

# 1 Sentence

Public transport user struggles with knowing where their bus is when running late.

## Aspects

- Tech
  - Enablers
    - GPS Connection
    - Cheap and performance dense computers (useful for mobile tracking)
  - Constraints
    - Geographical features
      - Tunnels
      - Mountains
      - GPS Dead spots
      - Concrete buildings
- Ethics
  - Data Privacy & Safety
    - GPS tracking of buses and users locations must ensure that no personally identifiable information is exposed or misused.
    - Users should know what data is collected, how it is stored, and who has access.
    - Real-time tracking information should not create safety risks, e.g., encouraging passengers to run for buses in unsafe conditions.
  - Equity of Access
    - The app should serve all users fairly, including those without high-end devices or continuous mobile data.
- Design
  - Onboarding
    - Integration with suedtirolmobil when selecting a connection or line
  - Experience cues
    - Map shows public transport positions
    - Filter by
      - line number
      - arrival time
      - kind (bus, train, etc.)

## State of the art

This issue used to be taken care of by the 'SASA Bus App', which has sadly been discontinued since then.

## Gap

Geographical features may make continuous tracking challenging. Covering larger areas with more public transport requires large amounts of infrastructure (trackers), as well as possibly posing difficulties making the app usable with many lines and connections.

## Opportunity

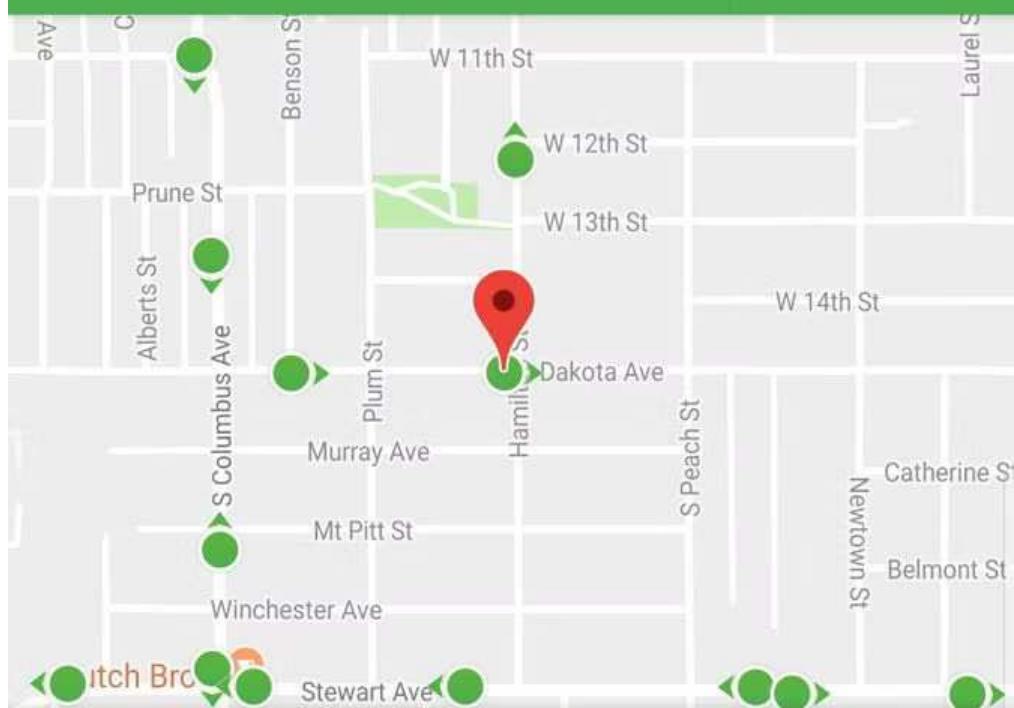
We believe that by creating a good way of tracking public transport for its users, we can improve the overall travelling experience.

11:26

87%



## Nearby



★ 2 West Medford

11 min

★ 2 West Medford

41 min

★ Dakota Ave - West of Hamilton St (E)

★ 2 West Medford

2

Scheduled

11 min

Arriving at 11:37 AM

★ 2 West Medford

2

Scheduled

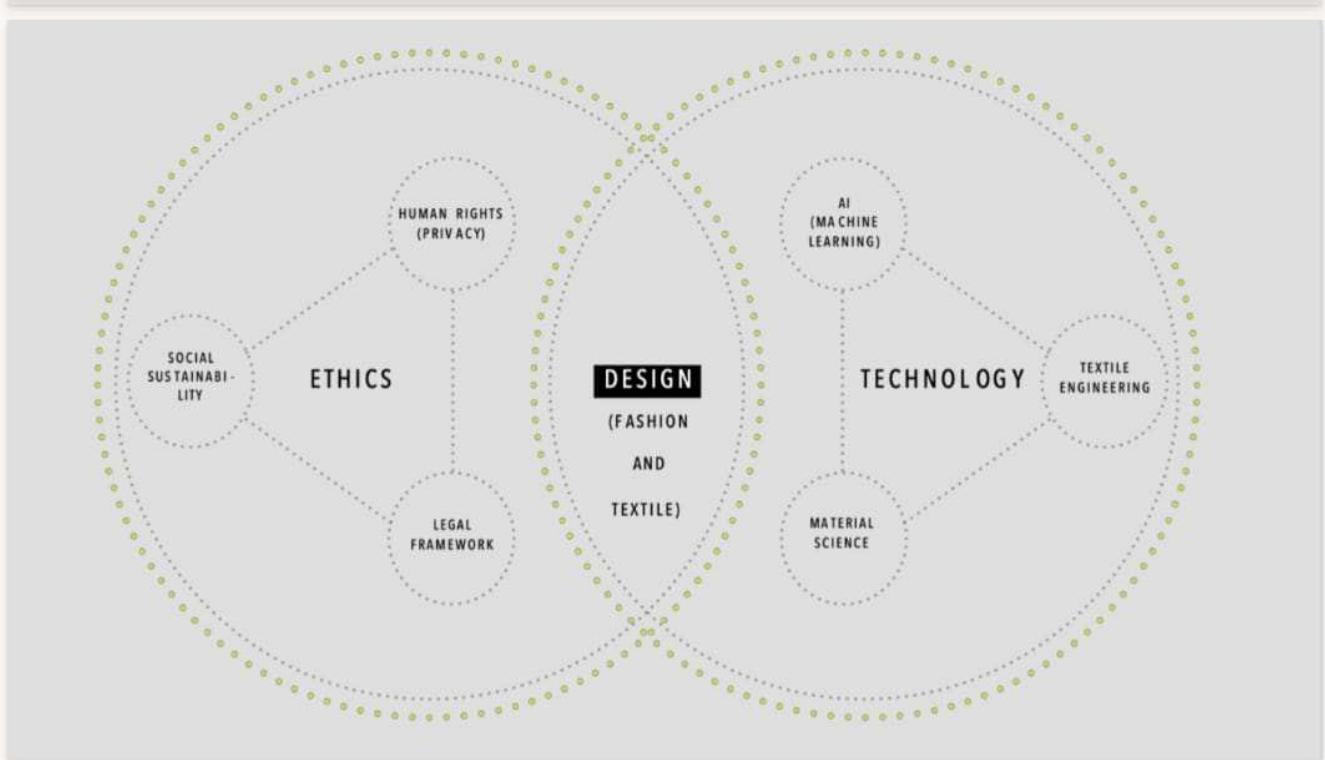
41 min

Arriving at 12:07 PM

LOAD MORE ARRIVALS



# Task



## 5. GROUP FORMATION & BRAINSTORMING.

- Form teams (Hustler / Hacker / Hipster).
- Sign up on Teams (one spokesperson per group).
- Task: pick one Show-&-Tell problem and break it down using the Cap\_able lens:

TECH – what enables or constrains the interaction? (data, sensors, AI, platforms)

ETHICS/SOCIAL – whose rights/interests are affected? risks, externalities, stakeholders

DESIGN/EXPERIENCE – how it feels and communicates (flows, onboarding, cues)

## Samuel

Bus and train tracking is no longer available in the app. This was helpful to know if the bus was running late or if it was stuck in traffic.

## Felix

Ticket terminals at the train stations are inside of the station building instead of out on the platform. This makes it very inconvenient to scan your ticket if you're running late.

# Lazi

“Focus Mode” Browser Extension that reduces distractions by adjusting screen layout, color scheme, or blocking certain sites. Focus is interaction design and cognitive ergonomics.

## Picking Samuels issue

### Tech (Samuel)

The solution would be made possible with the help of GPS trackers in every public transport vehicle in South Tyrol. The interface would be implemented with the help of an app that allows users to track the location of the transport vehicle they want to use in real time. This app already existed in the form of the SASA app, but was discarded for unexplained reasons.

### Ethics / Social (Lazi)

From an ethical and social perspective, providing real-time tracking of buses and trains improves accessibility and transparency for all users. Passengers can make informed travel decisions, reduce stress caused by delays, and plan their time more efficiently. On the other hand, it is important to consider data privacy and the responsible use of GPS tracking. The system should only share vehicle location data — not any personal or sensitive information — and comply with GDPR regulations.

### Design / Experience (Felix)

#### Possible Solution

- App which allows filtering by line number and time
- A map shows all public transport belonging to that line and their current positions
- Maybe linked from the SuedtirolToGo app
- This makes it easy to spot if you've missed a bus, if it is running late and where exactly it is. Integrating it with the SuedtirolToGo app would allow direct tracking of the planned connection

# Public Transport Tracking

An HCI Project by Hell Bjoern Felix, Soini Samuel,  
Lazarov Andrej  
Group 6





# Problem

- Users have no idea where their public transport is / if it is on time
- Planning journeys or alternative connections is difficult without knowledge about delays



# Existing Solution

- Static timetables give an indication of when transport is supposed to arrive
- No real time updates
- Announcements on train stations for train delays
- Examples
  - London TfL (Transport for London)
  - OneBusAway
  - MtA Bus Time (New York)



# User / Customer Segment

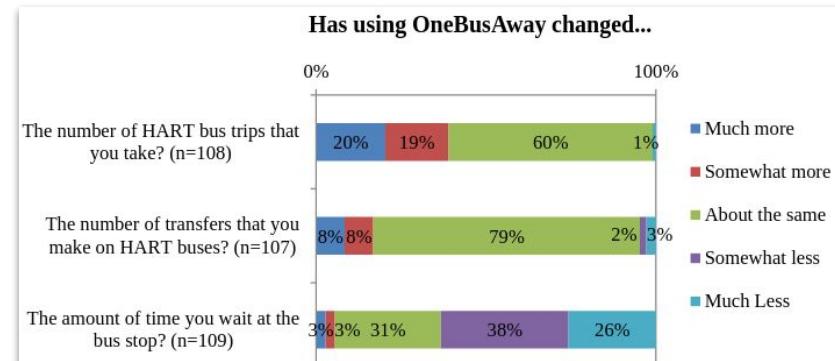
- Users
  - The average Joe trying to use public transport
  - The general public
- Customers
  - Public transport providers
  - Private transport companies



# Data & Statistics - OneBusAway

- OneBusAway

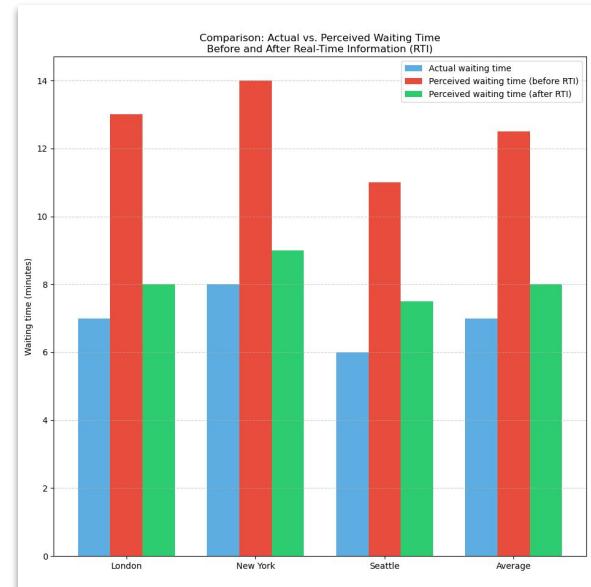
- In New York City, real-time information led to an increase in weekday ridership of 1.7%, with the biggest increase on routes with the greatest level of transit service.
- In Seattle, 92% of riders reported increased or greatly increased satisfaction with public transportation.
- Riders self-report an increased number of transit trips per week, particularly in the off-peak when transit is below capacity.
- For riders without real-time information, perceived wait time is greater than measured wait time. But, having real-time information brings perceived wait time in line with actual wait time.
- Mobile real-time information users have been observed to actually wait almost 2 minutes less per trip than those arriving using traditional schedule information.





# Data & Statistics - TfL and MtA Bus Time

- Perceived waiting time decreases: Real-time displays reduce the subjective perception of waiting time even if the objective waiting time remains the same — this improves satisfaction and the feeling of safety. (Empirical findings from several studies).
- TfL findings
  - Perceived wait times dropped by about 30-40%
- MtA Bus Time (New York)
  - Perceived wait times dropped by about 25%
  - Passengers report less stress and frustration



# Thank you for your attention

Any Questions?

# Public Transport Tracking

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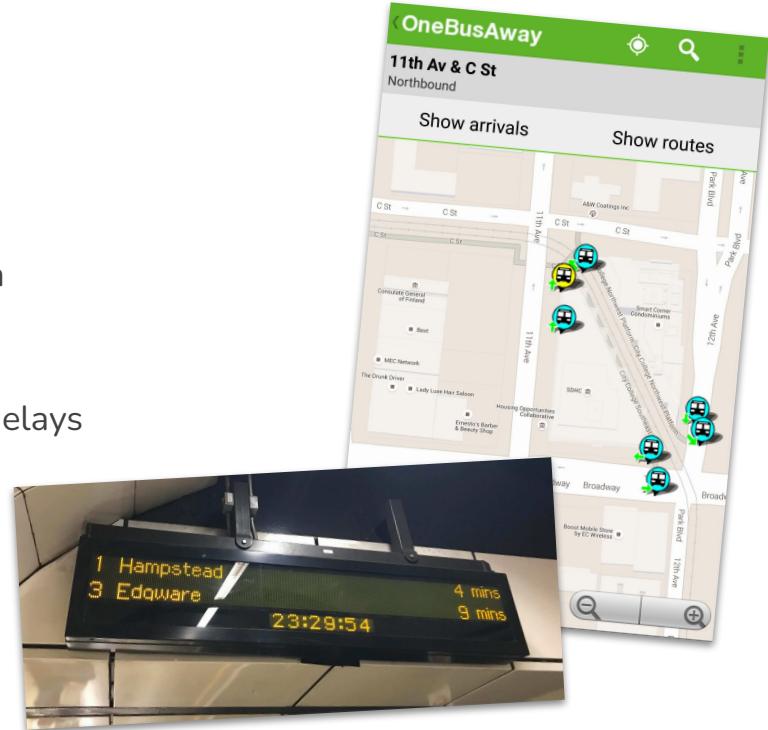
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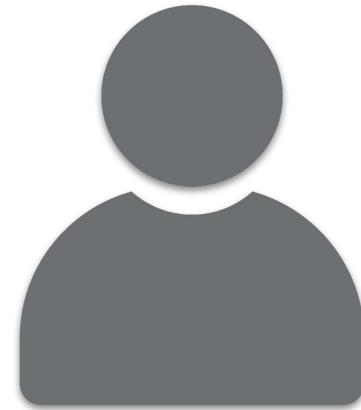
- Users
  - The average Joe trying to use public transport
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- Customers
  - Public transport providers
  - Private transport companies



# Interviews - Public transport users Summary

Key statements:

- Difficult planning / alternative finding
- Unannounced delays are unpredictable
- Estimated waiting times make wait feel shorter

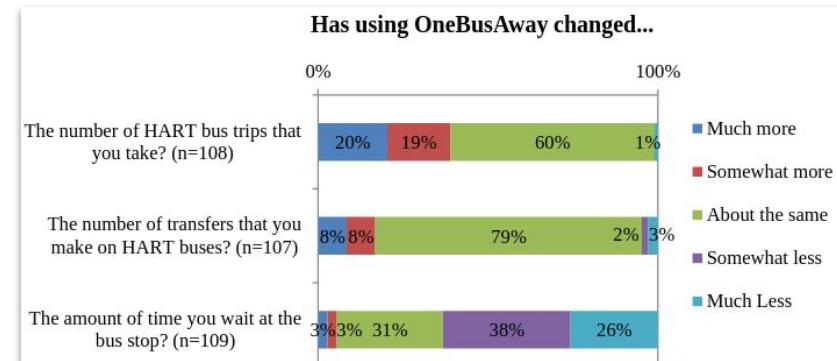




# Data & Statistics - OneBusAway

- OneBusAway

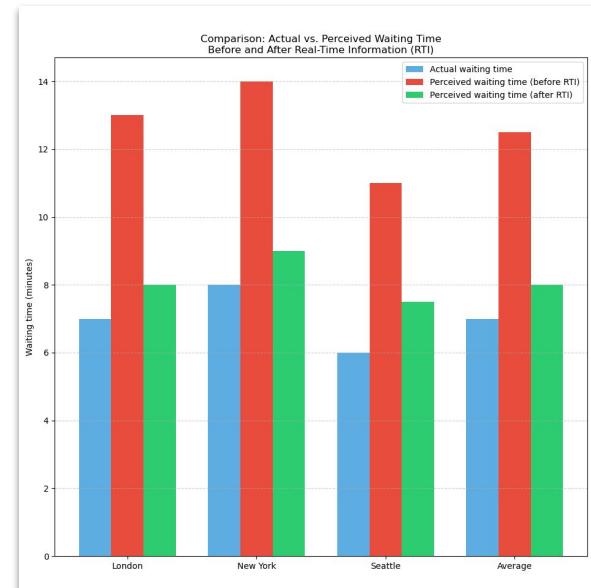
- NYC: real-time information led to an increase in weekday ridership of 1.7%.
- Seattle: 92% of riders reported increased satisfaction.
- Riders self-report an increased number of transit trips per week
- For riders without real-time information, perceived wait time is greater than measured wait time
- Real-time information users have been observed to actually wait almost 2 minutes less





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# Assignment - Human Centered Design

## Goal of our research

The aim is to collect user data in order to determine whether the ability to track public transport is a necessary feature or one that offers a real benefit to users.

The target group for our research is most public transport users. However, we do expect them to have some basic knowledge of how to operate digital devices like smartphones, in order to make use of our application.

## Choose methods

The best way to achieve our goal is to collect personal data and thus create a sample. Accordingly, we decided to conduct a survey coupled with online research.

- Survey
  - Get a picture of the current situation passengers deal with
  - Evaluate whether there is even a need for our project
- Online research
  - Fetch data in regards to similar projects, their viability and how useful they have been to passengers

## Participants

Participants will be chosen out of a random pool consisting of:

- students which rely heavily on public transport
- randomly chosen peers, known to also take advantage of public transport

This should give use a decent overview of different groups of people

## Preparation

- Google Form: <https://forms.gle/5jdYbNLm1B7ezA1i8>
- Online research
  - Data from similar Projects
    - TfL
      - Live arrival times
      - Service alerts
      - Journey updates for London's transport network
      - Apps, signs, and open data feeds
    - OneBusAway
      - Standalone Mobile and web app
      - Real-time transit arrival information
      - Service alerts for participating transit agencies
    - MtA Bus Time
      - Real-time bus locations
      - Predicted arrival times

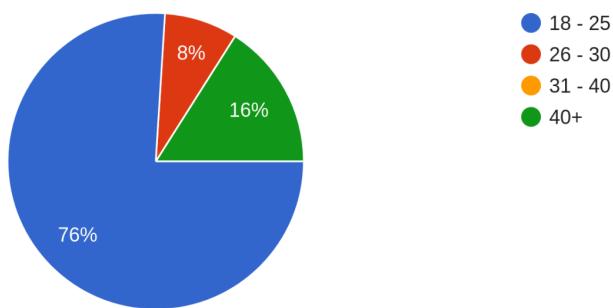
- Service alerts for New York City buses via web, SMS, apps, and open data

## Execution

The survey has been sent into the UNI class chat, as well as being shared with friends and relatives. This produced somewhat predictable results which summarized indicate a strong interest in the concept of supplying passengers with real time information.

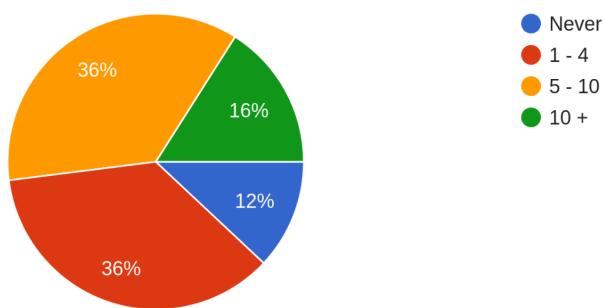
How old are you?

25 responses



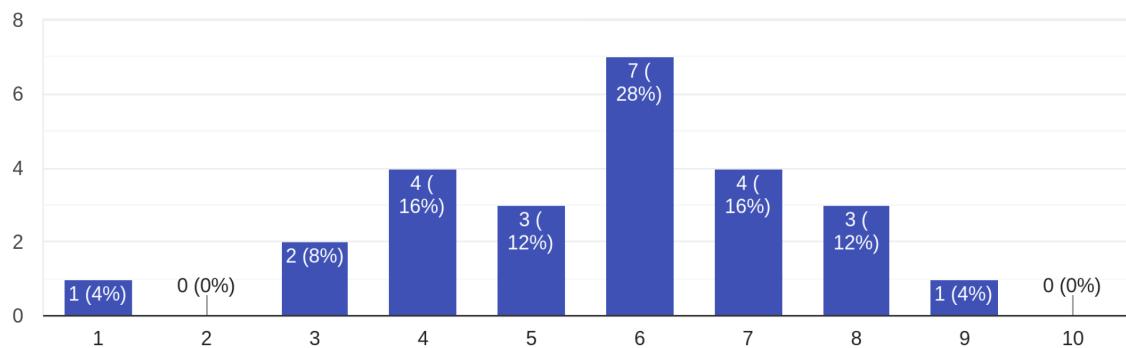
How often do you use public transport each week?

25 responses



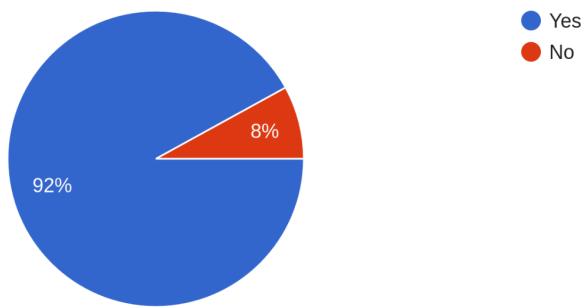
### How would you rate the punctuality of local public transport?

25 responses



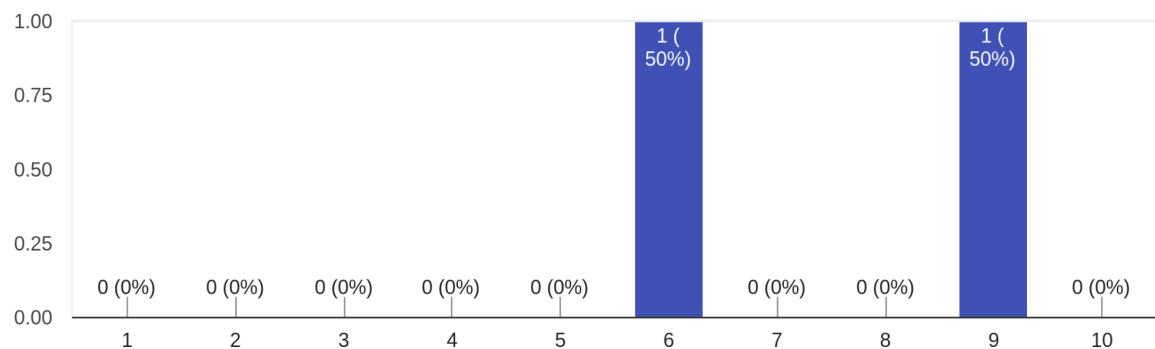
### Do you use the 'südtirolmobil' app?

25 responses



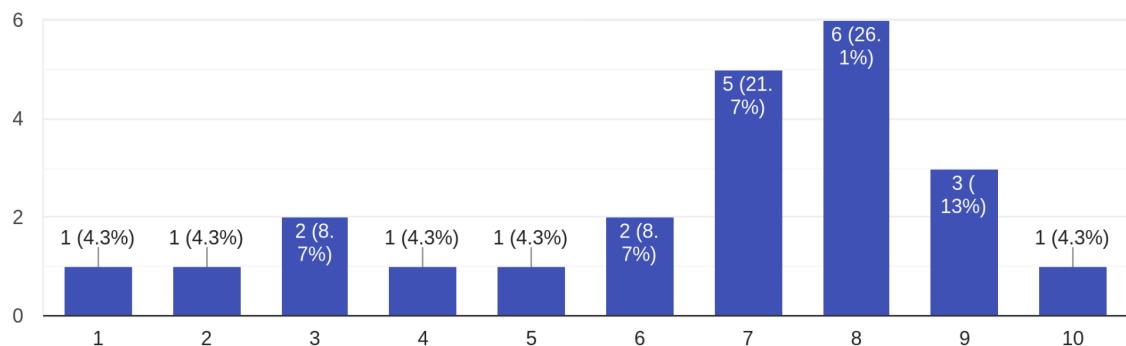
### How satisfactory/adequate is the information provided by the timetables for you?

2 responses



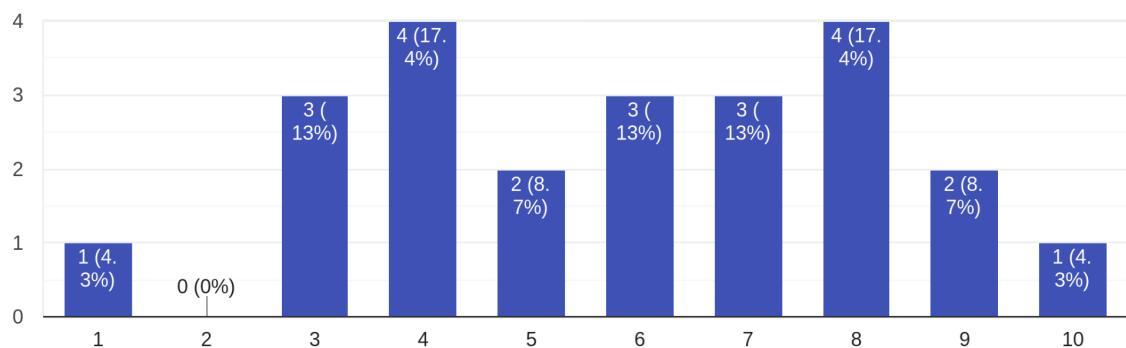
### How satisfied are you with the app (in general)?

23 responses



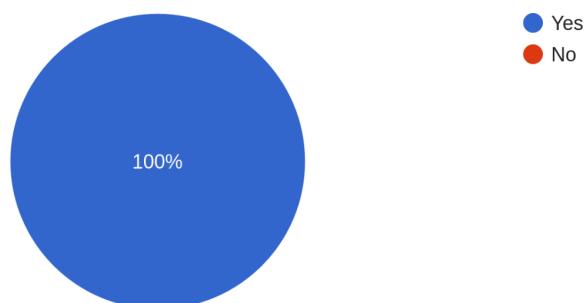
### How satisfied are you with the app's punctuality display?

23 responses



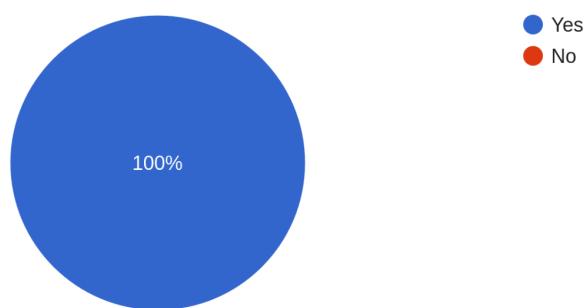
### Would real-time information improve the experience (vehicle location, utilisation, etc.)?

25 responses



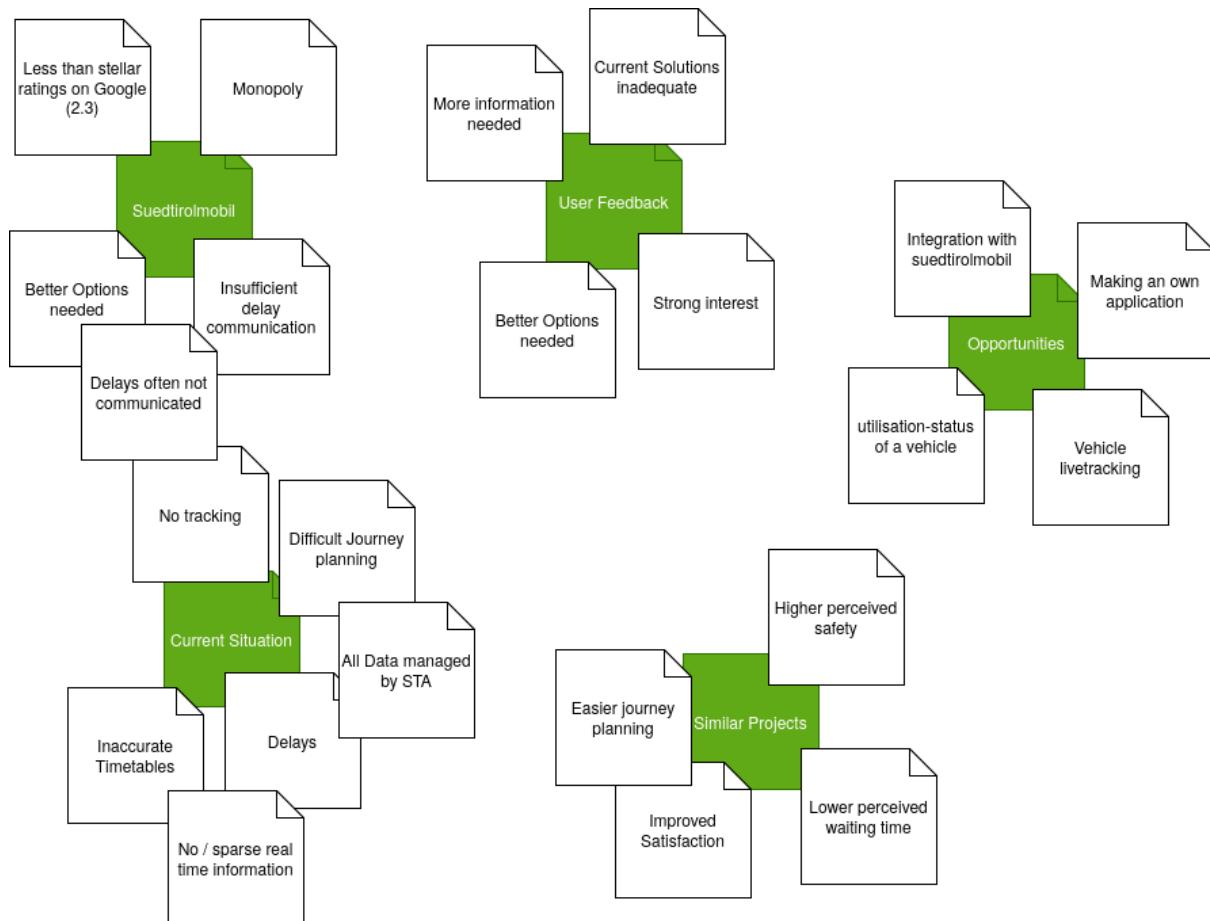
Would you use such an app? (Tracking example)

25 responses



For the online research we consulted data from similar projects like MtA and TfL, which led to interesting statistical findings

## Analysis



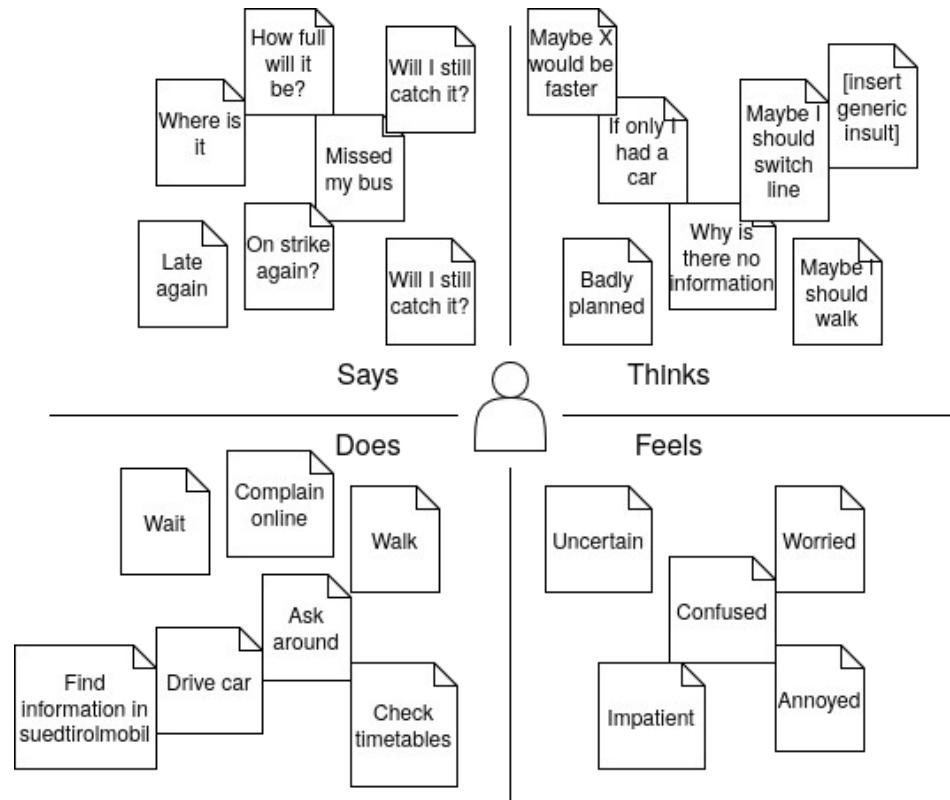
Create an Affinity Diagram (photo is fine).

Then provide:

- 3 Key Insights
  - Insights that go beyond what your group had understood so far.
    - There is a uniform interest in our application

- Almost everyone uses the suedtirolmobil App, making possible integration with it important
  - More than 70% of people utilize public transport, yet its punctuality rating only sits at about 55%
- 2 New Problems Identified
  - Problems that were not visible before conducting this research.
    - GPS tracking unreliable
    - Not everyone uses apps for navigating public transport
- 3 Opportunities / Project Directions
  - Three possible directions for your HCI project that emerged thanks to this assignment.
    - Combination with physical infrastructure would improve usability for less tech literate people
    - Integration with suedtirolmobil to make tracking specific connections easier
    - Possibly create our own standalone app with timetables, tracking etc., rivaling suedtirolmobil. This would require much more effort to deliver a superior experience in order to motivate users to switch.

# Empathy Map



# Key Insights Empathy Map

- Tracking and Utilization are requested features
- Large user-base of suedtirolmobil
- Dissatisfaction with current situation

# Journey Map

## Running Late Riccardo

**Scenario:** Riccardo is running late and needs to catch a bus. The problem is he has **no real-time information** about whether the bus is delayed, early, or already passed.

## Expectations

- Clear, reliable real-time bus positions
- Quick access with minimal steps
- Accurate, updated arrival times
- Integration with existing suedtirolmobil lines



Riccardo realizes he might miss his bus

### Actions:

1. Checks the timetable he remembers
2. Determines when the bus should arrive
3. Opens suedtirolmobil to confirm the static schedule.

### Mindset:

- "I hope I'm not too late..."
- "If only I knew where the bus is right now."

### Opportunities:

- Add real-time location directly in suedtirolmobil
- Provide quick "Where is my bus?" button.

Riccardo tries to figure out if the bus is delayed.

### Actions:

4. Looks up alternative connections.
5. Refreshes the app repeatedly hoping for delay updates.
6. Texts a friend, "Did your bus arrive already?"

### Mindset:

- "This shouldn't be so complicated..."
- "Why can't I just see the bus on a map?"

### Opportunities:

- Show real-time arrival predictions
- Display bus GPS location on map
- Reduce mental load by offering clear delay indicators.

Riccardo evaluates what to do.

### Actions:

7. Decides whether to run or walk calmly.
8. Checks alternative routes like trains or other lines.
9. Chooses between waiting or walking to another stop.

### Mindset:

- "Do I sprint, or do I wait?"
- "This is stressful... I'm probably going to miss it."

### Opportunities:

- Offer alternative route suggestions automatically.
- Predict whether the bus will be early/late.
- Reduce stress with reliable real-time reassurance.

Riccardo evaluates what to do.

### Actions:

10. Commits to one option:
  - rush to the stop
  - switch routes
  - gives up and waits for next bus

11. Hopes he made the right decision

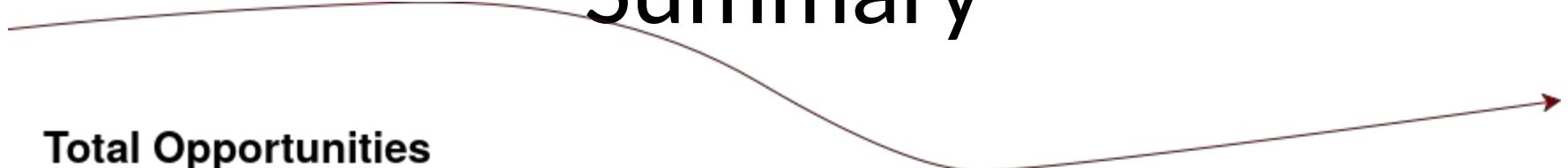
### Mindset:

- "I hope this was the right choice."
- "This would be so much easier with real data."

### Opportunities:

- Provide post-trip feedback to improve accuracy.
- Push real-time alerts \*e.g.: Bus is 4 minutes late)

# Emotional Curve – Opportunity Summary



## Total Opportunities

### Define:

- "Where is my bus?" quick-access feature
- Real-time position integrated into suedtirolmobil

### Compare:

- Map with live bus GPS
- Real-time arrival predictions
- Clear visual delay indicators

### Negotiate:

- Suggest faster or alternative routes automatically

### Select:

- Push notifications for delays or early arrivals
- Feedback loop to improve ETA accuracy

# **Lifestyle Board**

## ***Habits***

- Habitual Transport Users
  - Same lines/connections (e.g. going to training/uni/school)
  - checks their connections for delays / expects delays
  - checks if there are free seats/spots in the bus

## ***Environments***

- Urban
- Rural
- Anywhere with public transport connections

## ***Values***

- Reliability
- Trustworthiness
- Comfort / Utility

## ***Aesthetic World***

- Serious design
- Data driven
- Information > Design
- Simplistic

# Naming

## A. Pillars - Values - Keywords

Pillar	Values	Keyword
1. Reliability	Accuracy Trust Predictability	Pulse
2. Clarity	Simplicity Transparency Ease	Clear
3. Movement	Speed Fluidity Mobility	Flow

## B. First Naming Exploration

### Recurring Themes

Reliability	Clarity	Movement	Cross-themes
real-time heartbeat / pulse live / now certainty / stable	transparent simple clear visible insight	motion flow route glide go / move / shift	“Live movement you can trust” “Clarity in motion” “Real-time transparency” “The pulse of mobility”

### Useful Words, Roots & Sounds

#### Words:

- Pulse, Clear, Flow
- Live, Track, Path
- Move, Route, View
- Sync, Line, Map

#### Roots:

- geo (earth/location)
- via (route)
- mot / move
- lum / clear (clarity)

#### Sounds:

- Short, sharp: pulse, ping, snap
- Smooth, flowing: flow, move, glide
- Clear, light: clear, lumi, view

## Initial Name Directions

### Combine keywords:

- PulseFlow
- ClearRoute
- FlowMap

### Theme-based:

- RouteSync
- CityPulse
- MoveNow

### More abstract:

- Flumo
- Lumio
- GeoPulse

## What works

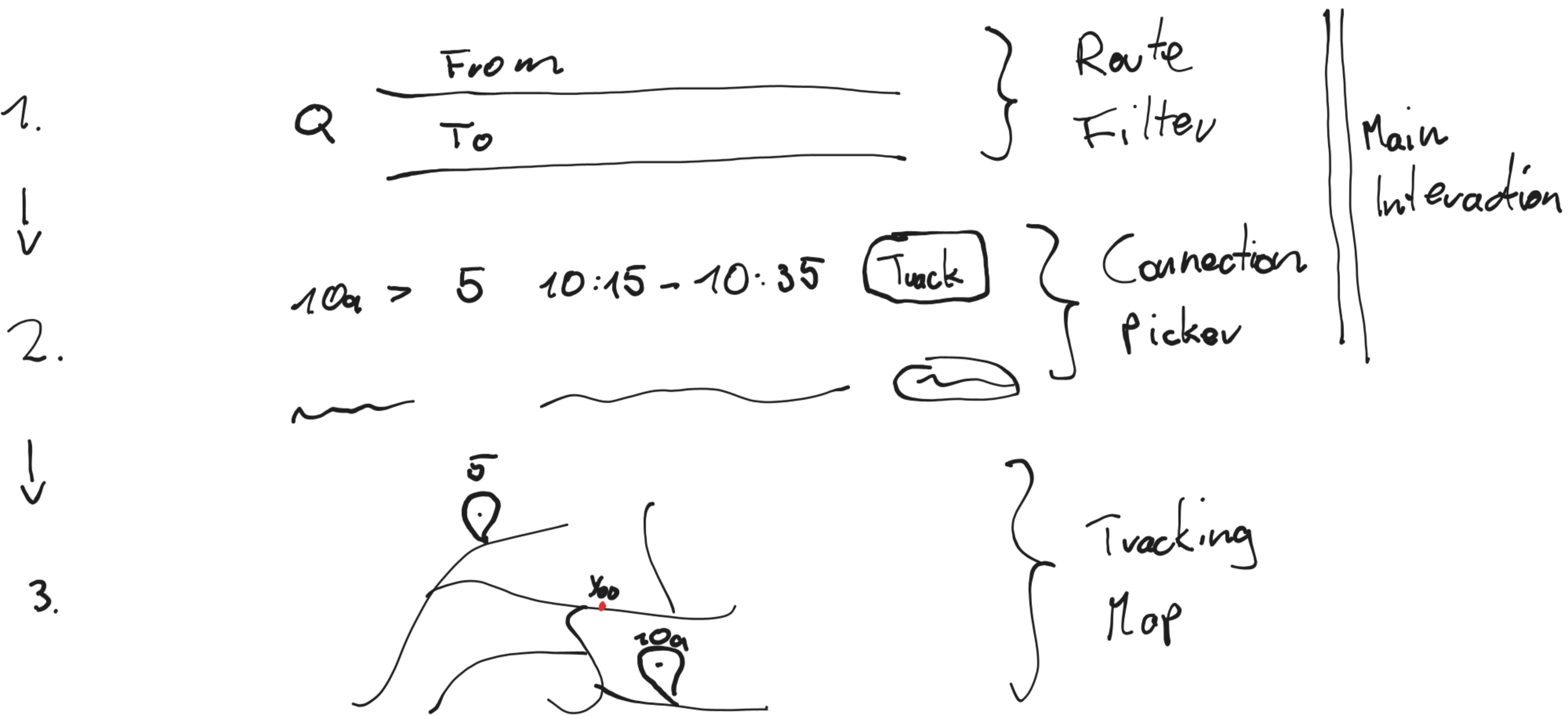
- User gets to pick their route
- Connection location available on demand
- Similar to swedtirod mobil

Testing needed

- Unstable GPS
- Multiple connection tracking

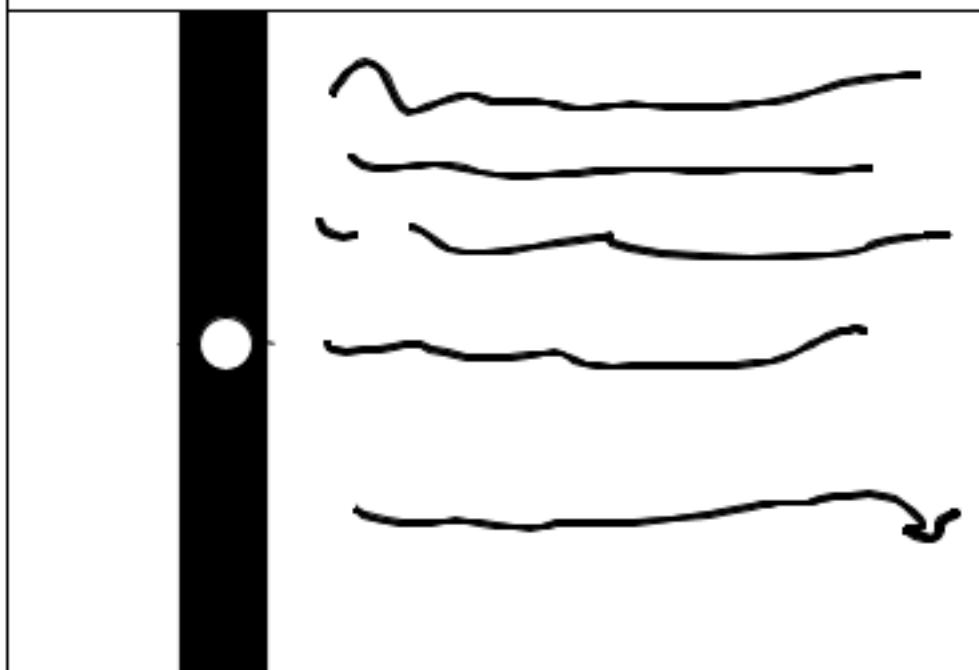
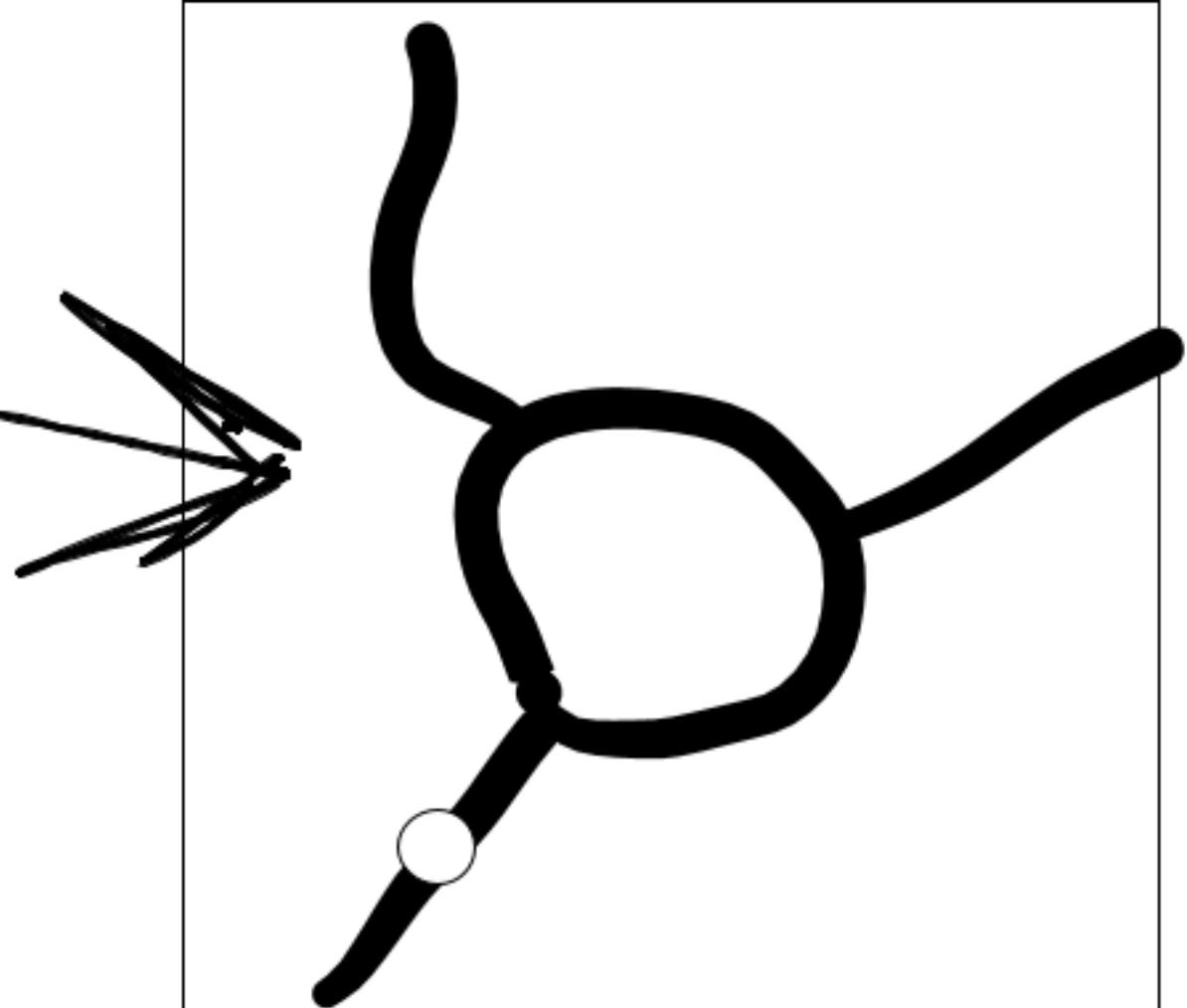
Next Prototype

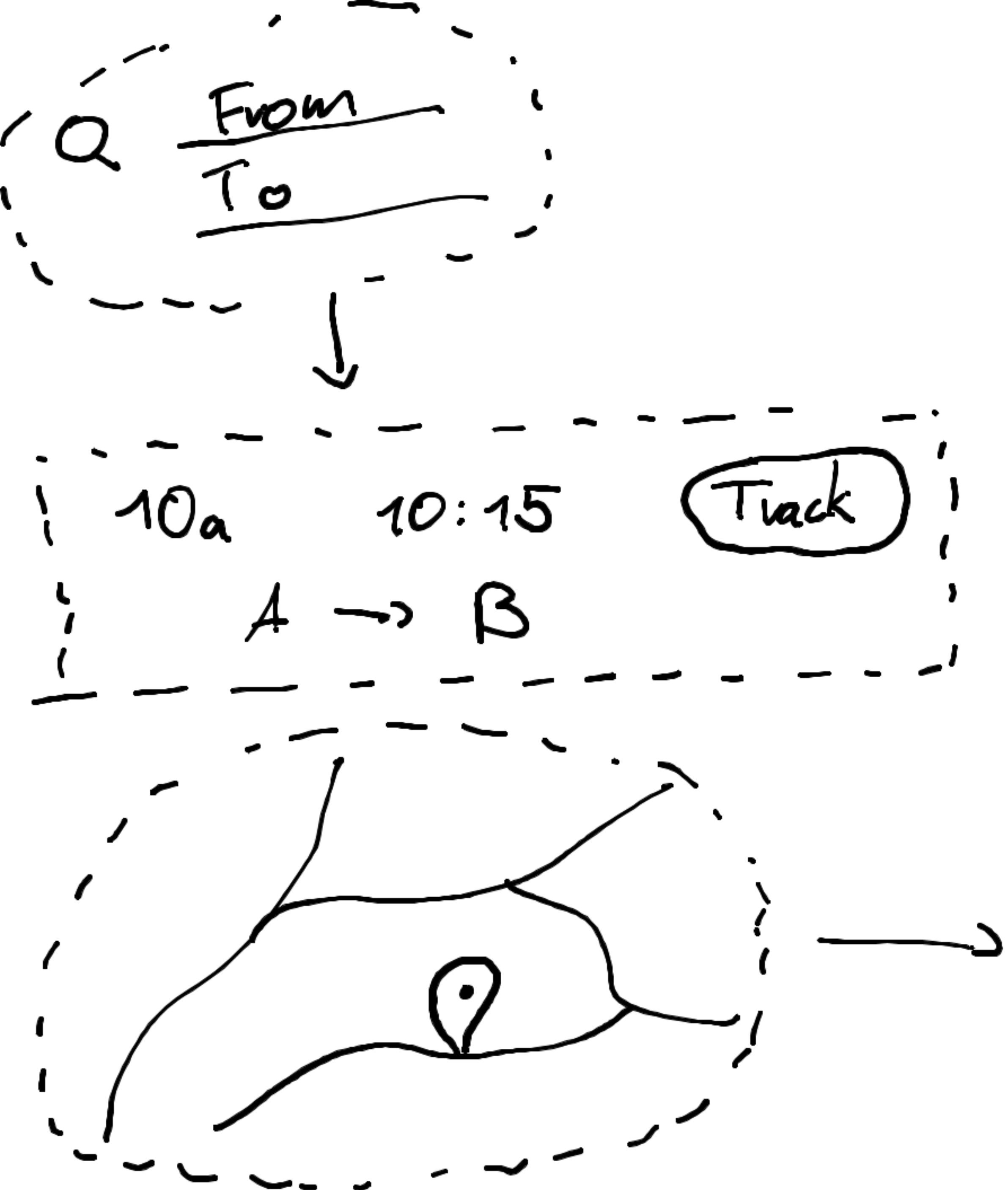
- Route selection
- Multiple connection tracking



MAP

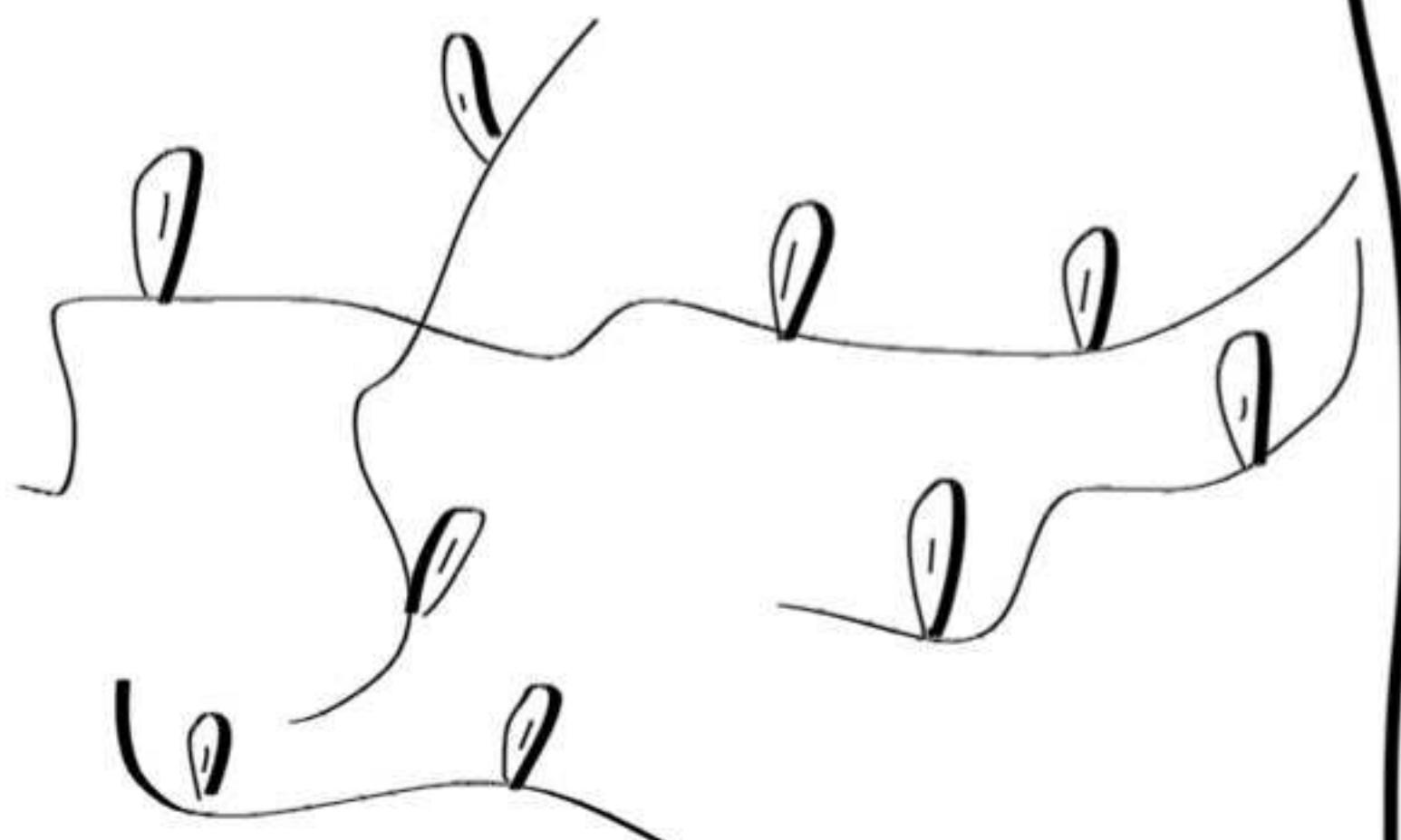
TIME





Q Your location

enter your location to see all routes connected to the stop  
and tracked vehicles



filter

all public transports  
in alto adige

to select preferred routes at the overview

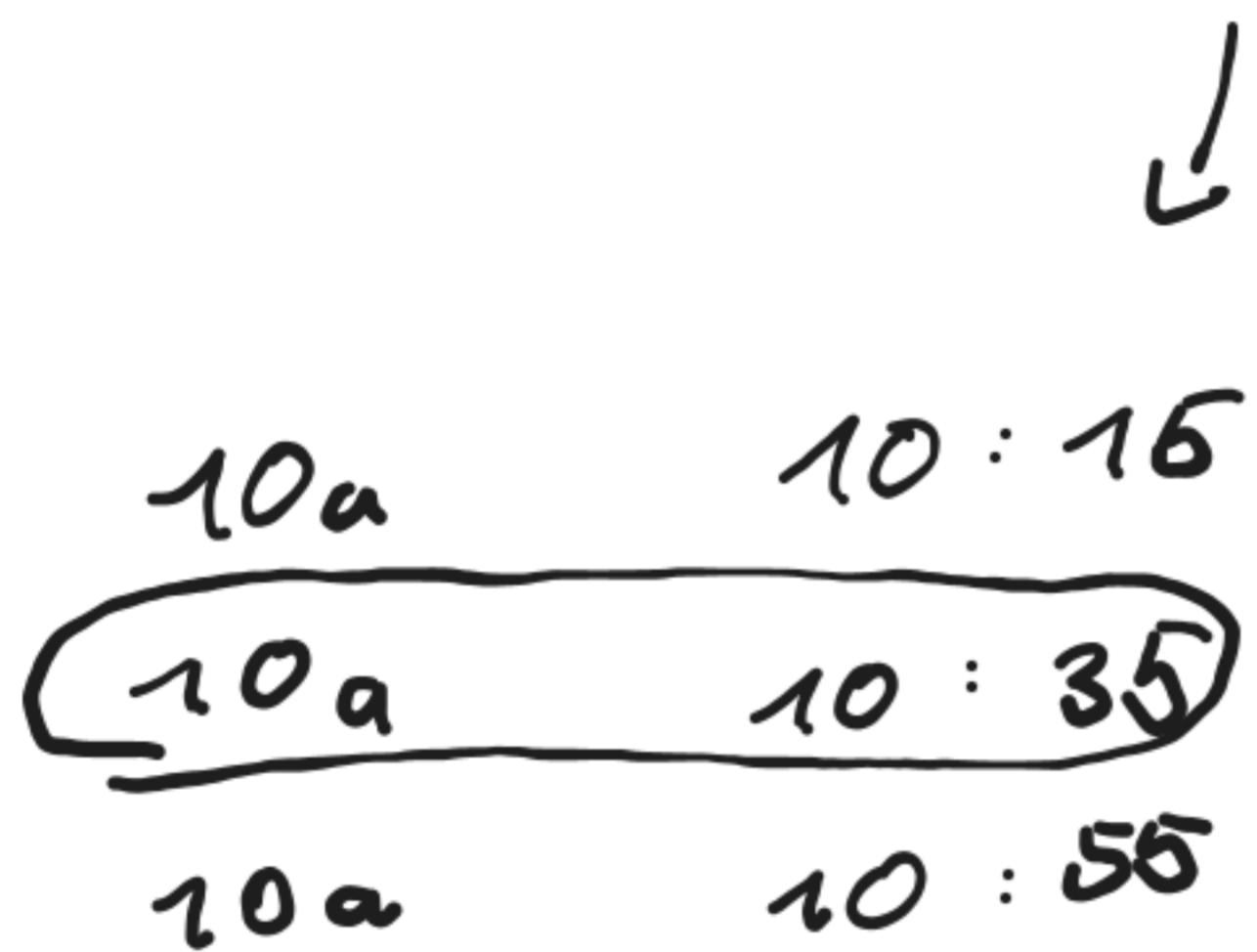
This section converts into a timetable if a location is submitted.  
Here you can see the arrival time of all the vehicles that cross your stop.



→

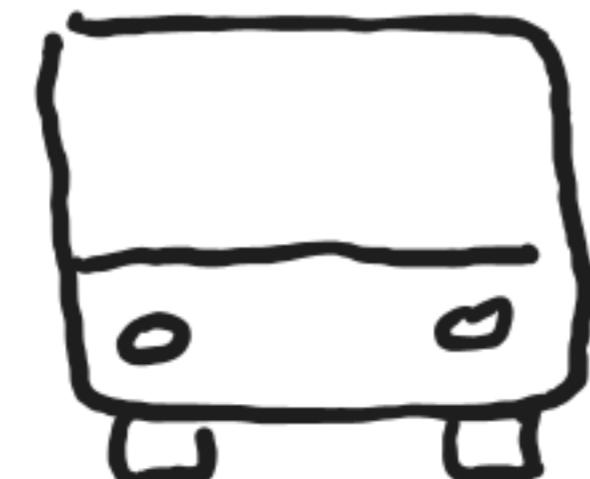
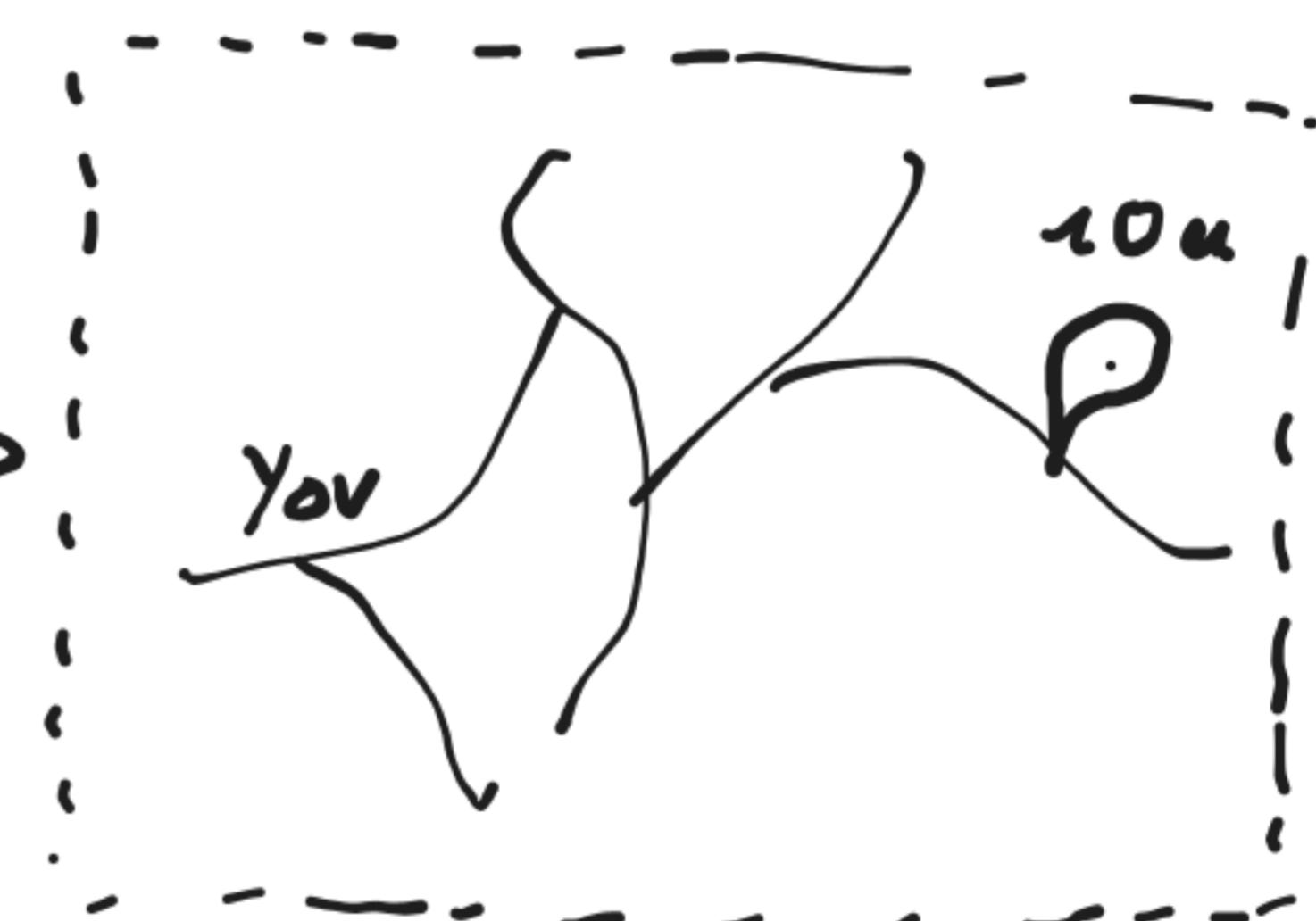
Q

From  
To



→

You



←



## UVP:

[User = Everyone] + [Problem = Lack of information] = [Unique Value = Tracking]

=> Travel-Insight for everyone

## Color palette



#96B940

Inspired by regional bus colors

#FFFFFF

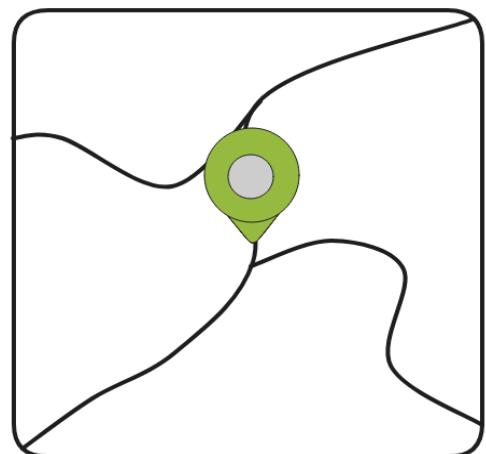
White for contrast

#CDCDCD

Offwhite for accents

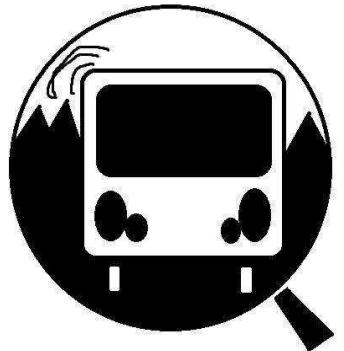
## LOGO A - Function

This logo shows a map with a marker, implying the functionality of the application: Tracking public transport



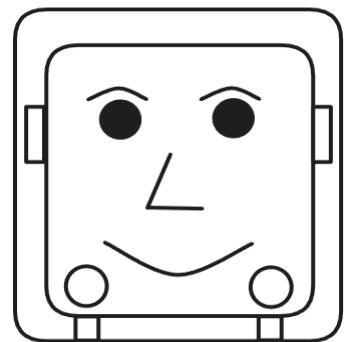
### ***LOGO B – Personality***

We are based in South Tyrol and plan to serve that very same area, thus the mountains



### ***LOGO C – Emotion***

We want our users to be happy when using our App, instead of stressed because they missed their bus.



### ***Final Logo***

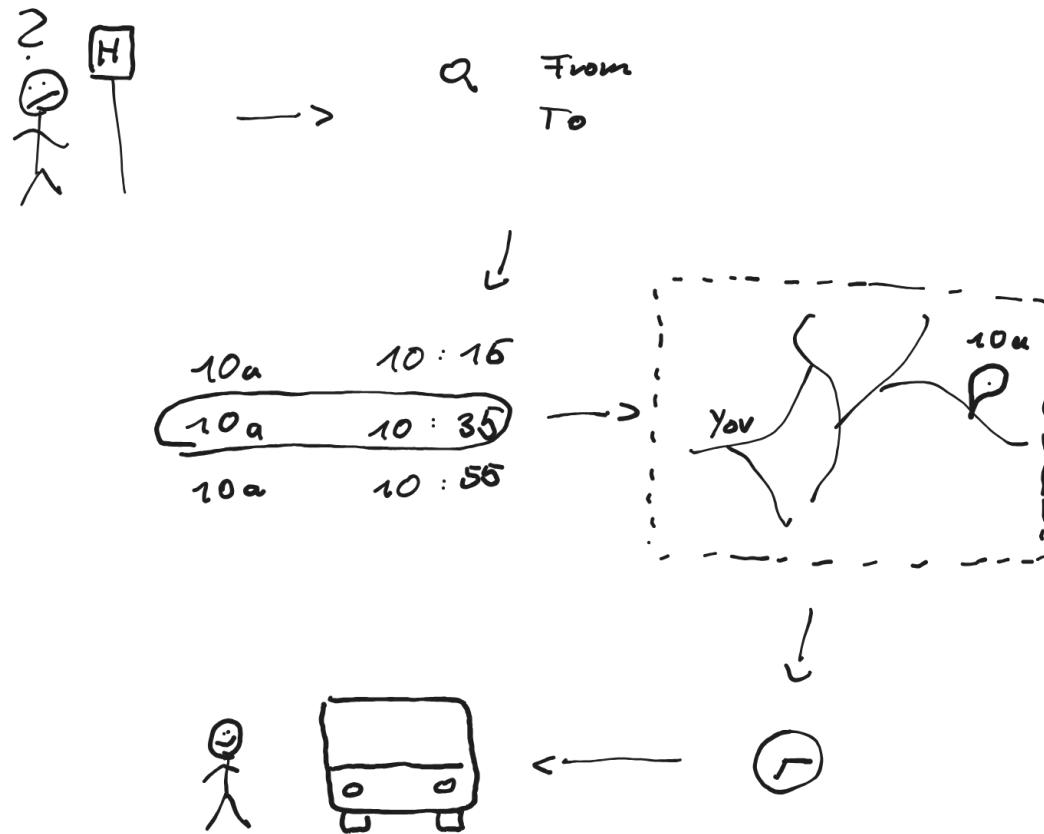
Logo A was chosen as it fits a minimalist design, scales well and shows the base concept of the App. We are not trying to convey emotion but function.

# Prototype

# Problem

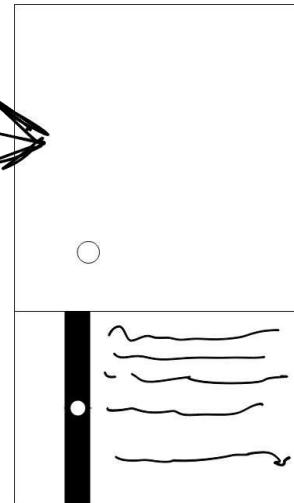
User does not know when / if bus will arrive

# User Scenario + Storyboard

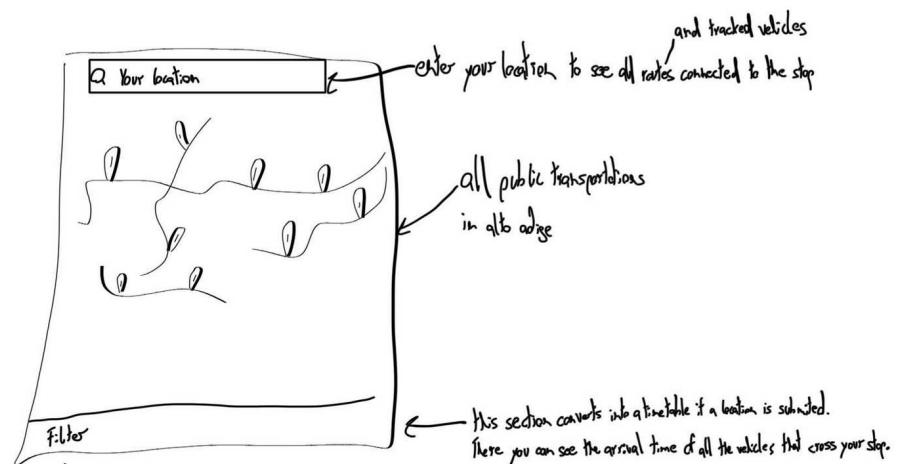
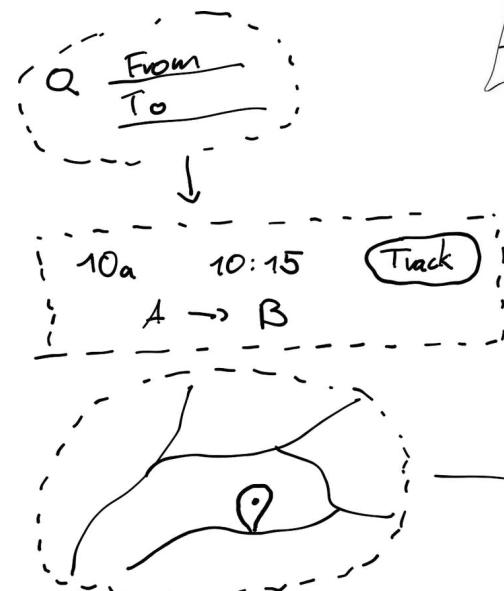


# Sketches

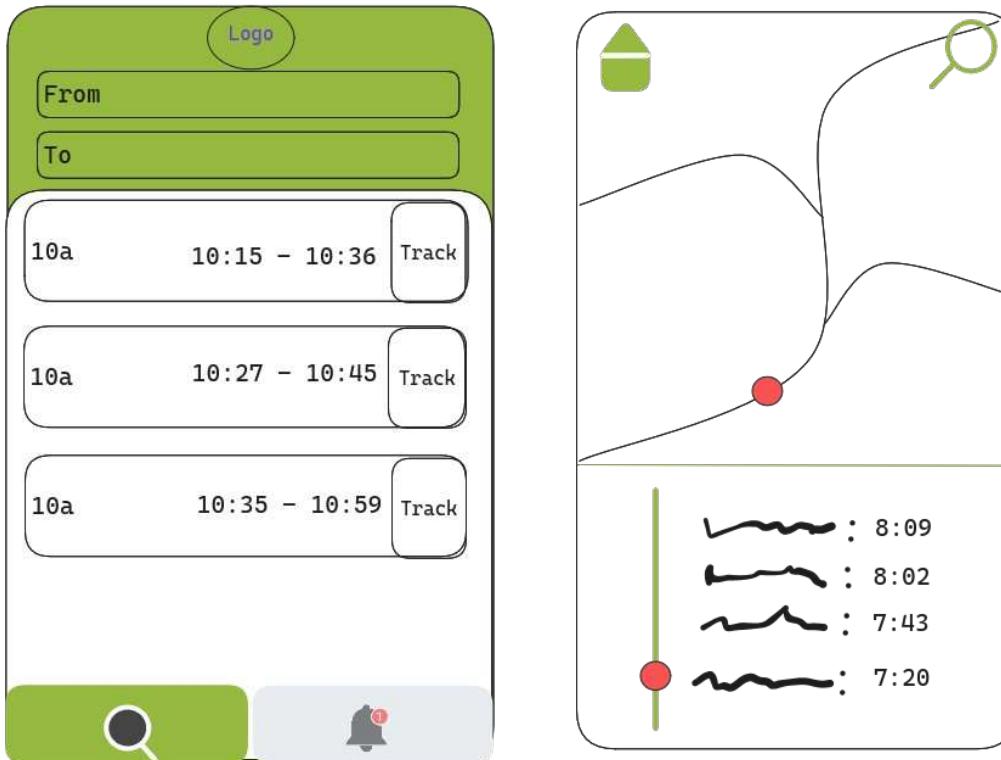
MAP



TIME



# Digital Mockup



# Feedback

- How easily navigable is the UI?
- Feasible for older / less tech literate users?

# Channels

## Primary

- Word of mouth → Mobile Apps → In-App Notifs + Email

## Secondary

- Physical / Digital Advertisements, Announcements
- WebApp
- WhatsApp Business

# Public Transport Tracking

## Problem

- Timetables often differ from actual arrival / departure times
- Finding viable transport alternatives often hard due to difficult planning
- Finding best transport option often inconvenient as for example bus might be stuck in traffic

## Existing Alternatives

- Static timetables give an indication of when transport is supposed to arrive
- Announcements on train stations for train delays

## Solutions

### Technology

- GPS based vehicle tracking to allow for accurate position and arrival time determination

### Design

- Progressive Web App to enable the widest possible User-base to have access
- Integration with existing public transport apps to ease usability

### Ethics / Social

- Improved public transport experience



## Key Metrics

## Unique Value Propositions

- Public Transport Users + Advanced and Dynamic Information + Convenient and Easy to Use Design = Dynamic Timetables for travelers

## High Level Concept

- Public transport tracking for everyone

## Unfair Advantage

## Channels

- First awareness
  - Physical advertisements at bus / train stops
  - Posters in / around public transport
  - Homepage
  - Word of mouth
- Access interface or prototype
  - Mobile phones
  - Desktop webpage
  - Homepage link
- Continuous learning and feedback
  - In-App notifications
  - Push notifications
  - Email Feedback poc
  - WhatsApp Business Contact

## Customer Segments

- Users
  - The average Joe trying to use public transport
  - The general public
- Customers
  - Public transport providers
  - Private transport companies

## Early Adopters

- Ideal customer
  - Willing to invest in hardware and software to make the project possible
  - Willing to offer time for us to test and improve solution
  - Willing to pay for the software maintenance and upkeep post initial install
  - Interested in our solution to provide improved service to users

## Cost Structure

## Revenue Streams

<b>Category</b>	<b>Examples</b>
<b>Human Resources</b>	Developer, Prototyper, Actors (Ads)
<b>Tools / Technologies</b>	GPS, Web, Responsive Application Development
<b>Materials</b>	Embedded Computer, GPS Sensor, Server Infrastructure, Development Infrastructure
<b>Operations / Time</b>	Testing, Iteration, Development, Advertisement
<b>Ethical / Safety</b>	Testing Environment, Consent for Tracking, Feedback Collection

Item	Category	Quantity	Time (h)	Unit Value (€)	Total Cost (€)	Priority (E/O)	Description
Developer	Human Resources	3	200	€ 12.50	€ 7,500.00	E	How many developers for how many hours
Prototyper	Human Resources	1	50	€ 12.50	€ 625.00	O	How many prototypers for how many hours
Actors (Ads)	Human Resources	3	20	€ 100.00	€ 6,000.00	O	How many Actors for how many hours
Embedded Computer	Materials	5		€ 90.00	€ 450.00	E	How many Computers
GPS-Sensor	Materials	5		€ 25.00	€ 125.00	E	How many GPS Sensors
Server Infrastructure	Materials	1		€ 2,000.00	€ 2,000.00	E	How many Servers
Development Infrastructure	Materials	3		€ 1,000.00	€ 3,000.00	E	How many Development Machines
Testing	Operations / Time	1	20	€ 5.00	€ 100.00	E	How long does Testing take and how much cost is associated with
Iteration	Operations / Time	10	20	€ 5.00	€ 1,000.00	E	How long to develop and how many updates will be delivered
Development	Operations / Time	2	200	€ 5.00	€ 2,000.00	E	External Development costs
Advertisement	Operations / Time	50		€ 1.00	€ 50.00	E	How many Ads to we want to publish
Testing Environment	Ethical / Safety	1	20	€ 10.00	€ 200.00	O	Cost of Testing Resources
Consent for Tracking	Ethical / Safety	1			€ 0.00	E	Consent for Data analysis
Feedback Collection	Ethical / Safety	1	20	€ 8.00	€ 160.00	O	How much for someone to respond to feedback
<b>Total</b>					<b>€ 23,210.00</b>		

### Reflection

Our heaviest cost are the developers

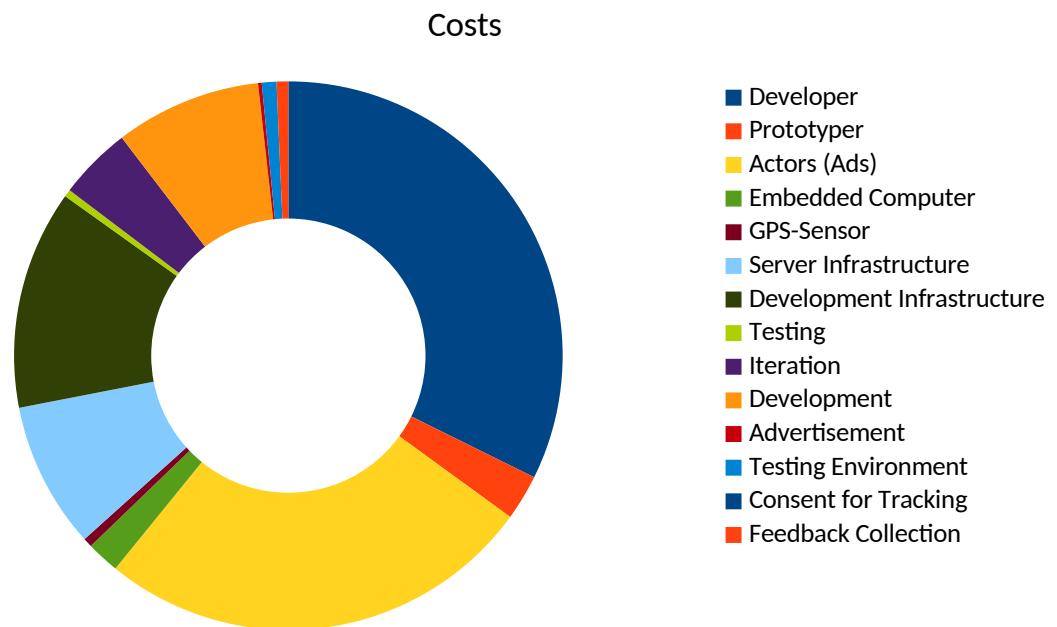
We could cut the Actor for Advertisement (or Ads at all) and the

Prototyper

nope our prototyping is not efficient, we need GPS-sensors and embedded computers (for data transfer)

### Graph

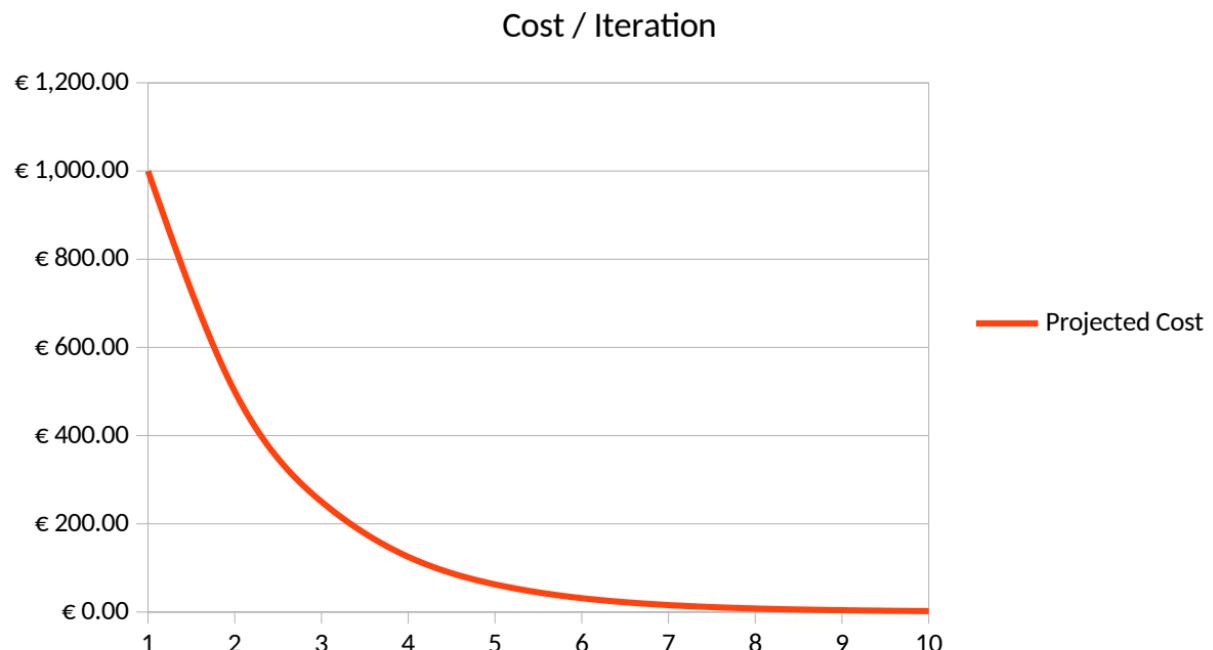
No clue what graph?



Metrics	Description	Value
	(Time × Hourly symbolic value) + Materials + Tools	€ 23,210.00
CPI	Total testing effort / Number of users	€ 232.10
CPU	Useful insights / Number of users	100
IY	IY / CPU	0.430848772081
DSS	Roughly the amount of users we expect	100
Users	Insight per user	0.3333333333333333

Base Cost	Iteration No.	Projected Cost
€ 1,000.00	1	€ 1,000.00
	2	€ 500.00
	3	€ 250.00
	4	€ 125.00
	5	€ 62.50
	6	€ 31.25
	7	€ 15.63
	8	€ 7.81
	9	€ 3.91
	10	€ 1.95

Since the development will stagnate eventually, costs will get progressively lower since newer iterations will just be minor bugfixes instead of major feature pushes



# Public Transport Tracking

## Problem

- Timetables often differ from actual arrival / departure times
- Finding viable transport alternatives often hard due to difficult planning
- Finding best transport option often inconvenient as for example bus might be stuck in traffic

## Existing Alternatives

- Static timetables give an indication of when transport is supposed to arrive
- Announcements on train stations for train delays

## Solutions

### Technology

- GPS based vehicle tracking to allow for accurate position and arrival time determination

### Design

- Progressive Web App to enable the widest possible User-base to have access
- Integration with existing public transport apps to ease usability

### Ethics / Social

- Improved public transport experience



## Key Metrics

- Usercount
- Downloads
- Support Tickets / Communication
- Complaints

## Unique Value Propositions

- Public Transport Users + Advanced and Dynamic Information + Convenient and Easy to Use Design = Dynamic Timetables for travelers

## High Level Concept

- Public transport tracking for everyone

## Unfair Advantage

- Unique Data
  - Proprietary GPS trackers
  - Proprietary usage tracking (via App)
- User habits
  - If merged with suedtirolmobil, users won't switch to alternatives

## Customer Segments

- Users
  - The average Joe trying to use public transport
  - The general public
- Customers
  - Public transport providers
  - Private transport companies

## Early Adopters

- Ideal customer
  - Willing to invest in hardware and software to make the project possible
  - Willing to offer time for us to test and improve solution
  - Willing to pay for the software maintenance and upkeep post initial install
  - Interested in our solution to provide improved service to users

## Channels

- First awareness
  - Physical advertisements at bus / train stops
  - Posters in / around public transport
  - Homepage
  - Word of mouth
- Access interface or prototype
  - Mobile phones
  - Desktop webpage
  - Homepage link
- Continuos learning and feedback
  - In-App notifications
  - Push notifications
  - Email Feedback poc
  - WhatsApp Business Contact

## Cost Structure

- Hardware
  - GPS trackers
  - Server infrastructure
- Development costs
  - Feature updates
  - Bugfixes
  - QoL improvements
- Running costs
  - Power bills
  - Labor
    - Device installation
    - Maintenance

## Revenue Streams

- indirect revenue
  - no revenue from users (like suedtirolmobil)
  - possible financing and support by
    - the province (or trough suedtirolmobil)
    - the users (e.g donations or data for useful statistics in exchange for privacy)
    - partners (possible ads)
- high non-monetary value for users
  - significant support for public infrastructure
  - high benefit for users trough live tracking
  - better time management trough main functionality and high usability
  - in general, high functional, social and (partially) emotional value
  - well-being because of a trustworthy and local service
  - only userdata for statistics and improvements which (user gets informed and must consent)

## Felix

- Filter for which type of connection and time frame
- Favorite Stations feature
- Proximity notification
- Integrate into suedtirolmobil instead of creating new standalone app
- Add delay information in connection list
- Ticket prices
- Ticket booking
- Add map with stops marked to show buses passing by
- Replace back button with search bar
- Push notification

## Samuel

- maybe legal issues
- to see via google maps api (?) if the bus is in traffic
- how to track if a bus has an accident
-

# Key Metrics

- Usercount
- Support Tickets / Communication
- Complaints

# **Unfair Advantage**

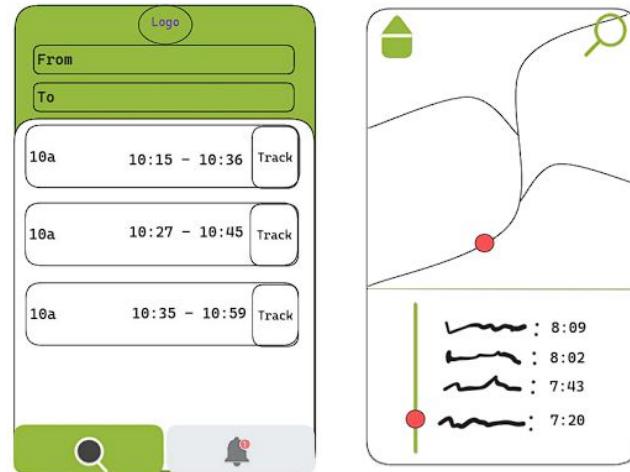
Our unfair advantage is the proprietary data we use to make our app function as well as user habits by integrating with pre-existing solutions.

# Testing & Refinement Report

# Project & Prototype Overview

## Group 6: Public Transportation Tracking

**Description:** Our project consists of a public transportation service that allows users to track public transportation live via GPS.



# In-class Testing (Round 1)

- Approximately 6-8 Testers
- Following tasks used:
  - Answering questions: Giving us feedback about our project idea in general and if they would use an app like this

# First Refinement

- Changed from GPS only to use a combination of GPS + proximity data for tracking
  - Has the added benefit of also supplying us with approximations for vehicle utilizations

# External Testing

- Approximately 15 Testers
- Following tasks used:
  - Navigating through our dynamic mockup and giving us feedback
  - Assume the position of a potential user and give us input as to what they deem to be essential features

# Final Refinement (Prototype v3)

- Added filter by mode of transport
- Added Favorite stations
- Added Google Traffic Data as additional input for time estimates

# Reflection

- Things learned
  - Testers can give valuable feedback even very early in the development
  - Testing shows which features are actually requested or needed
- Things to improve
  - Consider integrating all our functionality in already existing suedtirolmobil App in order to preserve user base while also lowering the bar of entry by not having to create an entire separate application from scratch

# TEAM INTRODUCTION

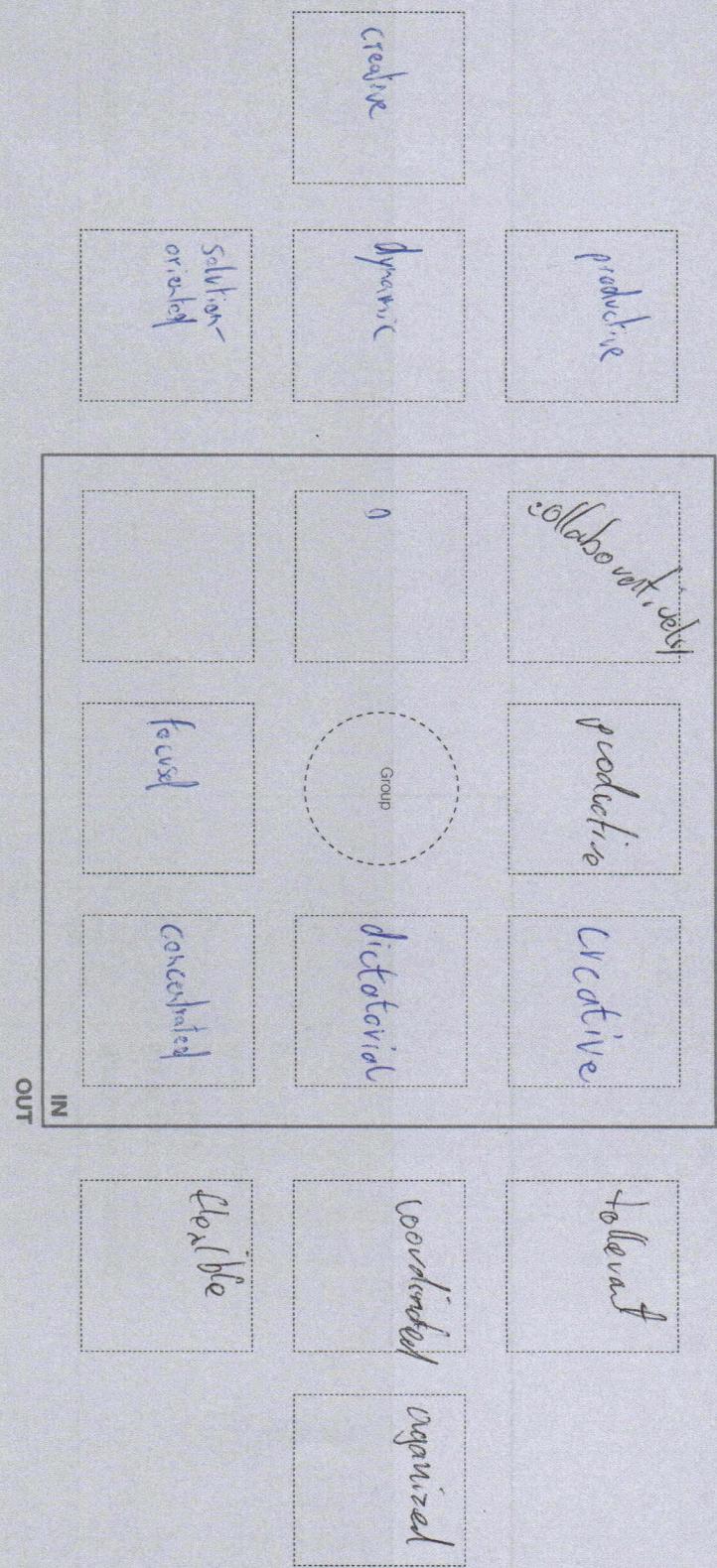
<p>Name and Surname: Samuel Son Background: IT - School Programs: superpowers: Creativity Dislikes: Nonsense</p>	<p>Name and Surname: Andrey Lazarev Background: IT - School Programs: superpowers: Technical know-how Dislikes: Samu Q</p>
<p>Name and Surname: Felix Börr Hell Background: Programmer Programs: superpowers: Focus Dislikes: Inconvenience</p>	<p>Name and Surname: Background: Programs: superpowers: Dislikes:</p>

# TEAMWORK

## 02

### Team work environment

How do you envision working together? Discuss and agree on how you want to work as a team. Work individually for a few minutes. Place your individual post-it notes on the template. Then discuss as a group and select eight words that best represent your team and how you want to work together. What behaviors do you collectively agree to foster a productive and healthy work environment for your team?



# PRIORITY

**Market Selection Criteria**

Take up to 6 specific market segments you identified in the mind map exercise and prioritize them based on the selection criteria below.

Market Segment 01

Market Segment 02

Market Segment 03

Market Segment 04

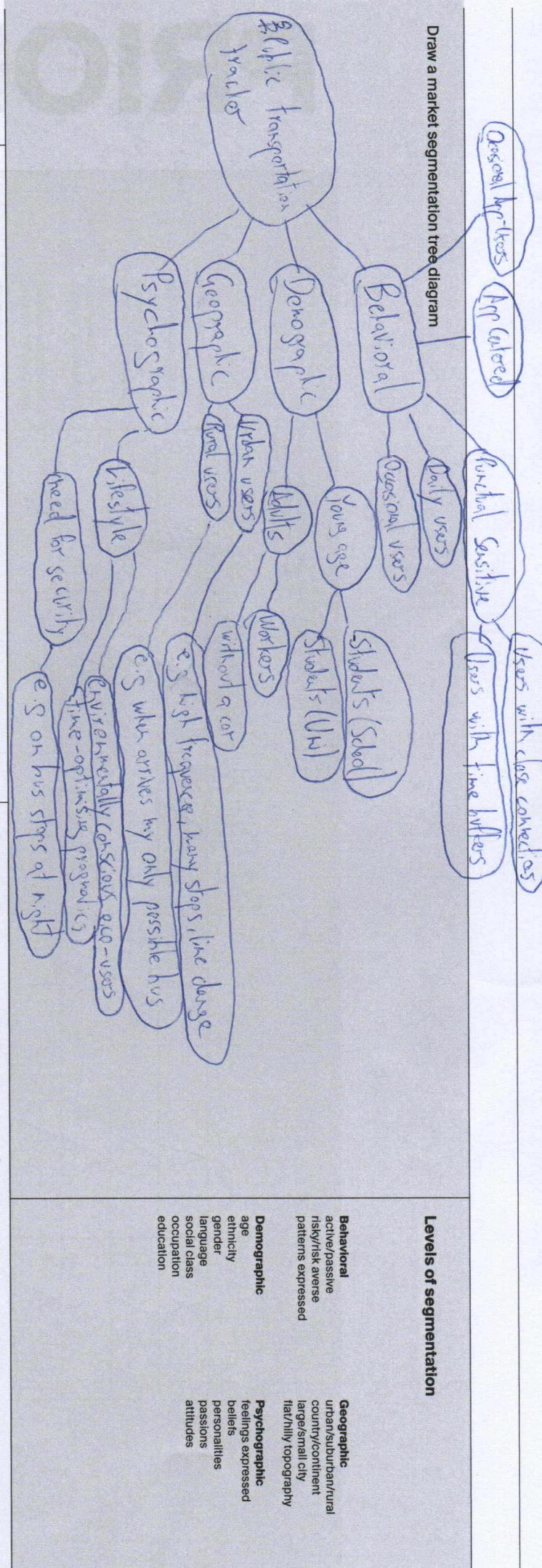
Market Segment 05

Market Segment 06

	Daily users	Students	Workers	Urban users	Rural Users	Occasional U.
Segment has the need you identified	✓	✓	✓	✓	✓	✗
Segment shows interest in a solution	✓	✓	✓	✓	✓	?
Segment has purchasing power	?	✗	✓	?	?	?
Room for competition in the segment	✓	✓	✓	✓	✓	✓
Segment will lead to additional markets	✗	+	+	+	+	✗
Segment is easily accessible	✓	✓	✓	?	?	✗
Does the segment need the same exact product?	✓	✓	✓	✓	✓	✓
Segment is growing or trend emerging	✓	✓	✓	✓	✓	✓
Segment conforms with the team's values	✓	✓	✓	✓	✓	?
Will you achieve your social/environmental impact with this market?	✓	✓	✓	✓	✓	✗

	Workers	Students	Daily Users
Select and rate the top 3 market segments you want to further explore/work toward.			

# MARKET VARIABLES



Identify as many potential market segments as possible for your solution. Use at least 3 of the markets you listed on template 1.2.1 as starting points, and use them to branch out and make multiple variations for each segment.

Use a mind-mapping tool or tree diagram to display all the potential markets you should evaluate. Explore different levels of market segmentation. See list above as guidance.

**POLIMIT**  
**HACIK**

# INSIGHTS

**01**

What insights did your prototypes give you?

Necessity for search filter

Station favourites needed

Highly welcome addition to public transport

**02**

How your prototypes help you communicate your idea?

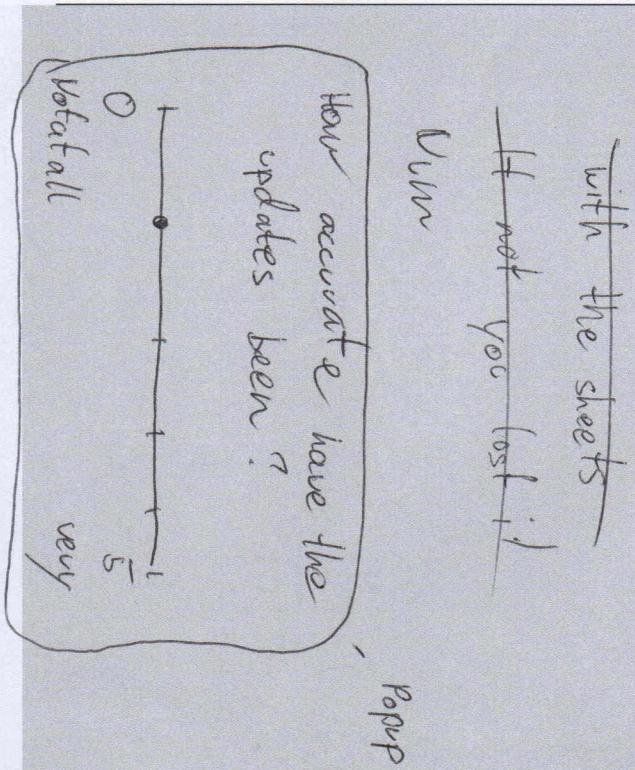
clear prototype  
goal easily recognizable  
no introduction needed due to similar interface

# PROTOTYPE

## 01

### Prototype

Make a prototype to answer one of your three pressing questions you identified earlier. Note that the prototype can be for a specific part(s) of your solution or the full solution. Paste photographs/diagrams/screenshots here.



Prototype should be  
with the sheets

~~It's not you, it's me.~~

I'm

popup

## 02

### Prototype Preparation

Make a bullet list of actions and resources you need to build your prototype.

- Programming
- Update server
- Update app
- Developers
- Designer

# PROTOTYPE IDEAS

**01** What will you prototype to answer the first pressing question about your solution?

User counter to keep track of requirements

**02** What will you prototype to answer the second pressing question about your solution?

Stress test to test reliability  
Early access launch to collect feedback

**03** What will you prototype to answer the third pressing question about your solution?

Implement feedback collection + to collect ~~results~~ accuracy voting

POLIMIT  
HACK

Identify risks and uncertainties  
Formulate questions to reduce risk  
Answer questions quickly and cheaply  
Start with focused questions, then move to comprehensive

Notes

A sketch of your key specifications for your solution is the first visualization of an idea, and a crucial part of the design process.

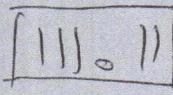
# SKETCH

## 01

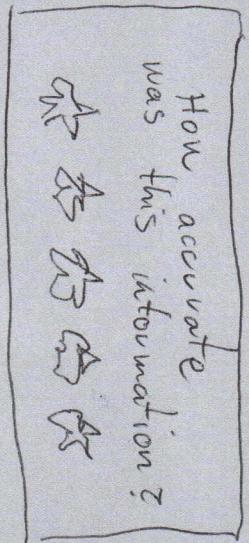
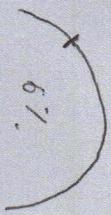
**Sketch**  
Sketch various versions of possible solutions to your questions

How to sketch a press leaf? Do not think this applies

User  
connected: 5629



Server utilization



# HOW MIGHT WE?

## O1 Develop and write the HMW question that is going to drive your project.

How might we

improve the visibility and functionality of an existing public transportation app?  
How might we create real value for the users?  
How might we create an app with a tracking function?

## O2 Evaluate the possible solutions with these three outcomes

HUMAN OUTCOMES  
Improved visibility reduces confusion

SOCIAL OUTCOMES  
Increased public transport adoption

FINANCIAL OUTCOMES  
Potential partnerships

POLY  
HACK

There are multiple ways a need can be met, or problem solved. Start with each team member placing their ideas on the board. Include your original idea but go beyond it to explore other ways this problem could be solved. Discuss key takeaways from this exercise and how your ideas inform your solution design. Select one idea you think might have the most potential. If you select your original idea, make sure to include any adjustments this exercise has inspired.

Discuss your various solution options in light of the three outcomes and select a solution idea that you believe will best deliver those outcomes.

# MISSING DATA

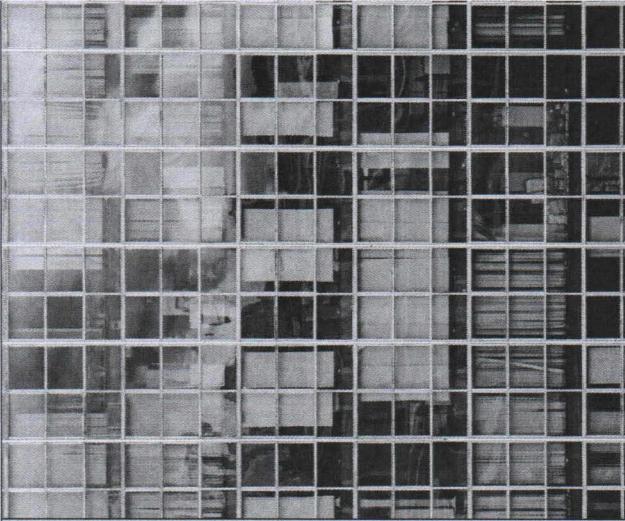


Photo by Triago Metrics

<b>01 Engagement</b> Ask yourself if you have a holistic view of the need for your solution and deep understanding of your target segments. Are you engaging with all key stakeholders? Are you able to triangulate information from multiple sources?	<b>02 Data Sources</b> Continue to search online for credible data sources needed to understand the scope, urgency, and trends associated with the need/problem you are working on. Identify additional data sources to answer new questions as they arise.	<b>03 Missing Data Checklist</b> Make a list of questions or missing data points. Keep adding to that list as new questions emerge. <i>How many users? Reliability? Accuracy?</i> <i>Yes, T4L One Bus Away</i>
<b>POLYMIT</b> HACIK	<b>Data Inventory</b> Our decisions are only as good as the information we have available to us. Take stock of your data and sources of information. Discuss the three topics above. Make notes.	You will require a lot of information to make effective decisions to design a solution that can meet your users' urgent needs. Make a list of questions or missing data points. Keep adding to that list as new questions emerge. Keep an active log of your data needs.

# THEORY OF CHANGE

Your Theory of Change Statement must capture your desired impact and the way you will achieve it.

If we create a public transportation app that includes a live walking service, then public transportation will be a pleasure to use ~~will happen.~~

Hake public transport a pleasure to use

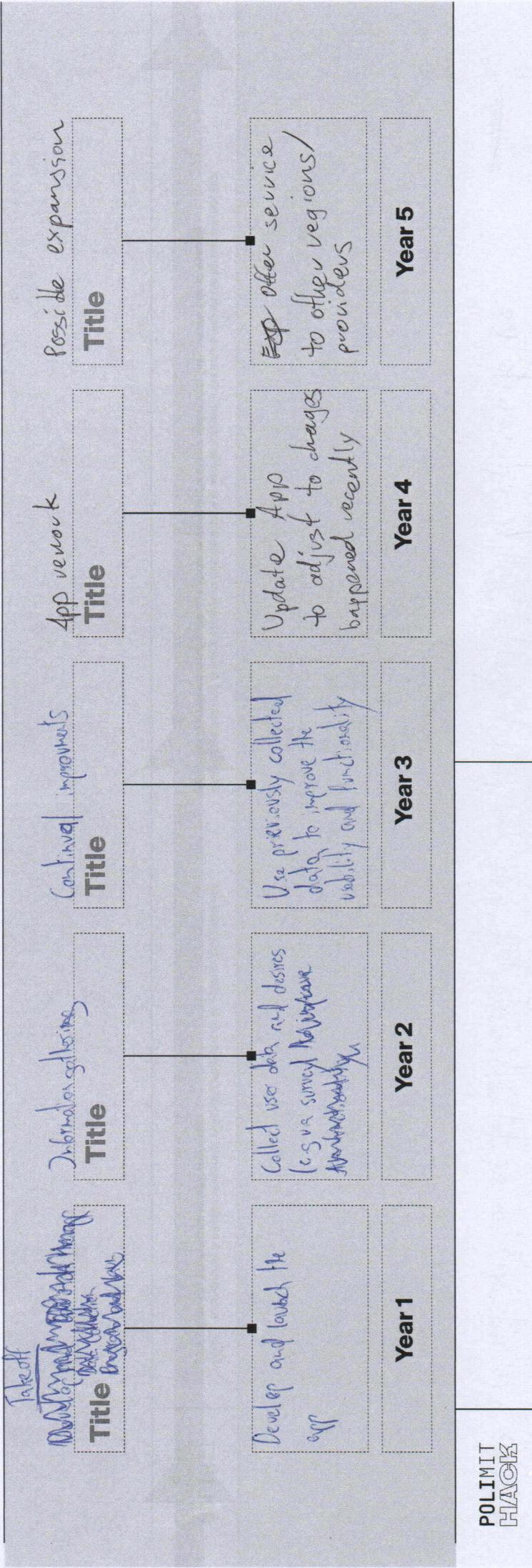
MISSION

VISION

**POLIMIT HACIK** Mission is functional. A mission statement describes what you do to achieve your goals and aspirations. I.e., what you do to fulfill your vision.

Vision is aspirational. A vision statement defines what you want to achieve in the future. Revisit the human and societal outcomes you defined in template 2.1.1. Make multiple drafts of your statement. Test. Iterate. Edit as needed.

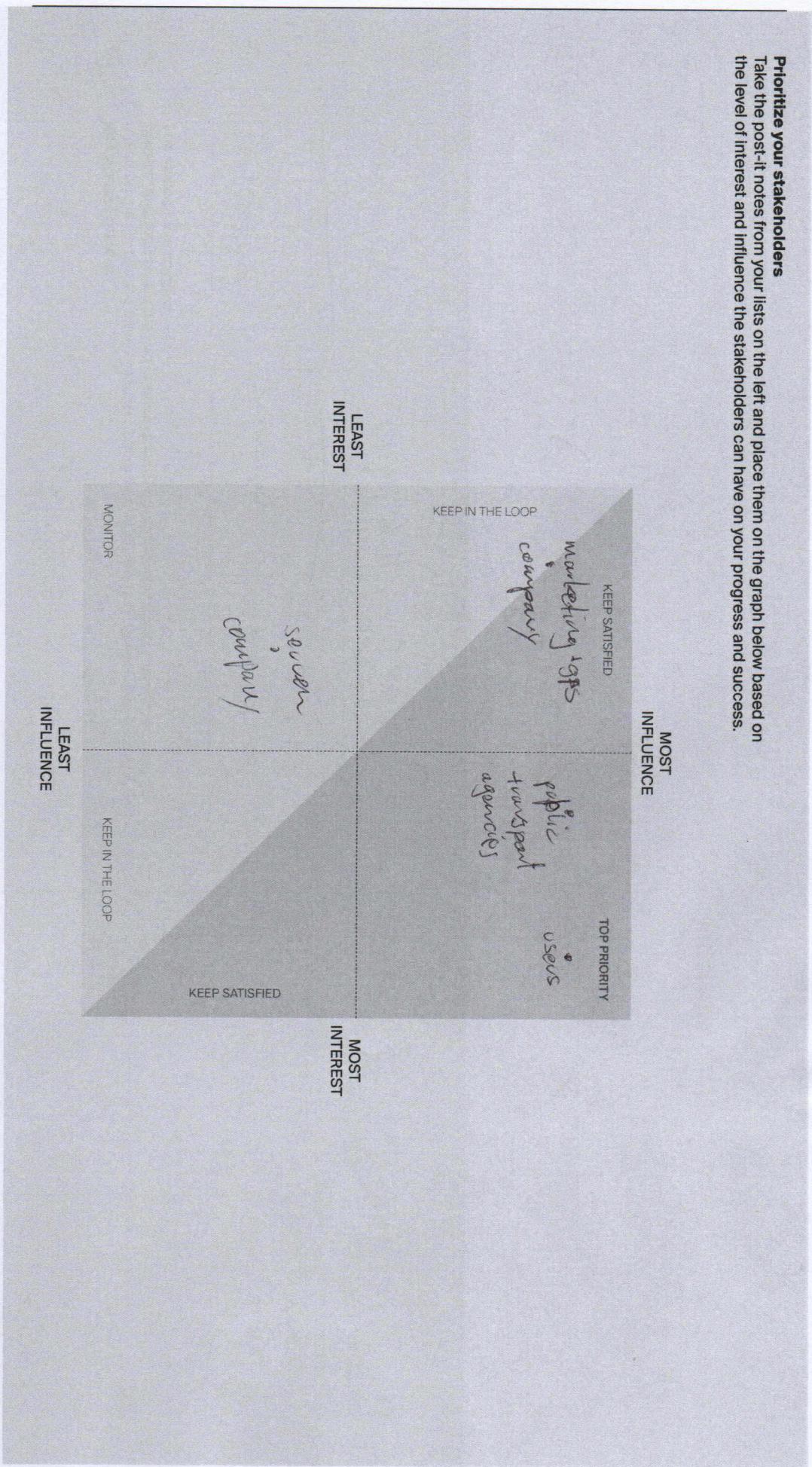
# STRATEGY ROADMAP



# MAPPING

**Prioritize your stakeholders**

Take the post-it notes from your lists on the left and place them on the graph below based on the level of interest and influence the stakeholders can have on your progress and success.



# SWOT POSITION

## 01

**Direct vs Indirect**  
Start by listing all the direct and Indirect ways your users are currently fulfilling their need/ solving their problem (competition).

Direct

svetlivnobilis indirect  
delay notifications

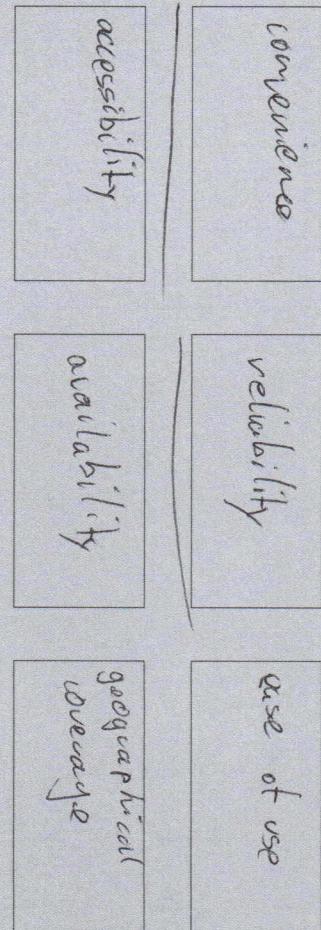
google maps data

Indirect

physical time tables  
They don't

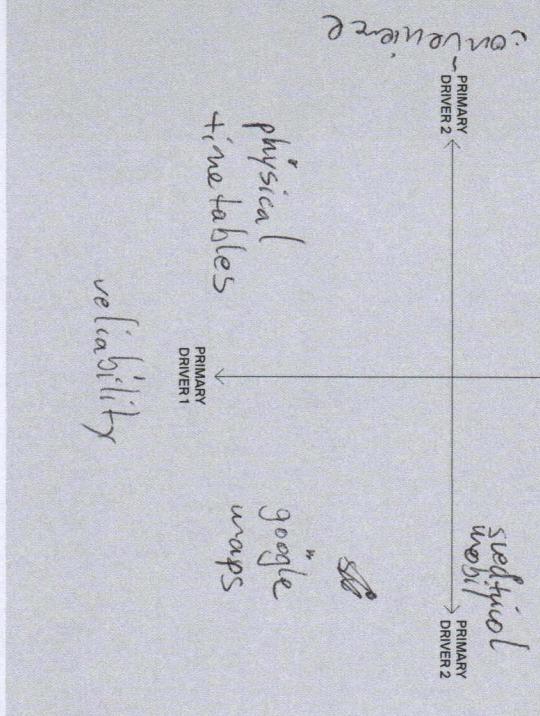
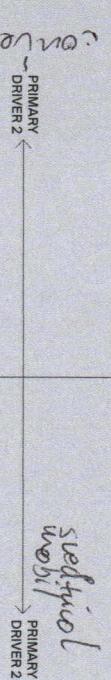
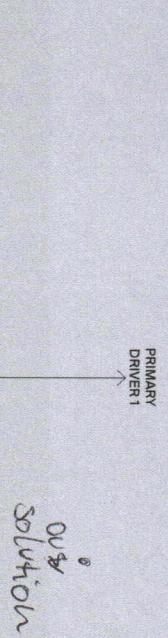
**Key Market Drivers**

Based on the list derived above, identify up to 6 market drivers (e.g., quality, speed, cost, etc.). Discuss, and then select the two primary drivers you believe affect users' decision-making when selecting a solution.



## 02

**Market Positioning**  
Label the two axes. Each of the axis represent the two primary market drivers you just identified. Each end of the axis represents the strength (up/right) or weakness (down/left) of that driver. Place the direct/indirect competitors on the chart based on their strength or weakness. Your solution should be in a position of strength on both axes (upper right corner).



# SOLUTION & IMPACT

The solution to the existing problem is the development of a tracking service for public transport. We expect this to have a major impact on the ~~whole~~<sup>Horizontal red</sup> waiting time of the users of public transportation.

# PROBLEM & STAKEHOLDERS

Problem:

- Already existing app from the public transportation company of Rotterdam (STA)

Stakeholder:

- GPS Company
- Data Service Company
- Marketing Company
- Users
- Public transport agencies

# CONCEPT STATEMENT

## Name of the concept

City Sweety Pulse

## Is the only

Specify category of service  
public transport app

## That

Main purpose of the service  
tracks transport

## For

Main stakeholders of the service  
commuters

POLIMIT  
HACK

# CONCEPT STATEMENT

Member 1	Member 2	Member 3	Member 4
<p>Best Idea 1 Make contacts for cheap GPS-Tracking, IT firms, marketing</p> <p>Best Idea 2 Make it app as simple as possible</p>	<p>Best Idea 1 Find cheapest hardware to do the job Find public transport companies (+ partner up with)</p> <p>Best Idea 2 To convince the biggest competitor to integrate our function in the app</p>	<p>Best Idea 1 Bring up the idea in general the beginning</p> <p>Best Idea 2</p>	<p>Best Idea 1</p> <p>Best Idea 2</p>

# CUSTOMER JOURNEY

Steps	Search-Phase	Advertisement	Trying out app	Usage	Works good	:-)
Actions	Lacks bus.	Seeks for alternatives	Sees our ad	Installs app	Uses App	Never gets late, Happy :-)
Touchpoints	Ad	App Store	App			
POLIMIT HACK						

COMPETITIVE ANALYSIS

# COMPETITOR PATTERNS

<b>01</b> Who pays? Transport agency	<b>02</b> How do they pay? (Preferred) money preferably	<b>03</b> What do they pay for? Their buses appear in app	<b>04</b> How much do they pay? ?	<b>05</b> Do they have recurring avenue? Maybe	<b>06</b> Notes direct and indirect competitor:  Indirect: Google Maps	<b>POLIMI</b> HACK	Discuss the questions above and write your findings in the spaces provided. Work for the first 5 minutes by yourself. Use different post-it colors for each team member and place your post-its on the wall/board.	Then work as a team. Discuss your individual notes and agree on key findings. Discuss the needs and what drives demand for an urgent solution.
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# REVENUE

**01**

**Source**

List all sources of revenue  
(Where does your revenue come from?)

Province  
Transportation agency  
Ads

**02**

**Classification**

Split the sources of revenue into transactional (one time) and recurring  
revenue streams

Transactional Revenue  
Initial sponsoring  
Province

Recurring Revenue

Ads  
Transp. agency

# PROTOTYPE QUESTIONS

**01** What is the most pressing question about your solution you want to test with your prototype?

*If GPS-tracker and other technology works reliable*

**02** What is the second most pressing question about your solution you want to test with your prototype?

*Will people actually use it?*

**03** What is the third most pressing question about your solution you want to test with your prototype?

*Will a regional ad campaign be possible?*

POLIMIT  
HACK

Identify risks and uncertainties  
Formulate questions to reduce risk  
Answer questions quickly and cheaply  
Start with focused questions, then move to comprehensive

Notes

## POLIMIT HACK

# ON VALUE

Value Proposition

Describe your value proposition by highlighting why/how/what drives your users/customers to your solutions.

## 01

### Value Proposition

Value Proposition plays a key role in stakeholders' decision to engage, use, or buy your solution. It governs how you design and build your solution as well as how you communicate its value.

#### Why

[A bold headline]

Conquer planning made easy

#### How

[Subheading with a more detailed explanation of the benefits and how they can get it!]

GPS based tracking delivers  
real time information

#### What

[3-4 bulletts listing key features that make your solution uniquely valuable]

- real time data
- no existing alternatives
- reliable
- valuable data

## 02

### Visuals

Use visuals (photos, graphics, videos) to enhance the clarity of your message.

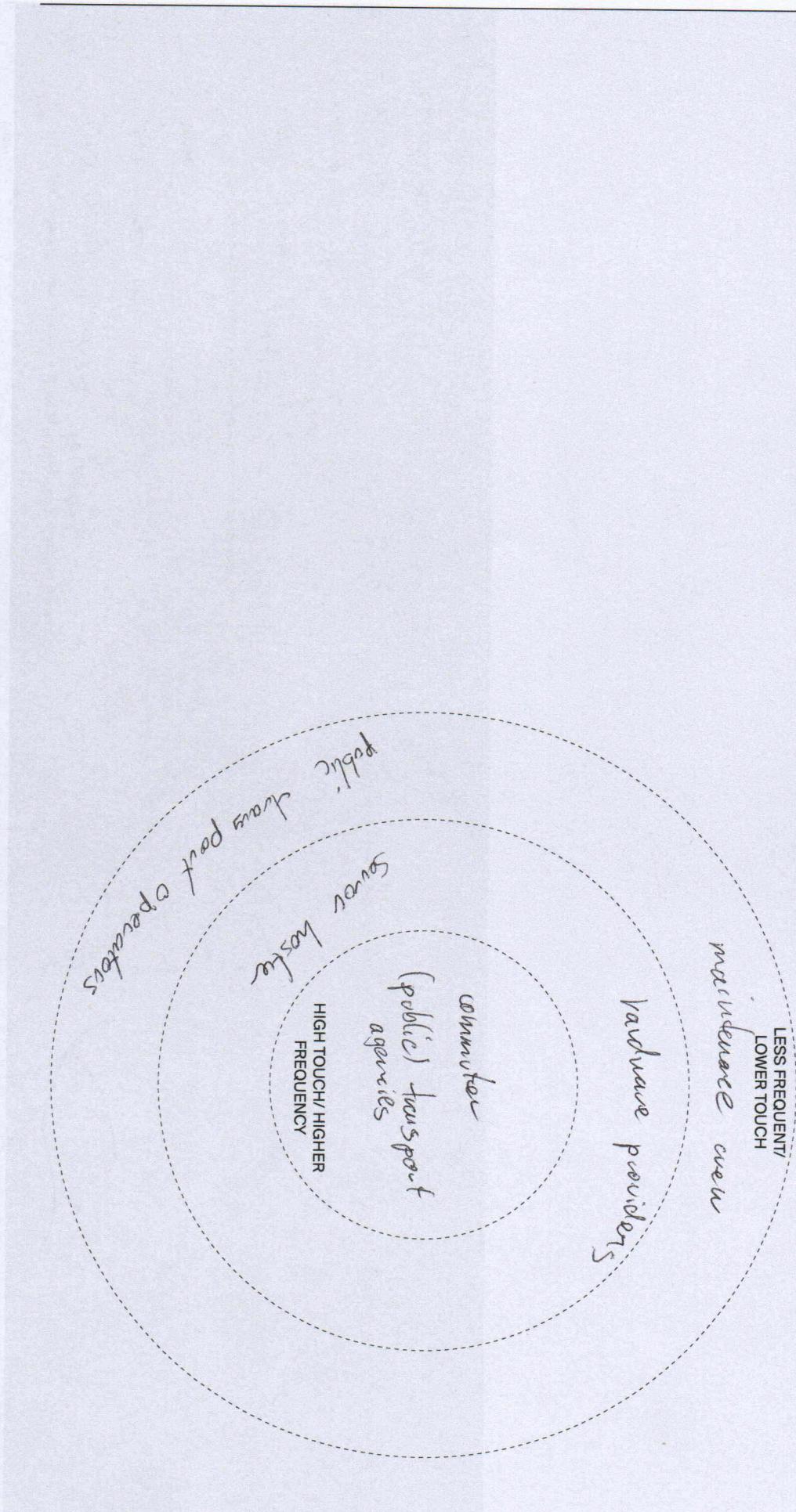
#### Visuals

[Insert a compelling images supporting your arguments]

Your bus



# MAPPING



# PITCH OBJECTIVES



<p><b>01</b> What do you need/want to accomplish with your pitch?</p> <p>Show why our project is important to our regional society</p>	<p><b>02</b> Who is in the audience and what do they need to know/understand after your pitch?</p> <p>Understand the problem Understand the solution to the existing problem</p>	<p><b>03</b> What do you want them to think after your presentation?</p> <p>To see, that such a clear solution can exist</p>	<p><b>04</b> What do you want them to feel during your presentation?</p> <p>Focused Curious</p>	<p><b>05</b> What do you want them to do after your presentation?</p> <p>Support our project!</p>
--	--	--	---	---

POLIMI  
HACKATHON

Pitch decks are commonly used for communicating new ideas. There is not a single method for creating an impactful presentation—the possibilities are endless. The magic is in how well a pitch is tailored to an audience and how clearly it communicates your ideas.

Pitching can be challenging; however, constructing or using a carefully curated content will result in a more powerful pitch. The design of your pitch deck along with a compelling story will help you make a positive impression on your audience.

TIME  
LAWSON  
SCHWARTZ

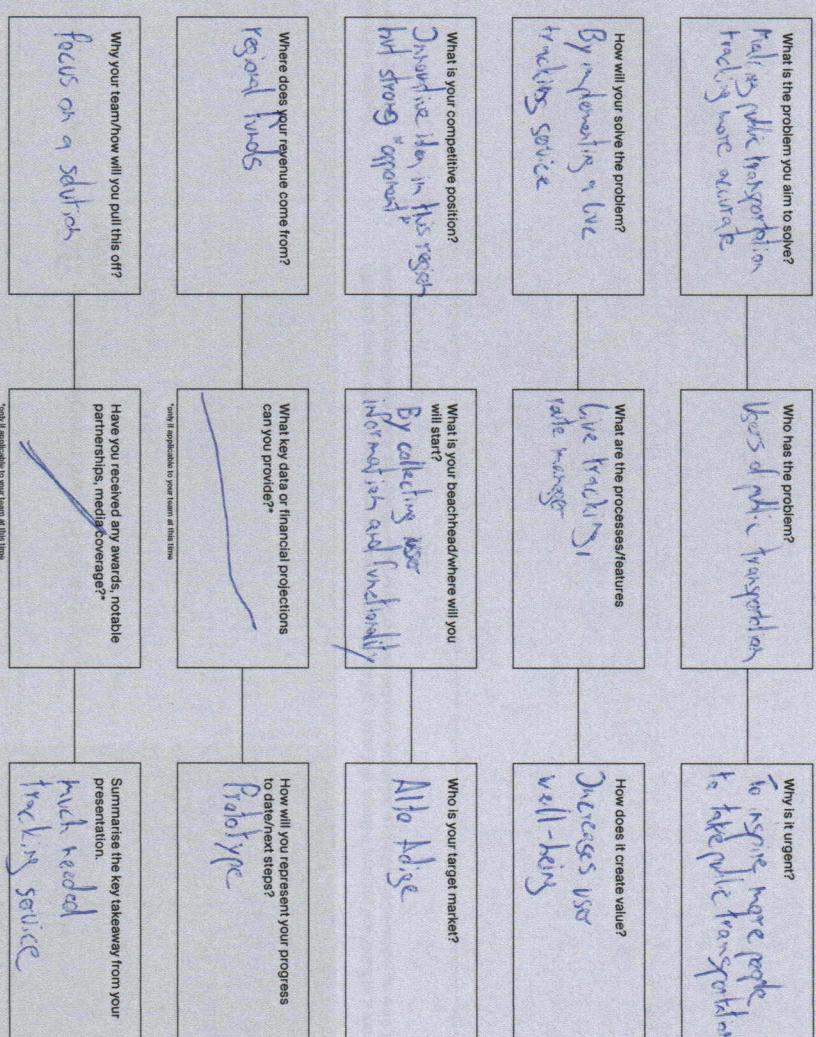
# STORYLINE

## 01 Work individually

Start working individually. Each team member writes one sentence for each of the topics outlined in the template. This single sentence should capture the key takeaway from each slide. In one short sentence, state what you need the audience to know/feel/think/do after seeing the slide. In other words, it should be the "punchline" for each slide presented as a strong headline for each slide.

## 02 Discuss and select

Once everyone has placed their sentence on the board, discuss each of your sentences and select the one that best captures the key takeaway for each slide. You can also create a new sentence that includes the best ideas from your individual sentences.



# USER ENGAGEMENT



Photo by Lisa Goldas

<b>01</b> Who will you interview?	<b>02</b> Where can you find them?	<b>03</b> When will you interview them?
Public transportation users (daily/weekly...)	Near public transport	Already done
<b>04</b> What questions do you need to ask?		
	Is there a need to track public transportation? Would you benefit from a tracking service/function?	

POLYMIT  
HACK

Define how you will engage directly with the actual people who have the need/problem or are impacted by it. What questions do you ask, what observations will you make, whom will you talk to, where and when will you conduct the interviews/observations.

Steve Jobs said: "You have to be so close to your customers that you know their needs before they do." Discuss and outline how you will manage your user engagement throughout your time at MITdesignX.

# RESEARCH PLAN

<b>01</b> RESEARCH OBJECTIVE <i>Need for dynamic timetable GPS tracked buses/trains</i>	<b>03</b> KEY QUESTIONS <i>How reliable public transport? How good available apps?</i>	<b>04</b> HYPOTHESIS TESTING <i>People will find it unreliable, they want knowledge about where bus/train is</i>	<b>POLIMIT HACK</b>
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# SECONDARY INSIGHTS

<b>01</b> Datapoint + Source <i>Flat Bus Time New York Public Transport Agency</i>	<b>02</b> Datapoint + Source <i>TfL (London Transport organisation)</i>	<b>03</b> Datapoint + Source <i>One Bus Away</i>
<b>04</b> Datapoint + Source	<b>05</b> Datapoint + Source	<b>06</b> Datapoint + Source
<b>POLIMI HACKZ</b>	Become an industry expert and gain a deep understanding of the problem/needs and the trends relevant to your venture. Collect data from industry, government, and academia.	Conduct secondary research throughout the needs analysis and beyond. Document key data points and sources. Use your secondary research to inform your primary research.

# INTERVIEW INSIGHTS

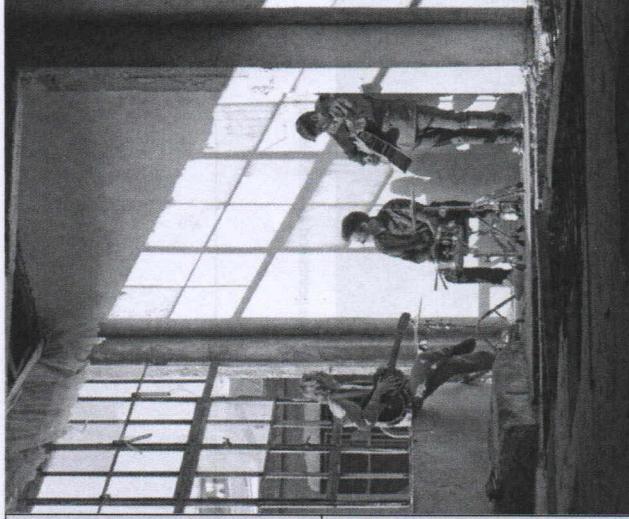


Photo by Sebastianos

**01** Insight  
People are unhappy with the  
reliability of public transportation

**02** Insight  
People are rating "satisfaction" only  
6.66 / 10

**03** Insight  
The need for a tracking service  
is really high

**04** Follow-up. How. Who. When.  
Provide information to consumers now.

Look at the themes emerging from your interview, what did you learn? what are the key take aways for your understanding of the need/problem? Identify at least three insights but feel free to add as many as needed.

POLIMIT  
HACKZ

Organize your thoughts and decide next steps, discuss, what you need to know more about. What will you follow up on? Who?

When?

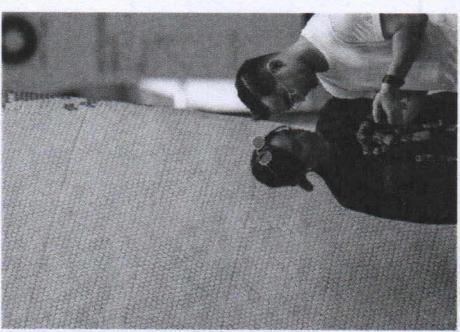


Photo by Ralph Rabeago

# ROOT CAUSE ANALYSIS

Summarize the problem you identified in one short sentence here

The problem is that public transport is too unreliable.

<b>POLIMIT</b>	<b>HACK</b>	<b>Buses come late</b>	<b>Why</b> People don't know when buses are coming	<b>Why</b> Traffic, weather, holidays makes it difficult to plan	<b>Why</b> Static timetables unreliable	<b>Why</b> People don't have a reliable way to look where bus is
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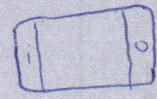
**POLIMIT**  
**HACK**

First work individually and ask yourself "why" is the problem a problem. What is the underlying cause?  
Dig deep for the root cause of the problem through multiple iterations.

In order to get to the root cause of the need/problem, start by stating the problem in one simple sentence.  
Then ask the question "why?" at least 5 times to uncover reasons for why the need/problem exists.  
Place your answer in the boxes provided above.

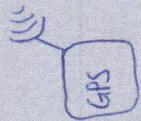
# TRENDS

MARKET



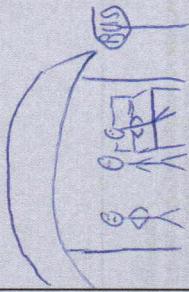
Visualize and/or write here

TECHNOLOGY



Visualize and/or write here

SOCIETY



Visualize and/or write here

POLIMIT  
HACK

# STATEMENT

## 01

### Needs/Problem Statement

Start by listing the most urgent unmet needs you identified in the previous assignment “1.1.2 Needs”. Then each team member writes keywords reflecting those needs on post-it notes and places them on the board. One word per note. Discuss the words. Select and prioritize. Draft a sentence that clearly and simply describes the need/problem your solution will tackle.

Information needs to be available

To improve public transport experience

#### + + Functional Needs

Copy the needs from template 1.1.2. Check if your statement captures these needs.

Need 1	<i>difficult planning</i>	<input type="checkbox"/>
Need 2	<i>No existing alternatives</i>	<input type="checkbox"/>
Need 3	<i>lack of information</i>	<input checked="" type="checkbox"/>
Need 4		<input type="checkbox"/>
Need 5		<input type="checkbox"/>

#### + + Emotional Needs

Copy the needs from template 1.1.2. Check if your statement captures these needs.

Need 1	<i>Inconvenience</i>	<input type="checkbox"/>
Need 2		<input checked="" type="checkbox"/>
Need 3	<i>Simplicity</i>	<input type="checkbox"/>
Need 4		<input type="checkbox"/>
Need 5		<input type="checkbox"/>

## 02

### Clarity Score

Evaluate your statement using the following criteria:

- Impactful headline

Clarifying text is:

- Short and to the point
- Focused on the problem
- States problem characteristics
- Based on facts
- Is measurable

# MARKET SEGMENTS

<b>01</b> Most obvious real time data	<b>02</b> Most in need of your product new users pt 2.	<b>03</b> Most accessible multinational migration	<b>04</b> Most lucrative Subscription App
<b>05</b> Most potential for growth open app (extensive)	<b>06</b> Most interested in a solution volunteers	<b>07</b> Able to create most impact car drivers	<b>08</b> Most crazy people fleeing mental asylum
<b>POLIMI</b> <b>HACK</b>	Create eight initial market segments as starting points, each with a different focus. The most obvious is not necessarily the best. The one with the most potential might not deliver the impact you want to achieve. The most lucrative might be too small. This activity is not going to give you a clear answer, but will start the process of identifying the ideal market(s) for your solution.		

EMI

Identify the functional and emotional needs of the key users that have the need/problem you aim to solve.

# NEEDS

## 01

### Functional Needs

List the functional needs that drive the users you previously identified to need a solution

Urgent   Scope   Trend   Select top 3

*lack of information*              
*difficult planning*              
*no existing alternatives*           

Urgent   Scope   Trend   Select top 3

*uncertainty*              
*inconvenience*              
*simplicity*           

Urgent: The need/problem demands a solution now and it is seriously impacting stakeholders.  
 Scope: Many are impacted by it. Trend: The need/problem is growing not declining.

## 02

### Emotional Needs

List the emotional needs that drive the users you previously identified to need a solution

Urgent   Scope   Trend   Select top 3

Urgent: The need/problem demands a solution now and it is seriously impacting stakeholders.  
 Scope: Many are impacted by it. Trend: The need/problem is growing not declining.

# PROBLEM FRAMING

<p><b>01</b> What is the need/problem you want to solve? Inconvenient use of public transport Difficult transportation planning</p>	<p><b>02</b> Who has the need or is affected by the problem? commuters use of public transport</p>	<p><b>03</b> What drives people to get, use, buy your product/service? information previously obtainable</p>
<p><b>04</b> Where is the problem taking place? public spaces</p>	<p><b>05</b> When does the problem need to be fixed? now?</p>	<p><b>06</b> What would be the consequences of the problem not being solved? difficult travel lose convenience possibly less public transport users</p>
<p><b>POLIMI</b> <b>HAGIK</b></p>	Discuss the questions above and write your findings in the spaces provided. Work for the first 5 minutes by yourself. Use different post-it colors for each team member and place your post-its on the wall/board.	
<p>Then work as a team. Discuss your individual notes and agree on key findings. Discuss the needs and what drives demand for an urgent solution.</p>		

# CONNECT

**TEMPLATE 2.1.3**

9

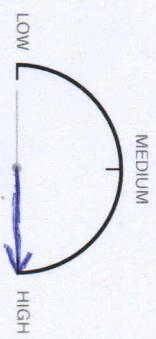
speen

**Needs**  
Paste your top three needs from your previous needs analysis here

20

Problem-Solution Fit

**Problem-Solution Fit**  
List key features that your solution must have to fulfill the need or solve the problem. Then draw lines connecting solution specifications with each of the needs. Finally, estimate the problem-solution fit on the dial above.



+ Functional Needs

++ Emotional Needs

- Working off known accurate arrival times
  - Delay notifications
  - See real-time bus location

+ + + Solution Features

- Live GPS-based location tracking
- Delay and disruption alerts
- Favorite stops and routes
- Simple, clean interface

- Feel confident about arriving  
on time  
Feel less stressed  
Feel in control

# CRAZY 8

Crazy? I was crazy once! They locked me in a room! A rubber room! A rubber room with rats! Rats? Rats make me crazy! Crazy?

<b>01</b> Live Bus Map	<b>02</b> Arrival Countdown	<b>03</b> Delay Alerts	<b>04</b> Favorite Stops
<b>05</b> Crowdness Indicator	<b>06</b> Smart Route Suggestion	<b>07</b> One Tap "Where's my bus?"	<b>08</b> Offline Timetable Backup
POLIMIT HACK	Text		
ECI			Software

# Reflection & Next Steps

During the hackathon, we did not make any further changes to our project, as the direction is relatively clear to us. Instead, it served as an insight into our project. The scope of the project was also clearly defined, but one question remains: will this project actually be implemented in the future, or do we want to start a petition or send our main aspect of the project to “STA” so that they can integrate it into their “Südtirolmobil” app? For the benefit of the users, it is best if this user experience is already integrated into an app that they use regularly without forcing them to switch.

In addition, during the course of our development, we decided to expand our project further thanks to useful feedback during the testing phase (in-class testing). A service where users can see how full the bus is. This would be based on the same concept as Google Maps, where you can also get traffic data when planning your route (red road = heavy traffic, green road = light traffic).

# Public Transport Tracking

## Problem

- Timetables often differ from actual arrival / departure times
- Finding viable transport alternatives often hard due to difficult planning
- Finding best transport option often inconvenient as for example bus might be stuck in traffic

## Existing Alternatives

- Static timetables give an indication of when transport is supposed to arrive
- Announcements on train stations for train delays

## Solutions

### Technology

- GPS based vehicle tracking to allow for accurate position and arrival time determination

### Design

- Progressive Web App to enable the widest possible User-base to have access
- Integration with existing public transport apps to ease usability

### Ethics / Social

- Improved public transport experience



## Key Metrics

- Usercount
- Support Tickets / Communication
- Complaints

## Unique Value Propositions

- Public Transport Users + Advanced and Dynamic Information + Convenient and Easy to Use Design = Dynamic Timetables for travelers

## High Level Concept

- Public transport tracking for everyone

## Unfair Advantage

- Unique Data
  - Proprietary GPS trackers
  - Proprietary usage tracking (via App)
- User habits
  - If merged with suedtirolmobil, users won't switch to alternatives

## Customer Segments

- Users
  - The average Joe trying to use public transport
  - The general public
- Customers
  - Public transport providers
  - Private transport companies

## Early Adopters

- Ideal customer
  - Willing to invest in hardware and software to make the project possible
  - Willing to offer time for us to test and improve solution
  - Willing to pay for the software maintenance and upkeep post initial install
  - Interested in our solution to provide improved service to users

## Channels

- First awareness
  - Physical advertisements at bus / train stops
  - Posters in / around public transport
  - Homepage
  - Word of mouth
- Access interface or prototype
  - Mobile phones
  - Desktop webpage
  - Homepage link
- Continuos learning and feedback
  - In-App notifications
  - Push notifications
  - Email Feedback poc
  - WhatsApp Business Contact

## Cost Structure

- Hardware
  - GPS trackers
  - Server infrastructure
- Development costs
  - Feature updates
  - Bugfixes
  - QoL improvements
- Running costs
  - Power bills
  - Labor
    - Device installation
    - Maintenance

## Revenue Streams

- indirect revenue
  - no revenue from users (like suedtirolmobil)
  - possible financing and support by
    - the province (or trough suedtirolmobil)
    - the users (e.g donations or data for useful statistics in exchange for privacy)
    - partners (possible ads)
- high non-monetary value for users
  - significant support for public infrastructure
  - high benefit for users trough live tracking
  - better time management trough main functionality and high usability
  - in general, high functional, social and (partially) emotional value
  - well-being because of a trustworthy and local service
  - only userdata for statistics and improvements which (user gets informed and must consent)

