

The Design Report

Dream Design Duo Duo

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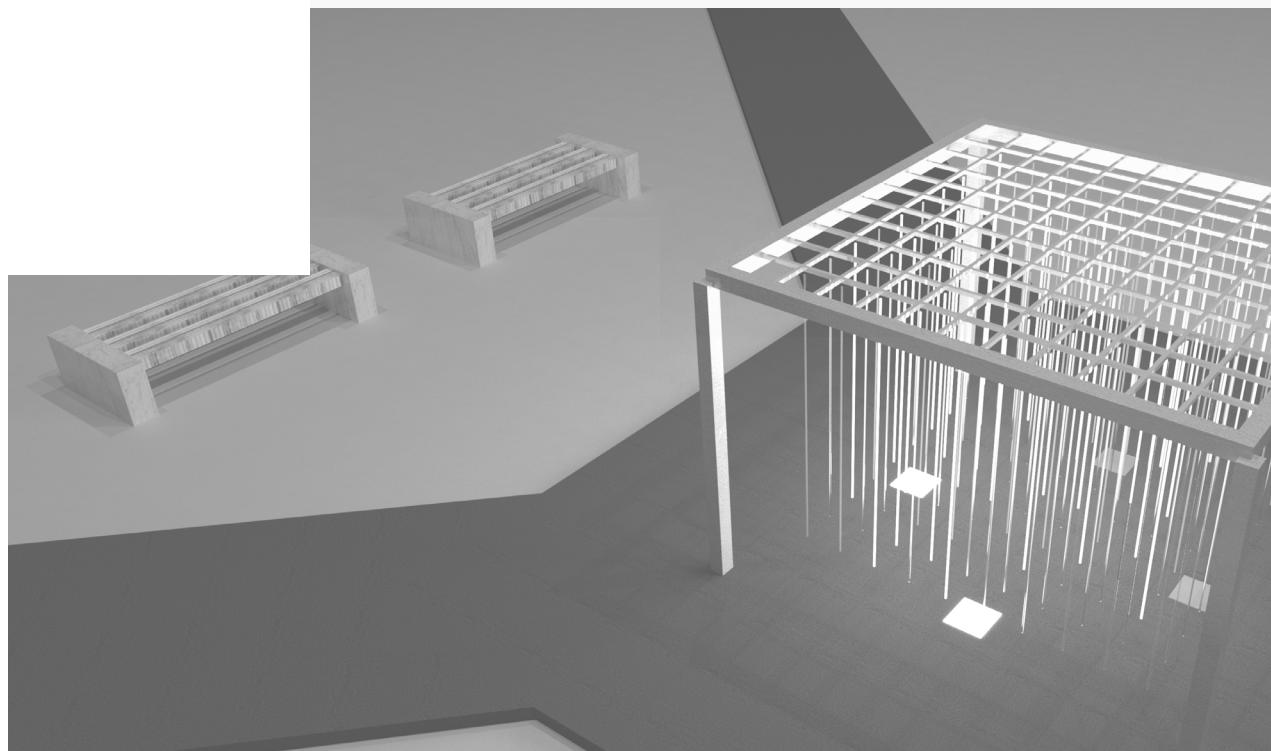
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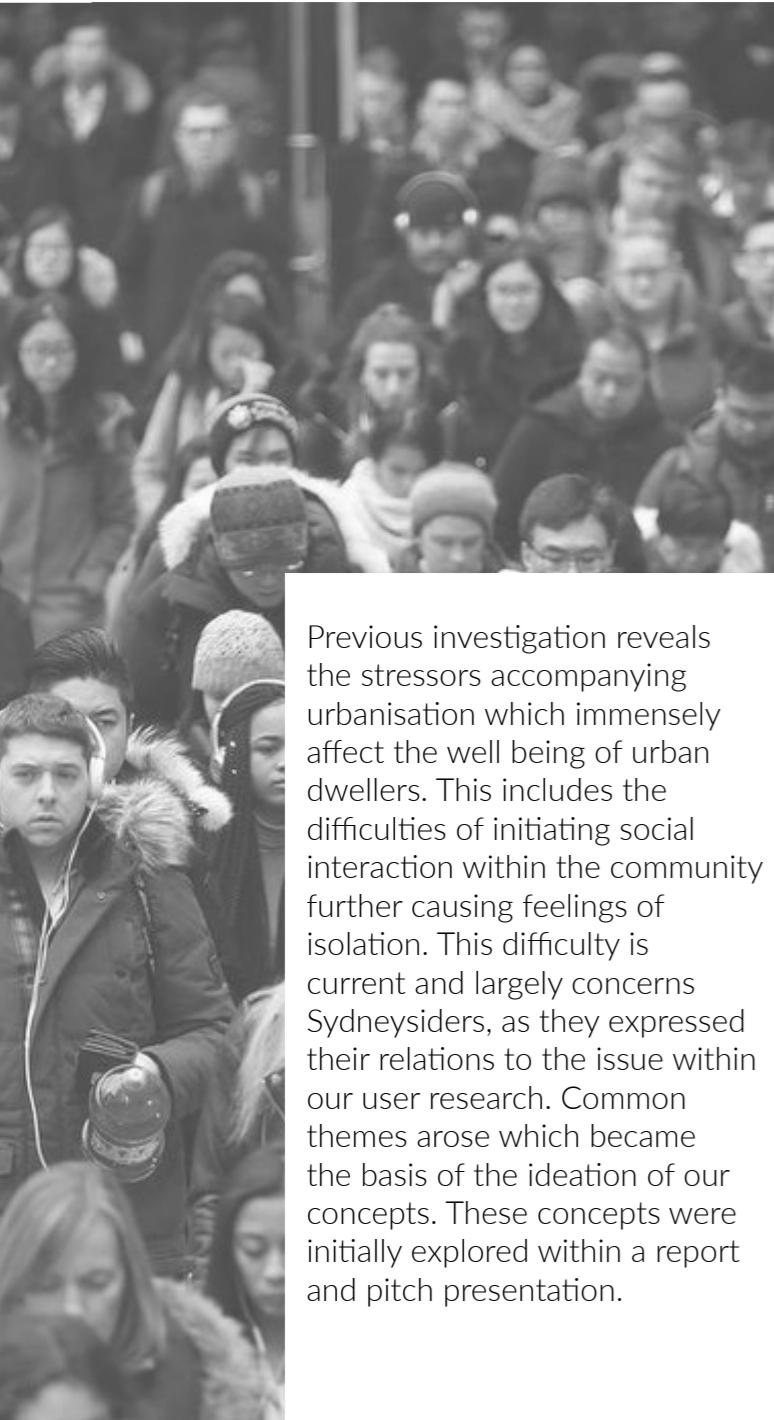
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The Project



Previous investigation reveals the stressors accompanying urbanisation which immensely affect the well being of urban dwellers. This includes the difficulties of initiating social interaction within the community further causing feelings of isolation. This difficulty is current and largely concerns Sydneysiders, as they expressed their relations to the issue within our user research. Common themes arose which became the basis of the ideation of our concepts. These concepts were initially explored within a report and pitch presentation.

Therefore, the next investigation aims to answer the issue of isolation by testing three concepts explored. This process will include the development and implementation of low-fidelity prototypes ready for user testing. Alongside this, the sociability of urban dwellers are put to the test. Their capability to interact with the prototype and with each other are evaluated. Methods of observation, interviews and surveys will support the collection of data for the analysis stage. The analysis of data will allow the iteration of the most successful concept. This will include a thorough evaluation of the overall scope of the concept, development of a mid-fidelity prototype and an implementation plan for high-fidelity rendering in the future. Therefore, this process will bring us closer to effectively encouraging individuals to connect and creating a sense of belonging in the urban community as the approach of utilising Sydney urban public spaces stays within our goal.

The Problem

Sydney urban dwellers find it difficult to initiate social interaction and the courage to connect with others in the community, causing feelings of isolation.

Project Goal

This project seeks to encourage sociability and create a sense of belonging to the urban community. Utilising Sydney urban public places, we want to foster new relationships and build courage in urban dwellers to connect with others.



Pre Evaluation

Narrowing down 4 concepts

For the purpose of evaluating the initial four design concepts and choosing the three most responsive to the brief, our team developed a decision matrix based on the Pugh Method. The design criteria was generated to reflect the major aspects of the brief which was to create an interactive product that encourages sociability in Sydney urban public places and builds courage in people to connect with others.

Some general criteria such as physicality, usability and feasibility were also included as necessary characteristics of a successful design. After an objective evaluation process by each team member, the average scores were calculated.

	Coffee Breaker	Creature of Habit	Kinetic Aurora	Sonicscape
Building courage in urban dwellers to connect	12	12	11	11
Creating a sense of belonging to the community	8	10	7	9
Encouraging sociability	11	11	11	11
Comfortable to use (interactive, inclusive)	11	13	15	15
Inclusion of diverse sensory elements	4	9	10	11
Utilisation of Sydney urban public places	8	14	16	16
Interactivity	14	16	16	15
Use of new technology	12	13	11	13
Visitors enjoyment	14	11	12	12
Feasibility	12	14	9	7
Encouraging social interactions	13	12	12	14
Intuitiveness and ease of use	11	14	11	10
Aesthetic pleasure	10	15	15	14
Inclusivity	9	12	12	12
Total score	149	176	168	170

Rating scale: 7 = Doesn't meet criterion, 10 = Somewhat meets criterion, 13 = Meets criterion, 16 = Slightly exceeds

The three Chosen Concepts for Testing that best fit these criteria were

**CREATURE OF HABIT,
KINETIC AURORA
AND SONICSCAPE**

leaving out the 'Coffee Breaker' as it satisfied the brief the least.

Approach

Description of Iterations

In order to evaluate each of these concepts, our team conducted an extensive process of prototyping, deployment and data analysis. We developed three distinct low fidelity prototypes which after a number of iterations were tested with the target audience. The several data sets collected during deployment were then analysed and combined together for the purpose of recording the key findings. During this process we first developed an implementation plan in order to:

Define Context

- People
- Place
- Physical media

Define Objectives

- Social Interactions
- Collaboration through play
- Physical Engagement

Identify Elements

- Location
- Materials
- Equipment
- Scale

Then we moved onto the prototype development phase. With the materials gathered, we built small scale prototypes that would allow testing of the main interactions in a very analogous manner. During a pilot testing session, we were able to identify the flaws in interaction process and in data collection questions. Based on the pilot testing

we iterated the prototypes slightly to fix those issues.

This lead us onto the conduction of usability testing sessions. Our team allocated a full day for testing each concept with at least four users. Involving an even amount of users is imperative within these sessions as users will interact in pairs. Therefore, the successful pilot tested prototypes were set up for users to explore and interact. Simultaneously, this process allowed the conduction of various research methodologies such as:

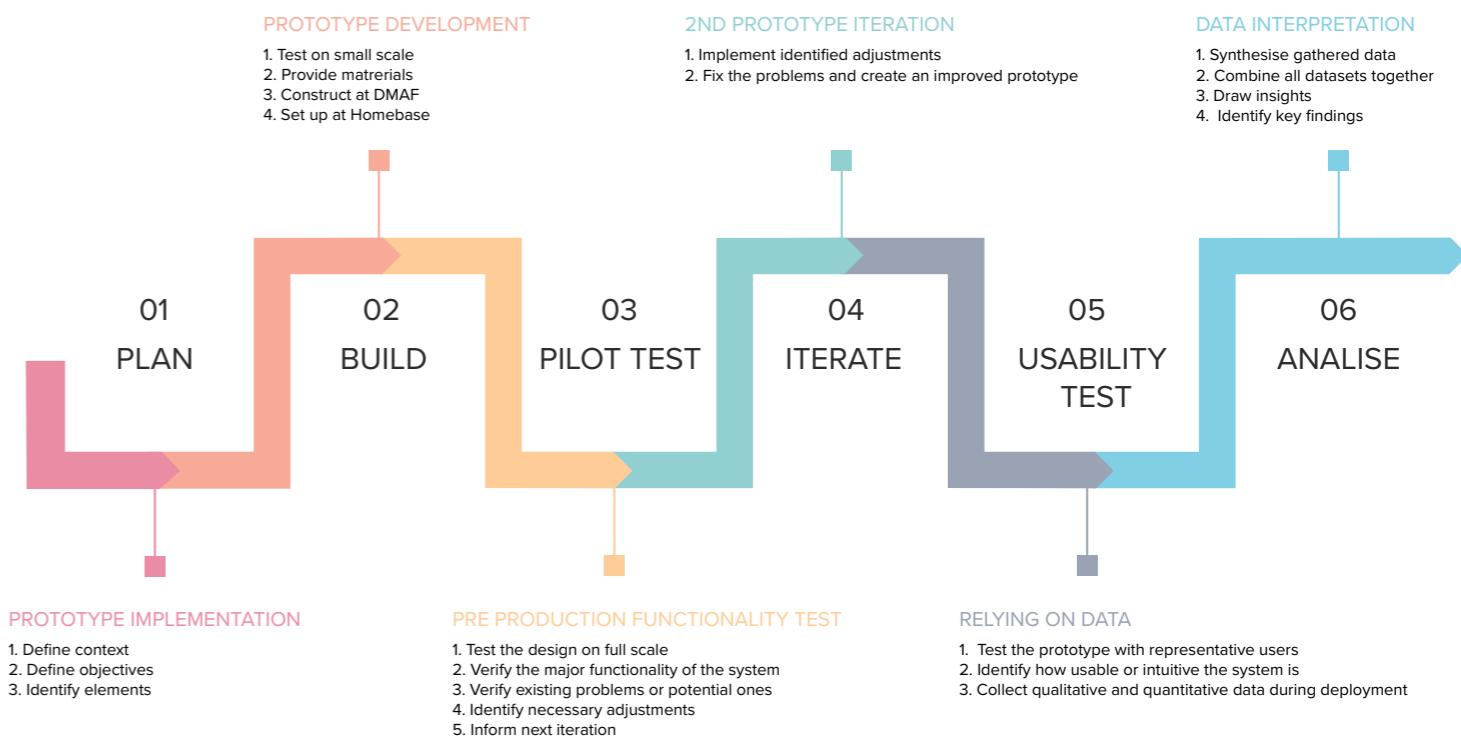
- Think-aloud protocol
- Interviews
- Contextual Observations
- Surveys

These methods are essential for the collection of user insights. This phase released the necessary findings needed to be gathered and evaluated in the analysis.

Therefore, an extensive sum of data findings were collated and analysed. This process included the combination of data sets including quantitative and qualitative data in order to support key findings outlined. These key insights were initially drawn upon with affinity diagramming and further lifted throughout thematic analysis.

The Process of Concept Evaluation

A description of the design iterations



Purpose of Data Collection

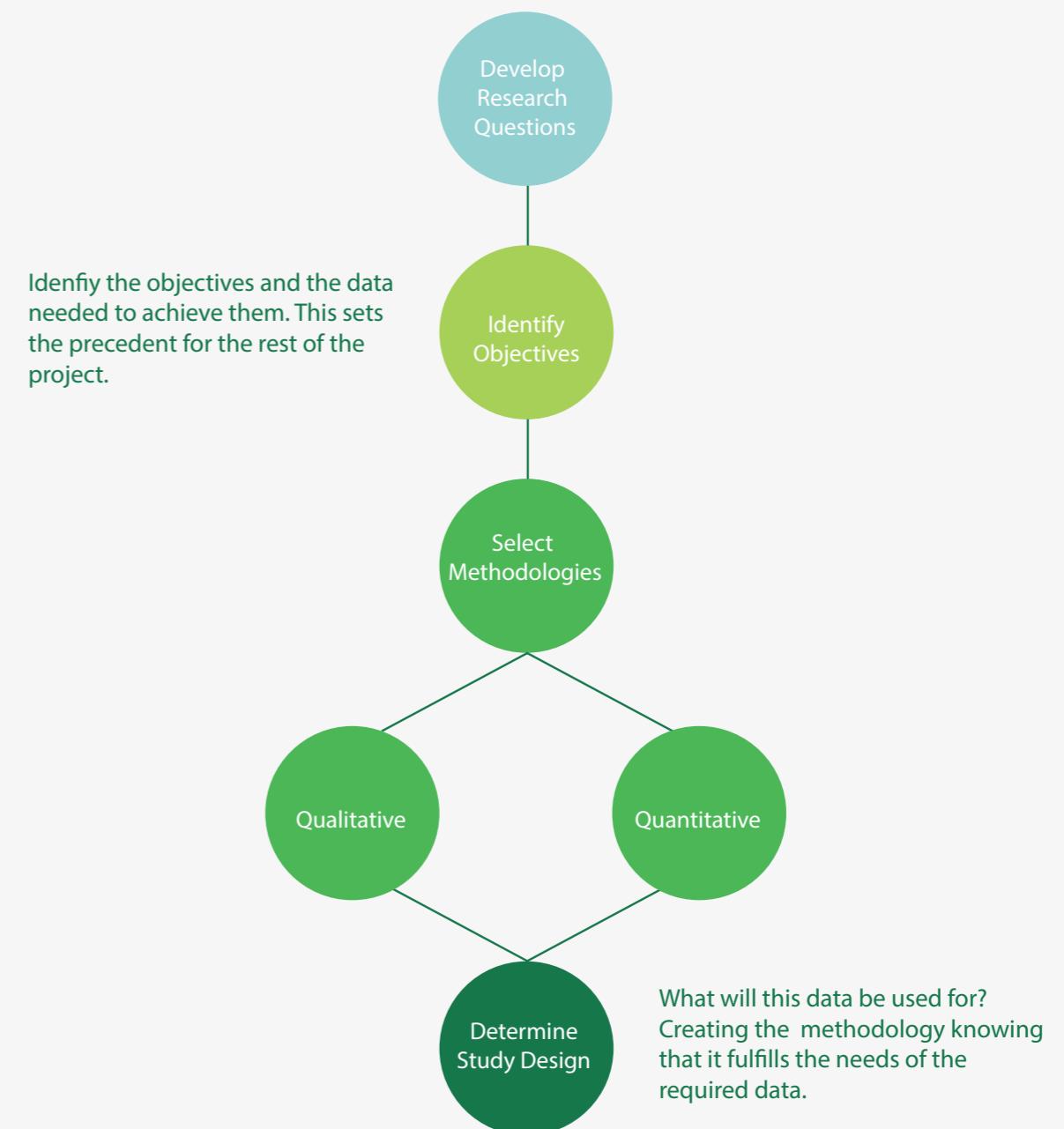
The Collected Data and the Rationale

As an integral part of our design iteration process, we raised curiosity to question and learn more from our target users. We wanted to learn more about the impact and local impressions of our concepts as well as how people will influence the implemented interactions. In order to gather and measure information we were interested in, we commenced a data collection process. A process which would allow us to answer our research questions, test hypotheses, and evaluate outcomes.

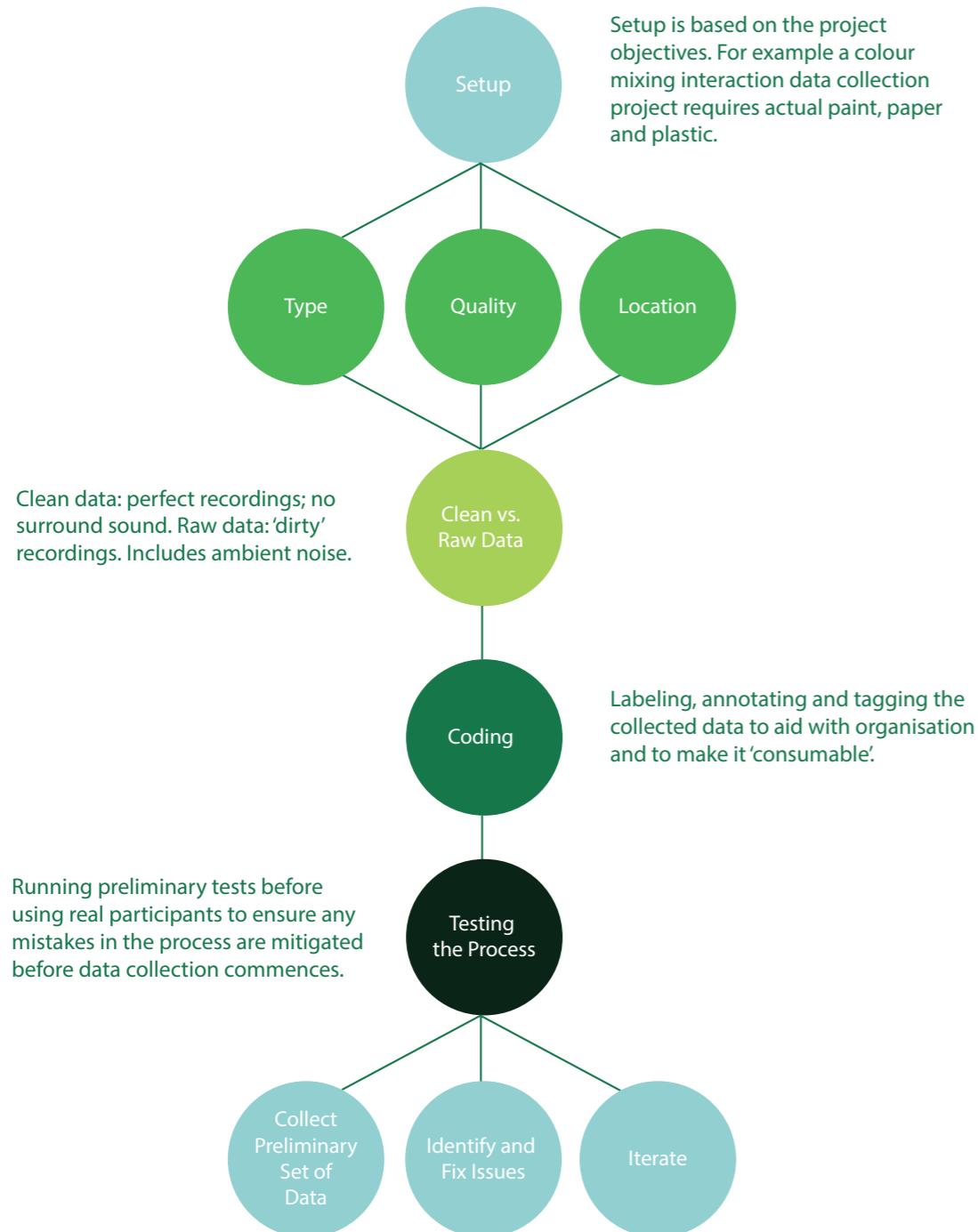
Furthermore the data would enable us to:

- Search for answers and resolutions
- Come up with answers in the form of useful information
- Inform evidence-based decision-making

In order to perform data collection, we went through the process of developing research questions, identifying objectives, selecting appropriate methodologies and determining the study design. Having the problem in focus, we defined the type of data we needed for the evaluation of each concept.



Data Collection Process



The Data Interpretation

The interpretation of data within this research is of most concern as the sum of datasets were quite large. Firstly, the 12 interview recordings were transcribed and coded. Alongside this, key points made from behavioural observations were noted. Therefore this qualitative information was able to be evaluated with the use of affinity diagramming. As coded statements were able to be grouped and clustered into themes.

Furthermore, these key findings were interpreted into a thematic analysis table identifying the key themes to each finding. This was the opportunity for quantitative data to be combined within these key themes. For example, the theme of 'correct mental model' goes in hand with the recorded time taken to complete a task as it identifies the user's acknowledgement of the product's function/use.

Therefore, the interpretation of our findings largely involved the combination of multiple data sources as well as supporting several data sources together with common themes. This approach constructs the future iteration of a concept, that embodies a developed adaptation of the data collection.

Methods

Methodologies

A mixture of methodologies were utilised throughout the conduction of user testing in order to gain a deep insight on the user's experience for each concept. This consisted of qualitative and quantitative research methods which consisted of the following:



Qualitative



Interviews



Contextual Observations



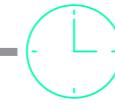
Think Aloud



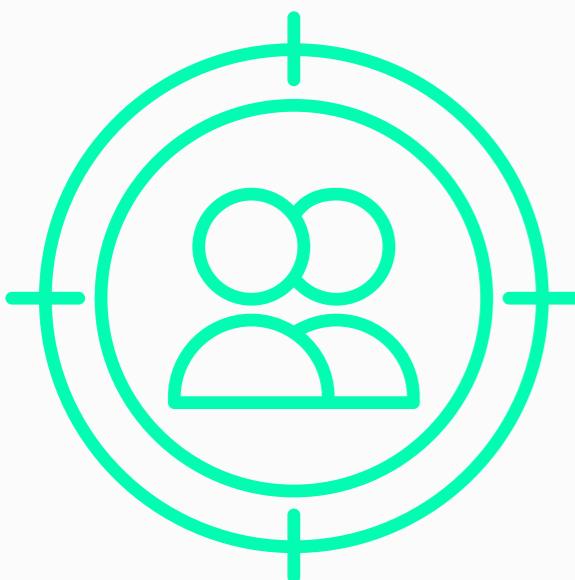
Quantitative



Surveys



Contextual Observations



Target Audience

In regards to user testing, we targeted urban dwellers as the participants for these sessions as our project goal concerns this demographic. In specific, persons who frequent the Sydney CBD such as university students and those who are employed in an urban area. Each concept was tested by 4 users in which they expressed their overall opinion and suggestions for improvement. These were taken into account in the process of data analysis. Therefore, the information these participants provided are vital to the iteration towards our final design concept.

Qualitative Research Methodology



Think Aloud

When testing a product or service, the think-aloud method allows users to verbalise what they are thinking towards performing a task. Therefore in the usability testing sessions, users expressed their thought process throughout the entirety of the sessions. The identification of their mental model of the product also became evident as users explored the functions of features in their discovery phase. This was evident in one Sonicscape session where a user states

"What is this layout? Is it like a sun or something? What does it do?"

This highlighted a key theme within Sonicscape as most users had an incorrect mental model of the product. At the same time, the think-aloud method leads participants to a more natural conversation when describing their experience in the post-interaction interview.



Contextual Observations

In a qualitative perspective, contextual observations was conducted in order to study the user's behaviour in the context of the product. This includes taking note of participant's changes in facial expressions, actions/gestures and physical posture towards the specific tasks given. These actions were recorded throughout via note taking on a prepared sheet and video recording during sessions.

Therefore, this method was heavily important within Kinetic Aurora specifically, as a large portion of the product's use is through physical effort. In this situation, users were jumping, stomping around the space of the product in order to trigger its function. We wanted to investigate the extent users will go to in this concept as well as the feeling it provided. Overall, users were filled with enjoyment and satisfaction as their physical efforts released a pleasing outcome with the colours exposed. Therefore, we developed a better understanding between the natural relationship between user and product.

Structured interviews were conducted post-interaction with the product. This allowed users to reflect on their experience and provide feedback about each concept. The structure of the interviews was prepared beforehand in order to investigate specific features of the concepts explored. A laddering method of '5 Whys' was used throughout the interview as well, to help uncover the roots of the user's initial answers.

This method also allowed our team to empathise with the users we are designing for, as we develop a further deep understanding about their experience. Giving us the opportunity to interpret these findings into more meaningful interactions.

Quantitative Research Methodology



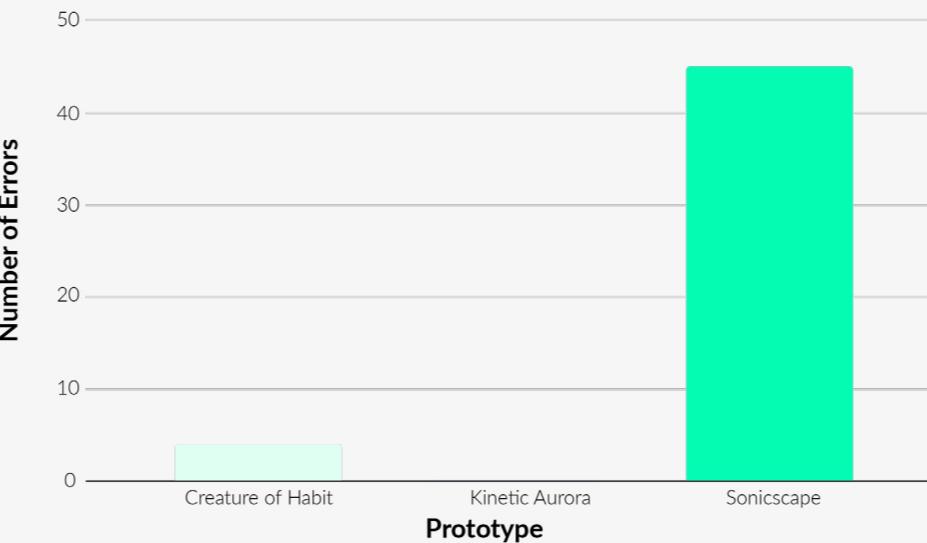
Contextual Observations

In terms of a quantitative approach, observations were utilised to measure data revealed about the functionality of each concept.

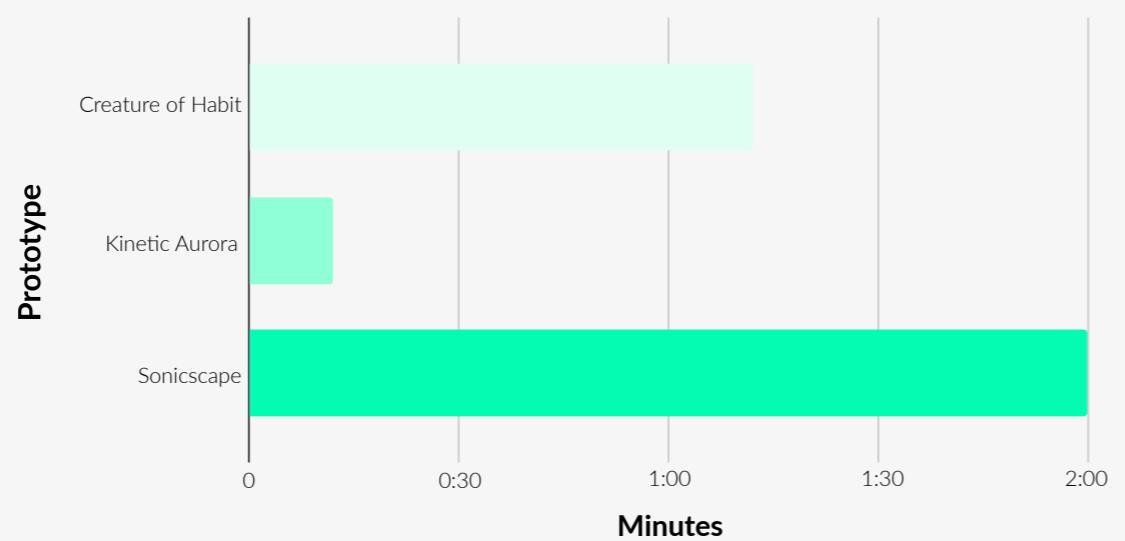
This includes the amount of errors made by users, the duration of sessions and time taken to complete a task. These factors contribute to the overall usability of the concepts explored and exposes the quality of the interactions being tested. In relation to this, Sonicscape in particular had distinct quantitative data measurements largely due to the confusion caused by an incorrect mental model within users. This resulted in an average time of 2 minutes to complete tasks which is extremely long and also resulted in the need for external input from the director of the sessions.

The concept also totalled in 45 errors which supports the idea of unclear application of affordances. These distinct measurements allow a goal for our team to work towards and target specific design applications. In saying this, qualitative observation clearly supports the key factors vital for the betterment of the user's experience.

Average Time Taken to Complete Task



Total Errors Made



4

Interactions on Average for Creature of Habit

5

Interactions on Average for Kinetic Aurora

8

Interactions on Average for Sonicscape



Surveys

SUS (system usability scale) surveys were distributed to be completed by participants post-interaction. This survey includes essential criteria for the application of a successful and efficient conceptual model. Specifically investigating the complexity, function and inconsistencies within each product.

This scoring system also clarifies the ease of use for each concept in which Kinetic Aurora is identified as one with larger scores of 4.5. This allows us to not only establish a correct mental model of this product within users but also gives us the opportunity to determine its overall complexity and not become simple or unchallenging for users. In comparison to Creature of Habit where users scored an average of 4.3 for how well the functions were integrated. This also highlights the 4.0 scored for these concepts within the criteria of user confidence when using the product. While, Sonicscape resulted in overall neutral feelings from users with scores ranging from 1.8 - 3.3. Therefore, the SUS survey allows the detection of each concept's strengths and drawbacks. A detailed depiction of this scale will be discussed further with the chosen concept in which our team and actively work towards in the development of an iteration.



I found the system unnecessarily complex.

2.8 2.0 1.5

I thought the system was easy to use.

3.3 4.0 4.5

I would need the support of a technical person to be able to use this system.

1.8 1.3 1.5

I found the various functions in this system were well integrated.

3.0 4.0 3.8

I thought there was too much inconsistency in this system.

2.5 2.3 2.0

I felt very confident using the system.

2.8 4.3 4.3

LOW-FIDELITY PROTOTYPES

Lo-fi prototyping

The development of the low-fidelity prototypes consisted of a discussion among our team about the following.

- What interactions are the prototypes testing?
- How will we make these prototypes?
- What materials are needed?
- Where are we going to set it up?
- Considering our time frame

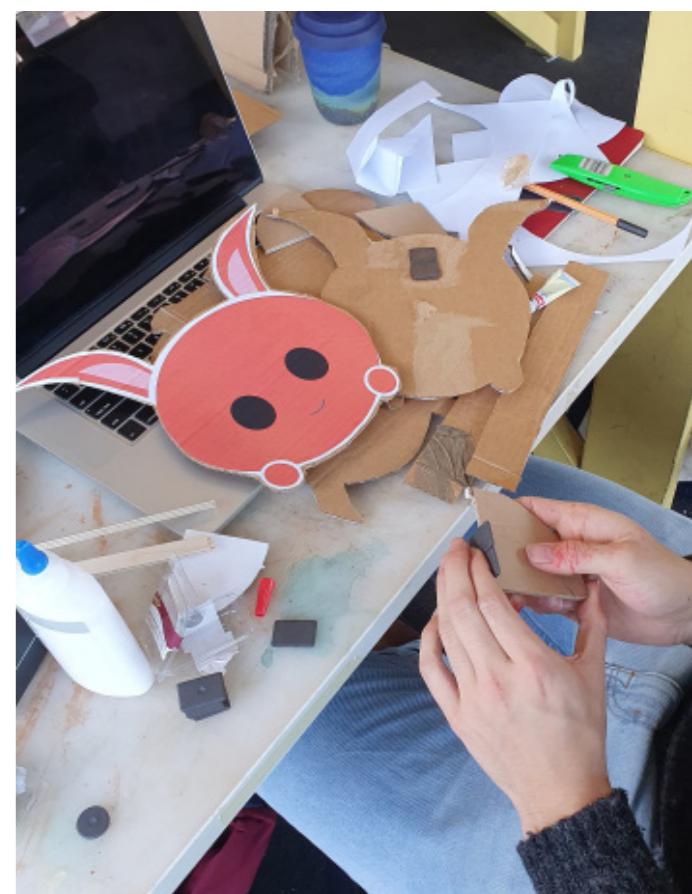
Therefore, this process began as each concept was evaluated for its main purpose and how its function/interaction will be portrayed. The acquirement for materials needed for each concept were delegated between team members as we considered resourcing and cost. Furthermore, we selected specific areas in the Wilkinson building for the set up of each concept, considering the amount of space needed, lighting and possible mess made. These factors were all considered within our project timeline in order to allow time between the creation and pilot testing of each prototype.

Creature of Habit

The development of this concept's low-fidelity prototype emerged from the idea of a 'screen' with 'floating creatures'. This idea imitates the Creature of Habit's main interaction of kinect projection of animations on a wall. Therefore, to implement this idea with accessible materials, our team discussed this prototype will need materials of a bedsheets and wooden frame for the 'screen'. And, cardboard cutouts with attached magnets of illustrated characters for the 'floating creatures'.



The wooden frame was created within the DMAF workshop, with great help from professionals. Therefore, a 2.5mx1.5m wooden frame was created for the bedsheet to be wrapped around. This became our 'screen'.



This prototype required allocated time to be made as we developed a solid frame in DMAF with safety and precaution. This frame also allowed the quality of our prototype to become quite solid rather than just hanging a sheet, as the sheet was able to be stretched and stapled in place for the magnetic cutouts.

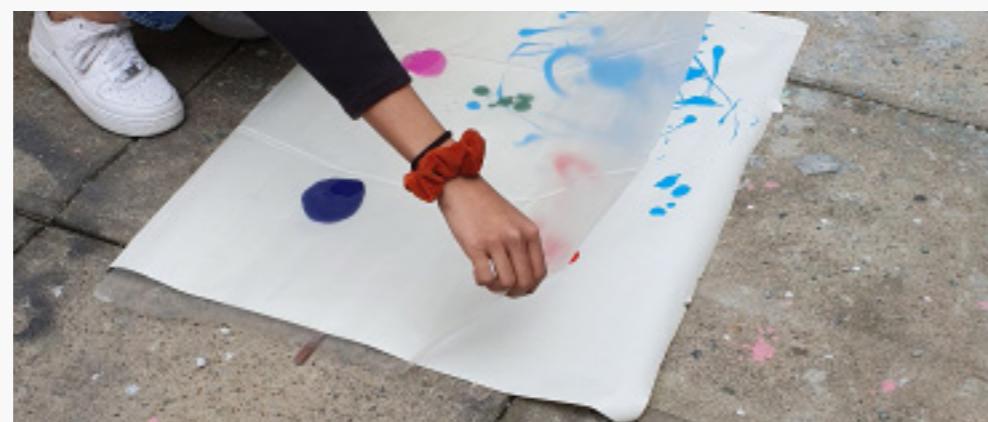
There was no significant iteration besides changing the strength of the magnets behind each cutout as we found them to easily fall off the screen if moved hastily. This prototype became ready for user testing as we re-tested the strength and movement of the cutouts across the sheet screen.

Building Process

The 'floating creatures' consisted of making the characters on illustrator, printing and pasting them cardboard. Magnets were also attached to the back of each cutout in order to create the illusion that they are moving and floating across the 'screen' seamlessly.

Kinetic Aurora

The development of Kinetic Aurora's low-fidelity prototype intends to replicate the interaction of mixing colour through the physical effort of participants, specifically using the pressure of their feet. Therefore, we considered projecting a mixture of coloured flashlights following the user's feet but felt that this did not encapsulate the concept's entire interaction. Physical input and the pressure that come from user is an essential interaction within the function and feedback of Kinetic Aurora. Therefore, our team concluded with using layers of plastic drop sheets, paint and butcher's paper. This will allow live feedback and include physical output as users can step and paint will spread accordingly. The space chosen to set up this prototype was within the courtyard of the Wilkinson building, taking into account the possible mess that it can produce.



Therefore, the order became: plastic, paint, butcher's paper, plastic. This order was evidently more effective as the paint is initially hidden from the user's vision in which they can now develop curiosity and discovery towards the product. Although, as we stepped, stomped and jumped on this prototype, it was quite difficult to release a great amount of paint and required substantial physical effort.



Therefore, a further iteration of the prototype included slits within the layer of butcher's paper. This allowed the paint to successfully seep through and be strongly portrayed across the surface provided. This stage of the prototype became ready for user testing.

Building Process

Firstly, we laid a plastic drop sheet of 2mx2m size with butchers paper on top of this, then puddles of paint and then another layer of plastic. Although, as we pilot tested this prototype, we found it did not communicate the concept's interaction effectively as the paint is exposed before users even step on.

Building Process



Therefore, we resourced copyright free sound clips available for the portrayal of sound. This is to replicate the sound triggered, through manual control. This included an exploration of sound recordings which we played through our computer and decided to execute with a range of synth noises. This was found best pleasing to the ear rather than playing fierce or extremely pitched sounds.

Furthermore, the lights were specifically laid out to resonate the initial vision of the concept which was a circle/ring with 8 spikes. The lights are meant to demonstrate sensitive to the sound which we controlled through the switches on the powerboard.

There were minor iterations toward this concept as we completed our pilot testing sessions. We moved the set up from homebase to the open walkway in level 1 instead. This area is found more suitable for testing as it is darker in lighting and is a more quiet/less disrupted space.

We also opted to play the sound through a speaker instead in order to better demonstrate the low and high volume ranges that is controlled through the proximity of our users. Therefore, this prototype became ready for user testing.



Sonicscape's low-fidelity prototype aims to demonstrate the gesture based sound and light interaction of the concept. Therefore, our team premeditated the wizard of oz approach with this prototype as we aim to portray the trigger of sound and light through user's actions. We also considered the set up for this prototype as we needed a darker and quiet space in order for the sounds and light to be heard and seen clearly by our participants.

Findings

Creature of Habit

The user testing sessions identified the importance of encouraging & supportive feedback within Creature of Habit. This allowed users to complete tasks given efficiently and alongside this, encouraged them to interact with each other.

The tasks given were completed in under a minute with an average of 5 collaborative interactions recorded throughout observation. Furthermore, the product's conceptual appeal was favoured by users due to the large build and playful/exploratory nature it presents with a user even describing features as "cute" and "draws my attention". Although, this painted a different picture to other users that mistook the use of some features of the product and its overall target audience where 2 - 4 minor errors were made.

These concerns depict an incorrect mental model within users, in which increasing user control can diminish unnecessary affordances.

Increasing the breadth of these features will also improve the collaborative aspect required and create freedom within the visual style; achieving a better user experience. This supports the user's desire for a more meaningful interaction which was largely indicated by the suggestive expressions of users. This was seen within the observation data, many users attempted to trigger the function by combining hand gestures, rings and creatures together. Their actions throughout the sessions communicated the potential in repurposing existing features to better their partner involvement.



Encouraging Feedback



32 Secs Taken for Tasks on Average
"When I touched the screen obviously there was some sort of response"

Incorrect Mental Model



4 Errors Were Made by Users
"I wasn't sure if I was supposed to interact with the characters or...just using my hands"

Desire for More Meaningful Interactions



4 Interactions Observed on Average
"Is that the purpose? Just to create a creature?" "What else can I do with them really?"

Conceptual Appeal



"It's very big, noticeable, draws my attention"
Users found creatures cute

Kinetic Aurora

The user testing sessions identified the user's enjoyment within the physical element of Kinetic Aurora. This was revealed in user interviews, where participants described that they enjoyed 'simple action and response'. This was due to the concept's allowance for physical input such as step, jump and stomp in which feedback was received in the form of a colourful display before their eyes. Another theme revealed was the user's effortless understanding of a correct mental model when interacting with the product. That is, the size and shape of the product indicated that there was a perceivable affordance for the

floor panels to be jumped on. A user mentioned that "from the way that the blocks were setup, I could guess I was going to have to interact with the surface with my feet". Due to the presence of this affordance, 0 errors were made throughout testing indicating that users constructed a mental model that was appropriate in order to interact correctly with the product. Furthermore, the product's conceptual appeal was favoured by users, where they mentioned that they genuinely enjoyed the playful and creative nature of mixing colours together on a canvas.

Conversely however, it was found that the users felt as though the concept was somewhat oversimplified and unchallenging. This was evident in the average time taken by users to complete tasks, where the average interaction time for both tasks was only 20 seconds long. Furthermore, participants mentioned that the tasks needed to be "a little more complex", clearly demonstrating that the conceptual model was far too simplified. Also, our observations uncovered that users seemed to complete the two tasks assigned to them simultaneously, indicating that the breadth of tasks needed to be increased further. In addition to this, the scope of

interactions available to users needed to be increased as a pattern emerged where the participants often felt hesitant to interact with the product due to its fragile appearance. Together, these two findings contributed to a major theme where users encountered severe obstacles preventing enjoyment. Most significantly, the research uncovered that collaborative aspects were missing from the experience altogether. The users failed in both tests to work together to achieve the task of creating new colours on the floor canvas. This was indicative from the user interviews, where a participant

mentioned that they felt as though "they didn't have to interact with people directly, only with what they made". Furthermore, data shows that the first testing pair indirectly interacted only 3 times, whilst the second testing pair interacted a total of 6 times - but only after creating their own colours.



Missing Collaboration



"You don't have to interact with people directly, but interact with what they made"

Unchallenging Conceptual Model



20 Secs Taken for Tasks on Average
"the fun went pretty quickly as once we mixed the colours that was pretty much it"

Conceptual Appeal



"it was visually pleasing, the combinations of colours was like neon"

Obstacles to Enjoyment



5 Interactions Per Test on Average
"I didn't like that I couldn't move around much without tearing something"

Physical Enjoyment



"I'm physically jumping and doing something rather than swiping a screen"

Correct Mental Model



0 Errors in Total Made by Users
"...I guess I was going to have to interact with the surface with my feet"

Sonic scape

The user testing sessions highlighted the importance of tangible enjoyment within Sonic scape. A higher level of enjoyment was developed due to the multisensory nature of the concept. This idea was evident as obvious body movement such as dancing and visual engagement toward the lights were recorded in the observation. This led to further emotional enjoyment, as the discovery of the concept's function was described rewarding as one user states "It felt good that I worked it out". Additionally, there was a distinct sense of mutual achievement observed as strong excitement was expressed after the tasks were completed.

This situation enforced a total of 25 bodily interactions between users that included jumping together, walking together and touching (holding hands, high fives).

Although, physical interaction was not easily achieved as users had no desire in collaborating with a stranger. This is due to the uncomfortable nature of the product as it requires physical contact to function. Users also expressed their strong attitude of only participating with friends stating "if I was with friends than yeah maybe". This was reflected in the longer time taken to complete each task with a recorded time

of 1:30-2:00 minutes. Moreover, achieving the function is also affected by the lack of attraction within the product due to its flat physical build and often overlooked by invaluable features such as the lights. This created a disparity within the user's mental model of how they should interact with the product, where external direction was greatly needed with a total error count of 46. Therefore, the product would need to address its limited amount of affordances and apply visual attraction in a meaningful way. This will indicate the use and function of Sonic scape more efficiently, steer away from discomfort & confusion; overall better user experience



No Desire to Collaborate



"I wouldn't use it with a stranger. I wouldn't try and get another person in there"

Lack of Attraction



"I'm going to work by it won't be likely that I would engage with it"

Disparity in Mental Model



45 Errors in Total Made by Users
"It wasn't clear when the sound started.
Was it even on the whole time?"
"Maybe there is no instructions"

Limited Affordances



2 Mins Taken for Tasks on Average
"At first I felt stupid because I couldn't work out what it was doing"

Overall Summary

The overall feedback from testing was to keep things simple but meaningful. Extra features were more likely to confuse users; then they were to make their experience better unless they are well thought out. However, we need always to make sure there are enough features, so users don't become disappointed with a lack of depth.

Users valued visually understandable features to hidden ones then needed to be found. If a feature was not recognisable, visually users were far more likely to make errors or feel frustrated in their experience. Highlighting the need for clarity.

However, this always needs to be weighed against not making the interactions require visual or reading ability.

Users loved to be physical. They enjoyed interactions that required them to move around rather than standing still. However, this needs to be moderated because too much will make the users uncomfortable into it with people they do not know.



Physical/Tangible Enjoyment



Users really enjoyed using their bodies in novel ways to interact with products, adding greatly to their enjoyment of it

Correct Mental Model



Products need to either be easy to learn or intuitive for users to interact with

Emotional Enjoyment



Users need to feel like they have achieved something by the end of their interaction.

Conceptual Appeal



Users really valued a product that was big and inviting and joyful, colourful.

Encouraging Feedback



Users expect a response experience that lets them know precisely how they are interacting. There should not be any gaps in the product's responsivity

Kinetic Aurora

Kinetic Aurora was the concept chosen for iteration. This choice was motivated by the collated data discovered throughout user testing, including the use of a SUS survey and decision matrix. These evaluation methods allowed us to conclude without bias or angle to a specific concept. In saying this, based on user findings, Kinetic Aurora was favoured for:

- Physical enjoyment
- Conceptual appeal (mixing colours, creative control)
- Correct mental model

Although, we needed to consider the following in our next iteration as they were of major concern by users in the testing of the prototype.

- Improve collaborative aspect
- Improve oversimplified / unchallenging task
- Improve fragility of product/prototype

In comparison to the other concepts, 'Creature of Habit' and 'Sonicscape' which had their personal strengths although did not achieve the higher score when scaling towards the criteria needed to solve our brief.

Creature of Habit was favoured for:

- Playful/exploratory nature
- Conceptual appeal - large, noticeable
- Supportive/encouraging feedback

Sonicscape was favoured for:

- Tangible enjoyment
- Body movement (multisensory nature)

On this note, our team identified this comparison of favoured themes as an opportunity to incorporate within the chosen concept. This will allow a combination of the strong aspects evidently tested in each concept. Although, we need to consider not to overwhelm users as well with an extensive amount of interactions.

Chosen Concept



SUS SURVEY

This visual depicts the detailed overview of the criteria needed to support a solution our brief. The criterion included tests the clear use and complexity of our chosen concept. This is evident within Kinetic Aurora as users scored this concept highest.

The total scores of each concept depict their overall usability in which Kinetic Aurora prevailed a score of 28.5 in comparison to Creature of Habit with 27.5 and Sonicscape with a score of 27. To get to this conclusion, each survey results were averaged and interpreted into a final depiction of the scoring for the SUS. This is to confirm the ideas of users towards each concept as a whole.

Therefore, these results further encouraged the choice of iterating the concept Kinetic Aurora as it holds most potential in solving our problem.

I think that I would like to use this system frequently

2.8 3.0 3.3

I found the system unnecessarily complex.

2.8 2.0 1.5

I thought the system was easy to use.

3.3 4.0 4.5

I think that I would need the support of a technical person to be able to use this system.

1.8 1.3 1.5

I found the various functions in this system were well integrated.

3.0 4.0 3.8

I thought there was too much inconsistency in this system.

2.5 2.3 2.0

I would imagine that most people would learn to use this system very quickly.

3.3 3.8 4.5

I found the system very cumbersome to use.

2.3 1.3 1.8

I felt very confident using the system.

2.8 4.3 4.3

I needed to learn a lot of things before I could get going with this system.

2.8 1.8 1.5

TOTAL SCORE

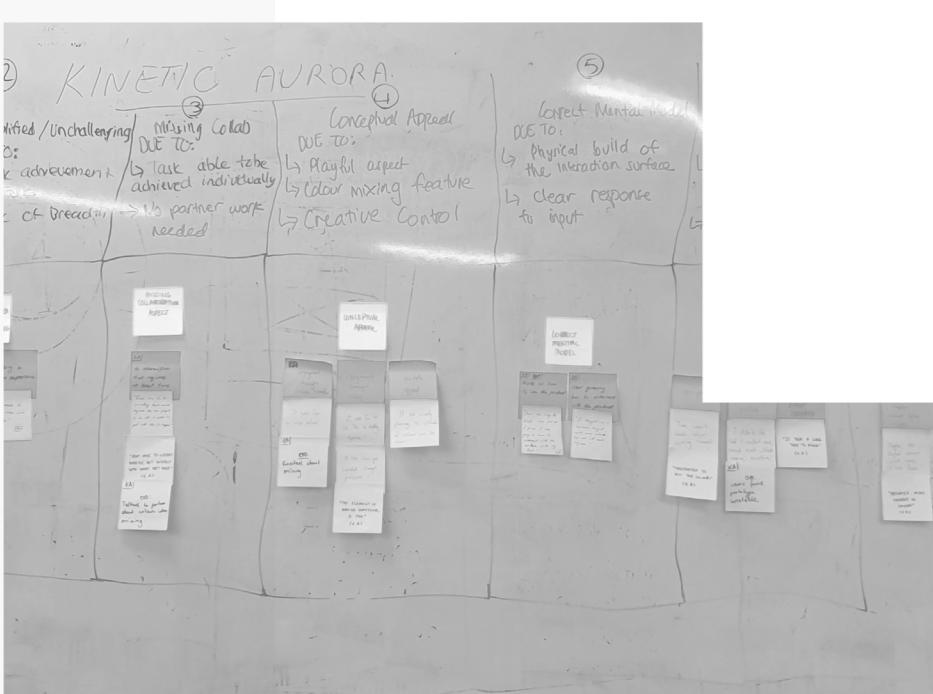
27.0 27.5 28.5

SUS (System Usability Scale) Criterion

Decision Matrix

A final decision matrix was completed in order to successfully appoint the concept solely based on the collated data findings. Therefore, this decision matrix consisted of criteria needed to assist in solving the brief, criteria related to the concept's implementation and also including the results from the SUS survey.

Therefore, as seen in the results, Kinetic Aurora outstands the remaining 2 concepts with the highest score of 71.5. This affirms Kinetic Aurora as the concept that holds most potential in providing the best user experience. As well as hold the criterion essential in providing a space for people to connect. The implementation of this concept is also taken into account as we judged the building process, potential materials needed and its affordability.



Decision Matrix Criterion & SUS (System Usability Scale) Results

	Creature of Habit	Kinetic Aurora	Sonicscape
Does it build courage in urban dwellers to connect?	2	1	1
Does it create a sense of belonging to the urban community?	1	1	1
Does it encourage socialisation?	1	2	3
Is it inclusive of a wide range of people in the public space?	3	3	3
Is it accessible for the disabled?	3	3	3
Is the conceptual model matching with user's mental model?	3	4	2
How diverse are the sensory elements?	3	3	4
Utilises Sydney urban public places	3	3	3
Does it encourage collaboration?	2	1	2
Is it interactive?	3	3	3
Does it offer physical/tangible enjoyment?	2	4	4
How stimulating is the product to use?	2	1	3
How feasible the concept is in a 4 week timeframe?	3	2	1
How affordable is it to produce?	3	2	2
Is it conceptually appealing?	3	3	2
Intuitiveness and easy to use	3	4	1
Aesthetically pleasing	3	3	2
How did the concept rate on average in SUS?	27.0	27.5	28.5
Overall Total	69.5	71.5	67

Rating scale: 1 = Doesn't meet criterion, 2 = Somewhat meets criterion, 3 = Meets criterion, 4 = Slightly exceeds criterion

Iterated Concept

Kinetic Space

Kinetic Space is an interactive light installation that encourages urban dwellers to connect by collaboration. Users are free to explore an unrestrained space consisted of a pressure sensitive floor & hanging light poles. An artistic projection of light is controlled by users as they walk throughout the space. The concept is able to create a sense of belonging in an urban context as users can exist within a space that represents the people of their community.

How does it work?

Essentially the concept will work by the pressure of the user's feet detected through pressure pads allocated across the floor space of the installation. Certain areas of the floor will have a designated colour, this is communicated to users by different coloured tiles. Therefore, if a user steps on a red tile, the light projected on the poles will be red. This resonates with Kinetic Aurora's main conceptual appeal of physical enjoyment. This exchange of information supports the idea of instant feedback for user's actions which was largely effective within the testing of 'Creature of Habit'.

Furthermore, as our users become responsible for the colour projected, they are given the opportunity of creative control. Continuing Kinetic aurora's playful/

exploratory nature. This aspect was found valuable to most users as they felt some restrictions from functioning the lo-fi prototypes. Moreover in Kinetic Space, an individual cannot create a secondary colour or mixture of colours without other users present. This does not restrict, but addresses the importance of collaboration towards encouraging urban dwellers to connect in which Kinetic Aurora initially lacked.

The overall purpose of the concept is to create a colourful artistic projection while enjoying the urban space together. We wanted to give users more reason to interact further with the product & improve Kinetic Aurora's unchallenging / oversimplified feature which was identified within the concept use. The purpose of the concept is also made clear alluding to a correct mental model within users. This idea is further present by the set up/layout of the concept. In the feedback for 'Creature of Habit', the large scale & vertical position of the visual elements was found more compelling than a flat physical build. In saying this, stepping away from making users look down, we make them look up as the light is projected vertically across the space. Furthermore, the idea of the poles is supported by the tangible enjoyment found in Sonicscape as users

expressed their interest in using a combination of their senses. Which in the case of Kinetic Space, is sight & touch.

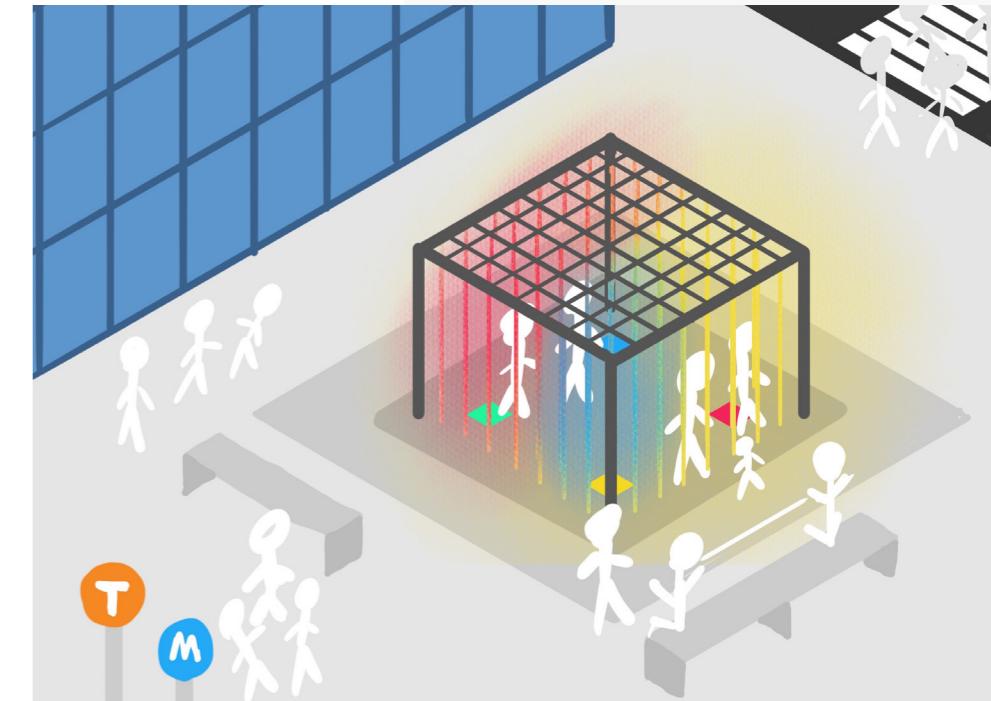
Ideally, the product's size will approximately double or increase to about 3m or 4m square which addresses the users desire to interact with a larger scale mentioned in testing. We want to create a space that drew users in, & pay attention to their surroundings. The light arrangement will be simulated by projectors situated above. The projection of colours on the light poles will create an ambient reflection around the space.

In future iterations we can consider the alteration of light projection on the poles controlled by the physical input of users such as jumping & stomping, makes lights move up & down the poles. This continues to support user input & direct response favoured from user testing. But this needs to be tested & seen, in order to identify an effective application of creative control. Also, we want to communicate this use of the product clearly (supporting correct mental model) with simple icons presented on floor pads to indicate function/use of their actions.

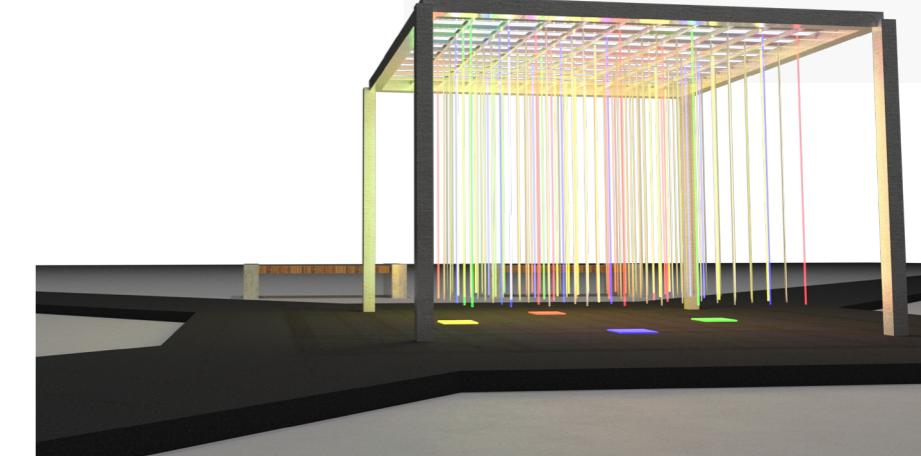
Initial Sketch



Concept Art



3D Renders

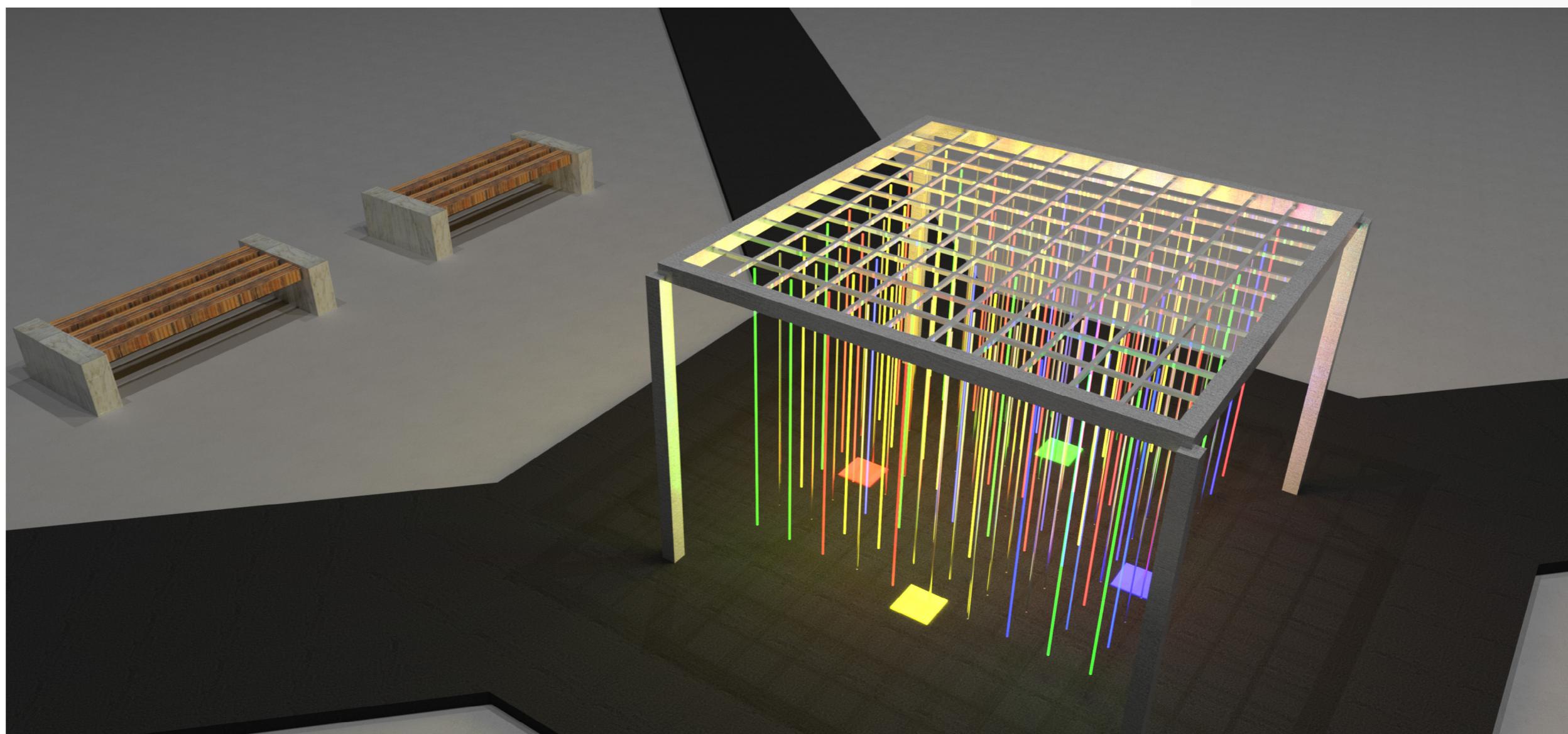


How does it tackle the problem?

In summary, Kinetic Space solves the brief in augmenting an urban area as it creates an ambient reflection of colour and light. Also, relating the concept back to our project goal, Kinetic Space aims to further encourage urban dwellers to connect by participating in playful and collaborative interactions. The collaborative aspect is passive as users connect through the actions of their eyes and feet. This factor was of great concern during user testing as the act of direct physical contact is found awkward or uncomfortable. In saying this, Kinetic Space will be the medium used by urban dwellers to exist within a space that represents connection and community.

Its open design encourages users to come and interact on their terms. Maybe they explore on their own the first time. The next they'll be more accessible, initially, they'll have a conversation with someone about Kinetic Space. From that moment of connecting over mutual interest, [in Kinetic Space], the users will have built enough courage to have a conversation on another topic. Alternatively, as they come back and interact,

they'll see the same faces there and build a sense of who is in their community. From which they'll be able to take the next step to have a conversation on the bus, in line at a cafe, or at Kinetic Space.



Target Market

A significant advantage Kinetic Space has over each other concept is that it now is inclusive for all people. Some user groups will have limited effectiveness in interactions, but all people can get involved. Kinetic Space is designed to be used by all people, from every age group, from any background and pretty much any level of ability.

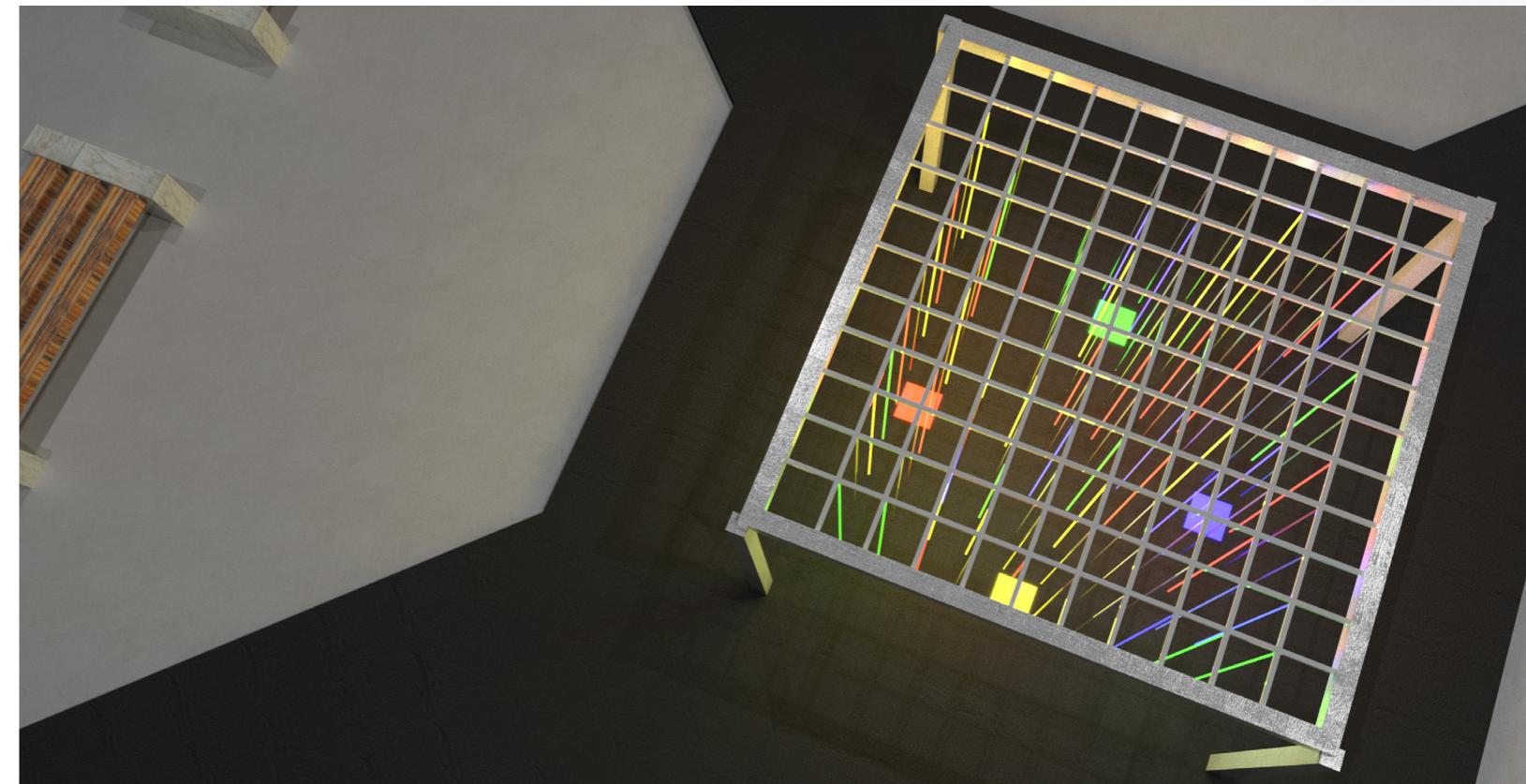
Disabilities.

Kinetic Space is designed to work for people in wheelchairs or Cains. Moreover, even blind users interact with the tangible physical assets of the experience. Thinking about these particular users was pretty essential for us because, in our initial research, we found that people who were

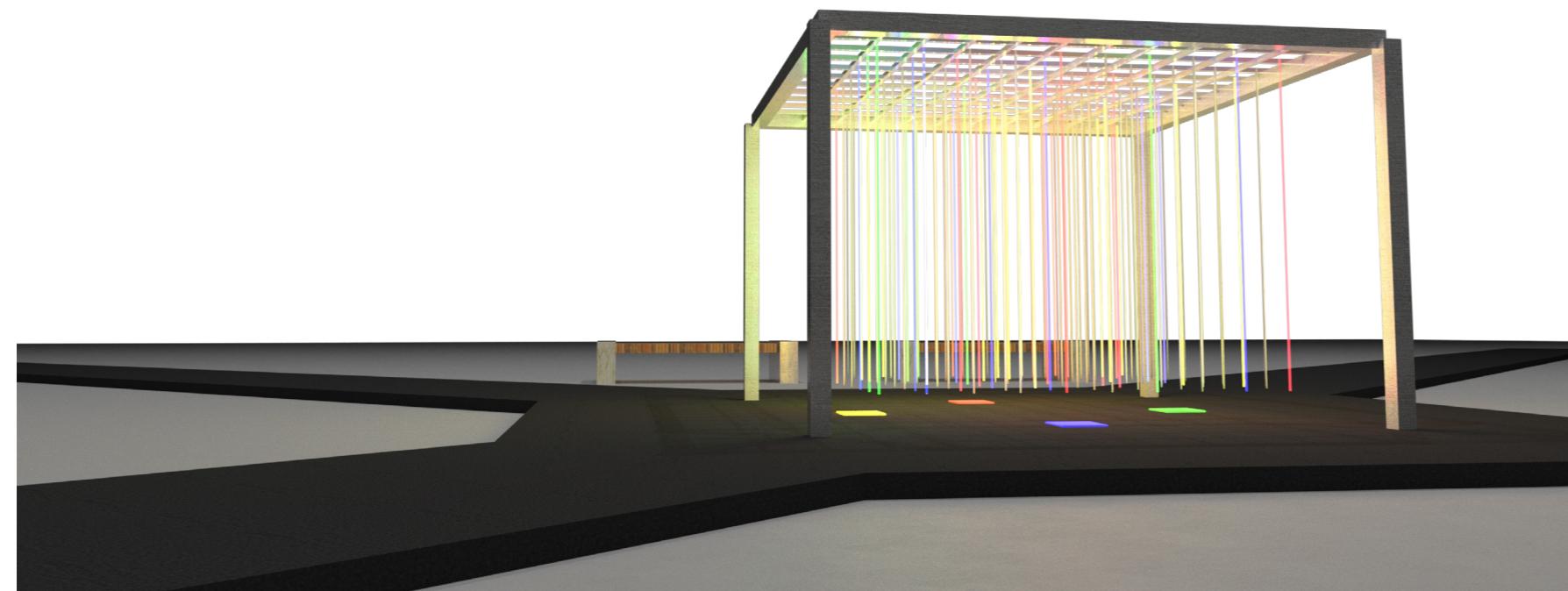
injured or have recently been disabled are at a particularly high risk of being socially isolated. So, it's essential to include them as much as we can.

languages

Thinking about people of different languages background is also very important. As Sydney becomes even more multicultural, it makes less and less sense to build experiences that only English speakers or readers can understand, especially when we are working to bring people together.



Top View Kinetic Space



Front View

Implementation Plan

Now that we have our final concept, the task is now to bring it all together. However, to do this, we can't just build the final product and hope to get it all right the first time. There are four phases in the implementation plan: Interaction refinement, Technology experimentation, Concept synthesis and Final execution.

Interaction Refinement

First, we need to test the finer points of how our users interact with Kinetic Space. Mainly to test the Interactions that we couldn't test in a low fidelity prototype such as:

- How do users expect a pressure pad to function?
- How do users interact in a space with these light poll within?
- What should the density of these polls be?

These are all questions we need to ask before we go away and build the product.

Because if we leave all these questions to the end to figure out, it'll cause us a lot more pain to make even the smallest changes in the product, so refining as much as we can early is essential.

Technology Experimentation

A parallel yet separate aspect we need to iterate on is the technologies we are going to use in our product. As our experiments with the iterations grow, we'll also need to see how we can produce these interactions using technology and ensure that they'll work in the way we think they will; also ensuring we are using the best

technology we can to build the best experience we can.

Concept Synthesis

"Rule of thumb: if you think something is clever and sophisticated beware-it is probably self-indulgence." - Don Norman, The Design of Everyday Things

Untimely users don't care what the specific technology we use is. They care about an experience that makes them forget that they are using several pieces of technology working together. Users want to be inside of an experience, not a tech demo; Which is what the quote from Don is getting at. We need to moderate our desire to make something technically cool, with the problem we are working to solve and the interactions we are trying to build. So, a refinement in our iterations should also refine our technology.

A refinement in our technology should streamline our interactions. One shouldn't define the other but work together to create a seamless experience.

Synthesis is the last step we have to make changes without affecting things we've already build. So, at this point, we'll have mapped out and understood how each part, each spec works together to make the sandstone that is our product.

Final Execution

Finally, the moment has come, where it all comes together, and we build our product. Not prototype, but a fully working product. Bringing all that we've learned and worked on over the semester and make something pretty cool. We hope.



Interaction Refinement & Technology Experimentation

MID SEM BREAK

- Design prototypes for high-level interactions
- Research effective pressure plates and ways of lighting the area.
- Design technical prototypes

WEEK 9

- Build interactions and technical prototypes
- Test the prototypes.

Concept Synthesis

WEEK 10

- Synthesise the technical prototypes and interactions prototypes together
- Design the final product.

Final Execution

WEEK 11 & 12

- Build the product.
- Test the product.
- Refine the product.
- Finalise the product.

Presentation

WEEK 13

- Present the product

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