

CRITERIA CARDS

to optimally design the daily commute for an

**AUTONOMOUS VEHICLE
RIDE-SHARING SERVICE**

INTRODUCTION CARDS

SERVICE CRITERIA

VEHICLE CRITERIA

USER-SERVICE CRITERIA

USER-USER CRITERIA

INTRODUCTION CARDS

Introduction Cards

The introduction cards briefly explain the possibilities these criteria have to offer and how they can be used to make, or check, a service design for an AV ride-sharing service for the daily commute. They also explain each cluster.

Brainstorms: The cards could individually be used as 'H2s' in a brainstorm when looking for partial solutions.

Concepts creation: The backside of the cards explains why a criterion is important and what user values are at its base, this

side is useful during the concept generation phase. The clusters and categories could be used to focus on a specific theme.

List of criteria: Lastly, these cards could be used as a set of criteria to which you could measure a concept for AV-ride-sharing.

basic offering

This cluster describes criteria that sound fairly basic, but are not to be underestimated when you want to roll out a successful ride-sharing service. They apply to the service and vehicle criteria and function as a basis upon which other criteria can be manifested.

service authority

The criteria in this cluster service to establish the roles and responsibilities between the service and its' users. Which tasks should the service fulfil? And what should the service ask from its' users to guarantee a pleasant commute for everyone?

rewards & consequences

This cluster applies both to the user-service criteria and the service criteria as rewards and consequences can both be used in the plain service offering as be used to create a good user-service relationship. Rewards and consequences contain criteria that will stimulate proper usage of the service.

payment

A very specific cluster that states the preferred form of payment from a user perspective and the considerations from a service provider perspective.

supporting activities

The cluster supporting activities describes how the vehicle in which the service operates should support the activities intended by the user. The most common activities observed or stated during different phases of research as part of this graduation project form the basis of these criteria.

vehicle-service integration

This is an important cluster when considering that the vehicle provider or service provider might not be one party but multiple collaborating companies. The vehicle is the servicescape and the largest manifesting and most essential part of the service and should be properly integrated to guarantee optimal user experience.

certainty & clarity

Feeling empowered is one of the most important user values for an AV ride-sharing service and understanding your surroundings, knowing what to expect, and being certain about your commute, are at the foundation of empowerment. The criteria in this cluster assure the foundation to user empowerment.

user understanding

In order to provide every user with a comfortable ride, the service needs to understand each individual user. Today there is only a limited possibility for having a deep user understanding of many individuals, but emerging technologies promise to improve this capability and as a ride-sharing service for everyday use, understanding the user and translating this into the service experience is a great way to make all riders feel comfortable.

user autonomy

Just as it is important to understand the user and act accordingly it is just as important that the users keep feeling a sense of control and empowerment. That is why certain choices and possibilities should never disappear from the service offering. These criteria aim to provide users with a feeling of control over their commute.

facilitating interpersonal contact

Since the servicescape is shared, the service should facilitate the desired amount of interpersonal contact amongst the riders. The desired state has a lot over variables such as the involved individuals, their mood and other factors in their lives. Properly facilitating engagement amongst users will improve the ride-sharing experience, so does facilitating ceasing of interpersonal interactions when desired.

matching

In order for a ride-sharing service to actually be shared, multiple users have to be matched to the same ride. This requires parameter on which to match individuals. This cluster elaborates what are, and what are not suitable parameters to match individuals.

SERVICE CRITERIA

Service Criteria

These criteria are mainly focused on the initial service offering. In this card deck, the desired outcome is a service design for autonomously driven vehicles, which will transport multiple people on their daily commute.

**THE SERVICE SHOULD BE
OPERATED ON INDIVIDUAL USE.**

basic offering

1

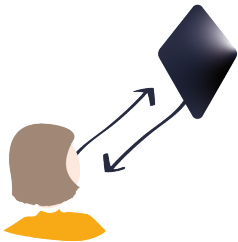


The standard would be to use the ride-sharing commute as an individual with the possibility to add an additional rider. People feel safer and more comfortable when they are sharing with other individuals instead of being an outsider individual to a group of people. People travelling with 3 or more should preferably get their own vehicle.

**THE SERVICE SHOULD
ALWAYS RESPOND TO USERS
(COMPLAINTS).**

basic offering

2



Today an important difference between Lyft and Uber is the responsiveness of the service and onboard the driver is there to address. Since this is an on-demand service the customer responsiveness should be high.

**THE VEHICLE SHOULD BE ABLE
TO BE STOPPED BY ITS USERS IN
CASE OF EMERGENCIES.**

basic offering

3



In case of an emergency, the user has to be able to intervene and stop the vehicle both digitally and physically, this should be a clear option to provide a sense of control.

**THE SERVICE SHOULD INCLUDE
THE OPTION TO RIDE IN AN
ENVIRONMENT WHERE PEOPLE
ARE FREE TO TALK.**

basic offering

4



Being able to engage in conversation or to have a phone call is another desired state for the daily commute that most certainly should be facilitated by the service.

**THE SERVICE SHOULD INCLUDE
THE OPTION TO RIDE IN AN
ENVIRONMENT WHERE PEOPLE
ARE REQUIRED TO BE SILENT.**

basic offering

5

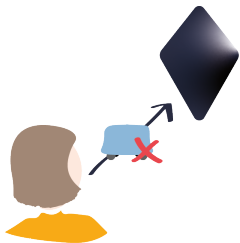


Silence mode is a desired feature for the daily commute. People should be able to state this preference and the service should (if possible) match passengers accordingly.

**THE SERVICE SHOULD PROVIDE
THE POSSIBILITY TO ENTER
A COMPLAINT ABOUT THE
VEHICLE.**

basic offering

6

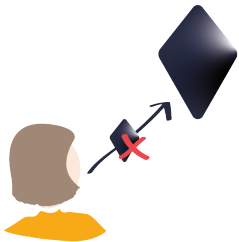


Without driver surveillance, there is a high chance that the vehicle could occur to be in not optimal state (dirty or damaged). The user should be able the enter a complaint which could be an indicator for Ford to check up on the vehicle and if needed grand a refund or apologize to the user if fitted.

**THE SERVICE SHOULD PROVIDE
THE POSSIBILITY TO ENTER
A COMPLAINT ABOUT THE
SERVICE.**

basic offering

7



If the service is not functioning properly is it important to make it easy for the user to notify so, in order to be aware of its functioning and to compensate this user if fitted.

**THE SERVICE REQUIRES A
LEGAL FORM OF IDENTIFICATION
FROM ITS USERS.**

service authority

8

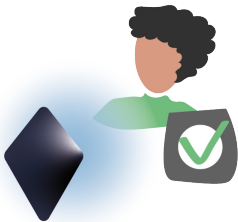


It is important to know who is riding your vehicles, partially from a safety perspective towards other users and to hold people accountable when they misbehave. A form of identification should discourage bad behaviour.

**THE SERVICE MAINTAINS
CONTROL OVER WHO CAN USE
THE SERVICE.**

service authority

9



By knowing who rides when and where in addition to knowing their IDs the service can easily identify someone who misbehaved and can in serious cases retain these people from riding (e.g. violence, sexual assault, intentional property damage). This is to make other users feel safe en discourage illegal behaviour.

**THE SERVICE SHOULD
REQUIRE A FORM OF PAYMENT
GUARANTEE FROM ITS USERS.**

service authority

10

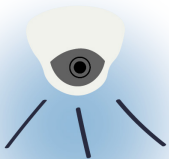


You do not want to risk unpaying customers, so an automated and legitimate form of payment is required for subscribing (e.g. credit card, google pay, automatic deposits etc).

**THE SERVICE SHOULD HAVE THE
AUTHORITY TO MONITOR THE
ACTIONS INSIDE THE VEHICLE
WHEN IN OPERATION.**

service authority

11



Monitoring what happens inside the vehicle is an important way to ensure the safety of the riders, users should always be aware that they are monitored. This can be done through cameras or sensors and could function purely as surveillance footage (meaning that it is not watched, merely stored until asked upon) in order to ensure the privacy of the users.

**THE SERVICE SHOULD GRANT
PERMISSION TO BRING ALONG
CHILDREN.**

service authority

12



People should indicate if they want to bring along little children or babies, who might not count as a full additional passenger but do cause a difference in the servicescape.

**THE SERVICE SHOULD GRANT
PERMISSION TO BRING ALONG
PETS.**

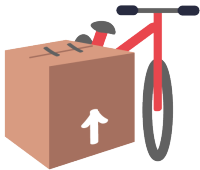


People should indicate if they want to bring along pets on their ride since. This might cause disturbance for other passengers (e.g. allergies) and the service should consider boundaries on how to transport pets.

THE SERVICE SHOULD GRANT PERMISSION TO USERS WHO WANT TO BRING ALONG LARGE ITEMS.

service authority

14

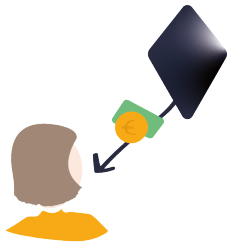


People should indicate if they want to bring along large quantities of luggage or large objects (e.g. bike, moving boxes)

THE SERVICE SHOULD HAVE THE ABILITY TO GRANT REFUNDS IN MONEY OR RIDES FOR CUSTOMERS WHO HAVE BEEN TREATED ACCORDINGLY.

rewards & consequences

15

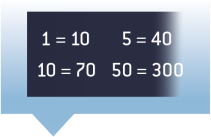


In case of an error by the service or significant misuse from a co-rider, the service should grant refunds to those users (like the NS paying back your ticket if your delays are too severe).

THE SERVICE SHOULD OFFER FREQUENCY DISCOUNTS.

rewards & consequences

16



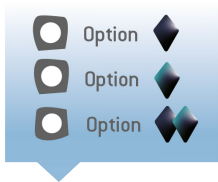
1 = 10	5 = 40
10 = 70	50 = 300

Since the service operates on matches it is much easier to guarantee a good service system is these rides uphold for a longer time span. Offering frequent usage credits (like KLM's flying blue or UberGold) are small but strong incentives to avoid users easily switching to other service providers.

THE SERVICE OFFERS DIFFERENT TYPES OF SUBSCRIPTION MODELS.

payment

17



The daily commute is a frequently reoccurring tip and today we mostly see pay per use trips in TNCs where the price differs for the time of day and traffic situation. When you take the driver out of the equation you can calculate an average price for someone's commute and offer benefits for taking a subscription instead of pay per use, since this is much easier to work with for the service system.

**THE SERVICE SHOULD INCLUDE
PAY PER USE OPTIONS.**

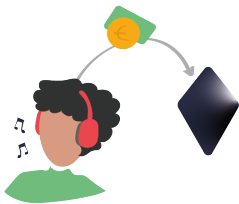
payment

18



This option would be good for incidental usage for people who have irregular commutes for example. Or when you have your basic commute subscription but you would like to use the service for transportation other than work from time to time.

THE SERVICE SHOULD HAVE A TRANSACTION THAT OCCURS SEAMLESSLY.



An automated and seamless transaction contributes to a more effortless ride experience.

**THE SERVICE SHOULD INCLUDE
THE POSSIBILITY TO CHANGE A
CHOSEN SUBSCRIPTION.**

payment

20



Once a user has chosen a subscription, he/she should still be able to change this when his/her mobility needs change. It would be very negative if people have the feeling they can not get their desired mobility plan at this service but could elsewhere. You should, however, avoid the possibility to continuously switch.

VEHICLE CRITERIA

Vehicle Criteria

To deliver the service to its users, one will need vehicles to transport people. The vehicles and the services will have a high impact on each other's functioning and therefore it is crucial to take into account some design aspects for the

vehicle in designing the service (vice versa).

Integrating the service with the vehicle will add to the possibilities and user experiences during the daily commute.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT MINIMIZE
MOTION SICKNESS.**

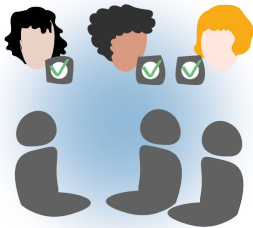


Motion sickness is one of the main things that prevent people from working or doing relaxing activities such as reading in the car. In an autonomous vehicle, where seats are not always faced forward and you have more time for activities, the risk of motion sickness poses a greater threat to having a positive experience.

**THE SERVICE SHOULD
PROVIDE THE ABILITY FOR ALL
PASSENGERS TO SIT DURING
THE COMMUTE.**

basic offering

22



Comfort is one of the most important influencers when it comes to the daily commute. People do not like to travel standing, and offering a service where this is an option would have an impact on the willingness to use this service over another.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT CAN
EASILY BE CLEANED.**



Hygiene is a large concern for AV ride-sharing services since it is used by many different people who do not have ownership over this vehicle. An interior that is easily cleaned and has a fresh appearance is very important in the assessment of quality and comfort. (e.g. stained train seats are often left empty).

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT CONTAIN
WINDOWS.**



Despite the many extra opportunities in activities on the go offered in an AV, people clearly state their desire to just do nothing and see your surroundings pass by, this is also the main activity in TNCs today. Even though the functional purpose of windows will decrease they should remain part of the servicescape.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT HAVE
COMFORTABLE SEATS.**

basic offering

25



Comfort is one of the most important (dis)satisfiers on the go. Having seats that are comfortable to work and relax in, is an important offering.

**THE SERVICE SHOULD OPERATE
IN VEHICLES THAT SUPPORT
THE USERS INTENDED ON THE
GO ACTIVITY.**

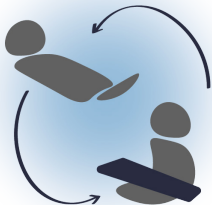
supporting activity

26



An example where the intended use and vehicle setting do not align is in today's trains. Here you find four chairs facing each other (an engaging setting), in a silence first class coupe, depriving people of the possibility to work and from the possibility to chat.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT HAVE
ADJUSTABLE SEATS.**



Adjustable seats are an easy way of facilitating multiple activities and cater to a large variety of people without having to be own a large variety of vehicles.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT OFFER A
SUITABLE WORK ENVIRONMENT.**



Doing work on the commute is an important desire, therefore the service should offer a table-like surface and supporting the use of electronic devices inside the vehicle.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT OFFER
A SUITABLE ENVIRONMENT TO
RELAX.**



Opposed to working people also like to relax on their commute and the servicescape should be able to facilitate this (e.g. watching a movie on a screen provided by the service or seats that can be lowered).

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT OFFER
A SUITABLE ENVIRONMENT TO
ENGAGE IN CONTACT WITH OTHER
RIDERS.**

supporting activity

30



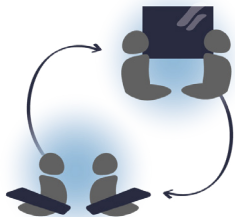
Engaging with other riders is can be made easier by arranging seats and screens in a way that people can more easily talk to each other and are not closed off by screens.

**THE SERVICE SHOULD BE
OPERATED WITH VEHICLES
OWNED BY THE SERVICE.**



Ownership over the vehicles, or the other way around ownership over the service by the vehicle provider is important to guarantee an optimal service since the two are highly interdependent. The vehicle designs and operations and the service offerings should always be aligned.

**THE SERVICE SHOULD OPERATE
WITH VEHICLES THAT CAN
EASILY BE MODIFIED.**



Service offerings are relatively easy to change and update, but the physical product can not as easily be updated or replaced on a weekly bases. But in order for the service and vehicle to align the vehicle should be modifiable. Not only for long term purposes, but also to be able to use the same vehicle for multiple purposes on a daily basis (e.g. social or sleep vehicle).

**THE SERVICE SHOULD OPERATE
WITH VEHICLES CAN ADAPT TO
ITS USERS.**



The adaptability of the vehicle is important to make every user enjoy comfortable experiences where they are empowered to perform their desired activities. If a rider wants to work on his/her commute the vehicle should (e.g.) manifest itself with an upright seat and table in front.

USER-SERVICE CRITERIA

User-Service Criteria

This set of criteria is more focused on how the service should manifest toward the users. And how the service should interact with the users to provide an optimal experience.

The criteria have mostly originated from the

relational touchpoints in the user journey of today's TNC use. They focus on essential user values such as certainty & clarity and making the users feel empowered.

**THE SERVICE SHOULD
CLEARLY COMMUNICATE THE
RESTRICTIONS ONBOARD OF
THE VEHICLE.**

certainty & clarity

34



If the restrictions are clear, passengers can more easily act accordingly. The restrictions should at least have been shown before initial use, easy to look up and not open for interpretations.

**THE SERVICE SHOULD VERIFY
THE BOARDING PERSON TO BE
THE CORRECT USER.**

certainty & clarity

35



If the vehicle stops to pick up a new rider it is important that the service knows that the boarding person is indeed the passenger who ordered the ride. It would be confusing if two neighbours with similar pick-up time get in each other car. Verifying the user is important from a safety perspective and for the users' sense of clarity and certainty.

**THE SERVICE SHOULD
INDICATE WHEN A USER IS A
DISTURBANCE TO THE DESIRED
STATE.**

certainty & clarity

36

Sorry, but you should put your headphones on in a silent ride.

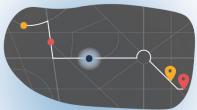


For example, if someone is being loudly talking in a silent ride the service should notify this user. By doing so this person gets informed that he/she is acting undesirable and could check with the other users if they are actually bothered or immediately stop their behaviour. By doing so the service does not require another user to confront the other person to their behaviour.

**THE SERVICE SHOULD KEEP
THE USER INFORMED ON THE
NUMBER OF STOPS ON THE RIDE
AND CURRENT LOCATION OF THE
VEHICLE.**

certainty & clarity

37



People like to know where they are on their route and have clarity on when they need to deboard. Providing an overview of where the vehicle is and the amount of stops on the ride will give the riders a sense of certainty and clarity.

**THE SERVICE SHOULD KEEP
THE USER INFORMED ON THE
ESTIMATED ARRIVAL TIME.**

certainty & clarity

38

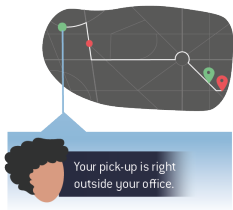


People find it extremely important to have an overview on when they arrive, an ETA should always be available for the users. Partially so they know what they can still do in the vehicle but mostly to ensure they will be on time and if not, communicate this as soon as possible.

**THE SERVICE SHOULD KEEP
THE USER INFORMED ON THE
PICK-UP LOCATION OF THE
VEHICLE.**

certainty & clarity

39

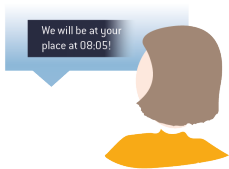


It is important to have no possible confusion on where the users will be picked up by the vehicle, especially on first rides, or when changes occur the pick-up location should be communicated properly. Improper communication would cause confusion and frustration for the users and possible delays for the system.

**THE SERVICE SHOULD KEEP
THE USER INFORMED ON THE
PICK-UP TIME OF THE VEHICLE.**

certainty & clarity

40

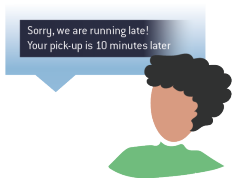


When operating in varying densities of traffic it is likely to have slightly different occurring pickup times. The users should be informed about this for every ride, to ensure that both the vehicle and the people do not have to wait.

**THE SERVICE SHOULD INDICATE
ANY (UN)EXPECTED DELAYS.**

certainty & clarity

41



Communicating delays is closely connected to keeping users aware of their ETA and pick-up time, but very significant delays, for example, should be communicated separately in order to give people the chance to choose a transport alternative or work from home.

**THE SERVICE SHOULD INDICATE
THE ATTENDANCE OF PETS, LARGE
ITEMS OR LITTLE CHILDREN TO
OTHER PASSENGER(S).**

certainty & clarity

42

Robin will bring a dog to work today, is this okay with you?



People will be aware of their co-rider during the commute both if people incidentally bring along pets or children, the service should make the other riders aware of this as well and should have the right to indicate that this is undesirable (e.g. because of allergies or a silent ride).

**THE SERVICE SHOULD ONLY BE
ABLE TO AMERCE USERS WHO
DO NOT OBLIGE TO CLEARLY
STATED RESTRICTIONS.**

rewards & consequences

43

An illustration of a person's head and shoulders in profile, facing right. The head is brown, and the shoulders are yellow. A bright red, circular glow emanates from behind the head, suggesting a warning or a negative consequence. To the left of the person, there is a blue speech bubble with a black rectangular area inside containing white text.

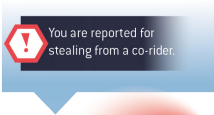
If you leave you trash again
we will charge you extra.

Having onboard restrictions is important to guarantee a pleasant servicescape for everyone and them having a consequence is a good way to make people stick to the rules.

**THE SERVICE SHOULD BE ABLE
TO AMERCE MISBEHAVING
USERS.**

rewards & consequences

44



Besides the service restrictions that are service specific and should clearly be communicated, it is also important that people do not get away with breaking the law inside the vehicles. The service should be able to address users who do misbehave or depute them.

**THE SERVICE SHOULD BE
ABLE TO AMERCE USERS WHO
DAMAGED THE PROPERTY OF
THE SERVICE PROVIDER.**

rewards & consequences

45

An illustration of a dark brown rectangular table with four thin legs. One leg is broken and lies on the ground. A blue speech bubble with a black rectangular area containing white text points towards the table.

Please refund the table
you broke.

Public transport displays many signs of a user who to some extent damaged the property of the service providers. If it is known to the service which user damaged the vehicle they should be held accountable in order to demotivate such behaviour.

**THE SERVICE SHOULD BE ABLE
TO REWARD THE PROPER USAGE
OF THE SERVICE.**

rewards & consequences

46



Congratulations with your
'always on time' discount!

Rewarding good behaviour works very well and people have a tendency to be very sensitive to rewards. For example, you could give a free ride to a user that has been on time every day of the month, or credits to someone who did not mind when a co-rider unexpectedly brought along a dog. Be careful that rewards do not become the new norm and be consistent with them.

**THE SERVICE SHOULD
STIMULATE FREQUENT USAGE
OF THE SERVICE.**

rewards & consequences

47



Since the service operates on routes with commuters it would be better for the service if it can count on people for a longer period of time. Loyalty plans, such as UberGold and FlyingBlue, are examples of loyalty programs that encourage people to keep using the same services instead of switching between operators.

**THE SERVICE SHOULD ADAPT
ITS TONE OF VOICE TO ITS
USERS.**

user understanding

48

You can relax a little,
your pick-up is at 07:55!

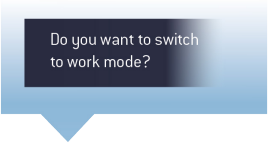
We will pick you up
at 08:05.

Artificial intelligence offers the possibility to adapt the service's tone of voice to each user, therefore making them feel more comfortable with the service. Adapting to each individual goes automatically for people in communication and allows subtle differences that could increase a sense of welcomness.

**THE SERVICE SHOULD LEARN
THE ROUTINES OF USERS AND
ACT ACCORDINGLY.**

user understanding

49



Do you want to switch
to work mode?

By learning the desired routines of a user on its commute the service can facilitate this and support their needs on the go. This can also help as a means of getting back to your routine when a co-rider proposes other activities without being impolite.

**THE SERVICE SHOULD
MANIFEST ITSELF ACCORDING
TO ITS USERS' PREFERENCES.**

user understanding

50



People could have a preference for a certain colour as surroundings, a certain window opacity, music in the vehicle, or a means of communication (e.g. auditory, visual, etc) when the service gets to know these preferences it should act accordingly.

**THE SERVICE SHOULD PROVIDE
THE POSSIBILITY TO IMPORT
PREFERENCES AND CONNECT TO
OTHER PROFILES OF THE USER.**



Connecting to other profiles of the user increases a comfortable ride experience, since he/she does not have to manually connect music (e.g.), and has as benefit for the service that it can acquire more user data and that could be featured in social media which could function as natural promotion.

**THE SERVICE SHOULD
MANIFEST ITSELF
ACCORDING TO THE CURRENT
SERVICESCAPE STATUS.**

user understanding

52

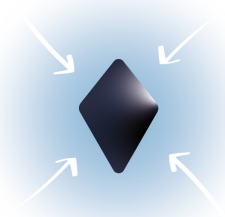


If the rider of the vehicle has indicated to prefer a silent ride, the service should not interfere with that by its own communication. It should use text or visual communication channels at those times, or when it is in social mode, it should not notify through a personal device (e.g. phone) making people focus on that instead of each other.

**THE SERVICE SHOULD ALWAYS
BE APPROACHABLE.**

user autonomy

53



One of the most important things is for the service to always be approachable for its users, mainly during the ride. Having a clear way to address the service or ask questions and express uncertainties is an essential way to make people feel empowered.

**THE SERVICE SHOULD
FUNCTION BASED ON
PRE-SETTINGS IMPORTED/
STATED AT INITIAL USE.**

user autonomy

54



Importing setting from earlier MaaS services or Ford services would make it easier to start initial usage and save people from a choice paralysis effect. Ideally, the service could also access additional data of the user to provide a more complete experience from the beginning (e.g. to match the tone of voice or music preferences).

**THE SERVICE SHOULD BE OPEN
TO ADAPT THESE PRE-SETTINGS
AT ALL TIMES.**

user autonomy

55



Besides the ease of set-up, you should never leave the user full unempowered over his/her choices and leave room for alterations in settings and preferences.

**THE SERVICE SHOULD BE
OPEN TO LETTING USERS
CHANGE THEIR MATCHING
PREFERENCES AT ALL TIMES.**

user autonomy

56

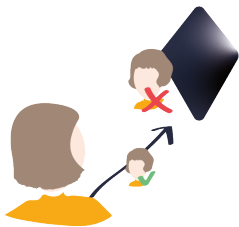


Matching preferences could form a basis on who you would share your ride with, but if your commute routines change, you should always be able to alter these settings.

**THE SERVICE SHOULD ALWAYS
HAVE THE POSSIBILITY FOR A
USER TO FIGHT A SENTENCE OF
THE SERVICE.**

user autonomy

57



If a user is complained about by other passengers and for example get warnings that he/she can not ride with this service again, there should always be the option to fight this sentence (for example, by requesting the camera footage). The possibility to unfoundedly complain about a co-rider you do not like in order to kick him/her out of the system should not be possible.

**THE SERVICE SHOULD ALWAYS
PROVIDE THE POSSIBILITY TO
MAKE CHANGES IN AUTOMATED
EVENTS.**

user autonomy

58



Starting your favourite
news broadcast...

NOPE, NOT TODAY

If a user has a certain ritual or habit the service should act accordingly, but the user should always maintain in the position to alter or change that. This is important to give the users a sense of empowerment over the servicescape. For example, the HUE lights have a set dimming time when you go to bed, but if you stay up late you can overrule the light going out.

USER-USER CRITERIA

User-User Criteria

These criteria are all about the facilitation of interpersonal contact and how to ensure that all individuals can travel comfortably amongst other users. It also includes what patterns matches should (not) be made. The possible

solutions that uphold these criteria will provide a servicescape where there is a high amount of designerly input for relationships, but leave the output susceptible for all the factors that the users bring into the service.

**THE SERVICE SHOULD INDICATE
THE PREFERRED STATE OF
THE CONVERSATION IN THE
VEHICLE.**

certainty & clarity

59

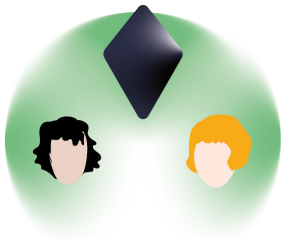


It should always be clear if you are supposed to be silent or welcome to engage in conversation. For example, the NS trains have very clear coupe indications which leave little room for uncertainty.

**THE SERVICE SHOULD HAVE
THE FREEDOM TO FACILITATE
POSITIVE INTERPERSONAL
INTERACTIONS.**

facilitating interpersonal contact

60

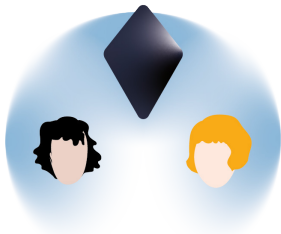


Since people have better commuting experience when they engage with other people, the service should be free to facilitate so-called ice-breakers in the servicescape, making it easier for people to connect.

THE SERVICE SHOULD FACILITATE ENGAGEMENT INSIDE THE VEHICLE.

facilitating interpersonal contact

61

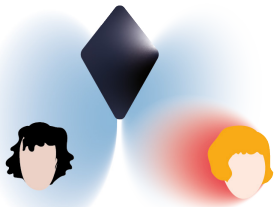


The manifestation of the vehicle is an important factor whether people can easily engage in conversation. For example, facing chairs are much more inviting seating environment than when each seat is appointed to a window.

**THE SERVICE SHOULD HAVE
THE AUTONOMY TO INTERVENE
IN NEGATIVE INTERPERSONAL
INTERACTIONS.**

facilitating interpersonal contact

62

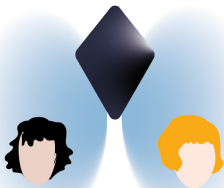


If people are engaged in very negative forms of personal contact the service should have the authority to separate these users.

**THE SERVICE SHOULD
FACILITATE CEASING CONTACT
INSIDE THE VEHICLE.**

facilitating interpersonal contact

63



The manifestation of the vehicle is an important factor whether people can easily dis-engage in conversation. For example, an appearing table or screen could be a clear indication of seclusion.

**THE SERVICE SHOULD INCLUDE
THE OPTION TO CONNECT TO
PROFILES OF OTHER USERS.**

facilitating interpersonal contact

64

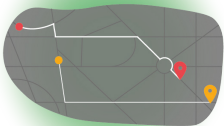


If users have public profiles with information it should be possible to connect accounts with co-riders. This could allow for getting to know things about each other. Or to use this as a means of communication.

**THE SERVICE SHOULD MAKE
MATCHES BASED ON RIDE
EFFICIENCY.**

matching

65

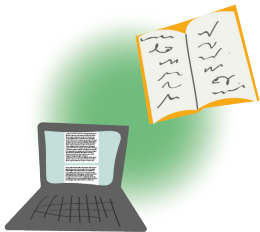


Matching different riders on efficiency is the most basic and functional way to run a ride-sharing service, since this would require the smallest number of VMT and losses of time.

**THE SERVICE SHOULD MAKE
MATCHES BASED ON DESIRED
ACTIVITIES.**

matching

66



If there are possible matches with a similar efficiency, the service should take into account preferred activities on the commute as matching factors, since some activities do not go too well in combination with others.

**THE SERVICE SHOULD MAKE
MATCHES BASED UPON
THE PREFERRED STATE OF
CONVERSATION.**

matching

67

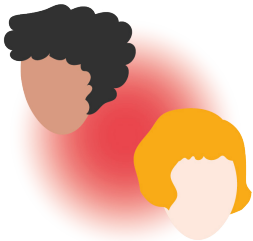


Whether or not people want to be in an environment where people can speak or not is a very important preference that influences what activities you can do on your commute and should, therefore, be taken into account with matching passengers if possible.

**THE SERVICE SHOULD NOT
MATCH PEOPLE BASED ON
DISCRIMINATING FACTORS**

matching

68



Personal data, (such as someones cultural back ground, or sexual preferences) that is sensitive to be experienced as discriminiting should not be used as matching criteria.

**THE SERVICE SHOULD NOT
MATCH PEOPLE BASED ON
SEGMENTING FACTORS**

matching

69

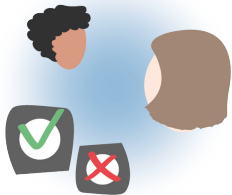


A risk of matching people based on a lot of data is that it can have a segmentation effect which should not be viewed as desirable. Making matches on income, political preference or religion should never be made, but are still possible to occur as a by-product from matching on (e.g.) efficiency or musical taste.

**THE SERVICE SHOULD PROVIDE
THE OPTION TO INDICATE WHETHER
YOU DO OR DO NOT WANT TO BE
MATCHED IN THE SAME RIDE AGAIN.**

user autonomy

70

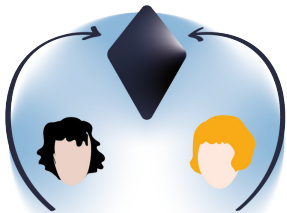


It could occur that a user is not feeling at ease in a certain ride which would reoccur frequently. The user should be able to state that he/she would prefer another option, or, in case of violations of the service restrictions by the other user, demand a different ride.

**THE SERVICE SHOULD
REMEMBER PREVIOUS
INTERPERSONAL CONTACT
AMONGST USERS.**

user understanding

71

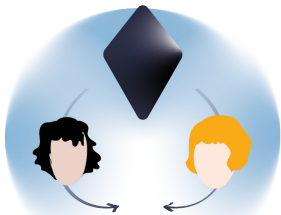


Just as remembering individual routines, it is important to store the data of interpersonal interactions amongst user in order to understand good combinations or offer ice-breakers in follow up shares.

**THE SERVICE SHOULD BE
ABLE TO ACT ACCORDING
TO PREVIOUS ENCOUNTERS
AMONGST USERS.**

user understanding

72

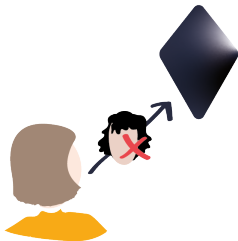


If three commuters always enjoy a card game after their work the service could stage the vehicle accordingly with the table out and facing chairs. Or when two people never talk nor get along the service could ask to play music or the news.

**THE SERVICE SHOULD PROVIDE
THE OPTION TO REPORT
MISBEHAVING CO-RIDERS.**

user autonomy

73

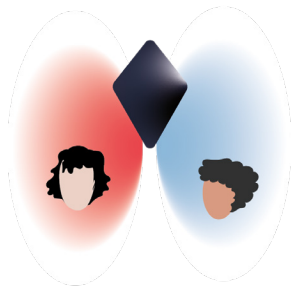


Misbehaving users might be hard to monitor and therefore it is important to leave room for users to enter a complaint about misbehaving co-riders. These complaints should be verified before acting upon them or charging the user, about whom is complained, with consequences.

**THE SERVICE SHOULD
NOT REWARD ANTI-SOCIAL
BEHAVIOUR.**

rewards & consequences

74

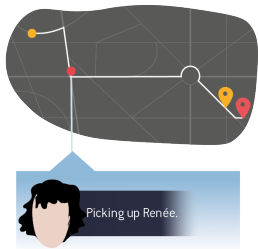


If a user is constantly requesting new rider combinations without proper reasoning (e.g. no violations of the service restrictions nor monitored inappropriate behaviour nor similar complaints about these users from other users) it should not be rewarded into an individual ride. Because if all possible matches are being declined this should not lead to individual rides for a shared price.

**THE SERVICE SHOULD INFORM
THE USER ON POSSIBLE
BOARDING RIDER(S) DURING
HIS/HER TRIP.**

certainty & clarity

75



People find it comforting to know why their ride is stopping and who they can expect to enter their ride, this allows for anticipation. This is especially important if it is out of routine.

**THE SERVICE SHOULD INFORM
THE USER ON POSSIBLE
RIDER(S) ALREADY OCCUPYING
THE VEHICLE.**

certainty & clarity

76



People find it comforting to know what to expect when entering a new environment. By letting users know if there are already rider(s) onboard, the service allows for anticipation. This is especially important if the occupancy varies from routine.

**THE SERVICE SHOULD INFORM
CURRENT USERS IF NEW
PEOPLE ARE ADDED TO THEIR
REGULAR RIDES.**

certainty & clarity

77



The daily commute is highly sensitive to routines, and an additional passenger could have an effect on this routine and on the existing relationships amongst users. The service should, therefore, notify the users of about new rider.

**THE SERVICE SHOULD INFORM THE
DESIRED STATES OF CONVERSATION
OF NEW AND CURRENT RIDERS TO
EACH OTHER.**

certainty & clarity

78



It is important to know the desired state of conversation of the other riders in order to act accordingly. People cannot properly estimate this of one another and by informing them about this the service helps to achieve a common understanding.

This card deck was created as part of a master thesis for the Delft University of Technology and serves to provide guides in designing an AV ride-sharing service for the daily commute, with a focus on interpersonal relationships.

For any question regarding the content or usage please contact:

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MASTER THESIS - EMMA SCHALKERS - TU DELFT