ROINN

Get A Roinn !

Design Process Journal

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In the near future, transportation is poised to be electricly powered and automated. However, to have significant impact, it must also be shared. The project documented in this journal explores how design can encourage and normalize shared transport.

Team 5, MSc PDE 2019-2020

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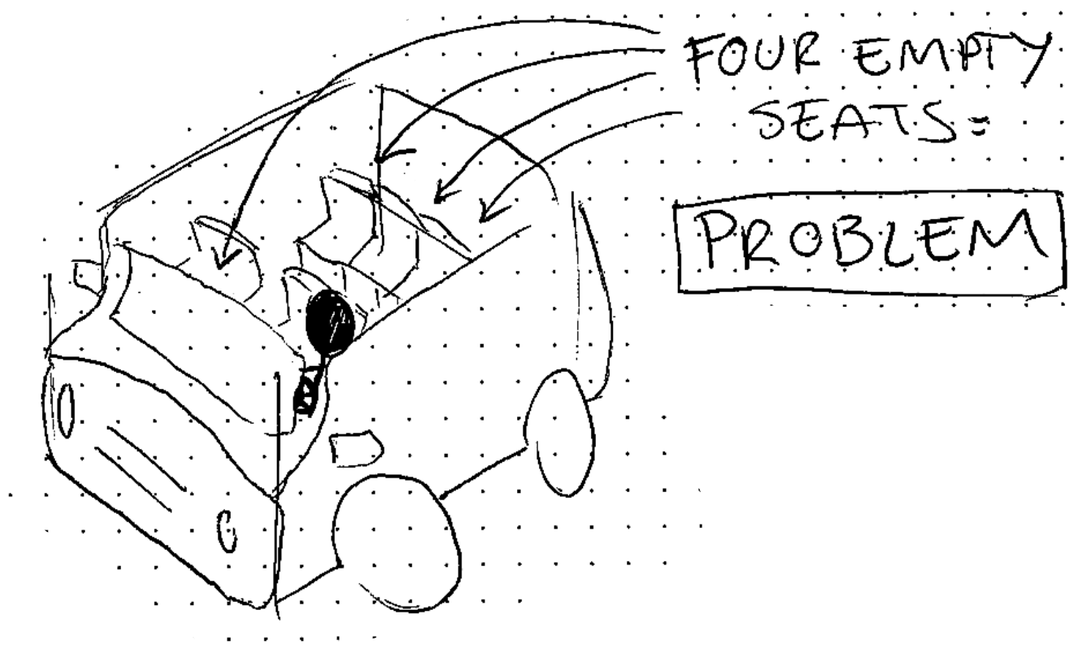


INTRODUCTION

How do you choose a problem, and what makes it worth solving? How do you go about solving it, and how do you know it will make a difference?

Under the context of “Gestures” which we took to be the interaction between users and their products, we tackled these questions. We were a team of eight people with different origins, educational and professional experience - with the common goal of designing something that will make an impact. This journal documents my personal journey through identifying, defining and solving a problem with this team of designers and engineers, and my takeaways from the experience.

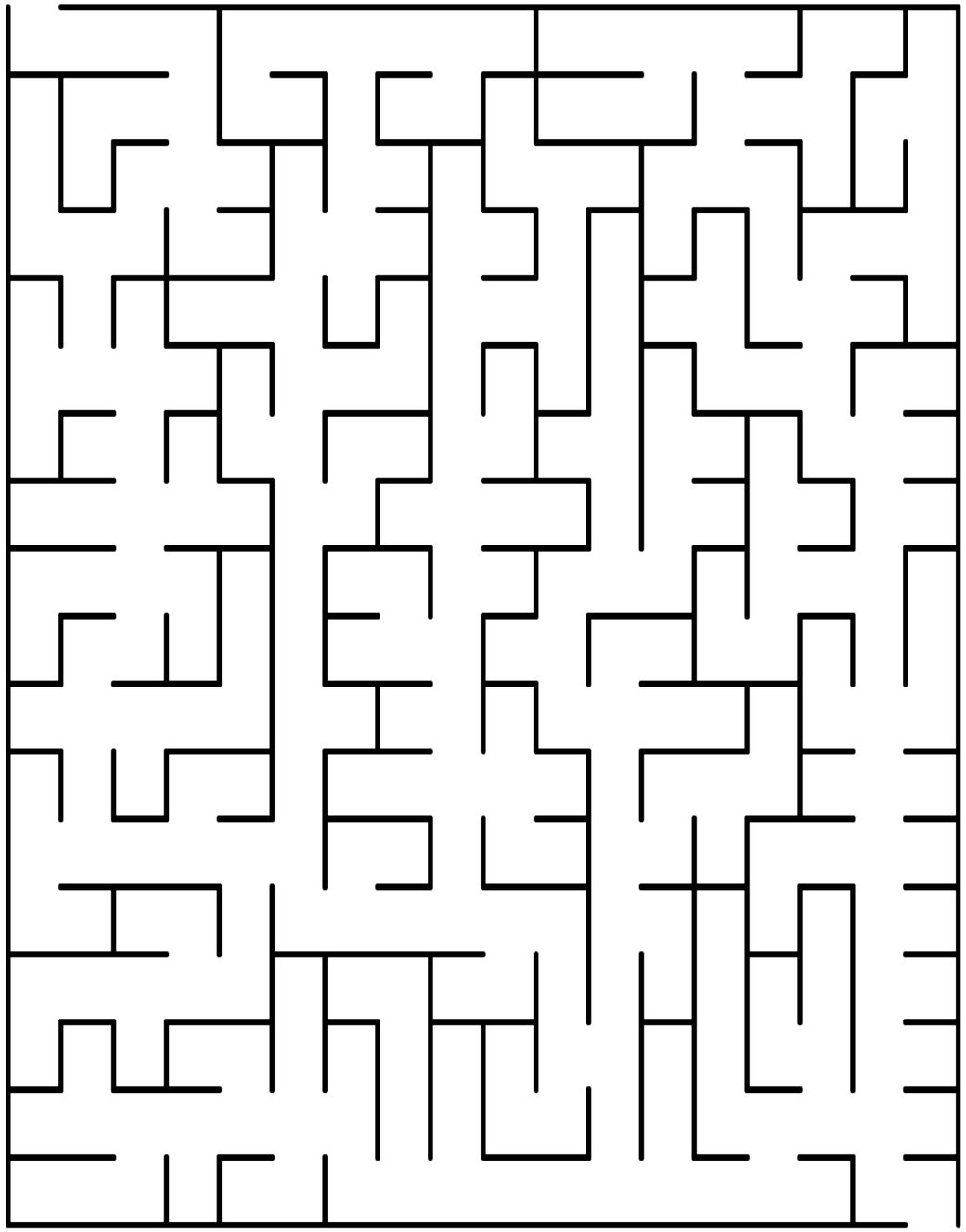
The open ended brief that we used as a starting point generated a variety of areas of focus: from cooking at home to street performers. This led to the first challenge we had to overcome as a team, identifying a problem.

After much deliberation, ideas began to converge into the realm of transportation. This broad topic in itself was widened further by the personal interests of the team members. To our aid came the pressure the deadline of an Interim Presentation, and utilizing the power of research, we were able to define a problem.

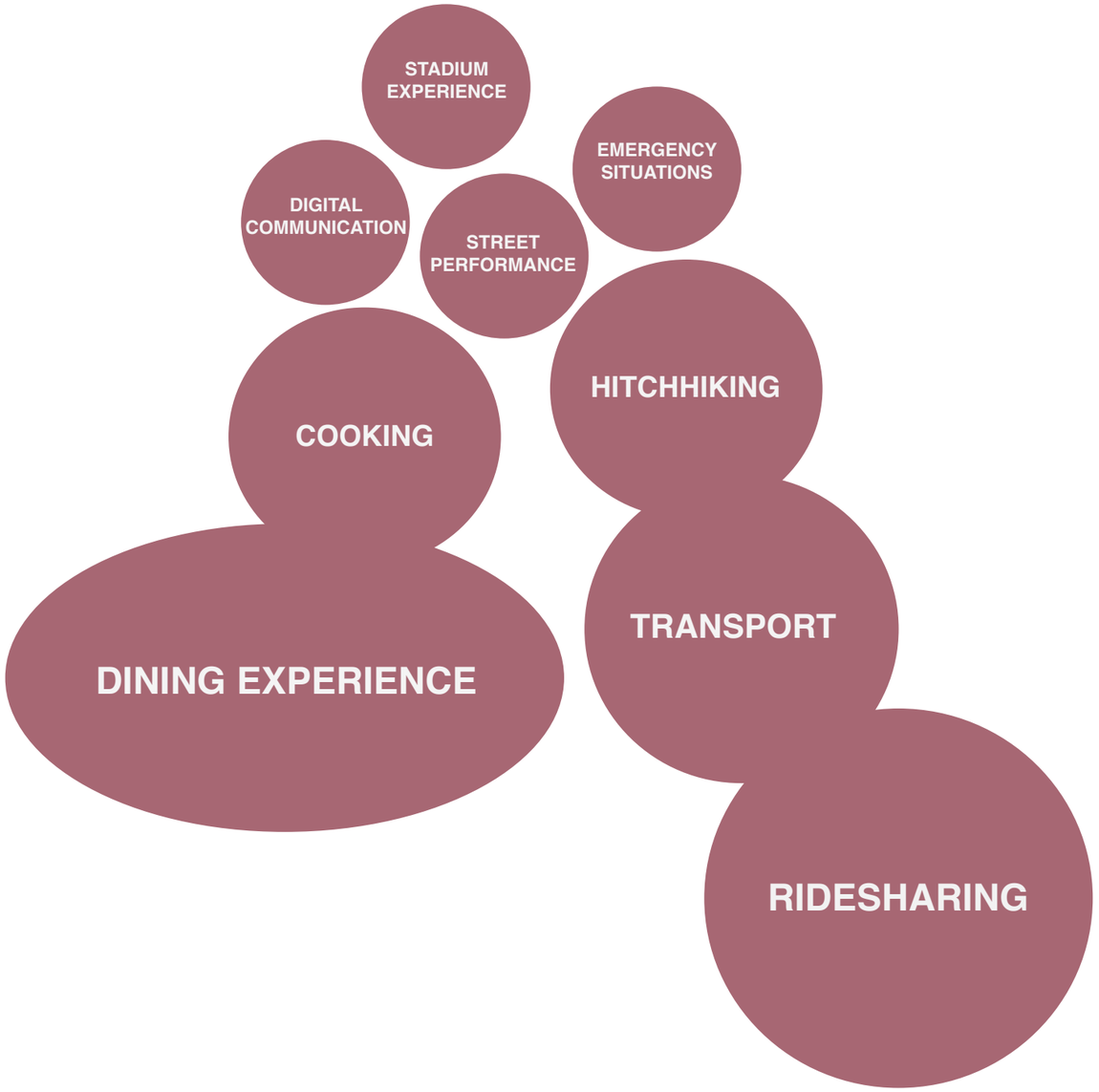
Armed with the confidence of a concrete problem to solve, design solutions diverged again, as eight brains can invent a many of ways to skin a cat. This led to what I refer to in this journal as design paralysis, the state of having multiple viable solutions, and few methods with which to choose a single one. We revisited our research, carved out a specific path, consulted our instructors and even relied in our gut feelings for concept development and moved forward in the design process.

We then came to define our Proposed Concept. Starting with a design envelope, evidencing our decisions, running through scenarios and discussing outcomes, our design started taking shape. Again with the final deadline helping us converge, we generated models and a storyboard to present and explain our idea. We chose to call it Roinn, the Scots Gaelic word for sharing, and in my opinion successfully presented it to our cohort.

The process outlined is detailed in the following pages, with instances and takeaways, and followed by a reflective conclusion on how I came to stop thinking so much like an engineer, and start thinking more like a designer.



DEFINING A PROBLEM



Based on a given brief and through brainstorming, we successfully generated many topics of interest. However, we came to a standstill when we had to identify and define what we would focus on.

We used a number of criteria, such as relevance and research accessibility to narrow down our selection to two areas, which at the time seemed equivalent in weight: Ridesharing and the dining experience. With such broad topics, through research we could always manage to find impactful design opportunities within them. In a team of eight people, a democratic approach seemed to be the only way we would move forward fairly. In the face of casting a vote, choice was more influenced by personal convictions, namely for me: a gut feeling, interest in the topic of transportation and sustainability, the potential takeaways and how this project could influence my career moving forward.

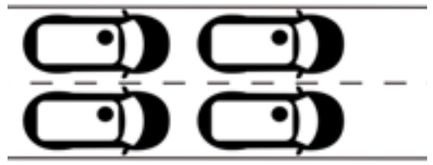
Personally, however, the most important deciding factor became: Which problem has the least obvious solution? Which one is the “blurriest” or is it most difficult to wrap my head around? Although in the past I would have deemed these questions counterintuitive to problem solving, my inability to quickly grasp the issue and ideate concrete solutions assured me that the problem was a difficult one, and in turn worth solving. In this case, everything pointed at RideSharing

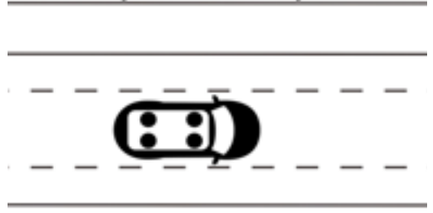
DEFINING A PROBLEM

Research: Observation, Interviews and Literature

In this instance, we observed people in public transport and their behaviors

Problem Definition



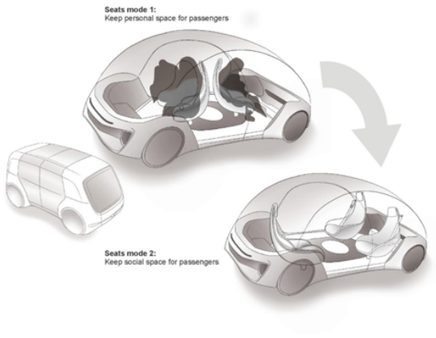


Based on our research, we decided to focus on reducing Vehicle Miles Travelled by encouraging Ridesharing

“What if” Scenarios

We defined Personas based on our investigations and ran them through multiple scenarios to generate ideas

Intial Concept Proposals



We drew out some intial concepts based on our work up to that point

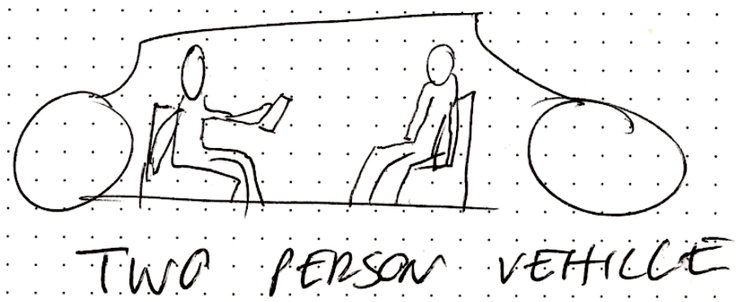
Once we had selected our topic to be ride-sharing, we again had a difficult time narrowing down our approach.

With previous experience in this ambiguous area of design, the Industrial Designers in our team led the charge by collecting research. Specifically field research, ethnography and observation took the forefront.

At the time, my engineering background led me to hold literature and academic research as the highest form of data collection - so I was surprised at the immense value of real life observations: even with a relatively small sample size, the photographs and interviews of real people permeated our entire design process onwards.

We found a particular piece of research from Princeton Andlinger Center for Energy that stated that to assure a sustainable future, vehicles will need to be clean, automated and shared. Data in hand and with the Interim Presentation upon us, we successfully defined and evidenced a concrete problem: to encourage and normalize ride-sharing to reduce vehicle miles travelled. At the time, we also proposed a few concepts with the intention of revisiting them.

DESIGN PARALYSIS



With confidence we now came up with a great range of solutions take on our specific problem, and together with a less aggressive pace, we spun our wheels for weeks trying to chose a solution.

We did a second brainstorming session, this time more focused on our issue, which successfully generated even more approaches and areas of focus. There seemed to be no boundaries to how we could solve this problem (it looked like we had indeed chosen a big enough issue)

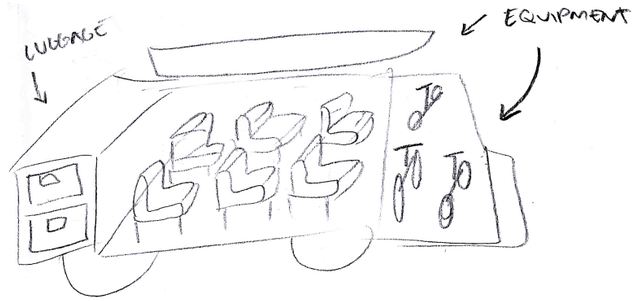
RESEARCH

6 Passengers per Vehicle for Commuting

Peugeot E7

INTUITION

DESIGN DECISION/FOCUS



We consulted our instructors which insisted heavily on us defining a product envelope which we could fill with our ideas, and we were also pointed to revisit our research. In this manner we began to make progress, although with caution. At some point we were convinced our vehicle would carry two people at a time, and tried to define the lay-out, only to scrap it and interpret our research in a different light the next day.

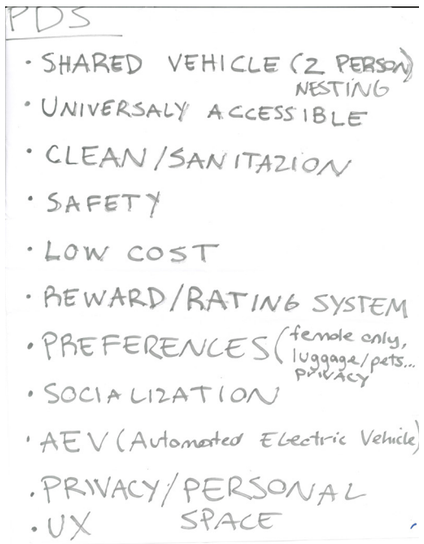
Finally, aided by our instructors, we looked at our research once more and defined our vehicle to be the dimensions of the largest locally available taxi, the Peugeot E7, and to carry at most six people, which was deemed optimal for commutting by a McKinsey study. Again, intimidated by the limitless possibilities that could exist in making the vehicle of the future, we studied our research and carved out a path for ourselves: **the willingness to share lay in human behavior, so we would focus on the interior of the vehicle and in user interactions.**

It was at this point that I realized the importance of the combination of design intuition and evidence-based decisions that are at the core of Product Design Engineering.

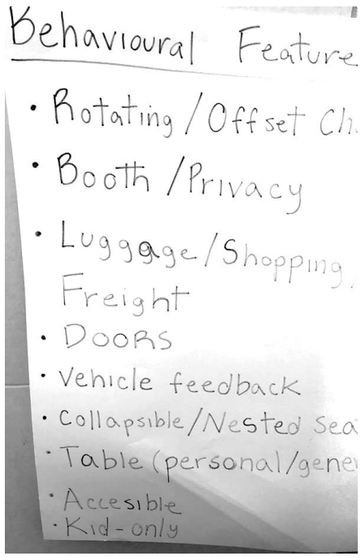
CONCEPT DEVELOPMENT

With a product envelope, a number of users, and a focus on human behavior, we could now define which specific features our design would have in order to solve our proposed problem: to encourage ride-sharing.

It was at this point that I was again inadvertently bounded by my background and previous experience: the list of features included many technical aspects that are surely part of the product, but in regards to this program and the role of a designer of human-centered products, they only trail the more important features concerned with the user experience. We identified these through running scenarios and creating personas.



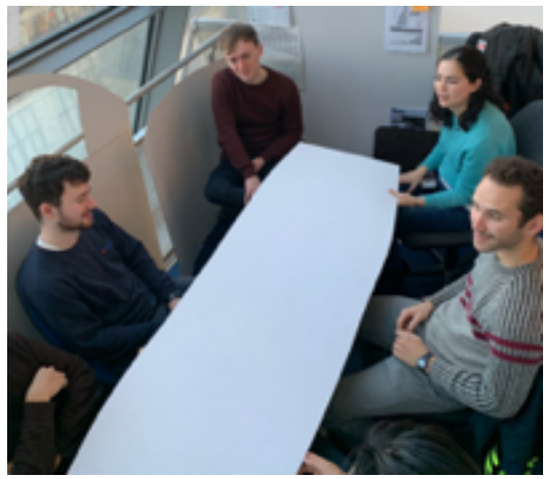
ORIGINAL FEATURE LIST



UPDATED FEATURES
FOCUSED ON USER BEHAVIOURS

Moving forward, we relied on a technique that was novel to me but proved to be extremely effective in narrowing down our approaches to the features proposed: role-playing

This technique helped us define the seating layout as well as a variety of other features such as door number and the decision of whether to include a table. We also made a prototype of the seat we designed for our vehicle.



We had two areas set up for role playing: one was in the lobby of the Reid Building, which we used to determing the seating layout. From this session we concluded that the 3x3 (bottom right) seating arrangement minimized space use while allowing the best environment for sharing/private alternatives. This is also one of the simplest ways to access every chair in the vehicle without obstructing other passengers, and the best arrangement in case of emergencies.

There was another area in the Studio which we used for most of the other features, in this case, we can see the table being tested. We decided not to include this as it would feel too crammed.

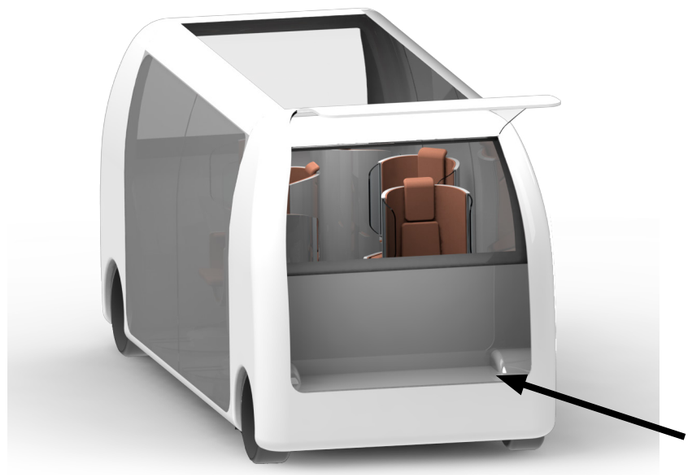
CONCEPT DEVELOPMENT: STORAGE

After agreeing on major ideas behind defining features, we split into groups as to design the details of each of them. In this document I will focus in more detail on the features Yongxin Lyu and I designed: The Vehicle Storage.

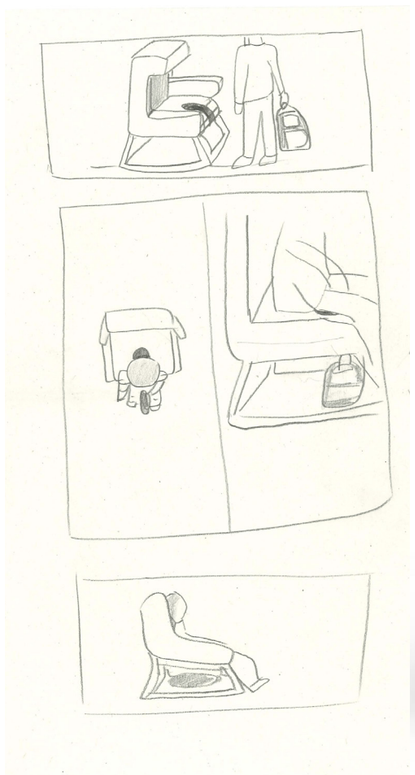
The starting point was our observation of public transport and scenarios, from which a couple of facts stood out:

- People prefer to have personal items close to them
- When public transport is the only option, they are not shy about carrying their items, regardless of type or size
- Overhead compartments are seldom used because they are high off the ground
- In our scenarios, there would be multiple instances of larger loads such as shopping, groceries, luggage, equipment

We placed the cargo storage space on both ends of the vehicle for storing larger items. The storage space is 200cm meters wide by 150cm tall by 40cm deep. The wall that divides the cabin is made of glass (allowing riders to see their items). The default position sets the bottom shelf of the storage at only 25cm from the ground. There is enough space for the rider to transport items of large dimensions, including bicycles, skis, tools, appliances, etc. In the case where the cabin space is cleared for accessibility, the bottom shelf rises by 65cm (to store the seats from the cabin) this leaves the bottom shelf at 90cm from the ground, which is still fairly accessible.

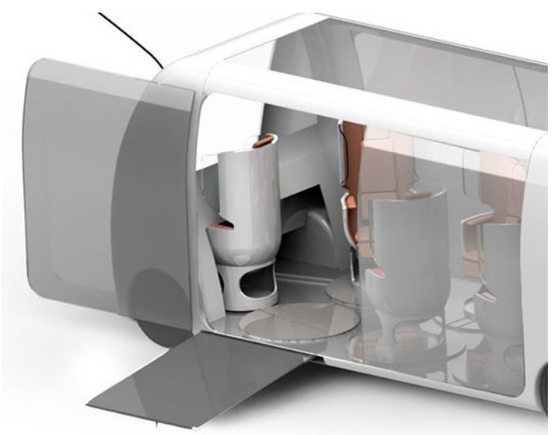


Shelf at default position

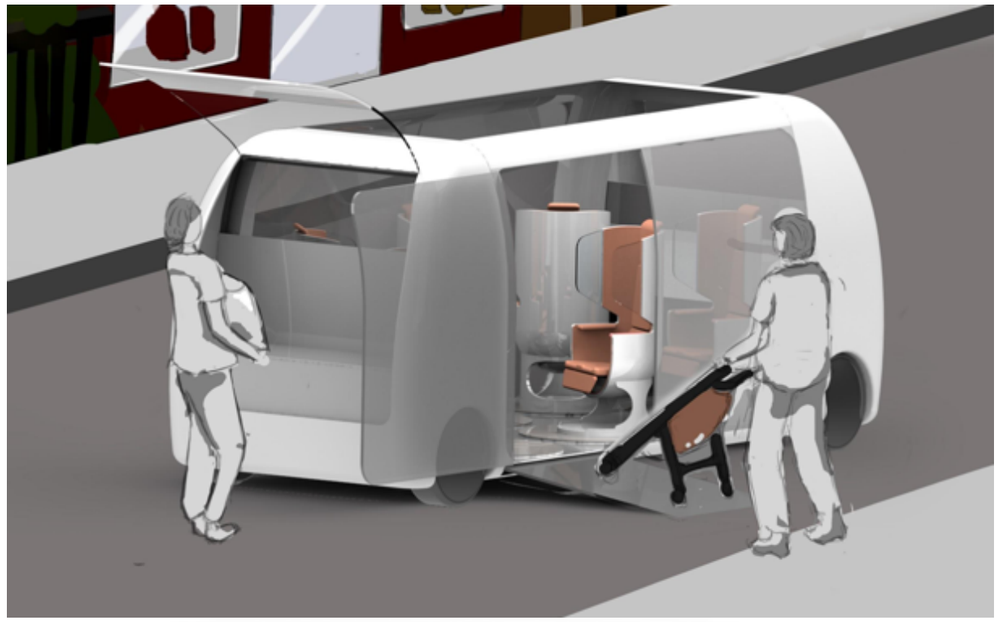


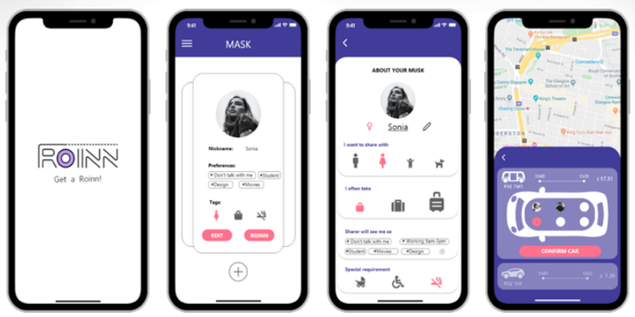
This is a sketch for one of the storage options: personal storage, which keeps belongings close to the reach of the passenger. Riders would have access to both personal and cargo storage options

Raised shelf to store seat and open cabin space



PROPOSED CONCEPT





The proposed concept was arrived at through evidence-based decision making, as well as our judgement as designers and potential users. Driven by the future need of shared transport, we identified key features and implemented them into a complete package.

The product, Roinn, is meant to be used by a variety of users and in many different situations. To accomodate for this we have allowed enough versatility in our product to make sure everybody's needs are met.

Roinn works through an application that allows the user to set preferences, such as chosing who to ride with, seat preferences, and other comfort settings. It has a variety of storage opportunities so as to accomodate for all kinds of trips. For instance, besides the strorage space described, the seats can be stored away as to allow for universal accessibility or greater storage capability. Moreover, the swiveling seats and optional low profile screens allow the users to maintain their privacy and personal space, or engage with other riders through vehicle interaction, entretainment or friendly conversation.

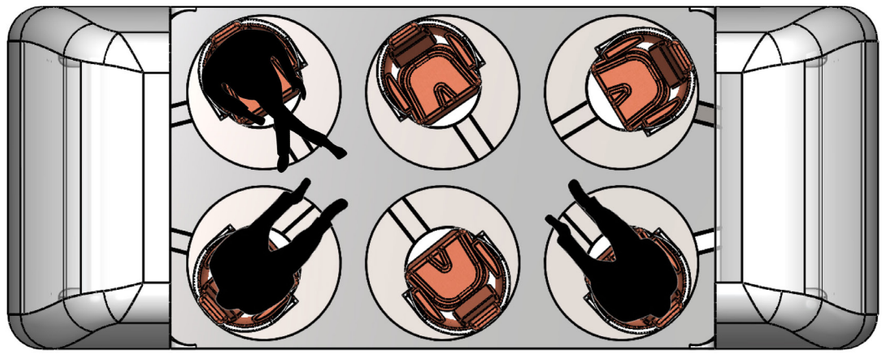
More details on the features of this vehicle can be found on the Roinn Evidence Document

CONCLUSION

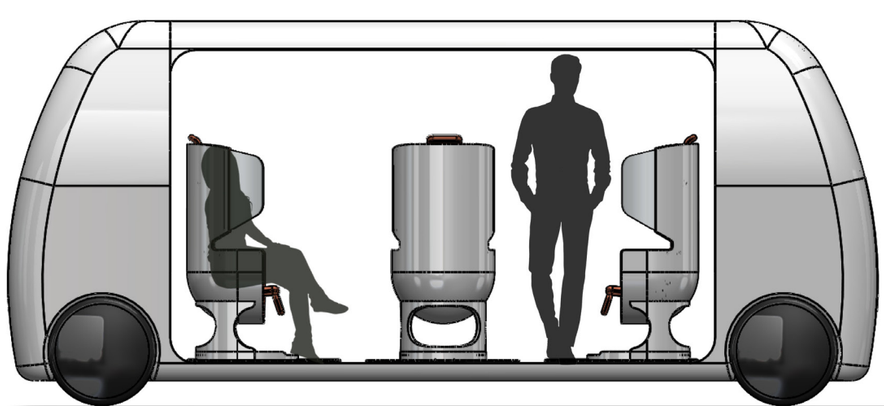
Every time we encountered a problem during this project, it seemed like the answer was always different versions of “work harder”. Running through the stages of the design journey like we just did, however, puts into perspective that some kinds of work are more important than others. Amongst the top I would list: Work on effective communication of abstract ideas, work on patience, do better research (because you never really start from scratch), work on getting to know your user, their needs and desires, work on making prototypes and read a lot!

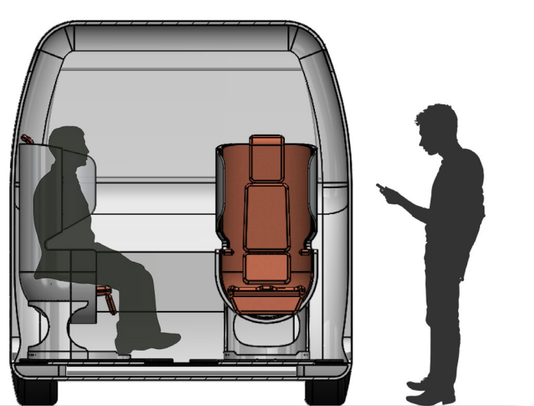
In the end, I am satisfied with the work we did and I look forward to trying to convice everyone in the future that “we had that idea first!”. In my opinion we chose a somewhat ambitious topic (the vehicle of the future), and one that was very much centered on human behaviour (which only complicated things), and, after much deliberation, made a very fair attempt at addressing a forecasted issue from a couple of decades ahead. The maze I used as an image in the introduction is an exaggeration of what the design process was actually like (maybe I should have chosen a simpler maze), but nevertheless, it is not the “complexity” of the maze but its the fact that in reality, there are many correct paths, so the diffculty lies in assuring we are on the “best” correct path, or the most appropriate, or the cheapest, or the most important one?

So, how do you choose a problem? how do you solve it? how do you know your idea is worth its weight? Through this project, I’ve made some progress in trying to answer these questions, but I have a feeling one can never be sure - maybe that is the very reason design stays interesting.



It helps to have a good team, and for that I have to thank mine, composed of Lu, Lorena, Yongxin, Pumbaa, Wan, Sean and Phillip. Our different approaches were as refreshing as they were different, and being one of the newcomers to the field of design, I learned a lot from the team. Peppered throughout this journal are grey boxes with realizations I came to during the design process - not through osmosis but with patience and instruction of our tutor, Stuart Bailey, who I have to thank for understanding where I came from professionally and helping me get rid of my bad habits (like saying “that will never happen”).





I have purposely ommited some details of our design to simplify this journal because I see its potential as a tool in the future: when I get stuck, or don’t know what decision to make, or have a misunderstanding with my team - I hope to refer to this journal that documents my first wobbly steps into my career as a Product Design Engineer.