

DRIVE : SWEDEN



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FORMAS

Delta
Eleonor Sjödin Turah
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Strategic
innovation
programmes

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Jag är medveten om att nedanstående uppgifter kommer att publiceras efter granskning och eventuell redigering av Vinnova *: Ja

Syfte och mål - uppfyllelse *

Syftet är att sänka andelen resande med eget fordon till och från Kistaområdet för en hållbar framtid. Detta kan göras genom att erbjuda ett attraktivt och hållbart kollektivt resande i Kistaområdet som även ökar den upplevda säkerheten under resan till och från arbetet. Syftet är också att göra Kista till ett än mer attraktivt område och en självklar plats för framtidens mobilitet. Målet att genomföra tester av tjänsten med utvalda fokusgrupper för att möjliggöra detta.

401 / 500 tecken

Syfte och mål - uppfyllelse - på engelska *

** Denna text är maskinöversatt **

The purpose is to reduce the proportion of travelers with their own vehicle to and from the Kista area for a sustainable future. This can be done by offering attractive and sustainable public transport in the Kista area, which also increases the perceived safety during the journey to and from work. The aim is also to make Kista an even more attractive area and an obvious place for future mobility. The goal is to conduct tests of the service with selected focus groups to enable this.

431 / 500 tecken

Resultat och förväntade effekter - utfall *

Lärdomarna från användarna var bl.a. *Användarna var nöjda och ville att tjänsten skulle fortsätta *Appen för bokningen bör utvecklas för att tillgodose resenärens behov *Resenärerna var tveksamma till att betala för tjänsten, men kunde tänka sig det om det var billigare än taxi eller ingick i kollektivtrafiken *Resenärerna var öppna för att nyttja tjänsten även om resan var delad med andra och den utfördes av självkörande fordon. De belyste dock att förarna gav en känsla av trygghet.

Kunskapen kommer nyttjas för vidare utveckling av mobilitetslösningar för en hållbar framtid.

495 / 500 tecken

Resultat och förväntade effekter - utfall - på engelska *

** Denna text är maskinöversatt **

The lessons learned from the users: * Satisfied and wanted the service to continue * The booking app should be developed to meet the traveler's needs * Travelers were hesitant to pay for the service, but could imagine it if it was cheaper than a taxi or incl. in public transport * Open to use the service even if the trip was shared with others and it was performed by self-driving vehicles. However, they highlighted that the drivers gave a sense of security.

The knowledge will be used for further development of mobility solutions for a sustainable future.

492 / 500 tecken

Upplägg och genomförande - analys *

Deltagare till fokusgrupper rekryterades från fastighetsägare och företag i Kista. Dessa förbereddes under en ws med info och inledande frågor. Elbilar förbereddes för att nyttjas för tjänsten och förare utbildades. Tjänsten utvärderades, av förare och fokusgrupp, efter en tid och tillgängligheten justerades. Enkäter skickades ut under testperioden. Efter avslutade tester genomförde forskare intervjuer med fokusgrupperna. Resultatet sammanställdes med svar från enkäter och statistik från appen och presenterades och diskuterades under en ws med bla Region Sthlm.

492 / 500 tecken

Upplägg och genomförande - analys - på engelska *

Focus groups were recruited from property owners in Kista. These were prepared during a ws with info and introductory questions. Electric cars were prepared to be used and drivers were trained. The service was evaluated, by the driver and focus group, after a while and the availability was adjusted. Questionnaires were sent out during the test period. After completing tests, researchers conducted interviews with the focus groups. The results were compiled with answers from surveys and stat. from the app and were presented and discussed during a ws with, among others, Region Sthlm.

495 / 500 tecken

Länkar till externa webbsidor

Finns det en webbsida för projektet, klicka på knappen "Lägg till länk" nedan för att skriva in en sökväg.

DELTA STATISTIC FACT SHEET



Main Takeaways From The Experiment

- Users enjoyed the service and wanted it to continue
- The service was most popular in the afternoons between 2-6pm
- If rides are not offered within 60 seconds, users will cancel their request
- Users were open to the idea of sharing a vehicle with others
- The vehicles were seen as great for the project, but “flimsy” due to their small size and low-to-the-ground profile; future vehicle designs need to incorporate more space for multiple passengers and goods
- The app needs several improvements for increasing service offer (ride requests times, communicating vehicle position, saving “favorite” or frequent destinations)
- Most users were hesitant to pay for the service, but would consider it if certain features were added, and if it remained cheaper than a taxi or part of public transit
- Users were open to the idea of autonomous vehicles
- Users were open to the idea of shared, autonomous vehicles, but emphasized that they liked the DELTA drivers and that drivers offered a sense of authority and a safety resource

Users were recruited through companies based in Kista Science City. Two vehicles were in service, with drivers who were selected through Keolis. The vehicles were electric, built and designed by T-Engineering, a Tröllhattan-based vehicle design consultancy owned by Dongfeng Motors. The vehicles were 5G-connected to Ericsson’s mobility platform. The app developed was built by Freeway, a software provider offering passenger and goods transport platforms at ski resorts and villages in Sweden.

The original vision of DELTA was meant to be shared, on-demand mobility. However, due to COVID-19, the experiment was modified to offer on-demand mobility (with only drivers and single passengers) instead.

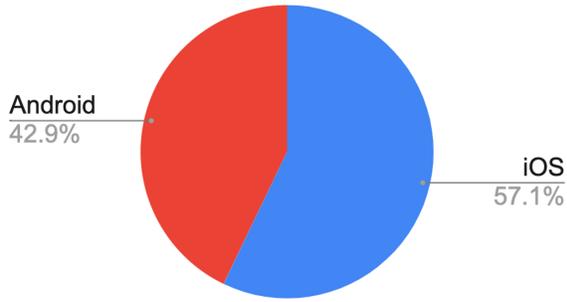
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Total User Base: 30

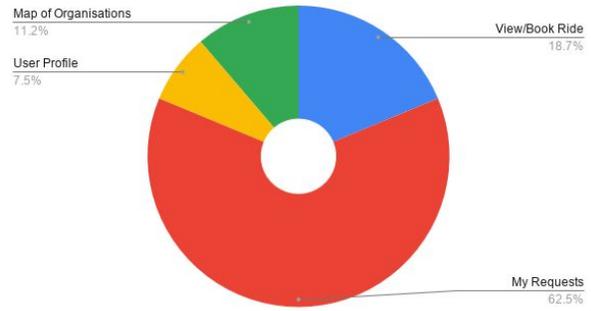
Daily average opens: 3.9

Average opens per user (total): 61

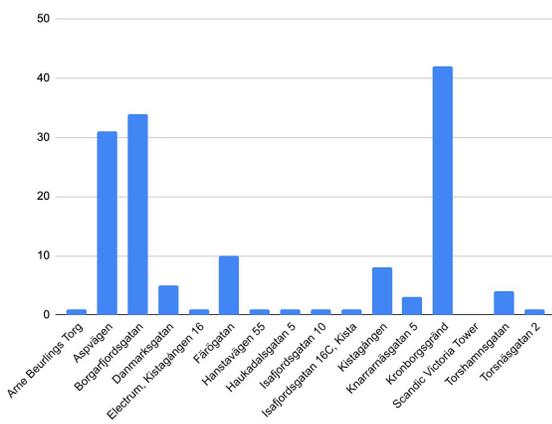
Operating Systems of DELTA Users



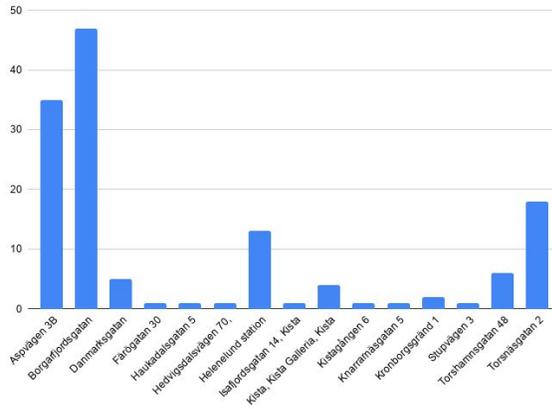
Amount of Time User Spends When Using the App



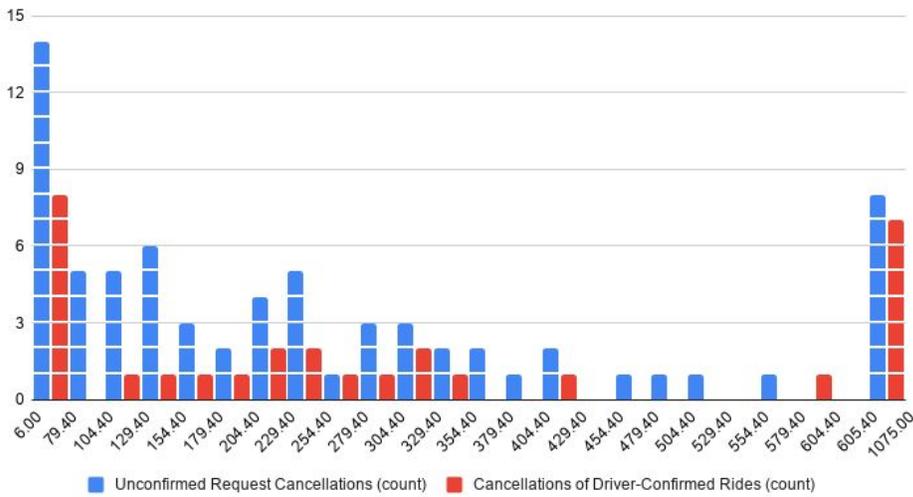
Departure Points by Frequency
October 19 - December 11 2020



Arrival Points by Frequency
October 19 - December 11 2020



Frequency of User Cancellations by Condition and Time (Seconds)



Overall, people were extremely positive about the service!

"The drivers were really friendly. So that's a good thing. Plus, it was easy to use."

"I would say, for example, every time I go to Kista, I take the bus to Kista. And it was quite easy to know, approximately when I was supposed to send in a request for a cab about payments in advance. And the cab was there when I was arriving to Kista. So that was very well. And the cab drivers were also very, very friendly, very helpful."

"The fact that you can actually take it to different places than where there are like bus stops or stations, things like that. That's probably the best thing."

How did you feel about the vehicles used?

"Very slow. And you can literally feel every bump in the street. Yeah, the doors are very loud, when you close them. They're like, the car feels like it's gonna fall apart when you close the door."

"But as I said, maybe the cars need to be bigger if you're going on the highway."

"I've seen some of these moped cars, another in our scenarios, and they're very plastic, but these were actually quite robust. The only thing with this the size is that when, when we actually thought of using it, when we were a few couple of people at the office, you can only fit one person at a time."

How do you feel about your personal safety, either in DELTA or in Kista?

"Yeah, I remember that I really had safety concerns. Last time you asked. But I don't know if I still see it that way... I don't know what's changed. Actually. Maybe I know the area better now. Because where it started, I just moved. And I don't know I'm not as negative to them anymore. Maybe it just took more time to process. It wouldn't actually change that much as of now."

But then your concerns before they were not so much in the technology. He was more on being the stranger in the car.

"Yeah, it wasn't at all about the technology. It was more about the authority of the driver. There's someone who can step in if something happens."

DELTA was free; how would you feel about a future service that was paid?

"I would probably still use it because I also use other services that are not free. And sometimes rarely to work, but mostly from work. So, I definitely can see myself paying for it because I already do."

"Well, maybe not, because I tried to use the service I think was seven times, and I only had three successful drives with it. But with some improvement, maybe yeah."

"I think it would need to be like a part of the regular mass transit system, something like that. But I don't think I would like to pay extra for it. So now, but yeah, I wouldn't have any problem with giving them my personal information, especially if it's for safety purposes. That would be fine."

How would you feel about using autonomous vehicles that may or may not be shared with other riders?

"No problem at all. No problem. That's I mean, it's this time of year. It's no fun to, to walk from the office down to the center, when it's very, very dark. And now, especially now when it's basically no one else. So it would have been perfect."

"I think I would trust your autonomous vehicles for them. Without doubt. The only thing is maybe like the it gets to be more, the demands more of the technology. With the driver, I can ask them, are you going to go this way? Or you're going to go this way? Or? Oh, right, maybe it's best to be take this way. You know, so the conversation gets to be about the routes and stuff gets to be the driver. But otherwise, I think autonomous would be good."

"Both yes and no, I don't know, sometimes you really don't want to talk. And you don't want to be rude, either. So that's great if there's not a driver. Other times, you may I don't know, enjoy company, or feel unsafe in some kind of way. I don't really know if I'm sure about that."

"No, no problem for me. Actually, the only thing that would might be a problem is that when you take such a short route or short time in the car, the extension of the time when picking up or dropping someone else can be too much. If you had larger vehicles, say, seating 10 people or something like that, then you'd be quite alright with having to wait a little bit or going slightly off your preferred route because it could still be quicker to get where you're going then walking or trying to grab a bus from a predefined stop. At least that's my view."

Where else could you see a service like DELTA being useful?

"I guess it all depends on the I mean, how time efficient it is. ... I guess it's a good start. And I mean, I would love to be able to take my son to kindergarten, but that requires car seats."

"Sure, in the last mile, if you look about the last mile solution. If you're handicapped, for example, getting to your work would be one group that would be benefited a lot from it. If I do look to my personal needs, going (unknown), carrying a lot of stuff, if you're at the store, or if you're actually in a work environment for a while you carry a lot of stuff."

"I would put it in areas close to universities, okay. And student housing, because I'm going to start in the students, they are always for the most convenient way to get around for the cheapest price."

Potential leverage for next steps: the Voltron portfolio

First Goal:

A potential solution to both concerns is to develop an on-demand autonomous vehicle service for staff, students and visitors to the Chalmers Johanneberg Campus, with a focus on supporting persons with mobility issues to go around campus. The vehicle should take advantage of pedestrian zones for motion.

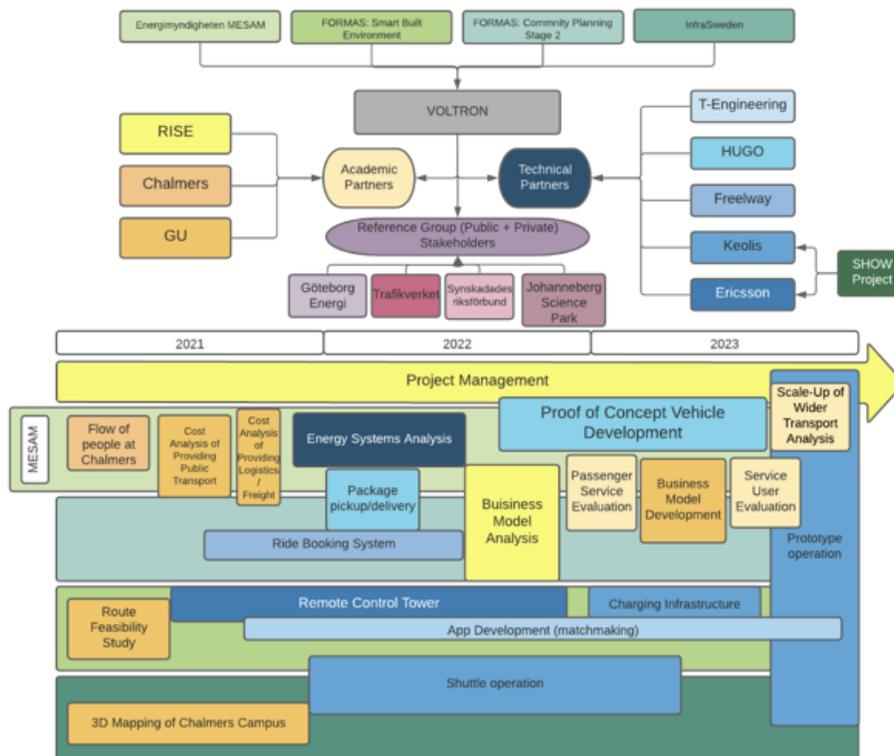
Long-Term Vision (Second Goal):

Beyond the initial free-floating, on-demand passenger service, Voltron also wants to explore the potential relationship between a vehicle design that allows for first/last mile delivery robots underneath the carriage of passengers in the same vehicle (using the same road space). This kind of integrated digital system has not been attempted before and has interesting implications for the financial and legal merging of passenger and logistics transport. This is a discussion of “duo-modality”, and looking for the potential synergies, efficiencies, and cost savings in both energy usage and financial resources in providing passenger and logistic service simultaneously. This has significant implications for wider use in the transport system.

By using the passenger service as an evaluation / test case for developing a new vehicle type, the next step for Voltron is to design and build a prototype vehicle that could allow for passenger transport simultaneous with pickup/dropoff of delivery robots.

Consortium

T-Engineering, Keolis, Ericsson, Freelway, Berge, RISE, Chalmers University of Technology, Johanneberg Science Park...and more!



Delta – On Demand

User experienced project

For sustainable and attractive public transport



Telia

KEOLIS



T-engineering



ERICSSON

intel®



DELTA - On Demand (ride sharing)

Agenda

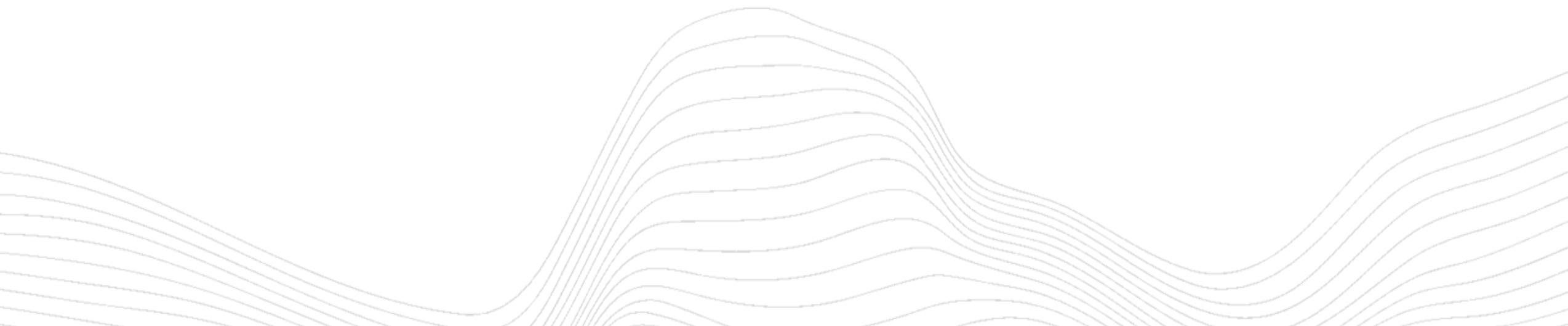
- Introduction
- Background and goals
 - Jan Jansson, New Mobility Manager, Keolis
- Learnings
 - Statistics and conclusion, Sigma Dolins, Phd student, Chalmers/Keolis
 - Business models, Gustaf Juell-Skielse, Associate Professor at the Dpt of computer and Systems Science, Stockholm University
- Break
- Learnings
 - Learnings from global research, Andrés Laya, Researcher at Consumer Lab, Ericsson
- Discussions

Introduction

Why Delta?

- Sustainability
 - Reduce amount of travellers using their own car (reduce emissions) through
 - Attractiveness
 - Availability

- Perceived security
 - No need of walking alone to/from work first/last mile on areas with perceived insecurity



Introduction

How did we carry out the project?



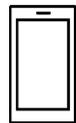
- Focus group
 - Dedicated group of people
 - workshops
 - using the service to and from work on working days in Kista. First and last mile.
 - Feed back via questionnaires



- Two electric cars
 - Small cars where only one passenger could fit in (corona)



- Drivers
 - Carefully chosen drivers



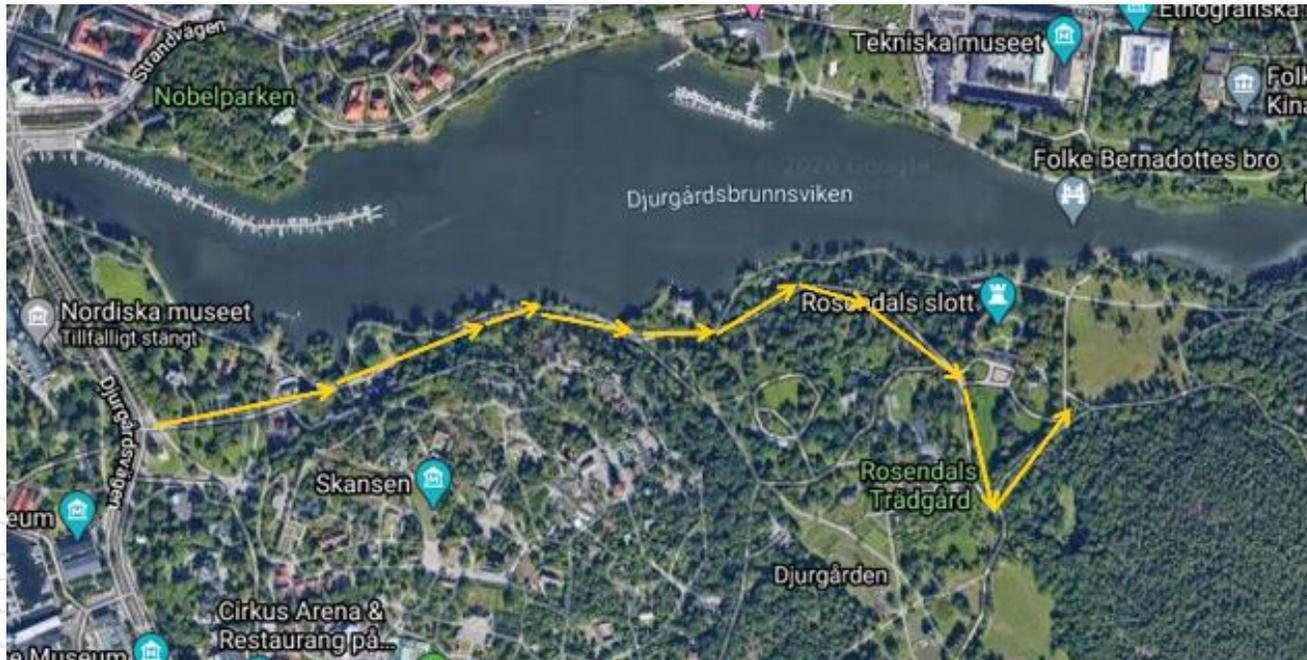
- App for booking



- Control Tower

Background

5G Ride Djurgården



DELTA

Topics

- First and last mile connecting to Metro and commuter trains
- App by Freelway, vehicles by t-engineering (DongFeng)
- Small electric vehicles with 1 passenger only (Corona friendly)
- The Kista area little bit less than 2 x 2 km , most travels carried out within 1 x 1 km
- On-demand in some years to be combined with autonomous vehicles
- Sensors and connectivity
- To be followed by on-demand ridesharing with more passengers
- Valuable for coming evaluation of on-demand solutions under certain circumstances replacing 12 m buses (areas and time of day)

DELTA

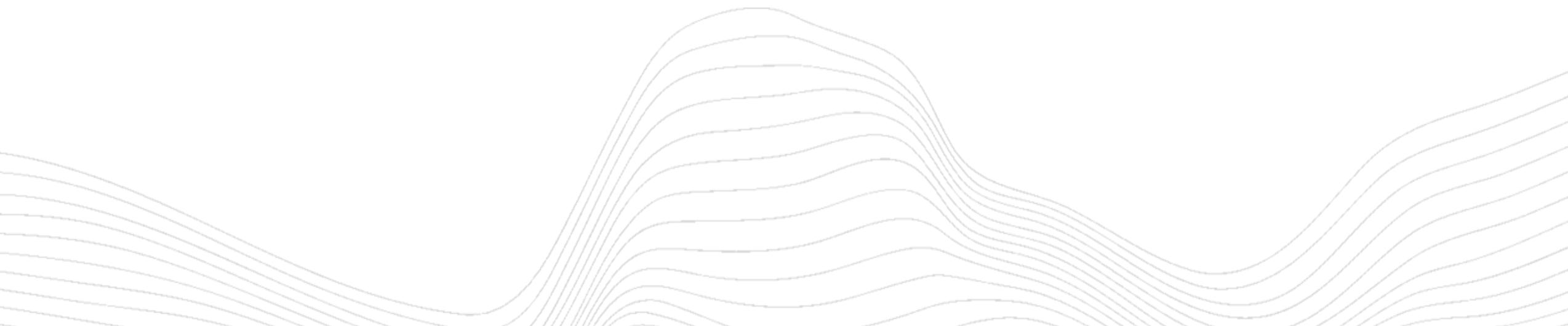
Statistics and Future Pathways

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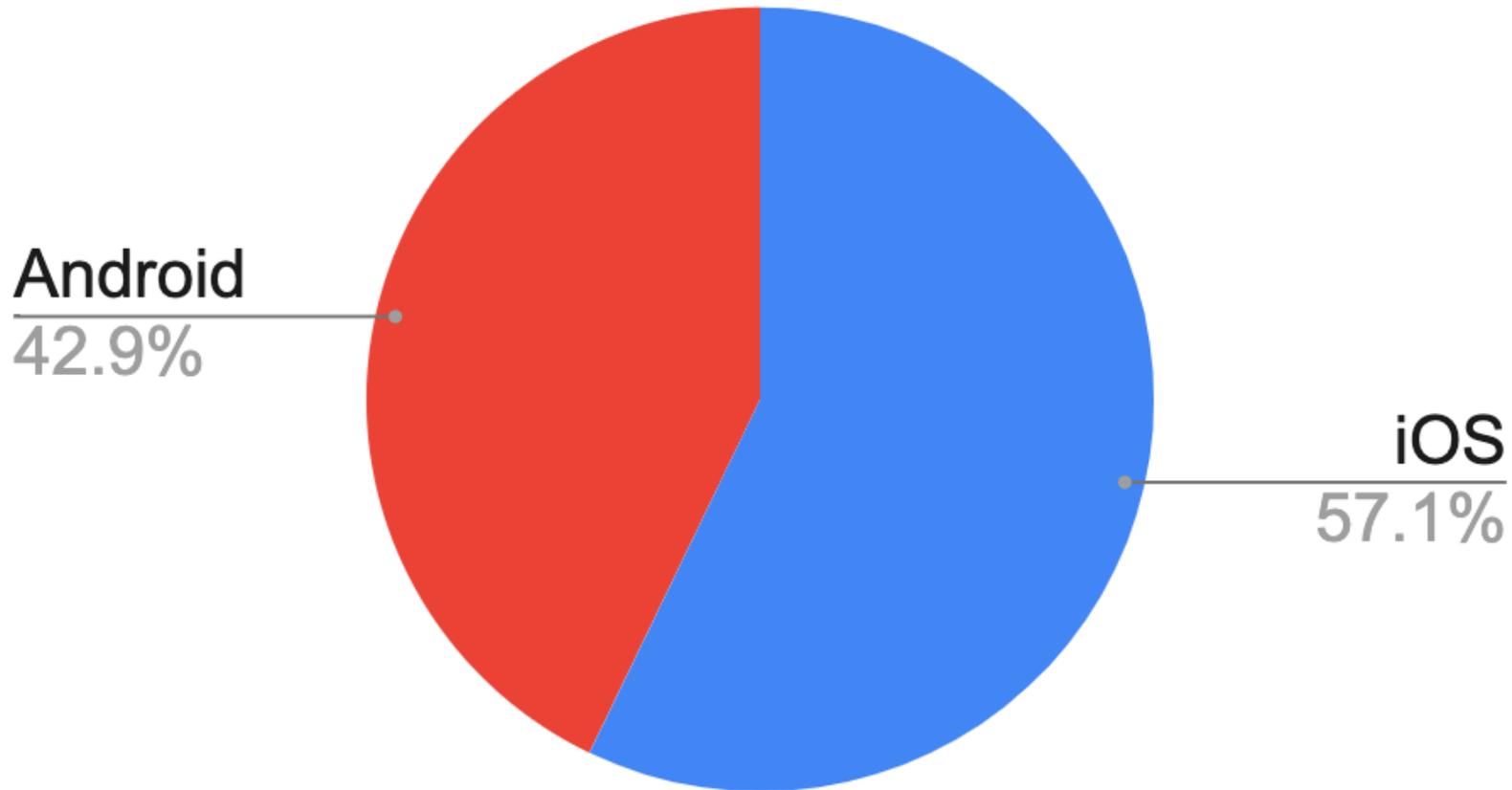
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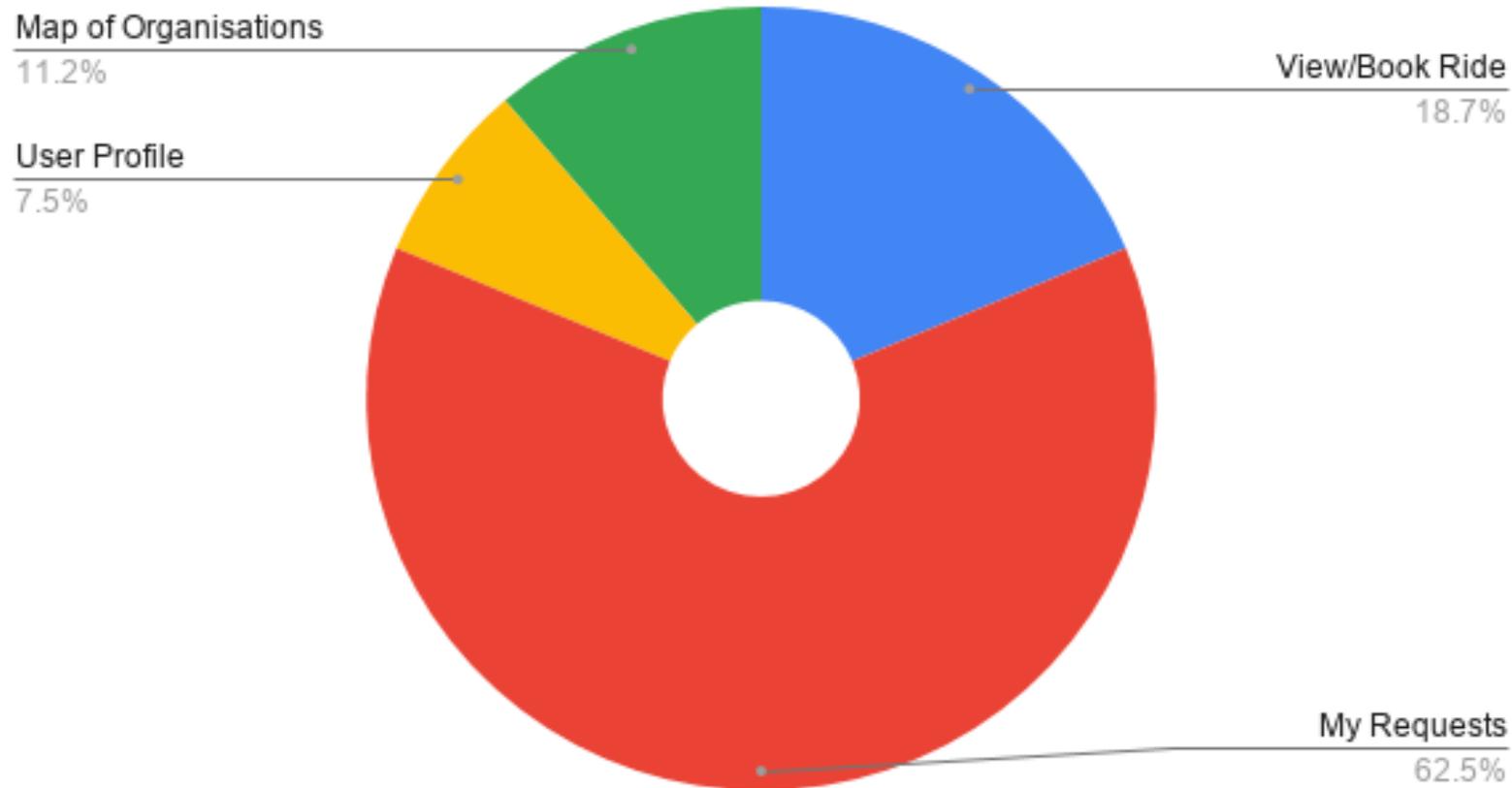
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DELTA

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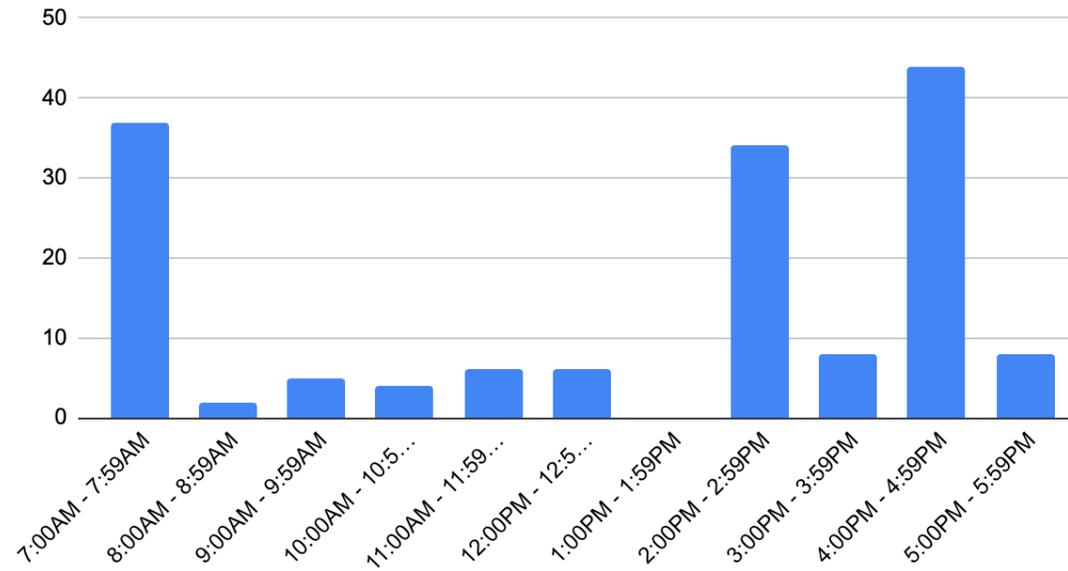
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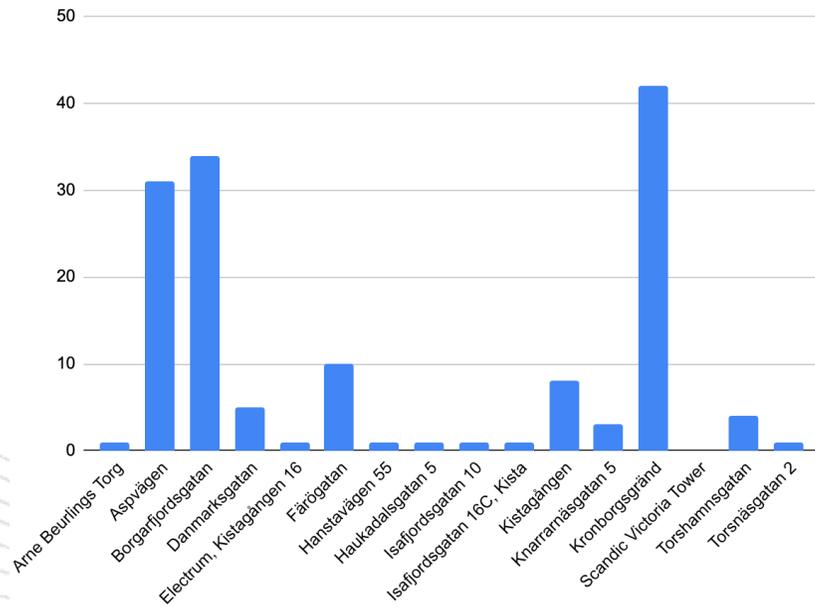
DELTA

5G RIDE™

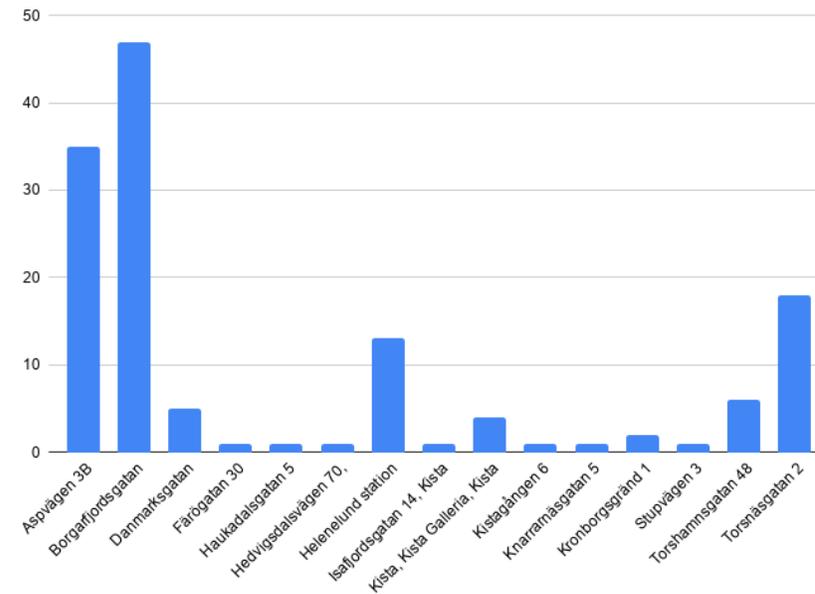
Frequency of Rides by Time of Day



Departure Points by Frequency October 19 - December 11 2020

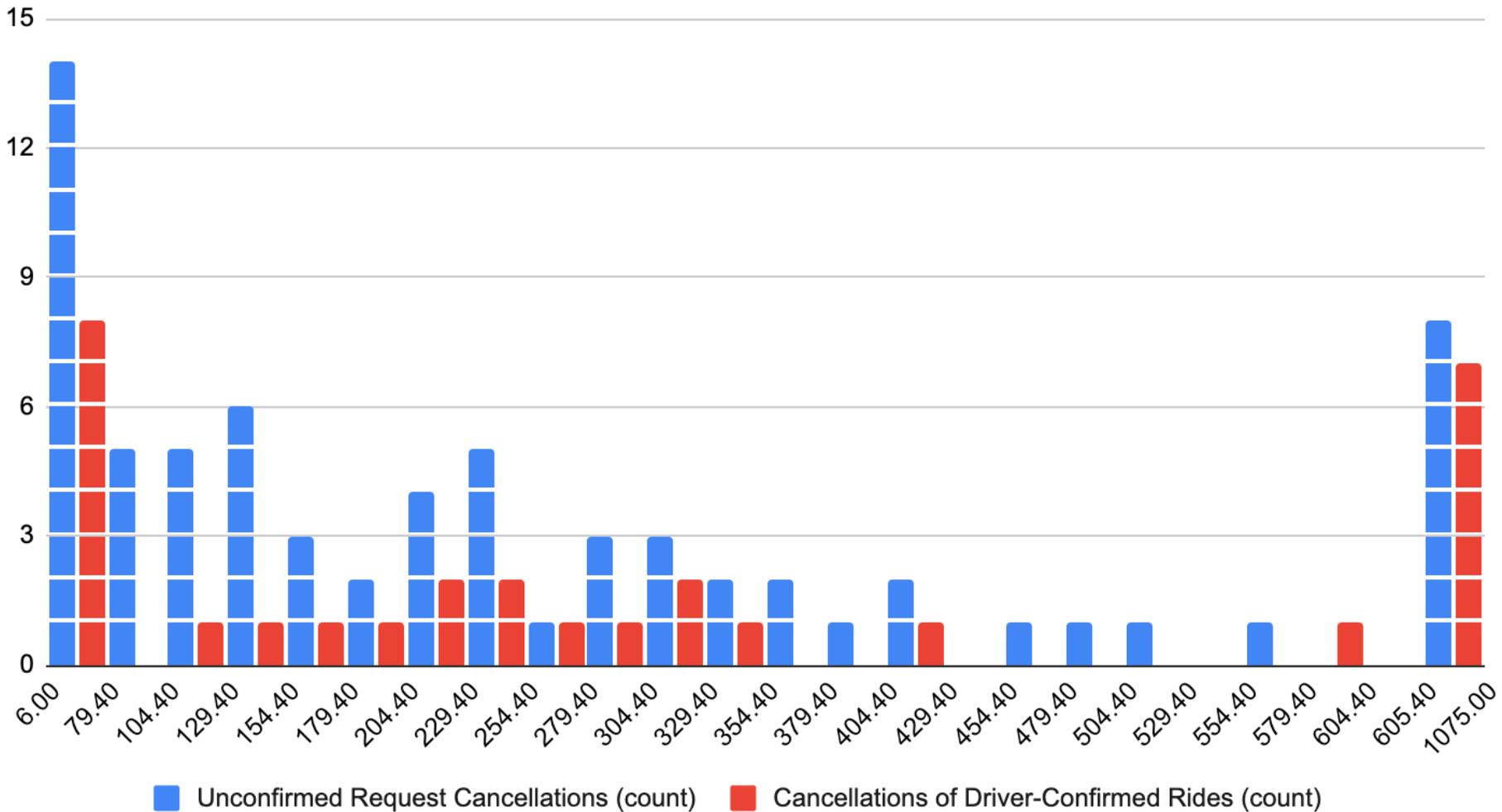


Arrival Points by Frequency October 19 - December 11 2020



DELTA

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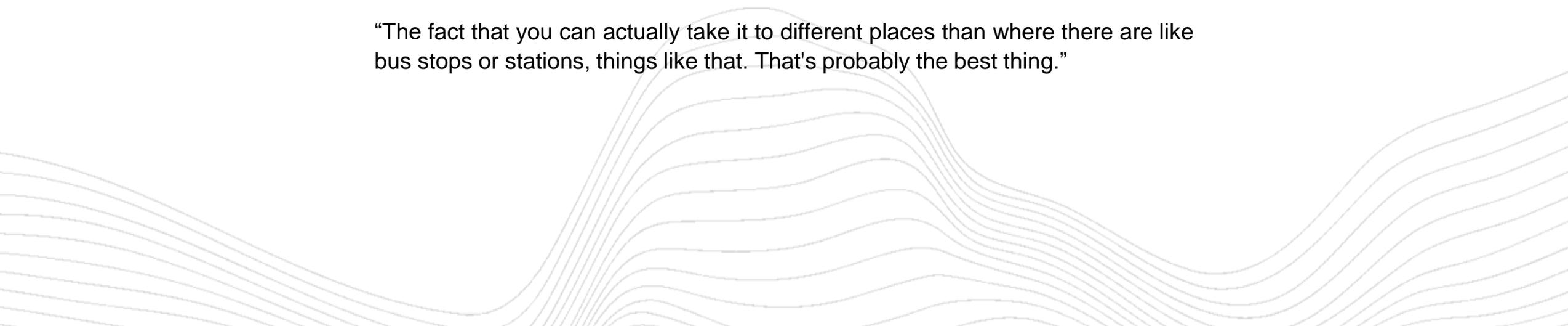
DELTA

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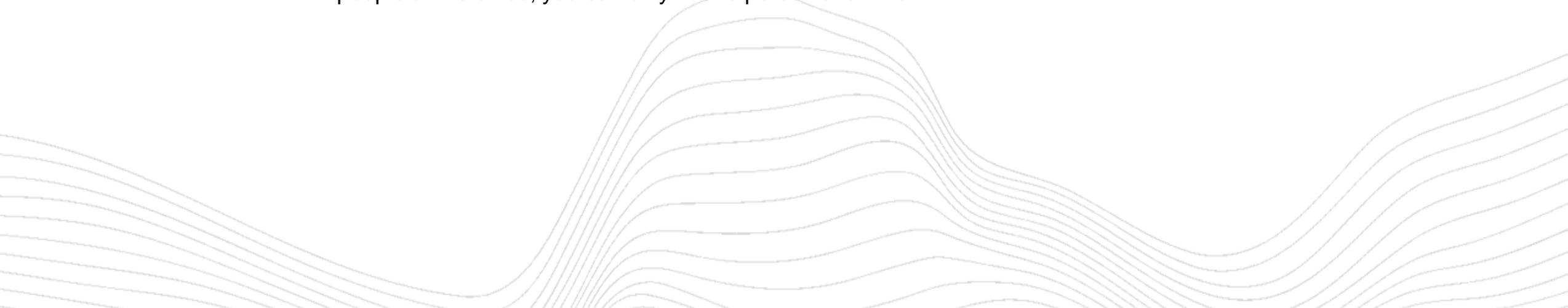
DELTA

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DELTA

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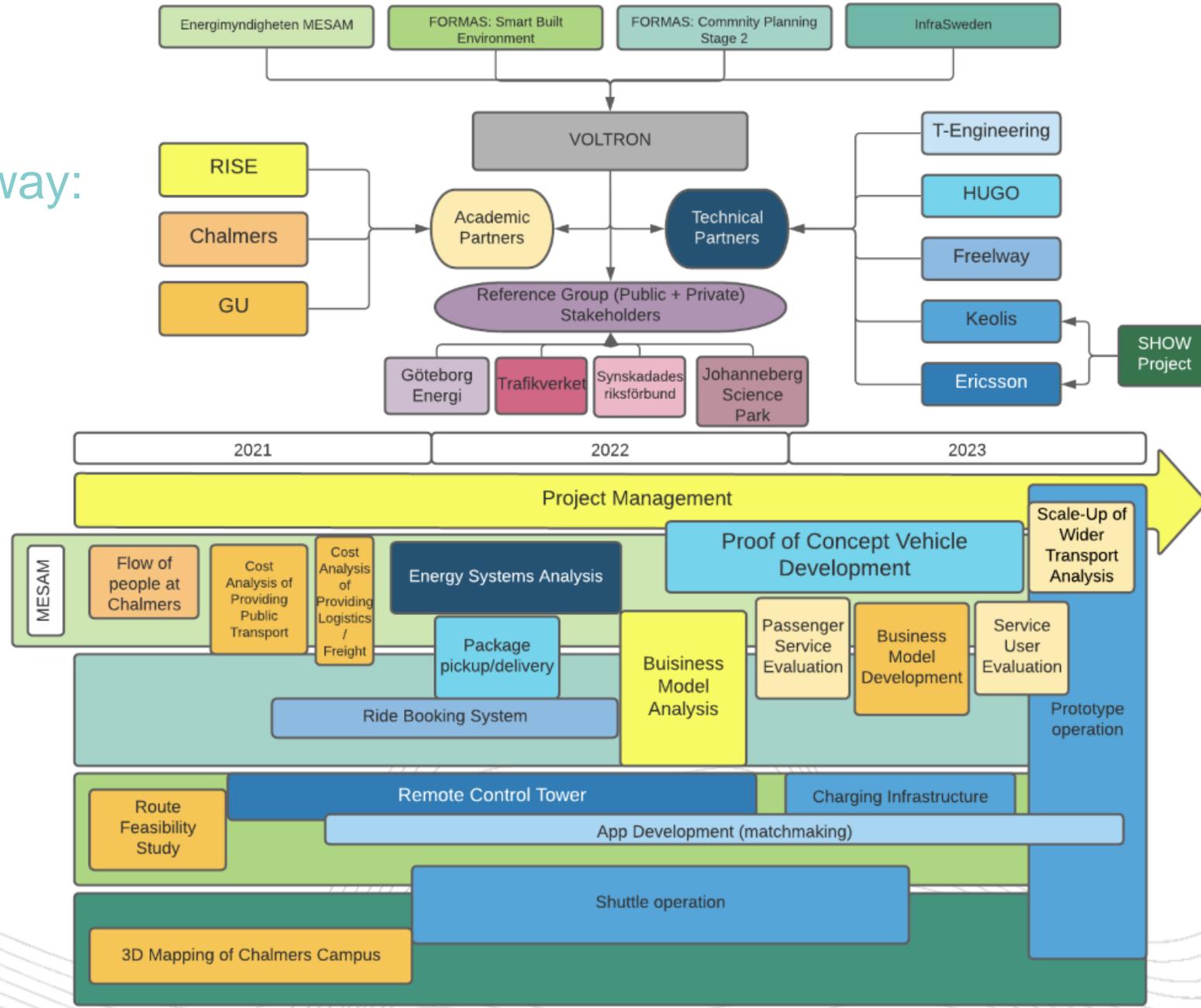
DELTA

Main Takeaways From The Experiment

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- Users were open to the idea of autonomous vehicles
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DELTA

Future Pathway:
Developing
Shared, On-
Demand
Autonomous
Services

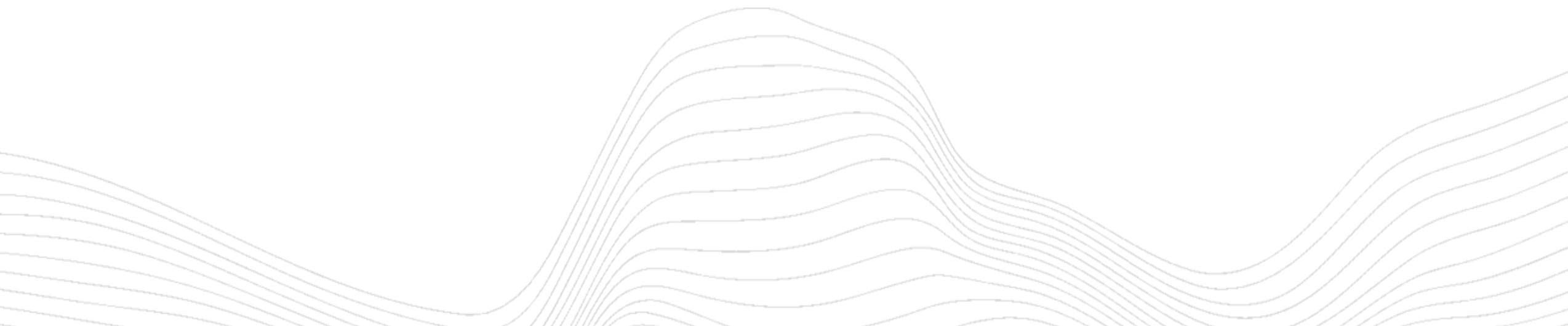


DELTA Business models

Kandidatuppsats 2020, Stockholms universitet Anton Winterman och Simon Nyberg

Problembeskrivning

- Hållbarhet - stor andel privat bilkörande
- Trygghet - upplevd otrygghet



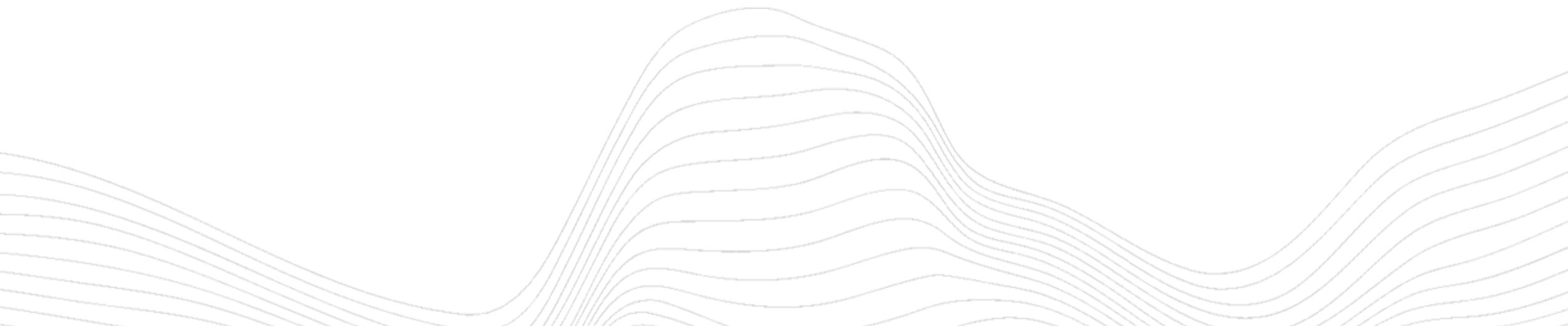
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Mål med tjänsten

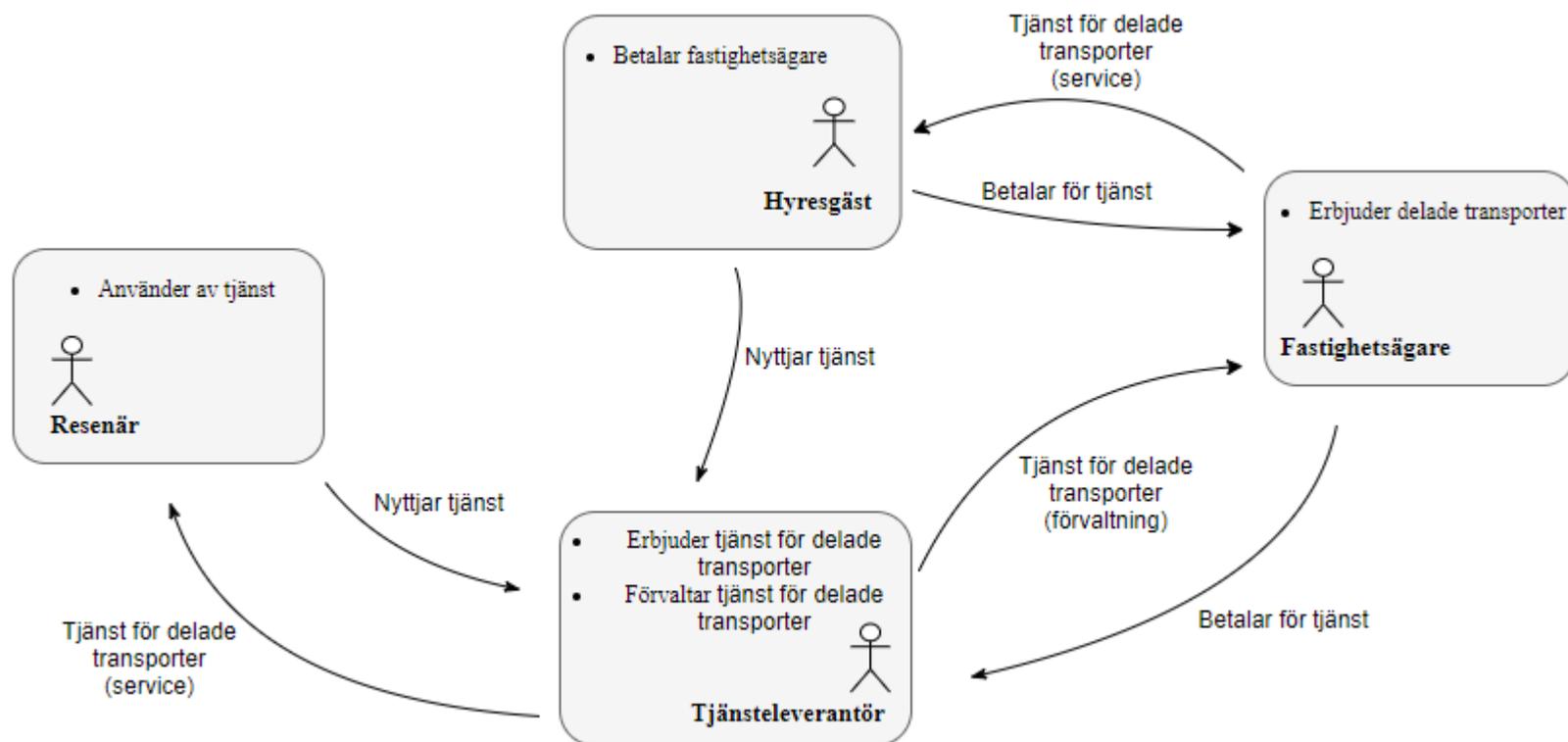
Minska andelen privat bilkörande med hjälp av delade transporter

Bidra till ökad trygghet med ökad trafik och rörelse i området efter arbetstid



DELTA Business models

Värdemodell



DELTA Business models

Affärsmodell för Fastighetsägare



Affärsmodell för Tjänsteleverantör



DELTA Business models

Affärsmodell för Fastighetsägare



Affärsmodell för Tjänsteleverantör



Delta – On Demand

5G RIDE™



Drive Sweden is one of the Swedish government's 17 Strategic Innovation Programs (SIP). Drive Sweden gathers partners from academia, industry and public organizations and is working towards a vision for Sweden to take a leading role in leveraging digital technology to shape a more sustainable transportation system. The SIPs are funded by the Swedish Innovation Agency Vinnova, the Swedish Research Council Formas and the Swedish Energy Agency. Drive Sweden is hosted by Lindholmen Science Park AB.