CONCEPT PROPOSAL

Bose and the Bois:

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Project Brief

Augmenting Urban Experiences:

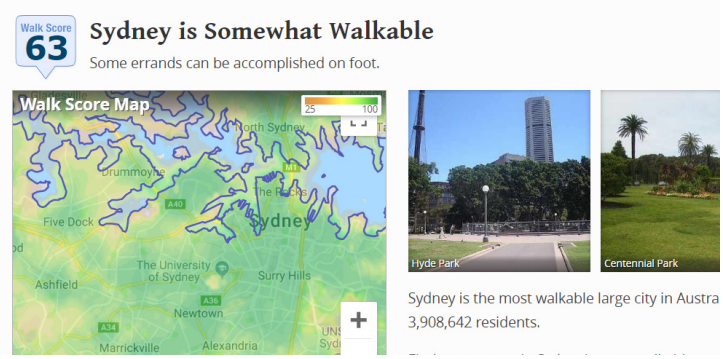
As cities become increasingly urbanised and populated, pedestrian congestion continues to rise with streets and areas being over populated with people heading to and from work, school, or recreational activities.

Unsustainable numbers of people in these urban environments can lead to a lack of walkability in cities, as streets dense with foot traffic lead to a more constant need for repairs as well as safety concerns. A lack of walk-ability in cities has been proven to increase stress and anxiety for people, leading to a less approachable environment for pedestrians and a lack of empathy towards other people on the street.

Augmenting the way people walk throughout cities can create new and interesting ways for people to interact with and learn new things about their environment, enhancing the pedestrian experience, and leading to a more accessible and hospitable urban environment.

Background Research

Pedestrian congestion is a well studied area when it comes to increasing the livability of cities and urban landscapes. Making a city more accommodating for pedestrians not only increases the way people feel about their environment, but has been proven to increase the value of a place, in turn providing a new positive for the economy.

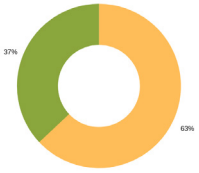


Many metrics for measuring the 'walk-ability' of cities already exist; most notably WalkScore, which determines how walkable a city is based on the number of errands and activities which can be accomplished on foot.

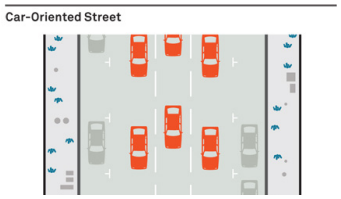
These metrics are useful for understanding the landscape or pedestrian activity in cities, and usually favour cities with higher population and people on the streets for a more walkable experience.

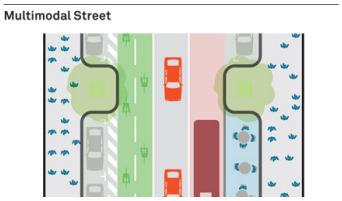
This is due to the market need for more goods and services in each area, meaning the time it takes to walk to different places is reduced based on pure frequency of locations. This leads us to believe that in order to increase the walking experience in a city, it is not only about reducing the amount of people or obstructions in the way, but reducing the negatives that distance and time have on the experience as a whole.

63% of millennials want to live in a place where they don't need to rely on owning a car for basic goods and services (ATTOM Data Solutions, 2019).



Walk-ability starts with city planning inherently;
Space for vehicles to park, the width of sidewalks and streets, and accommodations for accessibility are all considerations that should be made in the initial stages of city construction. However, for most areas compromises to walking experiences need to be made, leading to making people more hesitant to spend a bit of time walking to places.





Comparing Car Oriented Street design to a multi-modal design for accommodating traffic of all types.

When assessing the appeal of walking, factors to consider include; the look and feel of the environment and it's visual variety, shelter availability, the purpose of walking, safety, the presence of a natural environment, and notably, **the density of people.** This is known as **Walk Appeal** and can be used to increase the likelihood of people walking for transportation.

Congestion can be caused by an unclear designation of pedestrians based on their goals for walking in the first place; are they walking purely out of function, or is it recreational activity like sight-seeing?

Providing designation of these different types of foot traffic allows for each market to accomplish their goals in a more satisfying way, improving walk-ability by providing extrinsic reasons for walking in a more immediate fashion, without ruining the experience of others.

Additionally, things like encouraging business activity at street level, installing public art, providing landscaped areas and well designed street access to residences and stores can make streets more lively. Successful walkable cities are ones that balance footpath spaces to allow freedom of movement alongside such vibrant street activities, in turn reducing foot congestion on roads.

Methods such as place-making in cities can be beneficial for increasing the approachability and engagement of places that may be underutilised. It can be useful method of channeling pedestrian flow, reducing congestion whilst engaging more people with the urban built environment. Place-making practices are also likely to attract members of the creative class who prefer walkable, mixed use urban spaces.

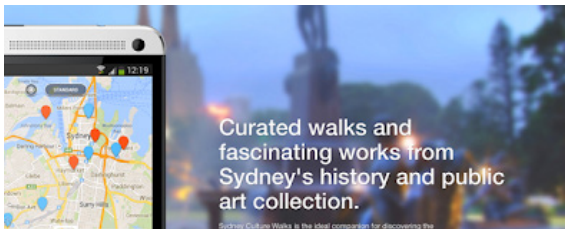
Engagement of pedestrians can be manipulated to improve walk appeal and feelings toward a place or area. People engage with their environment when they are given agency in their interactions. It's also important to consider the power behind using the behaviors of people in cities as a strong resource, instead of a negative.

Empathy of pedestrians. Increasing this empathy can lead to a more comfortable and enjoyable walking experience, as this increases safety and awareness, as well as consideration for differing goals for walking.

According to the **Shared Affective Motion Experience (SAME)** model, music and visual experiences can facilitate feelings of empathy and social bonding, which could be useful for approaching empathy in urban environments.

Market Analysis

A recent example of the balance between pedestrian flow and space for community activities is the revitalisation of Kimber Lane in Chinatown. Once a neglected and disused alleyway, Kimber Lane has been transformed into a meeting place and popular thoroughfare using a combination of paint, seating and suspended bespoke art work with ties to Aboriginal and Chinese history.



Additionally, Sydney City recently developed a Culture Walks app, that allows people to discover the city on foot while learning about the history and stories behind public art pieces, neighbourhoods and specific sites.

Refurbishing the Golden Temple complex, Amritsar, India:

As a UNESCO Heritage site and one of the most visited places in India, the Golden Temple complex underwent a complete recreational revamp, refurbishing 170 buildings around the complex, creating larger walkways, accessibility options, facades, and light and sound displays to alleviate congestion and accommodate its over 60,000 visitors every day, reaching up to half a million during festivals.

This use of technology allows people to immerse themselves in the culture of the area in a more intuitive way, with things like interactive portals used to spread knowledge of the Sikh religion and philosophy.

Before Refurbishing -

After

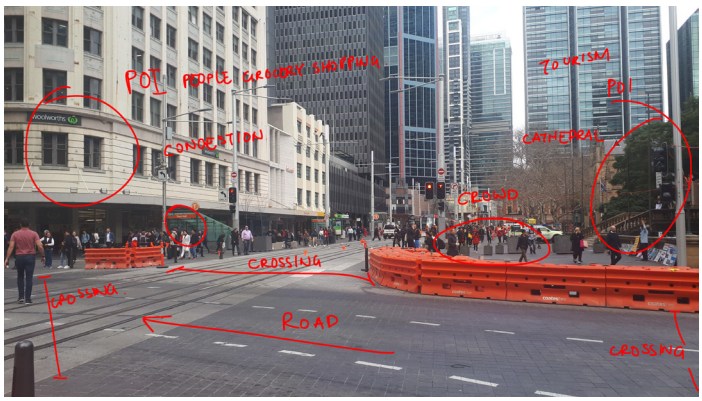
Observing the city:

To understand how pedestrians walk and move around the city landscape, we spent time observing busy areas in the Sydney CBD during different times of the day. This gave us a great idea of how people move around, and how the city accommodates or in some cases hinders pedestrian flow.

On Thursday 22nd August, around 12:00pm, we observed how pedestrians flowed throughout Sydney CBD down George St.

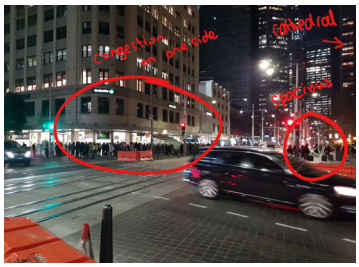
It was clear that although the walkways weren't too tightly packed at the start, areas with restaurants formed visible congestions due to lunch break hour approaching.

Congestion was also prominent at points of interest (POI) like the St Andrew's Cathedral or the shopping malls (Queen Victoria Building).



On Friday 23rd of August, 7-8pm, the observations of the same general areas in the city yielded similar results, with more congestion focused around public transport areas and points of access like doors,and stairwells.

This is most likely due to a combination of people making their way home from the city, as well as people going to restaurants and events.



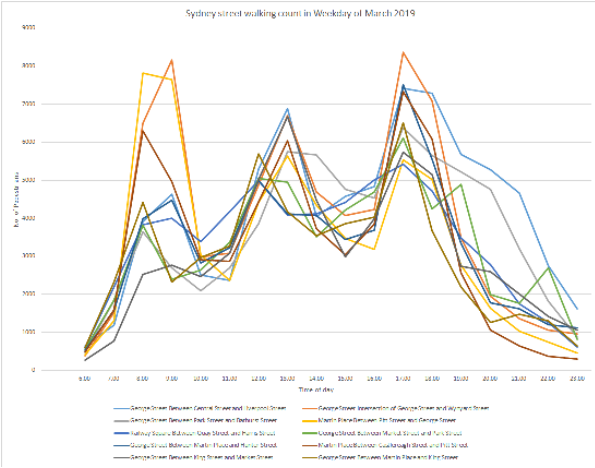
Walk Appeal Observation:

Places relatively out of the way get pedestrian foot traffic due to wide and open shared spaces making ti easier to travel, as well as appealing and attractive surroundings, such as the Pyrmont Bay Bridge.

Our observations were backed up by data sourced from the City of Sydney who carried out a walking count survey around streets of Sydney CBD In March 2019.

We converted the stats into graphs to gain a better visual understanding of the most populated streets and between what time periods these streets get crowded.

The graph illustrates the top 10 busiest streets in Sydney on March 2019, one on weekdays and one on weekends. We found that George Street was the busiest consistently.



All streets had 3 recurring peaks around the same time periods of the day. In the morning between (8~9am) people will come to the city for work, afternoon (12~1pm) around lunch breaks, and night (5~ onwards) people finish work.

The weekend stats depicted a more consistent rising trend between 11am~7pm as pedestrians use the city mainly for entertainment, shopping and tourism and less for work.

Survey and Affinity Diagramming:

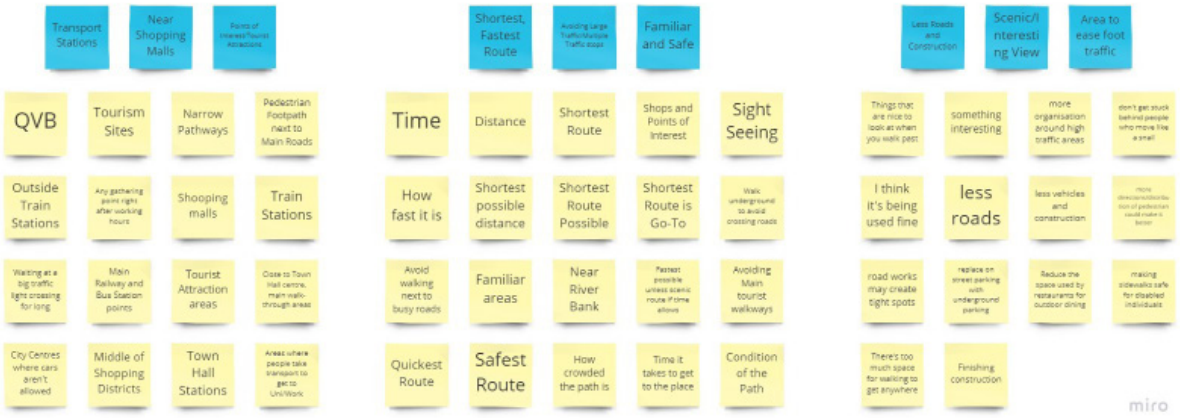
After surveying 24 participants on how they feel and what they'd do to change the way people move throughout cities, we found some key insights to define the areas we should focus on for concept generation. These insights were expanded upon through some affinity diagramming to get to the crux of the issue.

Overall pedestrians want to the flow/walking experience to be more seamless and streamlined in crowded areas, to feel familiar, safe, and achieve the shortest/fastest route possible to their destination.

Areas of Interest: Transport Stations, Near Shopping Malls, Tourist Attractions/Points of Interest

Needs as a pedestrian: Shortest/Fastest Route, Avoiding Large/ Multiple Traffic stops, Safe/Familiar

Wants as a pedestrian: Less Roads and Construction/Scenic/ Interesting View, Area to ease foot traffic

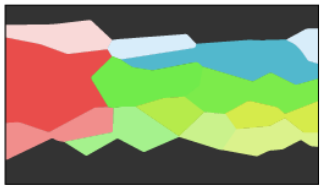


In summary, our research shows us that people prefer to walk in places that they feel are accomodating, safe, and easy to navigate.

Making streets more walkable is the key aspect of our research, and methods utilised in previous projects such as placemaking and considerations of empathy allow cities with even large populations feel more walkable and accomodating for pedestrians.

A focus on points of interest and entry points to these places is also important, as these areas become bottlenecks and major problems for pedestrian congestion at different times of day.

People are usually walking around cities purely out of function, to get from A to B, and also like using the shortest routes, so the primary goal is to promote pedestrians on the street, as well as create a way to make the experience in itself a more fulfilling way of transportation.



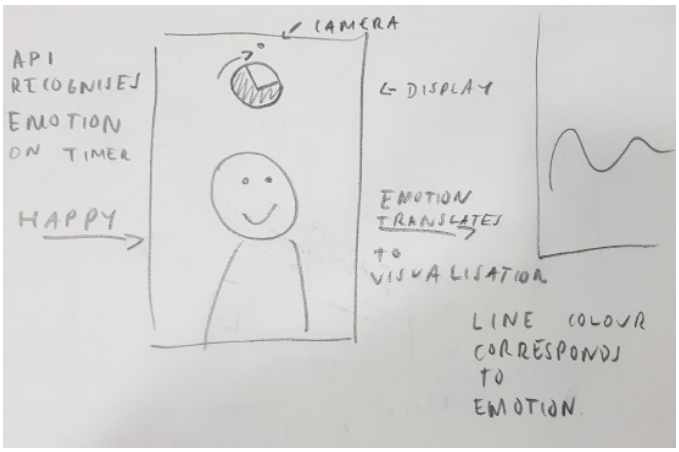
Concept 1

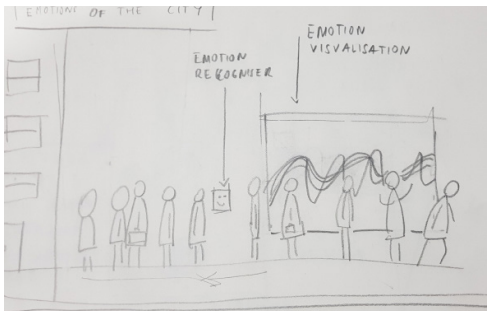
Emotions of the City:

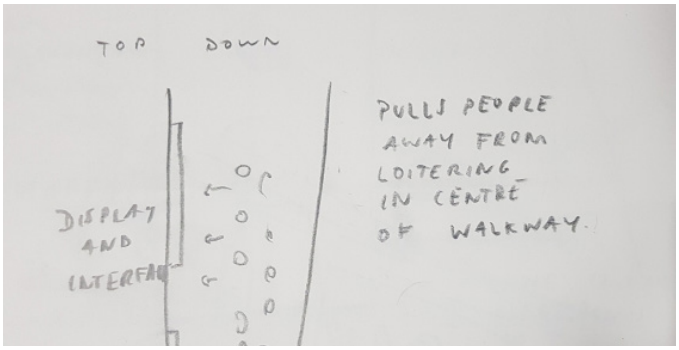
An interactive display that detects the emotions of people that pass by and engage with the display, and reacts appropriately, creating a mosaic of visual representations of emotion.

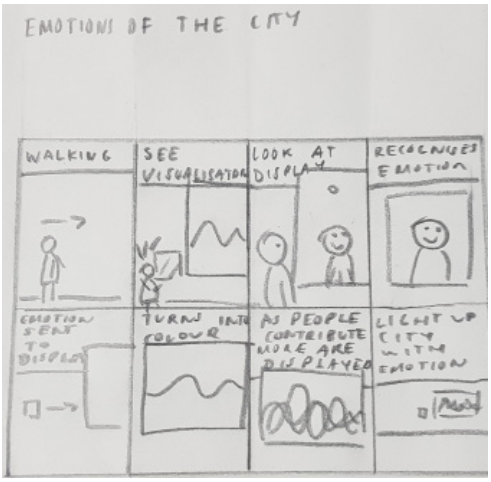
When people are walking in cities they are often disconnected from their environment and the people that inhabit it. Utilising placemaking and pedestrian distribution research, a wall mounted display would be used to present the array of general emotion form passerbys, to not only engage people in their surroundings, but also provide a dynamic visual experience for people who are walking by, increasing the visual variety and overall walk appeal of an area.

This concept would work by using an emotion recognition API to detect the likely emotion of anyone that looks into the camera. People would be prompted by a secondary display to engage with the camera, and their remotion will be transferred to the larger display to add to the collective array of emotions.

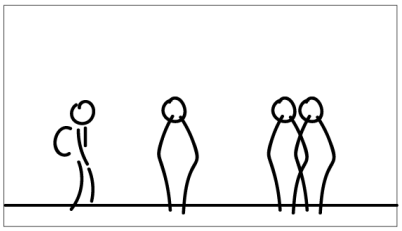




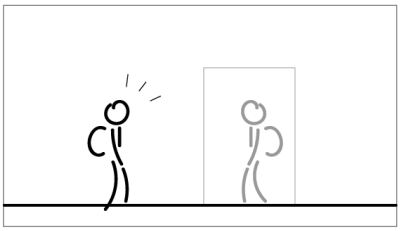




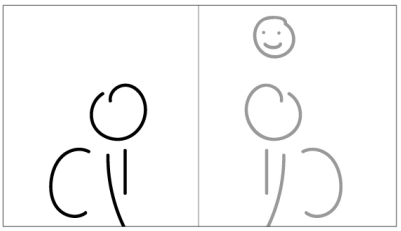
Storyboard:



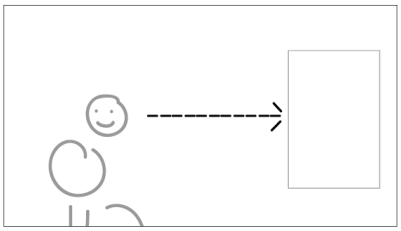
Pedestrians are walking within the city.



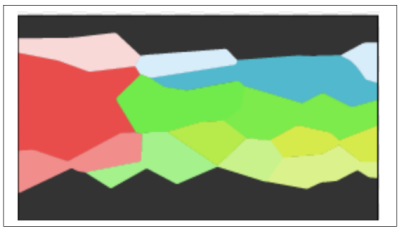
Pedestrians see the viusualisation display. This funnels audiences in.



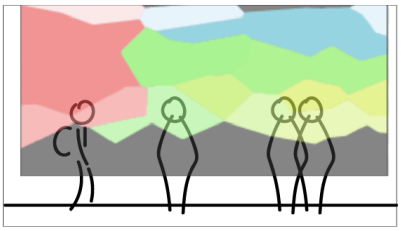
Audiences checks out the display whilst the visualisation recognises the emotion of the pedestrian.



The specific emotion data is sent and converted into colour for the main display.



As more people contribute, the colours expand and diversify to give a mixed representation.



The city lights up with the different colours and creates an artistic representation of the emotions of the people in the city

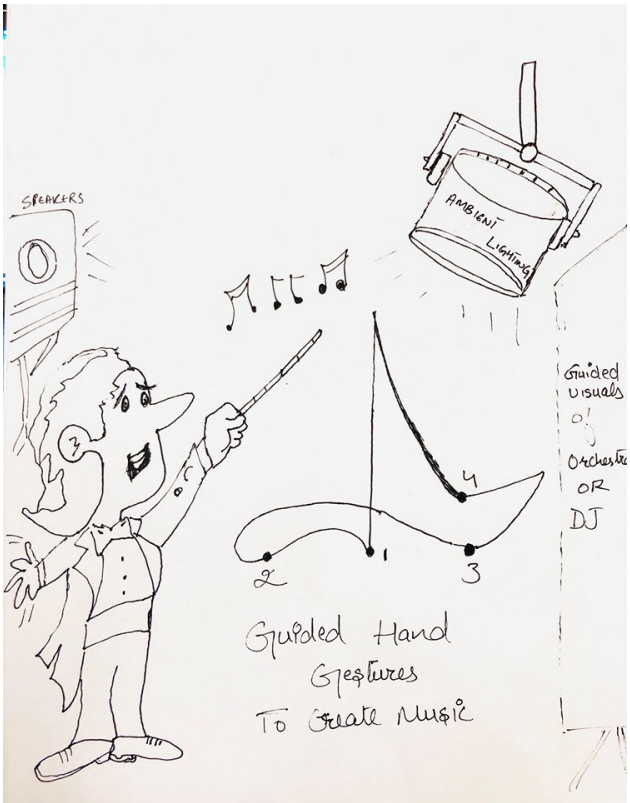
Concept 2

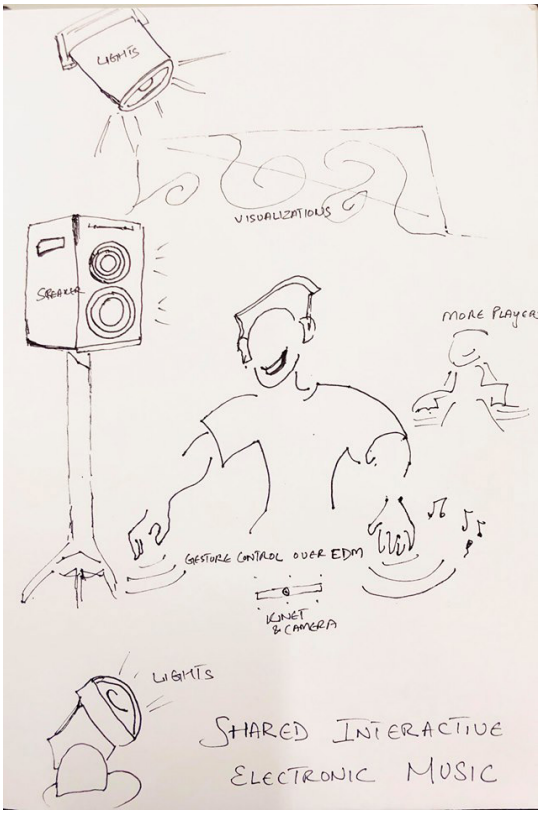
Musical Nexus:

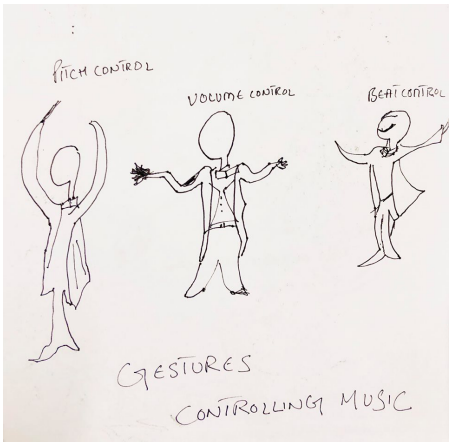
A vision-based, interactive musical experience which allows anyone, even untrained musicians, to conduct music. The goal is to allow the user to dynamically influence how music is played back, much like what a real conductor or DJ would do. The tempo and volume of the music playback are controlled by the user's movements.

An additional functionality is that the user can control the intensity and the pitch of the sound by changing the speed of his hand or finger movements. The system could project colourful patterns and lights that respond to the user, making the interaction truly multimedia It is believed that even a simple musical listening experience carries within it the presence of human action and human agency, and can facilitate feelings of empathy and social
bonding.

Our research highlights that shared musicmaking is a sophisticated example of the potential of music to express emotion and stimulate empathetic understanding between the community.







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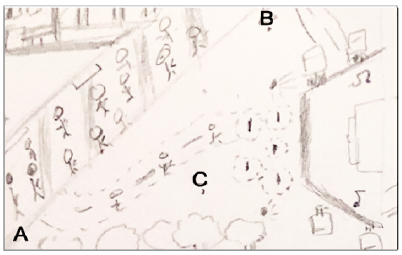
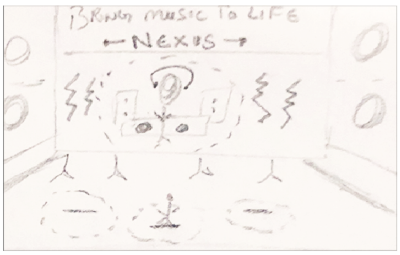


People often choose route AB because it's the shortest walking distance and making the route congested - whereas with Route ACB they can see something interesting.



Interactive display, ambient lighting and mild music grab passer-bys' attention and when they stand on marked circles, the Kinect assists in creating a laser outlined projection of the person.

While the player interacts with the display, a short instruction screen shows up to introduce the gestures used.

Huge projection of the player with multiple musical instrument options help influence electronic music. The player feels fully in control of the interaction and transforms the energy into music.

Multiple players controlling different layers of the same music provides a collaborative aspect to the interaction.

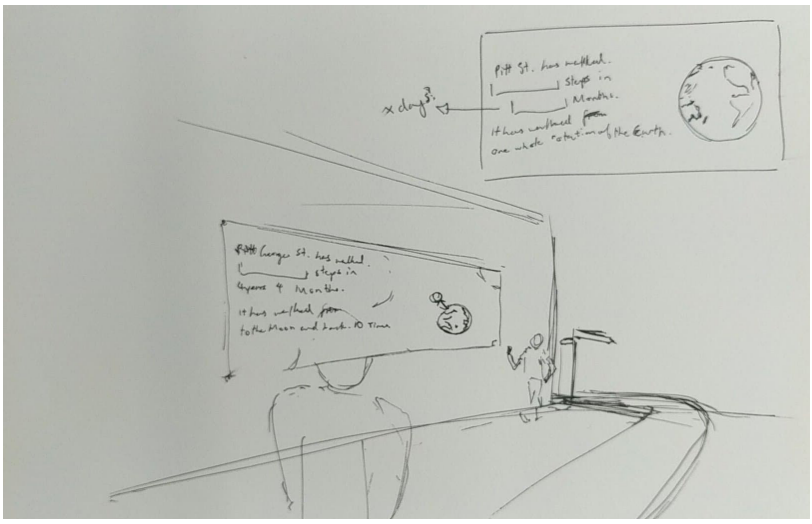
This leads to distributed foot density, and is how placemaking using music is utilised to lessen the foot traffic.

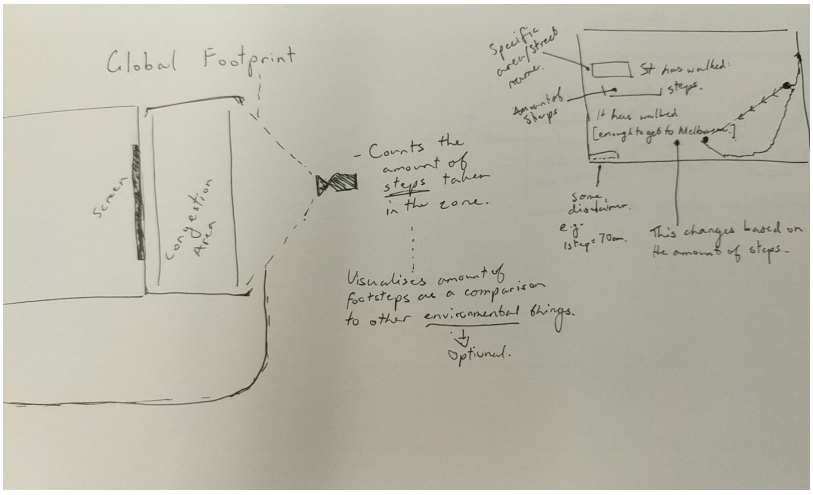
Concept 3

Global Footprint:

Global Footprint is a live, interactive information visualisation that calculates the number of footsteps in a specific area and compares it with traveling distance between different parts of the world/universe.

This concept utilises a way to funnel audiences through a long term interactive design. By creating an interactive information visualisation that changes over a long period of time, this concept would give a sense of familiarity to pedestrians as well as an opportunity to streamline flow by pulling away idle people. This then both solves issues of foot traffic whilst keeping the urban interaction creative and interesting.





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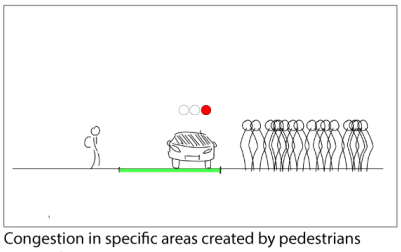
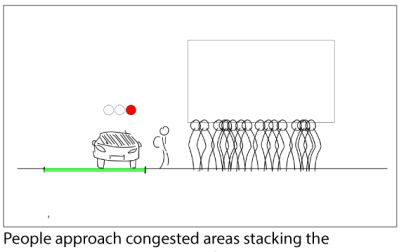
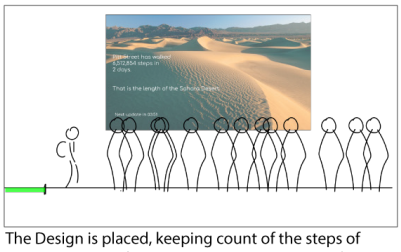


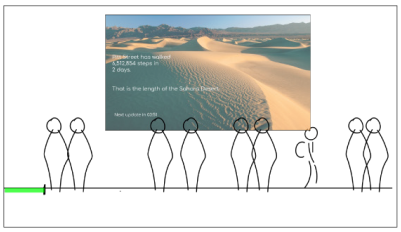
Congestion in specific areas created by pedestrians with different speed and people who loiter around Points of Interest.



People approach congested areas stacking the congestion and increasing difficulty getting to places within a busy city.

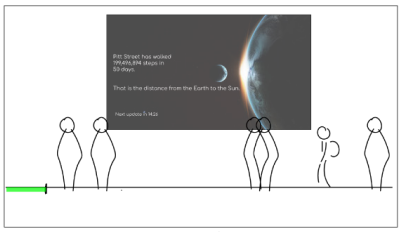


The Design is placed, keeping count of the steps of people in a specific area. This reduces audience funnel, but removes people who loiter.



The updating screen captures attention, and pedestrians are now aware of their steps being tracked and its comparison to things in the world.

Milestones are placed within the system to constantly change the screen when enough steps are taken. E.g. after 50 days, there are enough steps for this screen.



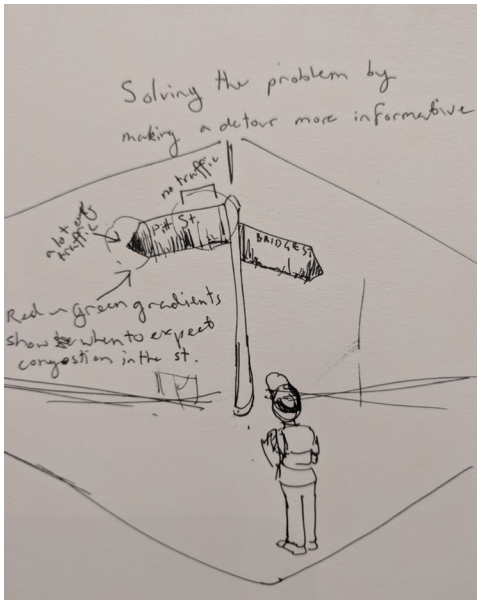
Pedestrians who spend a lot of time in the city are encouraged over time and also captures people to see if it has updated whilst moving congestion.

Additional Concepts:

Street Heat Sign:

The Street Heat Sign utilises problem solving through detour encouragement by creating a gradient map of the current pedestrian congestion in the specific directions people want to head. By just looking at the sign pedestrians will have information on exactly what part of that street is congested and can route accordingly.

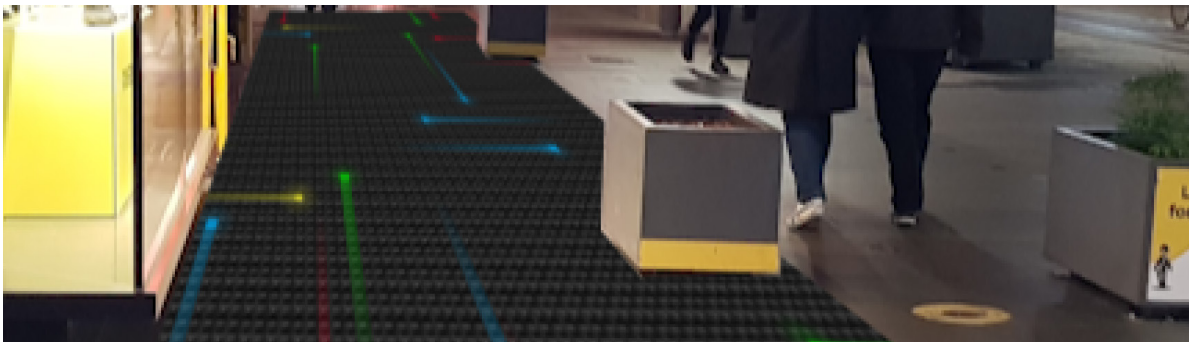
Although this removes a lot of the active interactivity in the design, it still utilises information gathered from pedestrians as data and presents it to people with specific needs and wants in routing around the city.



Pixel Grid Floor:

The Pixel Grid Floor concept depicts business/congestion within an area with a floor covering certain areas of a walkway/footpath. Congested points will produce a lot of coloured lights which spread out in a grid-based space.

Of the many factors that create foot traffic in specific areas, one pain point was people who stay idle around point of interest areas. The Pixel Grid Floor enables movement and interaction within that area, and by encouraging movement for more interaction, loitering and any idle waiting can be pulled towards the outside of the congestion.



Additional Concepts:

Seat Seeker:

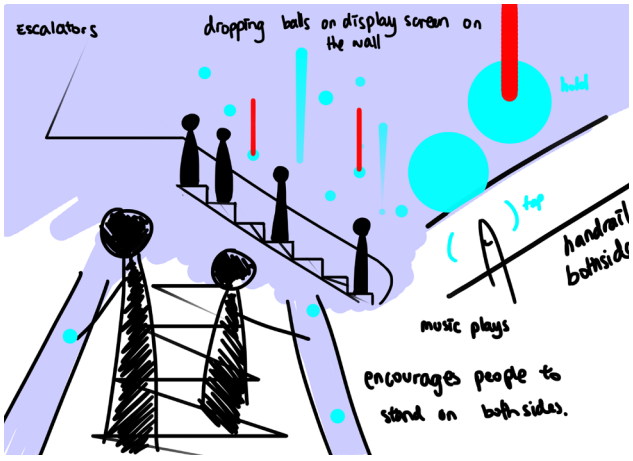
Interactive seats are a way to encourage people who stand still to take a seat next to the walkway near QVB light rail station to prevent them from obstructing pedestrian walkways.

The faces displayed through a digital screen will look inquisitively as people walk pass, but stare at and target people who stand still in one spot for too long. Once detecting a person sitting on it, the seat or the whole square block will lightly glow and the face will go to sleep as a sign of it's done it's job.

Escalator Handrail Tap:

Escalators are currently being used inefficiently due to cultural norms of splitting people who want to stand still and walk. This inefficiency becomes a major problem in terms of safety due to uneven distribution causing escalators to malfunction and collapse harming masses amount of people.

This design looks to prevent people from walking up the stairs and standing still on both sides through an interactive music making with all it's participants.



Hardware & Software Requirements

To be able to create these concepts with any sort of feasibility, we need to look at the hardware and software required. All of the concepts will utilise Adobe Suite for graphic design, DAW software for music. Some may utilise Java and Web technologies. They will also be running on a computer, using Windows and connected to the internet. For concepts with multiple parts or more mobile design, we may utilise Arduino for scripts and lighting control.

Emotions of the City: Emotion tracking API technology, There are many of these software on the market, however they are usually paid, meaning we'd need to pay for a subscription or per use fee for the product.
Two displays need to be mounted also, a smaller display for the user's face to be shown as their emotions are tracked, and a larger one to host the visualisation. The users face will be inputted via a camera that is also mounted to the display. The visualisation will need to be adaptive in real time, meaning the visualisation will need to be scripted to react to new inputs.

Musical Nexus: To track the users motion, a Kinect motion sensor will be used to get a full range of body tracking. The interaction will need to be displayed on a large scale, so using a projector will achieve this. Additionally speakers and sound output will be extremely important, so a multi channel speaker system will allow people to be immersed.

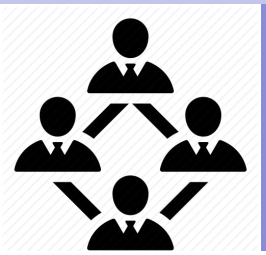
Urban Footprint: Projector or LED monitor to present the data, which is gathered through either a Kinect input or light sensors. If the project utilised light sensors, then the footpath would need to be lifted a little to install the sensors on the bottom, along with transparent flooring such as glass (a very small amount would be needed)

Seat Seeker: Display screen, camera to recognise people standing still for long periods of time. Scripts for idle/active face animation. LED

Heat Sign: Physical materials to create two (or more) signage systems, such as wood, Perspex or polymer and LED screens. Data will be received through Kinects in different areas.

Pixel Grid Floor: Equipment required for this to work will include perspex sheets and LED lights, as well as a pressure or light sensor to read stepping data.

Escalator Handrail Tap: Large display screen + flexible handrail length touch display screen.



Group Charter

Dom - Project Manager, Audio Design and Programming.
In charge of managing and delegation of the group and scripting/programming for the interaction of the product.

Daniel - Visual /Audio and Multimedia Design, Programmer.
In charge of developing visual or audio aspects of the interactive product

Ray - Graphic Design and Prototyping.
In charge of key graphic and asset design, as well as rapid prototyping for interfaces and design choices

Bose - Research and Visual Design.
In charge of additional research considerations, hardware and software requirements, and visual design of the brand/theme of the product.

Next Steps are to work towards some more low fidelity prototyping for our concepts to more realise their potential, and start to do user testing to understand how people respond to their design.

With this, we can work towards making a product that not only works towards our problem outlined in the brief, but fulfill and satisfies people in their urban environments.

Bibliography:

(2019). Retrieved 26 August 2019, from https://pdfs.semanticscholar.org/63fa/17549d43b0bbfd134fbf22e8ab44ac61651f.pdf
(2019). Retrieved 26 August 2019, from https://www.education.vic.gov.au/Documents/about/research/beyondrhetoric.pdf
(2019). Retrieved 26 August 2019, from http://www.engagementaustralia.org.au/uploads/universities_CE_2008_2010.pdf
(2019). Retrieved 26 August 2019, from https://www.bankrate.com/mortgages/homebuyers-surveyfebruary-2019/ https://www.attomdata.com/news/most-recent/attom-data-solutions-2019-
rental-affordability-report/
Betancourt, L. (2019). 10 Rules for Increasing Community Engagement. Retrieved 26 August 2019,
from https://mashable.com/2009/12/16/community-engagement/
Community Engagement, Participatory Planning and the City | Inner Sydney Voice Magazine.
(2019). Retrieved 26 August 2019, from https://innersydneyvoice.org.au/magazine/community-engagement-participatory-planning-and-the-city/
Community engagement: 6 tips to engage your community. (2019). Retrieved 26 August 2019, from
https://www.i-scoop.eu/community-engagement-6-tips-engage-community/
Doerrfeld, B. (2019). 20+ Emotion Recognition APIs That Will Leave You Impressed, and Concerned | Nordic APIs |. Retrieved 26 August 2019, from https://nordicapis.com/20-emotion-recognition-apis-that-will-leave-you-impressed-and-concerned/
Engaging Your Community: The Do's - dummies. (2019). Retrieved 26 August 2019, from https://
www.dummies.com/social-media/engaging-your-community-the-dos/
Is Seeing A City's Emotions A Good Thing?. (2019). Retrieved 26 August 2019, from https://blog.deliveringhappiness.com/blog/is-seeing-a-citys-emotion-a-good-thing
Simon, H. (2019). What does a walkable street look like? | AmericaWalks. Retrieved 26 August
2019, from https://americawalks.org/what-does-a-walkable-street-look-like/
Strategies of Community Engagement: Tactical Urbanism - Bang The Table. (2019). Retrieved 26
August 2019, from https://www.bangthetable.com/blog/strategies-of-communityengagement-tactical-urbanism/
The City and Emotion. (2019). Retrieved 26 August 2019, from https://affectlab.org/category/thecity-and-emotion/
The Emotional City - the future of the (smart) city from an affective point of view. (2019). Retrieved 26 August 2019, from https://www.design-emotion.com/2013/08/12/the-emotionalcity-the-future-of-the-smart-city-from-an-affective-point-of-view/
Why walkable cities are good for the economy, according to a city planner. (2019). Retrieved 26
August 2019, from https://www.vox.com/the-goods/2018/10/26/18025000/walkable-city-walk-score-economy

(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/262216705_Designing_collaborative_musical_experiences_for_broad_audiences
(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/311168752_Shared_Interactive_Music_Experiences_in_Public_Spaces_User_Engagement_and_Motivations
(2019). Retrieved 26 August 2019, from https://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0013/233320/Walking_Strategy_FINAL_for_web.pdf
(2019). Retrieved 26 August 2019, from https://hoyne.com.au/news/the-benefits-of-placemaking-inurban-design/
Book Review: NACTO Global Street Design Guide. (2019). Retrieved 26 August 2019, from https://dirt.asla.org/2017/01/25/book-review-nacto-global-street-design-guide/
BSY to allot portfolios on Monday, d., & Ex-foreign secy slams KIA toilets, f. (2019). Vintage look for Amritsar City. Retrieved 26 August 2019, from https://www.deccanherald.com/content/583306/vintage-look-amritsar-city.html
How far will we walk to go somewhere? It depends. (2019). Retrieved 26 August 2019, from https://kaidbenfieldarchive.com/20120730-how-far-will-we-walk-to-go-somewhere-itdepends.html
Public art - City of Sydney. (2019). Retrieved 26 August 2019, from https://www.cityofsydney.nsw.gov.au/explore/arts-and-culture/public-art
Religion and Urbanism. (2019). Retrieved 26 August 2019, from https://books.google.com.au/books?id=wQUBCwAAQBAJ&pg=PA78&lpg=PA78&dq=new+look+Golden+Temple%27s+document&source=bl&ots=sD7a4NKL0b&sig=ACfU3U2a5E9D5oito9NlX-kx7-3J7e5Ymw&hl=en&sa=X&ved=2ahUKEwig_vWRk5jkAhUbfisKHRXKBr4Q6AEwFnoECAcQAQ#v=onepage&q=new%20look%20Golden%20Temple's%20document&f=false
Signing into eresources, The University of Sydney Library. (2019). Retrieved 26 August 2019, from https://journals-sagepub-com.ezproxy1.library.usyd.edu.au/doi/pdf/10.1177/2399808317710466
Simon, H. (2019). What does a walkable street look like? | AmericaWalks. Retrieved 26 August 2019, from https://americawalks.org/what-does-a-walkable-street-look-like/
Sydney Urban Mobility Index City Data - HERE. (2019). Retrieved 26 August 2019, from https://urbanmobilityindex.here.com/city/sydney/
Sydney walkers - City of Sydney. (2019). Retrieved 26 August 2019, from https://www.cityofsydney.nsw.gov.au/explore/getting-around/walking/sydney-walkers
TRIANGLED - Immersive Light Installation on Student Show. (2019). Retrieved 26 August 2019, from http://www.studentshow.com/gallery/80517311/TRIANGLED-Immersive-LightInstallation
Walkability. (2019). Retrieved 26 August 2019, from https://en.wikipedia.org/wiki/Walkability

(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/284621160_Shared_affective_motion_experience_SAME_and_creative_interactive_music_therapy
(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/327443139_Musical_Children_Engaging_Children_in_Musical_Experiences
(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/301463396_Moodplay_an_interactive_mood-based_musical_experience http://delivery.acm.org.ezproxy1.library.usyd.edu.au/10.1145/2820000/2814922/a3- barthet.pdf?ip=129.78.139.29&id=2814922&acc=ACTIVE%20SERVICE&key=65D80644F295BC0D%2
E87D9DBB8EF508751%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1566213549_c5b86909aeac8fa80f2542bdbfed37c8
(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/320547414_Singing_the_body_electric_-_Understanding_the_role_of_embodiment_in_performing_and_composing_interactive_mu
sic
(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/224061497_VIM_Vision_for_Interactive_Music
(2019). Retrieved 26 August 2019, from https://www.researchgate.net/publication/332456851_Virtual_guitar_Using_realtime_finger_tracking_for_musical_instruments
Moodplay: an interactive mood-based musical experience. (2019). Retrieved 26 August 2019, from
https://www.youtube.com/watch?v=O-qsvduPFlE