Campfire.

DESIGN PORTFOLIO

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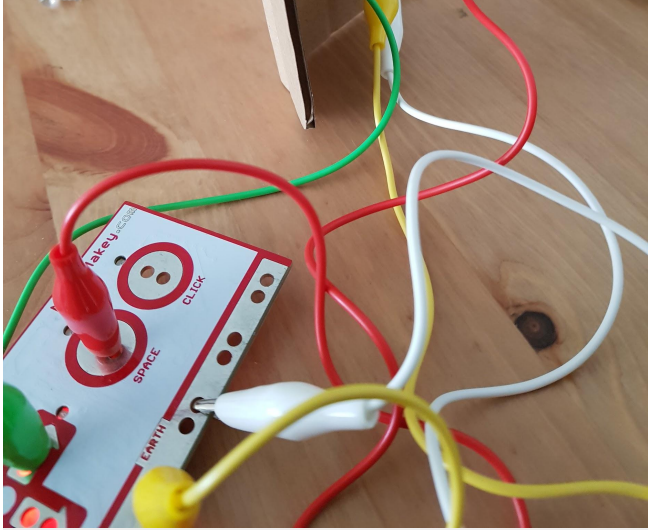
OVERVIEW

This portfolio covers the process for creating Campfire - a speaker system designed for multi-generational groups. We created this prototype to explore how a single curated music player could be used by people with dementia and their support networks, including family and friends, to help create positive emotional connections and reminisce.



Makey Makey used during prototype

Team during standup

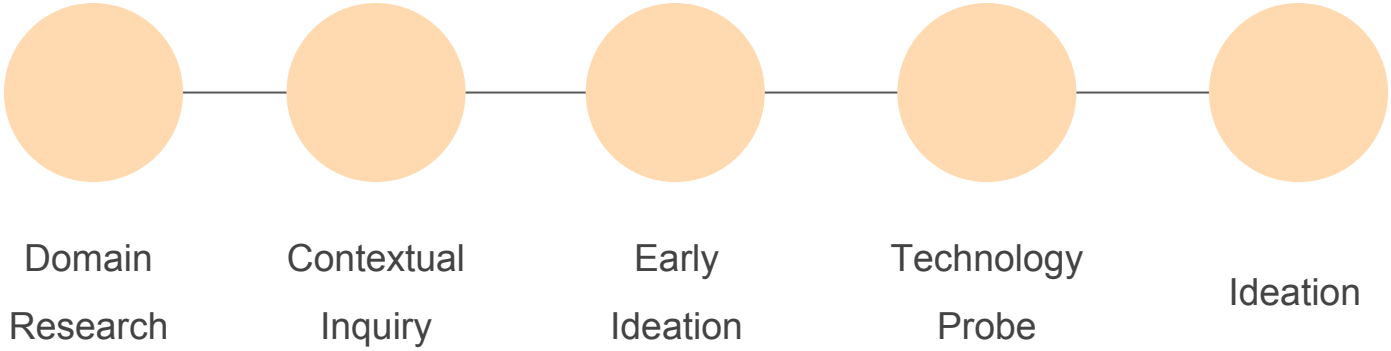
TEAM

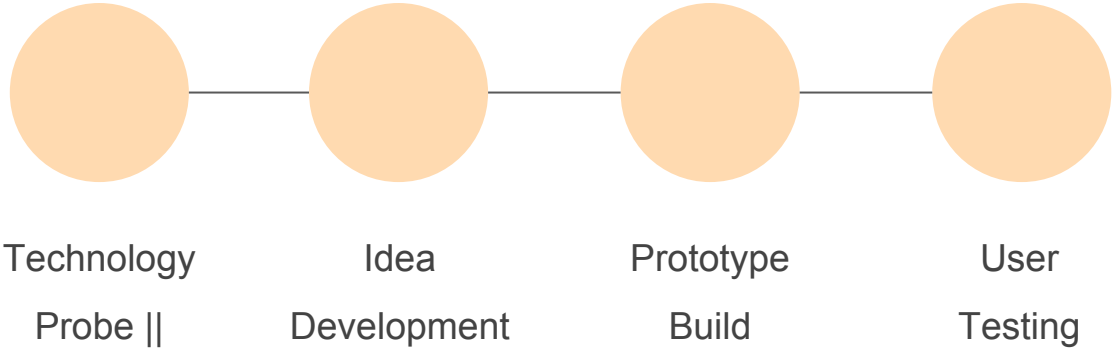
Our team is made up of:

- Gladys (IT & Management)
- India (Interaction Design)
- Nate (IT & Arts)
- Tiril (Computer Science)

PROCESS

This section outlines our process from design research and ideation through to building and creating our minimum viable product prototype and future design directions.


Domain Research
Contextual Inquiry
Early Ideation
Technology Probe
Ideation


Technology
Probe ||
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DOMAIN RESEARCH

After an early foray into researching handcrafting, our team moved onto the domain of people with dementia. We conducted a contextual inquiry to understand the literature on people with dementia and to better understand their experiences and what was truly needed from a design perspective.

Our literature review uncovered the importance of relationships and relationship building during the development of dementia. This can come from reminiscence activity, between people, and can be enhanced through use of music and colour. From this review we also developed our design guidelines which helped us to better cater to the needs of people with dementia and their careers.

CONTEXTUAL INQUIRY

- *Survey*

From our early literature review, we moved on to a process of ‘research through design’ where we sought to whereby our design activities themselves became communication vessels for the knowledge generated from the project. This involved a survey with five participants who had some form of relationship with a person with dementia at least once in their life.

Participants ranged from the twin brother of a woman with dementia, two nurses who have worked with people with dementia throughout their careers, and two grandchilden of people with dementia. The survey results revealed the importance of connecting with people with dementia and being with them as they reminisce together.

SHARING MEMORIES, SHARING JOKES, JUST BEING WITH MY SISTER AND CHATTING

- *John, survey participant on what is the most meaningful par*
  relationship with his twin sister who has acute dementia

CONTEXTUAL INQUIRY

- *Interview*

The second part of our contextual inquiry involved stakeholder interviews and meetings with two leading researchers from The Florence Project at The University of Queensland (pictured left), a project centred around assisting people with dementia and their carers through assistive technologies and a personal assistant tool.

Our interviews with these two researchers helped us to better understand the design directions that would be most meaningful moving forward, highlighting the importance of providing a sense of agency and dignity for people with dementia, the importance of time for carers, the need for entertainment solutions and use for reminiscence activities.

CONTEXTUAL INQUIRY

- *Research*

After these meetings we were better equipped to conduct additional research into the design needs and requirements as well as lived experience of people with dementia. Of particular importance were resources from Dementia Australia and the dementia friends program which two group members registered in to better understand how we could better cater towards this community and design a meaningful design solution in this space.

This next round of research uncovered a great deal of research on the power of music for people with dementia and advances that had been made in the space from a technology perspective.

EARLY IDEATION

From our previous research, we brainstormed and through several ideation design activities we came up with a hypothesis to test through the development of our prototype - could a music player system be used to facilitate positive emotional connections and reminiscence activities between people with dementia and their support networks.

During this stage, we generated multiple design ideas and solutions that might address the above issue. These ideas included:

- Ambient Memory Space
- Needy Robot Carer
- Communication Cube
- Music player system

A second consultation round with teaching staff and researchers led to us deciding on the last idea.

TECHNOLOGY PROBE I

As we needed further data in order to understand how a single music system for people with dementia and their family and friends might be used together, we knew that we needed to conduct a technology probe with a similar cross-section of the community with partially matching characteristics. We decided that the aspects of multi-generational and multi-person use meant that we could approach households that were these two categories to test a technology probe with.

Our technology probe, a speaker system and diary with experience sampling throughout, tested with two households over two days helped us to better understand the dynamics of music consumption as a shared and social activity in a real context.

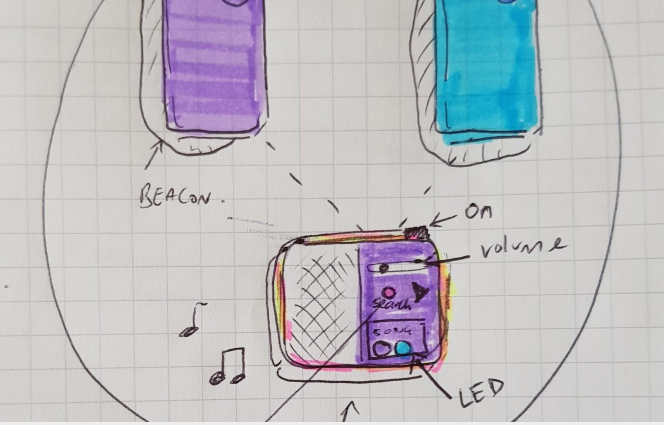
IDEATION

With the data from the first technology probe collected, we were now equipped to begin developing ideas for how to better facilitate shared use of a single music playlist and system to match the expectations of multiple generations. This included consideration of the physical aspects of a music system (better equipped for older users as well as persons with dementia) and the need for proximity testing to enable sociality and co-listening.

We developed further sketches, body stormed our ideas and used props to test out our early concept and were able to validate aspects of it as viable for our overall aim of people with dementia using our design guidelines.

TECHNOLOGY PROBE II

From the first technology probe, we realised that we still needed further data on the actual act of choosing and selecting music, so devised a secondary probe to be tested with a smaller pool over a shorter period of time to gather observation and survey notes on this aspect. This probe was based off the use of prompts to generate use awareness and to see how people who were participating responded to these prompts. Ultimately, from the results we were able to suggest that users have specific expectations about the functionality of such a playlist. Further, we found that when presented as the focal point of the space, a playlist system can potentially encourage sociality.



IDEA DEVELOPMENT

To build a music player we first thought of using a Raspberry Pi connected to a speaker and a screen, then use QR code or voice commands to curate songs. Due to time constraints we quickly moved on to using a website instead. We started with using YouTube and download MP3s as music in our current prototype explained in the next slide.

As a next step for this prototype we looked at using Spotify API to be able to choose from all the songs Spotify has to offer. We developed a Node.js server to use for our web application, this would work a middleman between the webapp and the Spotify API. Due to time and hosting constraints we found it smart to stick with the current prototype, but for future development the Spotify server would be a better solution.

PROTOTYPE BUILD

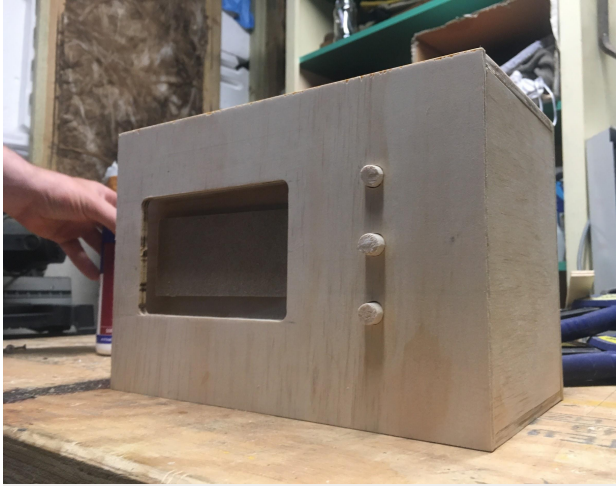
When it came to development of our final prototype, we chose to quickly iterate a minimum viable prototype to test with a multi-generational household that would flesh out our music system idea. This was created using HTML/CSS/JS/PHP and YouTube/MP3 files. For the physical aspects of the prototype, we moved on from the Raspberry Pi to instead use the Makey Makey, as physical controls were seen as paramount to our project. This was connected to a tablet which communicates with mobile phones in the space (with proximity simulated for the purposes of testing). Originally, we used a laser cutter to create a cardboard case (pictured left), however later moved on to a custom made wooden box (seen in next steps).

USER TESTING

Our final prototype was tested with a multi-generational household comprised of four members, with ages spanning from early 20s to over 50. Testing indicated a strong preference for physical, tangible buttons and interface mechanisms, even though touch was the most common paradigm for a music player. Users stated that they found elements of the interface clunky, but all of them enjoyed the ability to hear and comment on each others' songs, sparking conversation. The outcomes of our testing and evaluation indicated that the buttons must be made larger for use and that functionality should be expanded to match expectations of a music player. Overall, users saw the product as a largely social one and enjoyed the partner mobile application, with a preference for the box.

NEXT STEPS

Our next steps involve us testing with more multi-generational households in order to gather more data on and feedback on the social use of our prototype. From here, we would hope to better integrate the Spotify API we started developing and search functionality. We would then hope to gain ethics approval to do a second round of iteration with people with dementia and their family, friends and carers, potentially as participatory design.



Wooden case for Campfire during final stages of prototyping to date