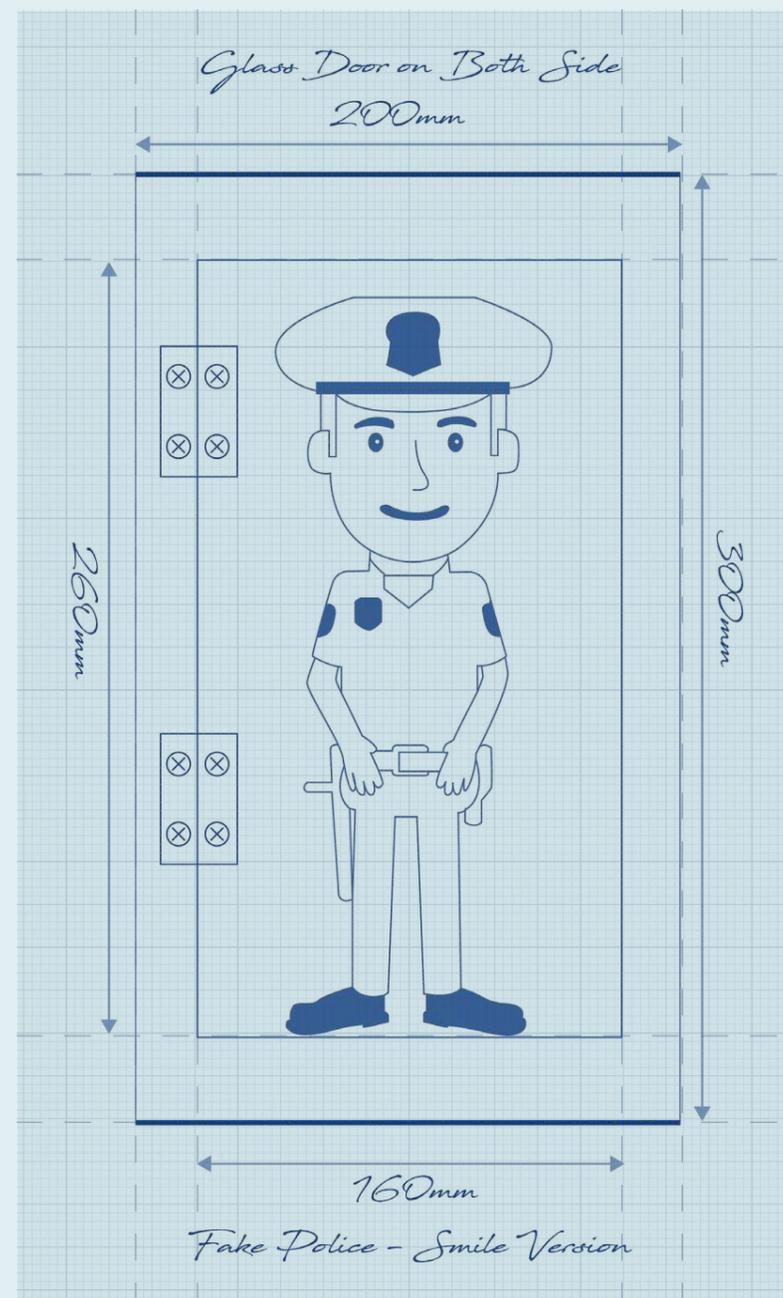


PART FOUR DESIGN



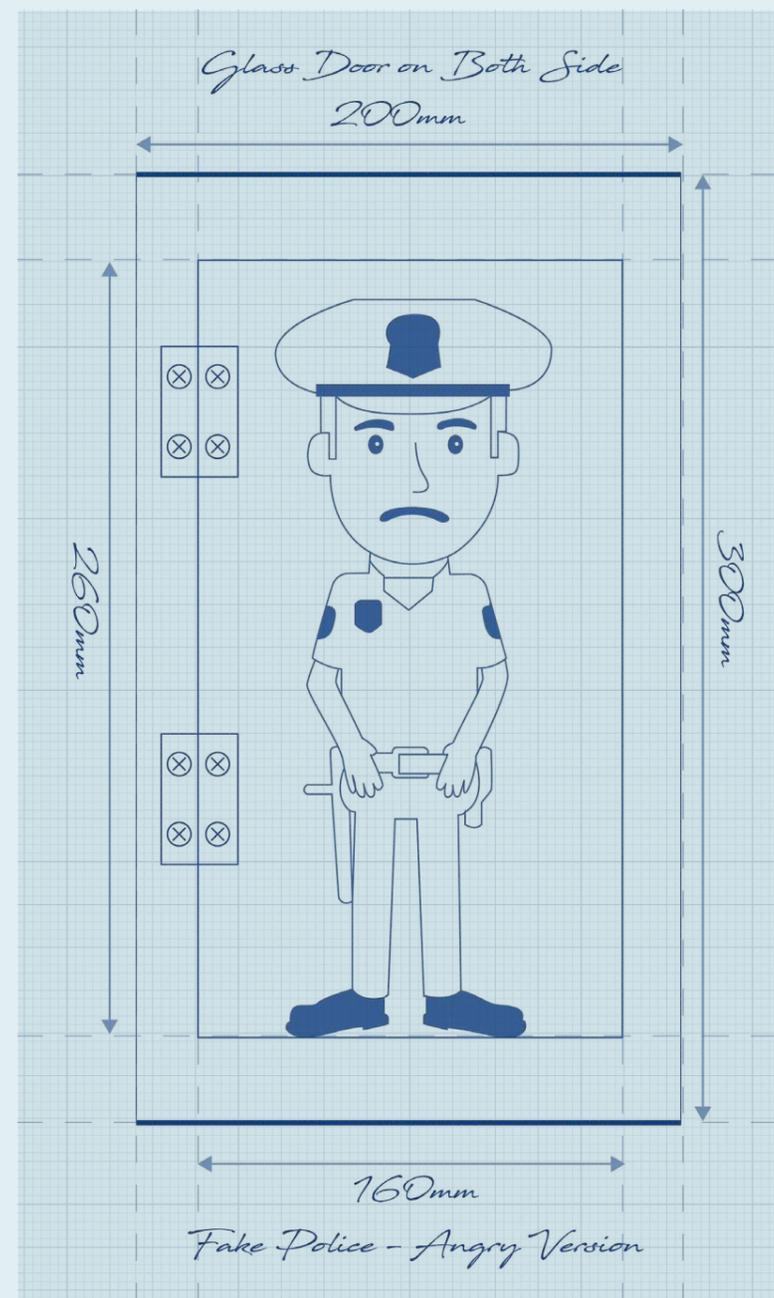
DESIGN

Blue Print of Train



The door on both side of the train can be used as a project screen. The fake police will be project on this door. This idea is inspired from the experience that some countries will put some fake police on the highway. When the drivers see it in the distance, they will believe they are the real police and behave themselves well. In this case, when the passengers first get on the train, they will see a smile police, just like who is protecting them on the train.

The size in the blur print is the size of module.

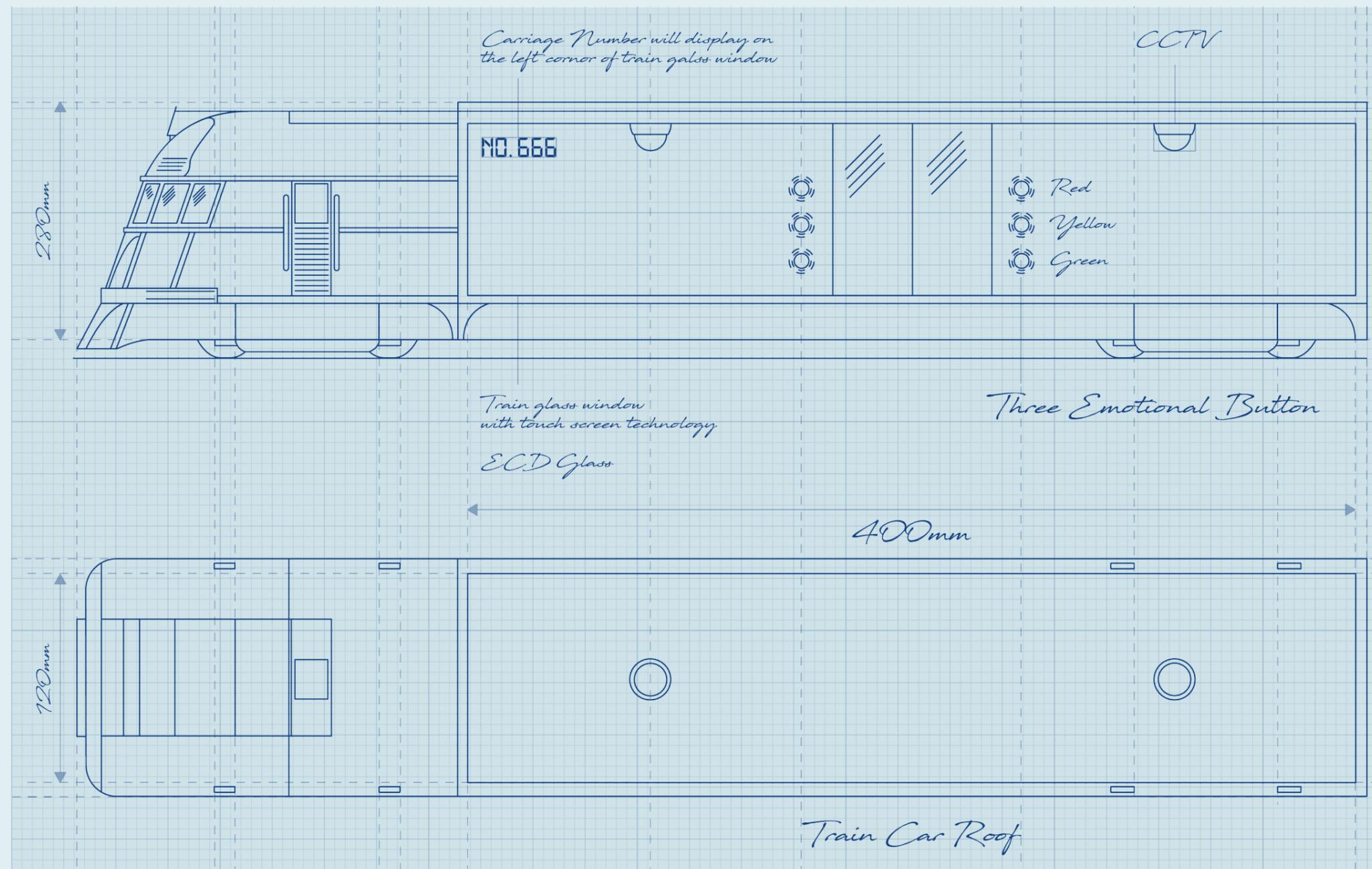


This projected fake police on the door will change based on the position of the passenagers. After they get into the train, this police will turns into a strong, serious one, which can be seen as a wake-up call for passengers to behave well. The strong emotion could influence the emotion of the violence passenagers or the passenagers who may have implusive violence activities to other passenagers.

The size in the blur print is the size of module.

DESIGN

Blue Print of Train



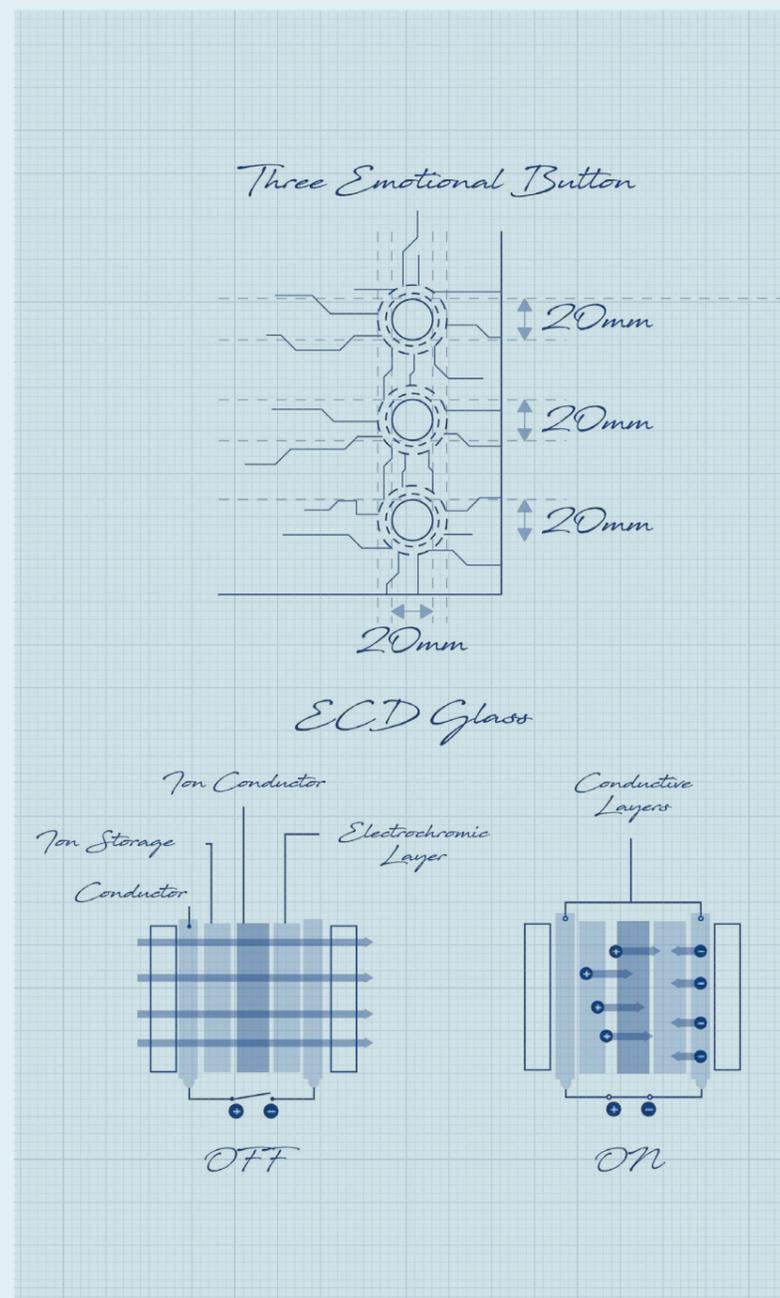
For the glass window, it will be good to enlarge its size. So the passengers will focus on the outside window rather than the crowded inside. As a result, This could change the emotion of passengers and make them calm down, especially when the time they have a lot pressure after one day tired work and not to do something impulsive to other passengers inside.

The emergency button will be redesigned and put on the glass window as well. So the glass window can be used as a touch screen or just a screen for project all kinds of materials.

Each train car will have it's own carriage number on the glass to indicate the location, which can help the police and other policy maker to find the problematic train car quickly.

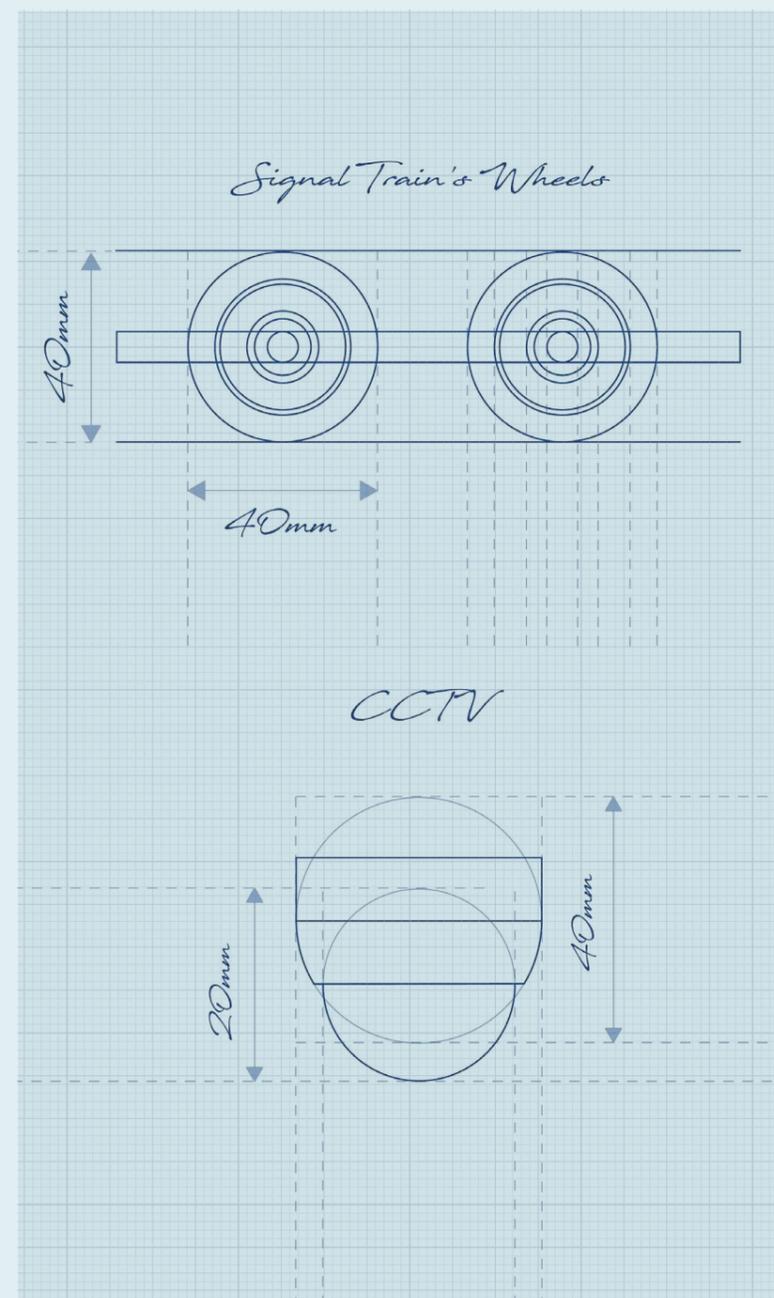
DESIGN

Blue Print of Train



The change of the glass window is that adding Electric Chromic Conducting Device between two layers of the glass, so it can be used for projecting any kinds of promotion poster on to the glass whenever you want. In the meantime, by using the glass window as touch screen, the emergency button can be put on it and connect to the window to control the color of it. The new emergency button has three situations: green, yellow and red. Each one match to one status of the train.

The size in the blue print is the size of module.



The last change is we enlarge the CCTV side on the train. The original CCTV is not obvious on the train. And from the interview, we can see many people even don't know where is the CCTV actually. So the new design decide to enlarge the size of CCTV and painted into red colour. This can make the CCTV become obvious and it is also the other way as a awake-up call for those who are not behave well on the train. Also adding the number of the CCTV is necessary on the train, even in other kinds of public transport services.

The size in the blue print is the size of module.

DESIGN

3D Presentation of Train

we focus on redesign the interface of the train car to build a new comfortable environment for every passengers. The Glass window, fake police and CCTV are the three elements to improve the safety environment. The thing we redesign here is all focus on how passengers interactive with the whole public transport environment. When the passengers feel comfortable with environment, they will be more willing to take the public transport. It will create a positive tendency of public transport safety.

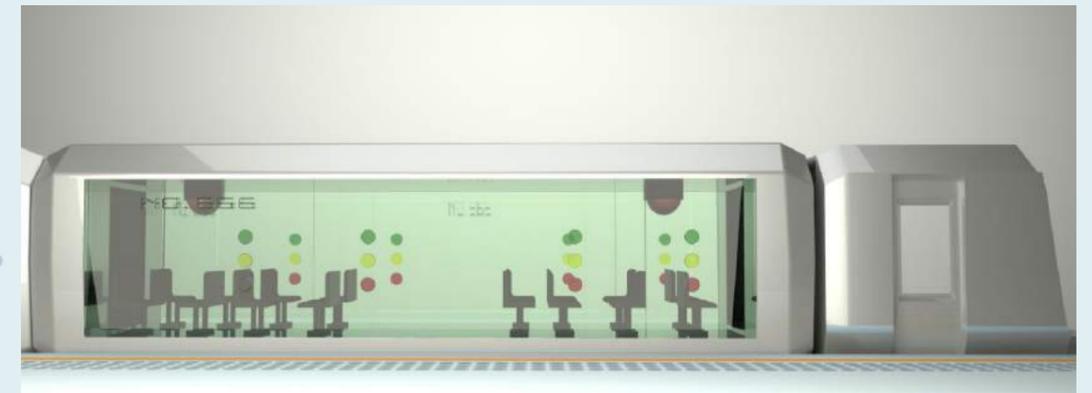
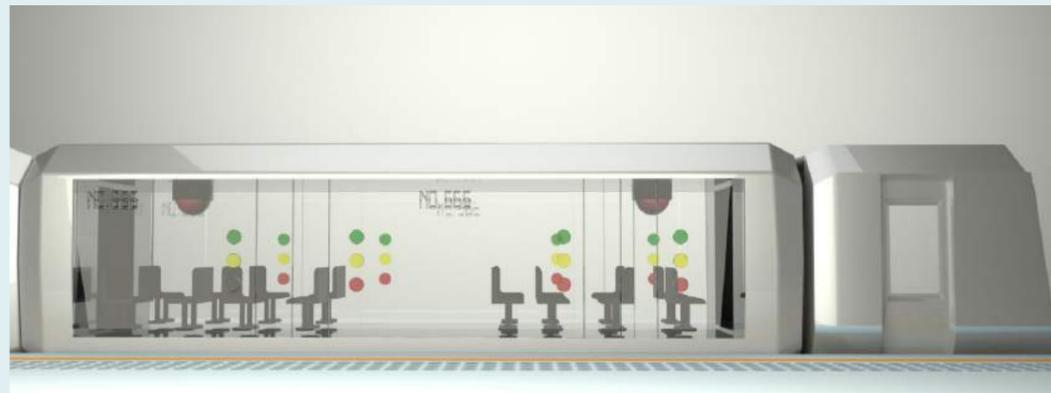


DESIGN

3D Model of Glass Window's Colour

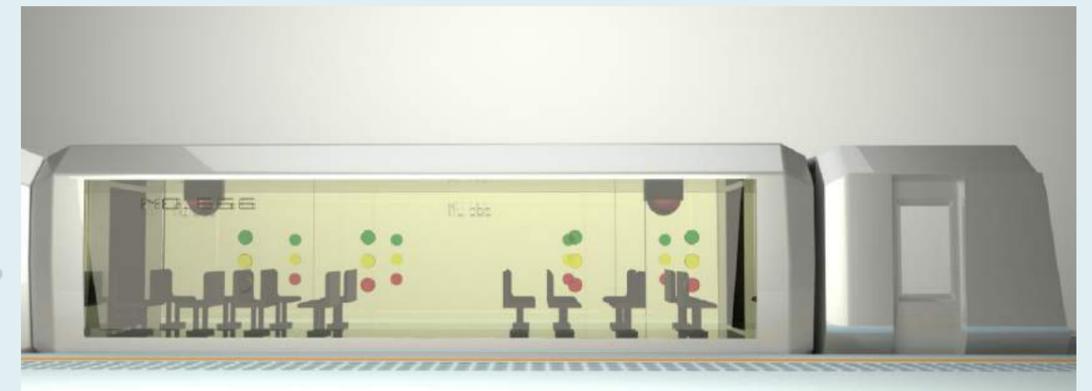
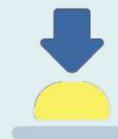
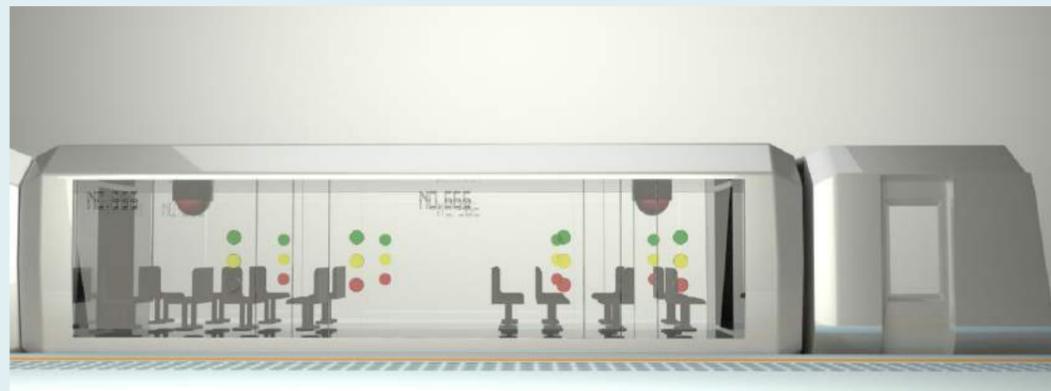
Green Button

For safe status



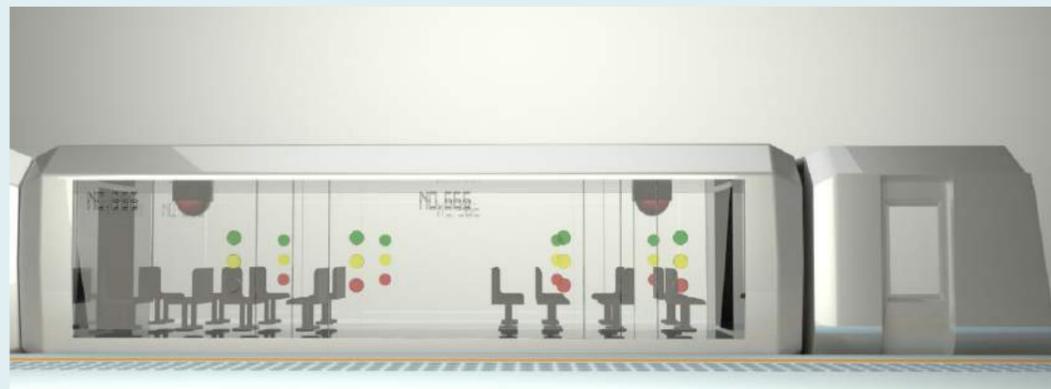
Yellow Button

For crowded status



Red Button

For emergency status

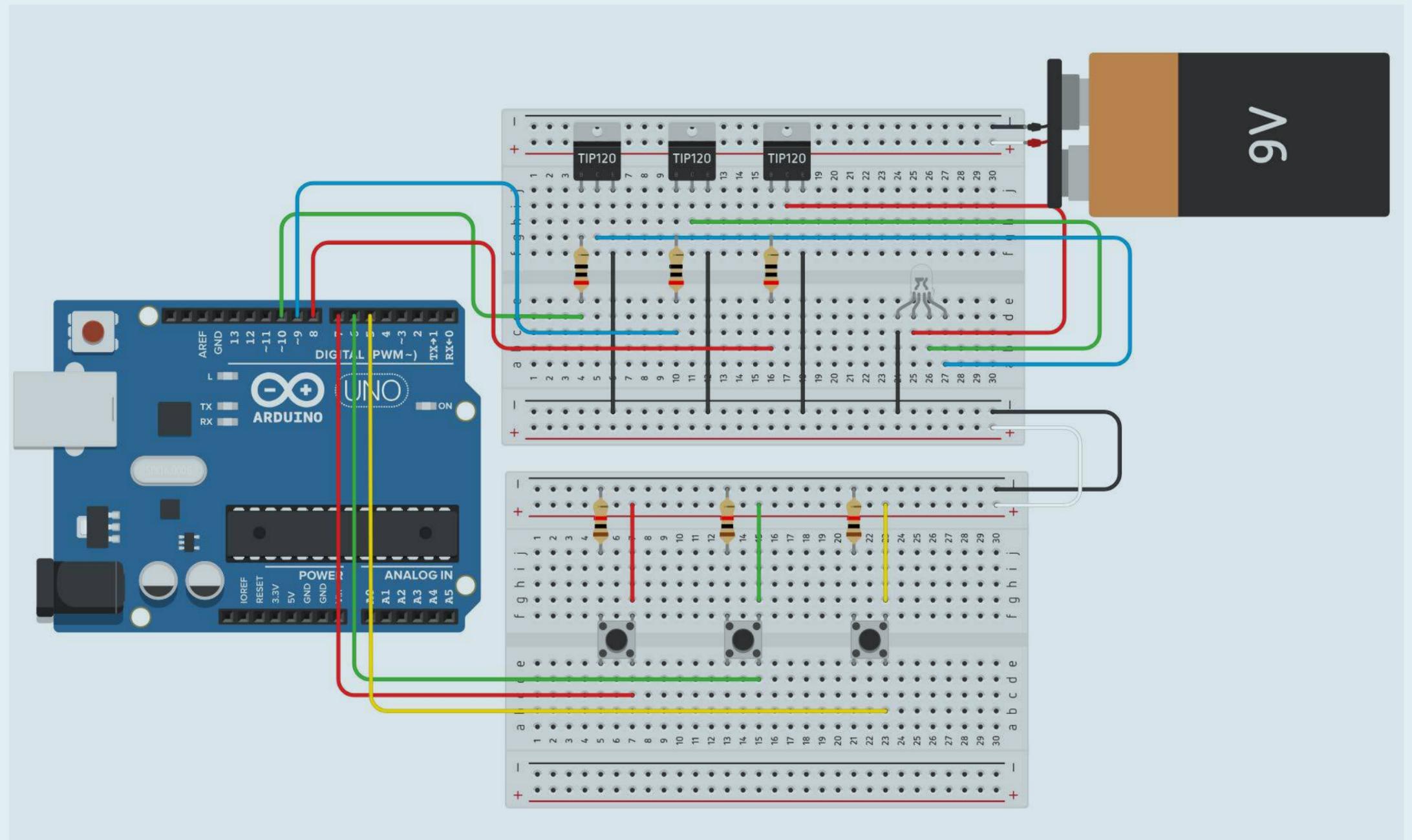


DESIGN

Circus for Arduino Board

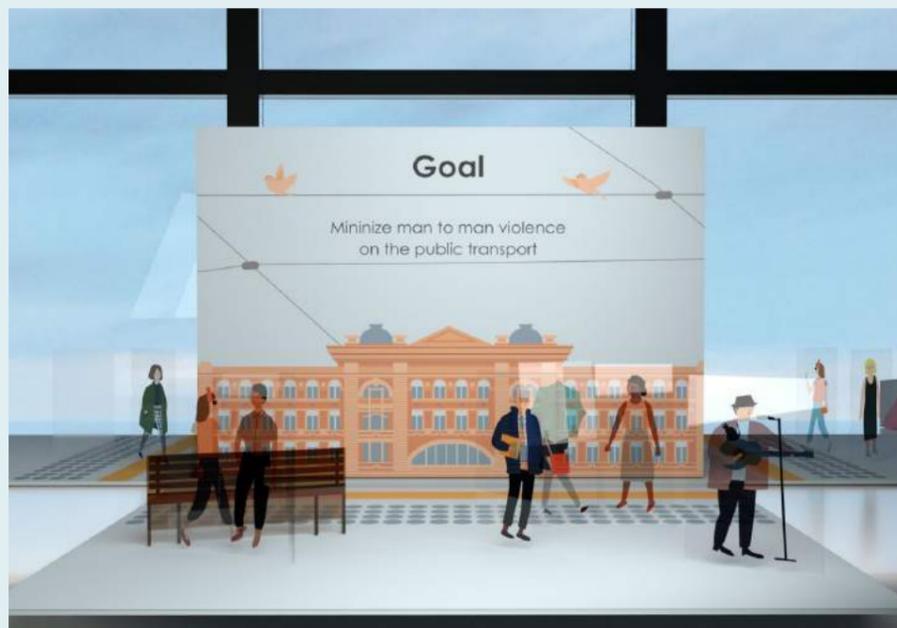
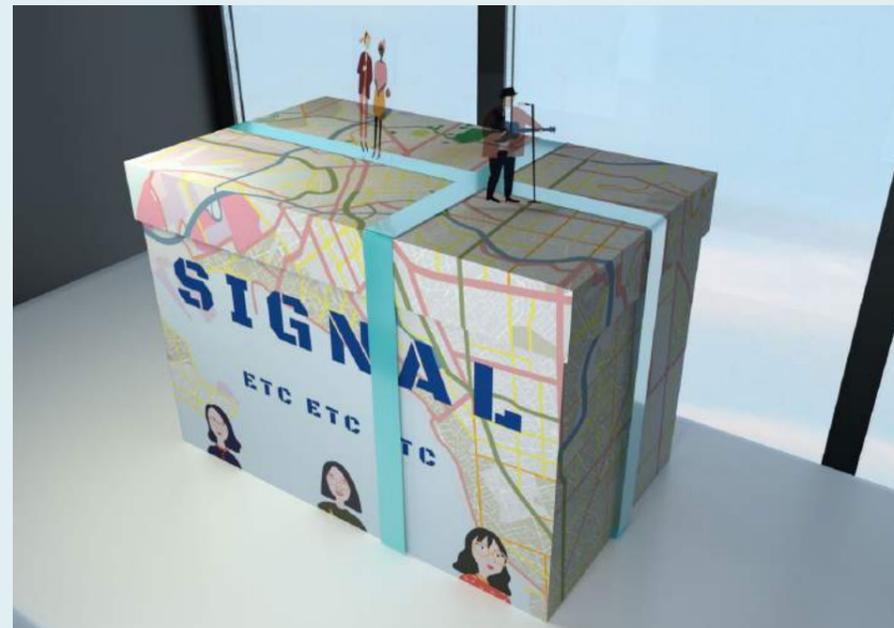
In this project presentation, the Arduino board is used for simulate the design elements in this project. Mainly about the color changing of glass window, which is based on the changing of LED strips. The technical we used here is called lit RGB LED, which is put a RGB LED strip under the edge of the glass, so the glass can have color when the LED turns on.

For this circus, the RGB LED strips is connect to three Tip 31 to enlarge the signal of color. Each Tip 31 stands for one color (red, green, blue) of the RBG LED strips. The button on the other board can control the value of each color on the LED stript to create red, green and yellow for the window.



DESIGN

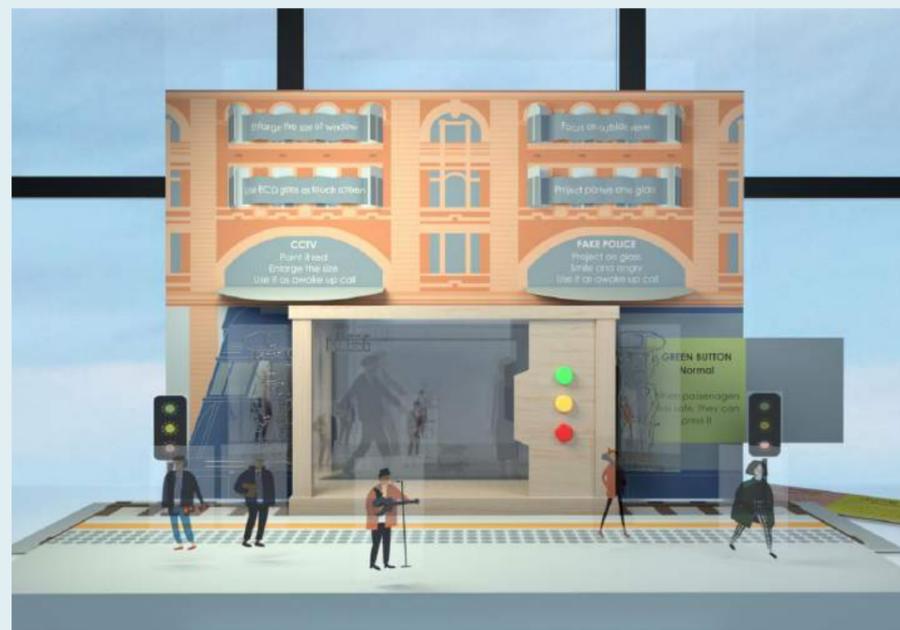
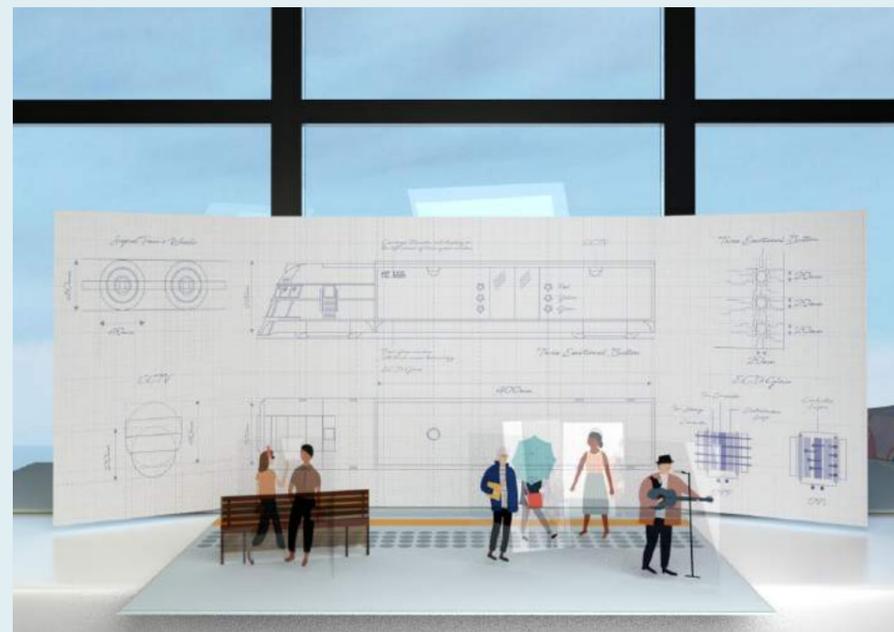
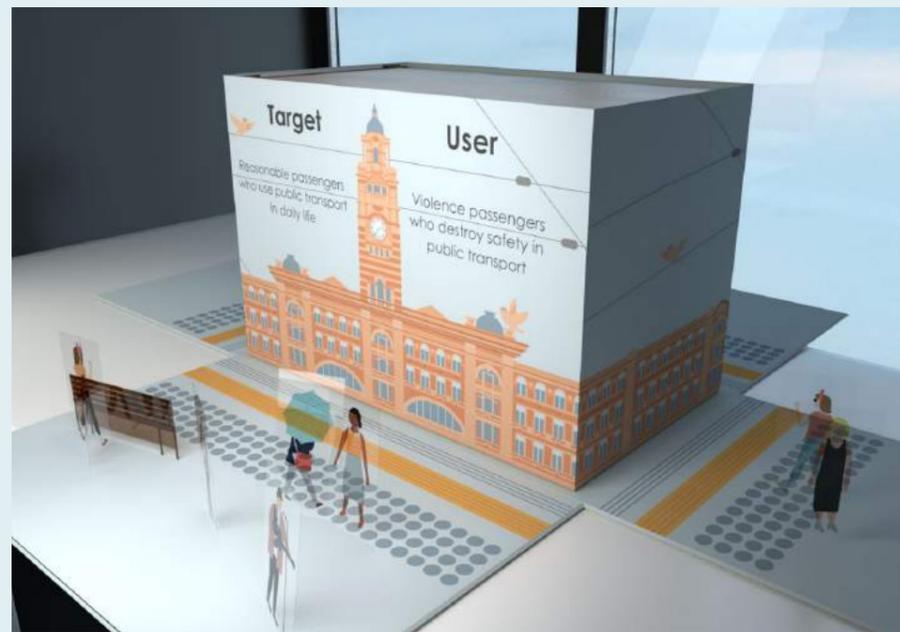
Presentation 3D Display



The presentation of this project is going based on a gift box. In the first box, we display the project name and other basic information of the group. The map on the box is the map about transportation in Melbourne. After opening the box, the initial goal and project's target user is on the two side of the box. This is came out based on the research. In addition, The background of the second box is based on the environment of Flinder Street station in Melbourne.

DESIGN

Presentation 3D Display



When open the face of target user, the blueprint of this project showing on this page. It is clear to see there are three main sections we want to redesign, which are glass window, fake police and CCTV, to improve the safety environment. The thing we redesign here is all focus on how passengers interactive with the whole public transport environment. After opening this box, the model of train is showing based on the environment of Flinder Street station. All these design elements will be demonstrate under this environment. Also, the module in this presentation represents the size in scale of half train car.

DESIGN

Presentation 3D Display



These four presentation scenes indicate all the status for the glass window of the new train. The first image indicates that when the train is in the normal status, the glass can be used as a touch screen and project any promotion poster on it. The second image is showing the safe status, which the glass turns into green. The third image shows what happens when the glass turns yellow. When there are too many people on the train and the train will detect it, automatically turns into this color. The fourth image shows when there are some emergency, such as robbery, violence and other situations happen, both victims and witnesses can press the emergency button. So the glass will turn into red. These three kinds of color can help the passengers and police to recognize the status of the train and choose the right train car they need quickly.

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