SYN+AIR:
Synergies between transport modes and Air Transport
Data sharing and access to travelers' data as a facilitators of multimodality

SYN+AIR project

X-TEAM D2D project

Workshop ‘Passenger-centred Mobility’

ART/ACARE/CAMERA

Online, June 16, 2021

Founding Members

EUROPEAN UNION EUROCONTROL

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Data sharing and access to travelers' data as a facilitators of multimodality in SYN+AIR project

Introduction (1/2)

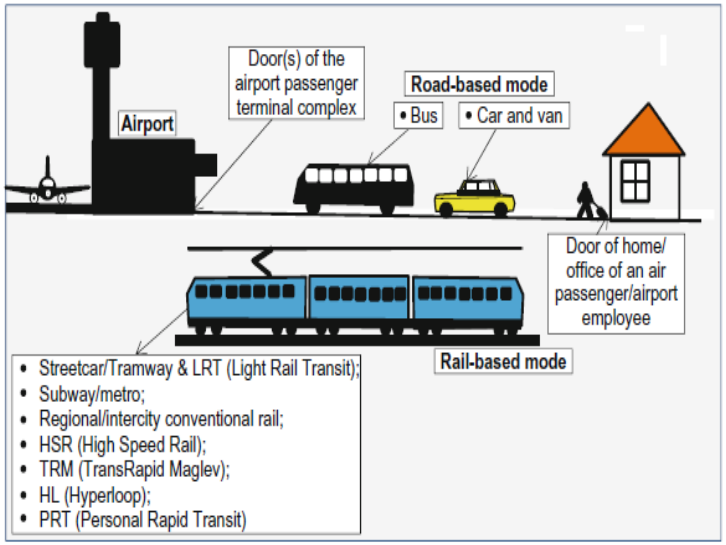
How existing data sharing among different stakeholders can be facilitated to provide to a passenger a better travel experience?

TRAVELER

Stage 1: Dreaming
Stage 2: Planning
Stage 3: Booking
Stage 4: Experiencing
Stage 5: Sharing (post travel)

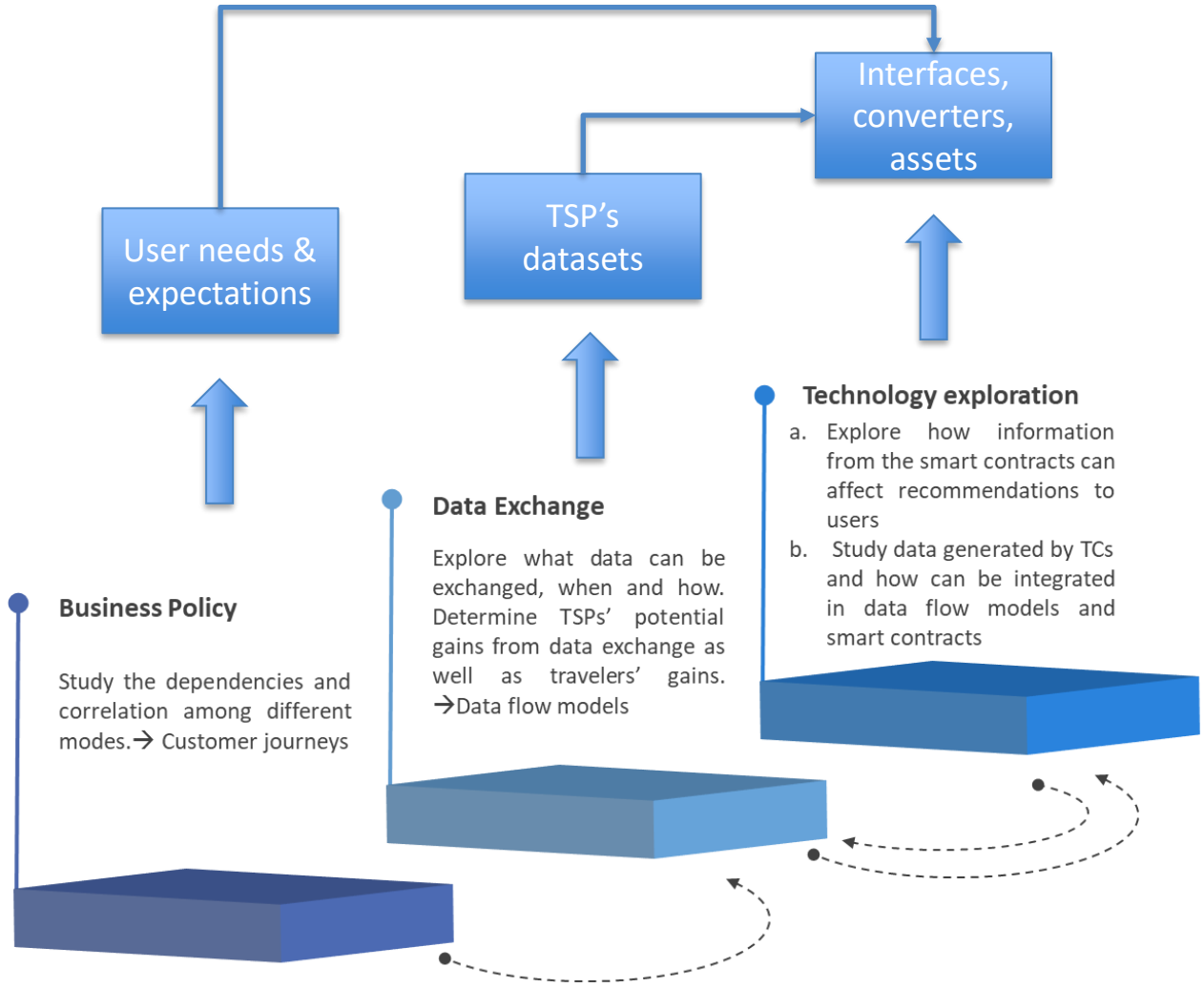
Data & trade-offs

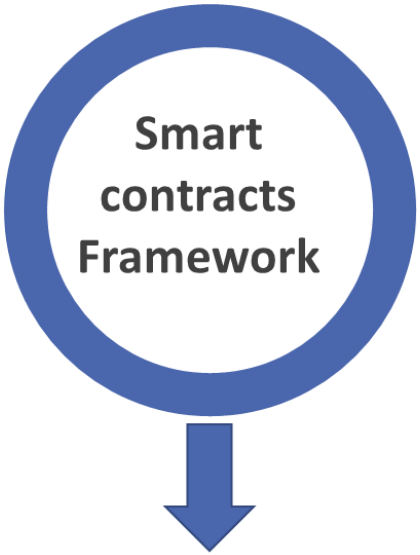
Airport & transport system



Janić, M., 2019. Landside Accessibility of Airports, Landside Accessibility of Airports.

Introduction (2/2)





Aims to assist TSP who participate in a predefined multimodal chain to define **data sharing** within the multimodal chain context which in return will be enriched with real time data through usage of **TCs**

Identified personas

Big spender

Price Sensitivity

Low budget

Robert| Family

Description
- 2 adults in their 40s
- 4 underage kids
- Carrying ski equipment

Budget	€€€
Time Sens.	
Group Size	
Other	

Behavior
- Does not like unexpected surprises
- Have planned everything in advance, in detail
- Would like to stay loyal to their schedule

Needs and motivations
- Need to be safe and stay together at all times
- May need time buffers between connections

Axel | Busine

Behavior
- No budget cor
- May have to a
- Very importan

Needs and moti
- Needs to be a

Nisha | Business PRM Traveller

Description
- 25 years old
- On a clock

Budget	€€€€
Time Sens.	
Group Size	
Other	

Behavior
- Always in a hurry
- May have to amend a reservation if needed
- Very important to be on-time and to not lose time

Needs and motivations
- Needs special assistance and more time to move around

Berta| Short break Traveller

Description
- 50 years old
- Travelling with her spouse
- Working until Friday evening
- Working on Monday morning

Budget	€€
Time Sens.	
Group Size	
Other	—

Behavior
- Spontaneous travellers, they don't want to bother with too much planning
- Need quick and inexpensive travel solutions

Needs and motivations
- Don't want to have delays from and to the airport due to work
- Need to have clear information about their trip

Selma | Budget traveller

Description
- 20 years old
- On a tight budget
- Travelling with 3 friends

Budget	€
Time Sens.	
Group Size	
Other	

Behavior
- It's about the journey, not the destination
- Will research alternatives in order to save money
- Open to change and new experiences

Needs and motivations
- Doesn't matter if the travel experience is not great, as long as it is cheap
- Not willing to spend money that she did not plan for

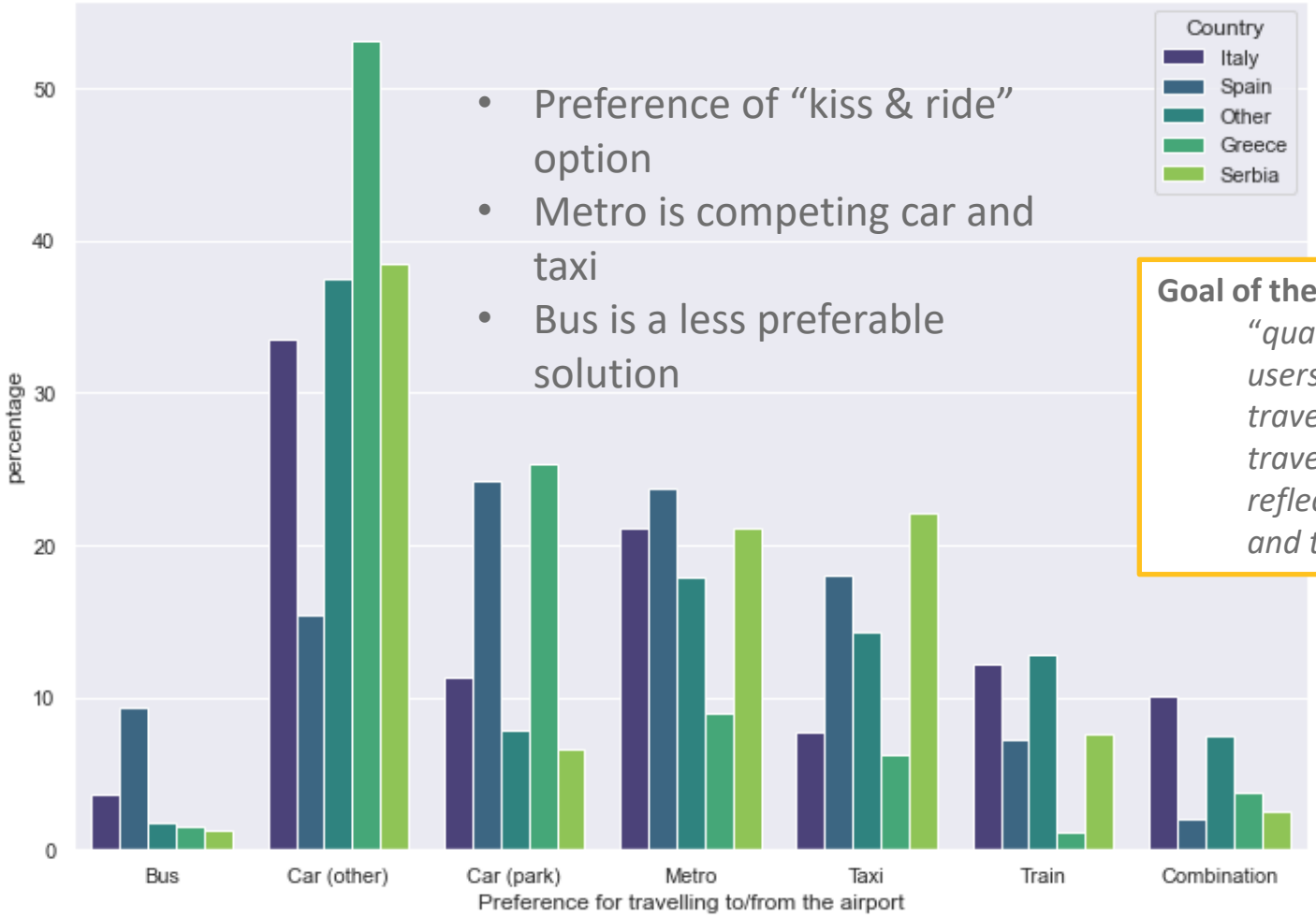
Sluggish

Time Sensitivity

In a hurry

Initial results of questionnaire survey

Sample 2225 answers in total (2199 valid after cleaning the sample). Italy, Spain, Other, Greece, Serbia



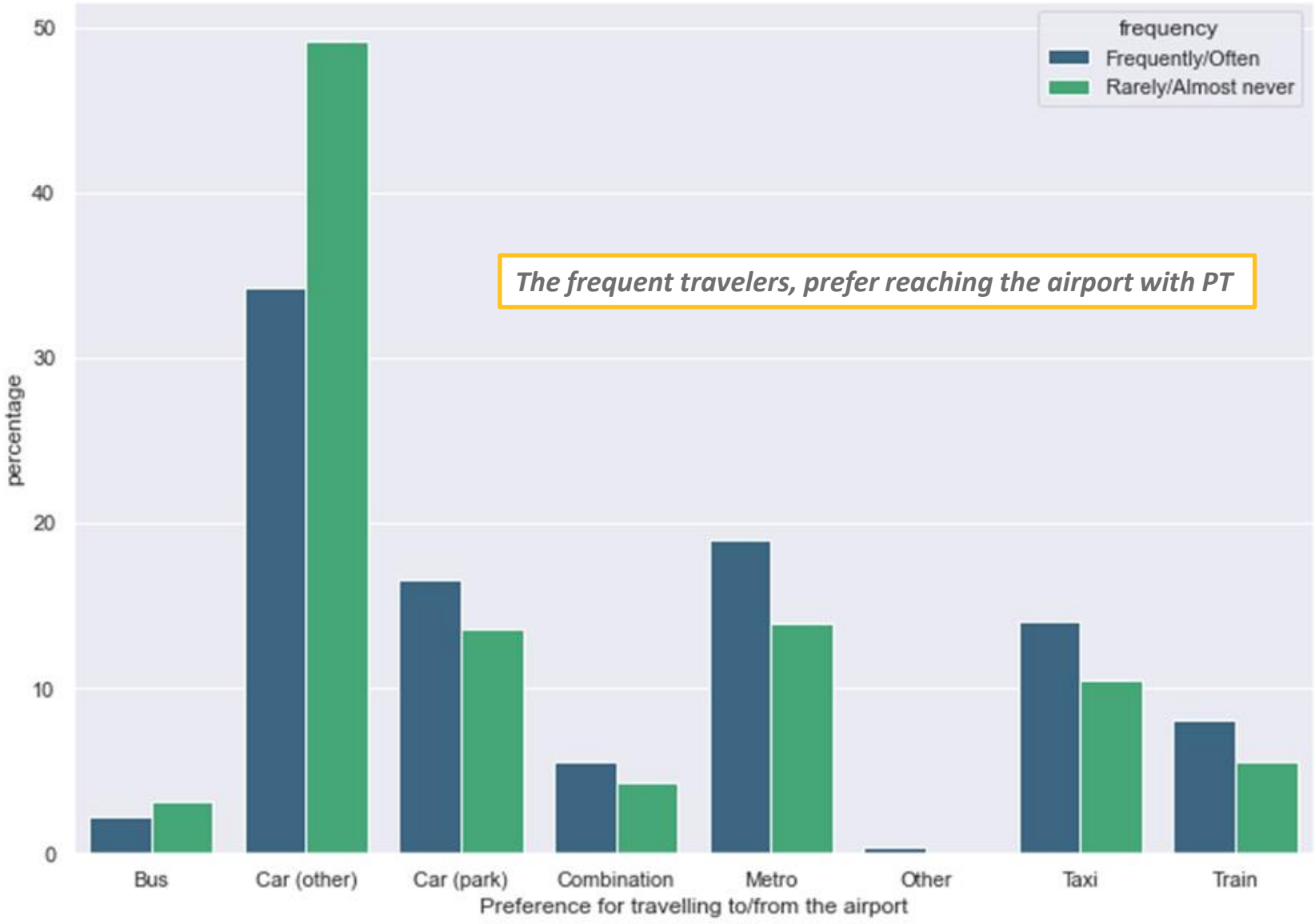
- Preference of “kiss & ride” option
- Metro is competing car and taxi
- Bus is a less preferable solution

Female	54%
Male	45%
Other	0%
Rather not say	1%

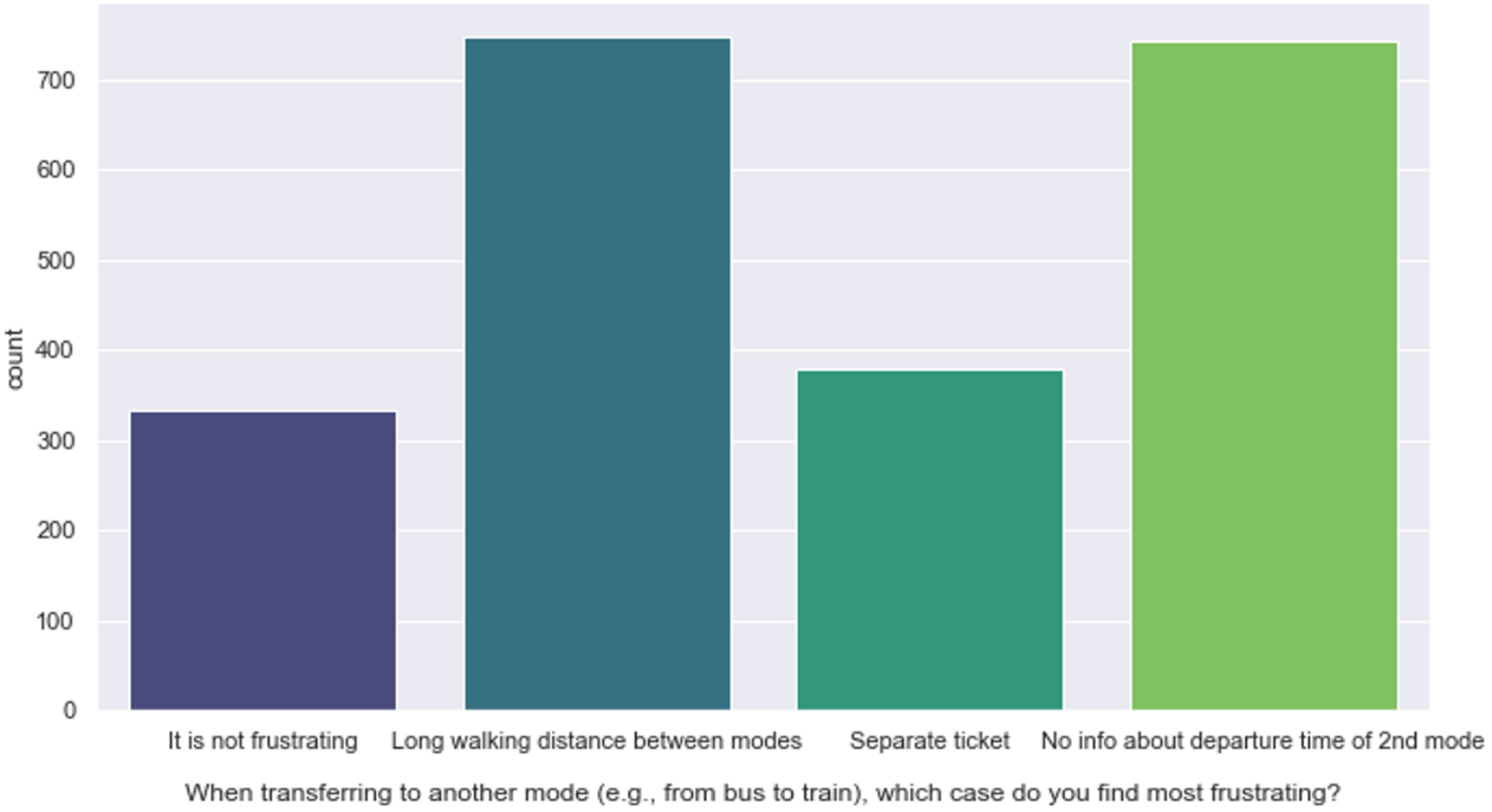
Goal of the Survey:

“quantify the trade-offs that users consider when selecting travel alternatives and identify traveller characteristics that reflect their emotions, attitude, and travel behaviour”

Initial results of questionnaire survey

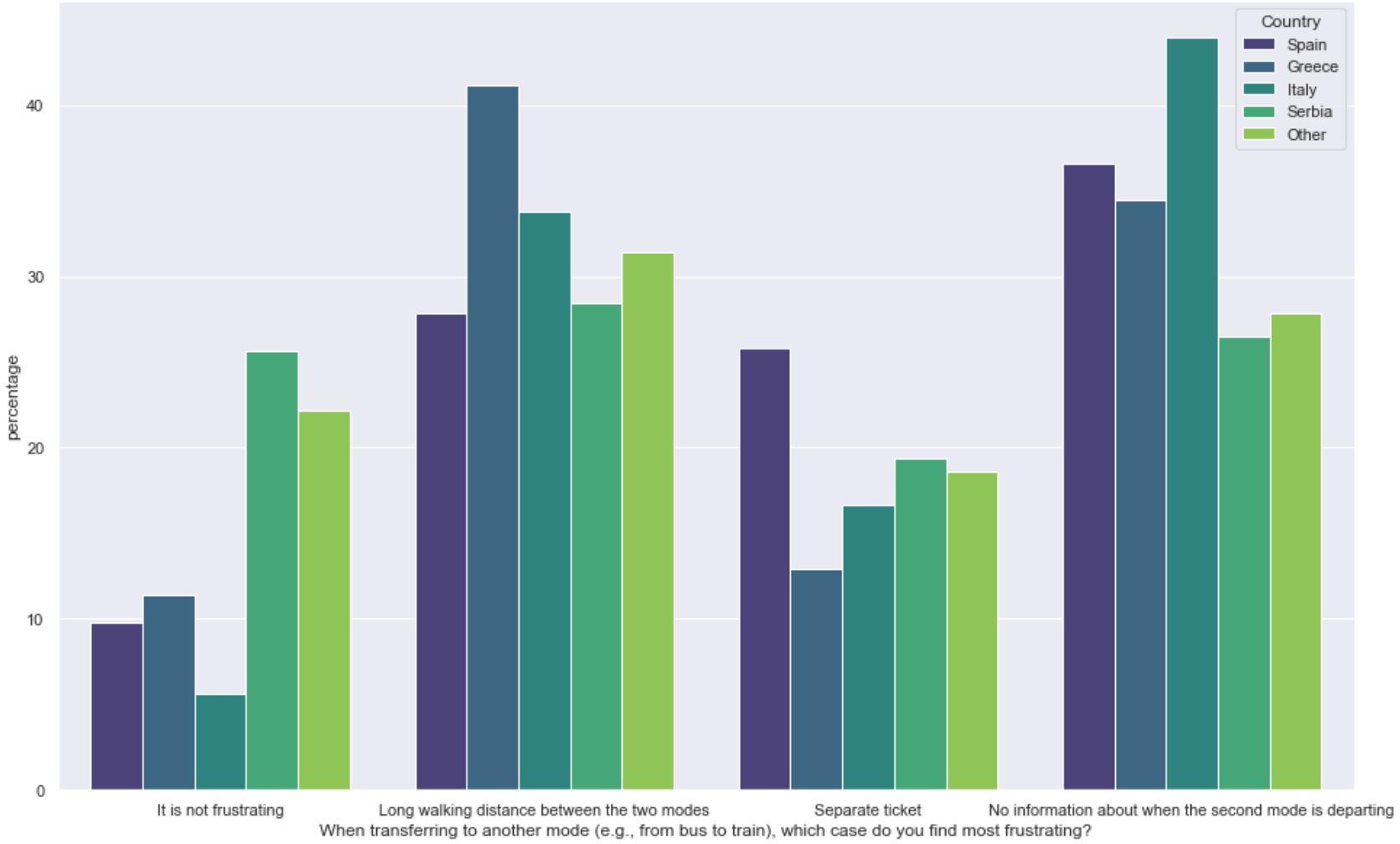


Initial results of questionnaire survey



The two most common travellers' difficulties when transferring to another mode are the long walking distance and the lack of information about the departure time of the 2nd mode

Initial results of questionnaire survey



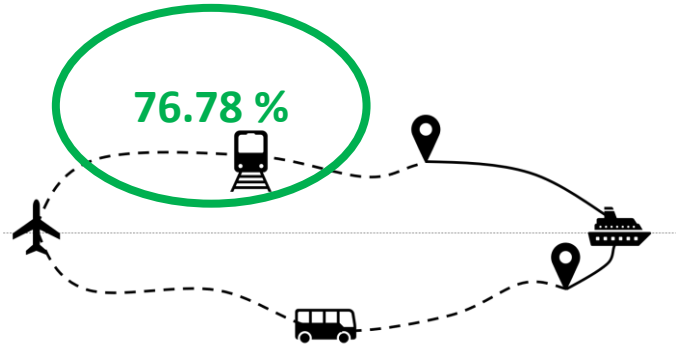
The two most common travellers' difficulties when transferring to another mode are the long walking distance and the lack of information about the departure time of the 2nd mode

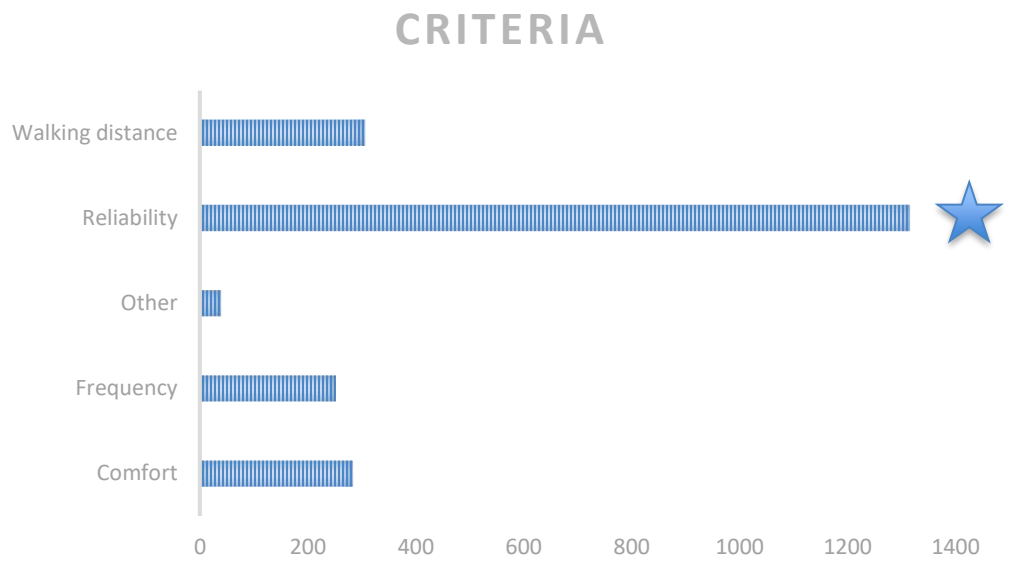
Initial results of questionnaire survey

Scenarios results

Scenario A – Bus or train

Imagine that you just landed, and you want to get to the port to get to take a ship. There is a bus and a train available, at the same price.
- The bus is frequent and drops you close to the port, but may be stuck in traffic
- The train leaves every half hour, drops you a bit further away from the port, but is faster and more reliable





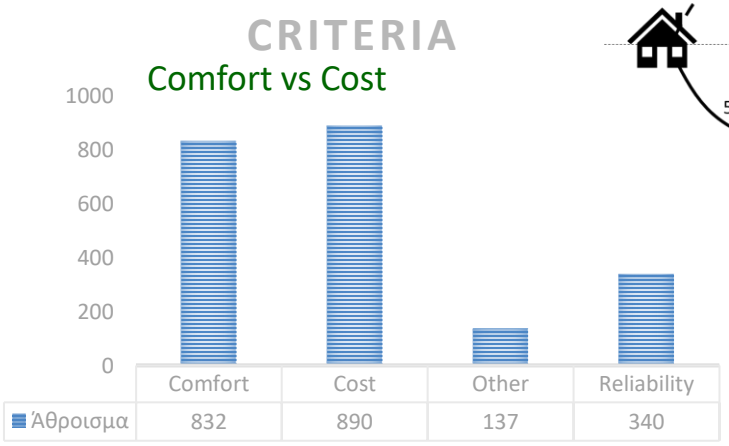
Reliability is the main reason of choosing either train or bus

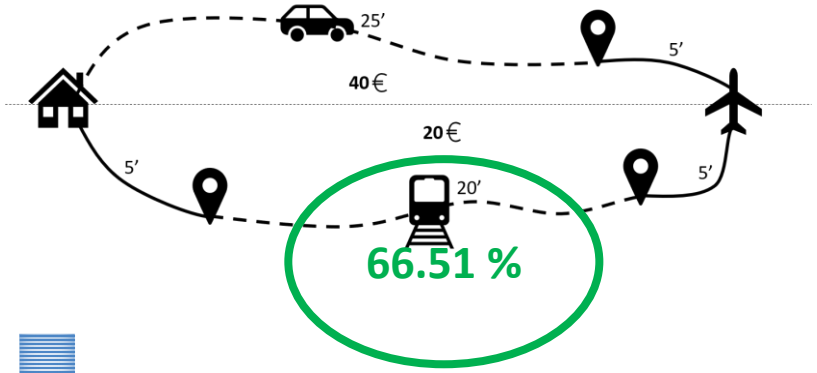
Initial results of questionnaire survey

Scenario B – Car or Train

You are heading to the airport for a weekend trip with your partner/spouse.
You can get to the airport either by car, or train.
In both cases the total trip duration to get to the airport is 30 minutes.
- By car, it takes 25 minutes to get there, and 5 minutes to walk from the parking lot
- By train, it takes 5 minutes to walk to the station, 20 minutes on the train, then 5 minutes to get from the station to the airport

Regarding costs, the car is x2 times more expensive:
- By car, the total cost is 40 euros (gas + tolls + parking)
- By train, the total cost is 20 euros (2 round-trip tickets)



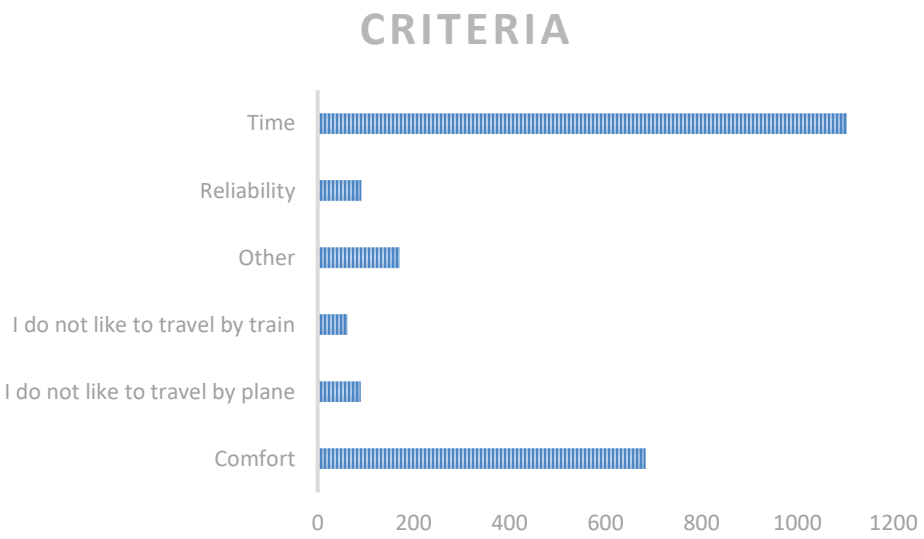


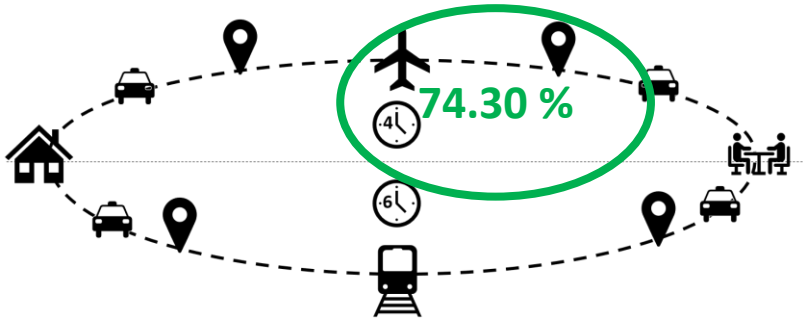
***Cost and comfort** seems playing equally an important role to choose to take the car or the train towards the airport*

Initial results of questionnaire survey

Scenario C – Train or Plane

You are travelling for business to a neighboring country. You can either get there by train or plane. **Travel cost is not an issue** since the trip is compensated by your company.
By plane, the door-to-door travel time is 4 hours and includes: Taxi -> [Airport] -> Plane -> [Airport] -> Taxi
- By train, the door-to-door travel time is 6 hours and includes: Taxi -> [Station] -> Intercity Train -> [Station] -> Taxi





Comfort	683
I do not like to travel by plane	90
I do not like to travel by train	62
Other	171
Reliability	91
Time	1102

***Time and comfort** are crucial for travelers.*

Existing collaborations (use cases)

Uber rematch

- Uber collaborates with over **200 airports globally**
- Opportunity for the driver to pick up a rider right after dropping off the previous one
- Reduces waiting time and enhances customers journey experience

Single Automatic Fare Collection System (OV-Chipkaart, ATHENA Card, T-casual, viva viagem, MoBib etc)

- Collaboration among **different transport** means bus, trolleybus, trams, subways, suburban railways, (ferries) using a single ticket
- Anonymous vs personal, electronic vs paper based, integration with an app or a webservice

Hertz Lufthansa collaboration

- Discounted price when flying with Lufthansa and renting a car with Hertz
- Services provided during booking or at landing airport

Star Alliance

- **Collaboration among 26 airlines,** offering rewards to frequent international travelers
- Digital Service Platform (DSP): **data exchange among airline members**, providing additiona information to customers, in order to provide seamless travel experience

Existing collaborations (use cases)

Reference: Gonzalez Feliu et al. 2018

Existing collaborations (use cases)

1. Facilitate muilti-modality
2. Reducing time of issuing tickets & booking
3. Discounts to passengers
4. Single validation and luggage transfer

Benefits

1. Transport system specifications
2. Willingness to collaborate →multiple stakeholders, data privacy, legacy systems
3. Legal system of different countries

Bottlenecks & considerations

Questions

- How were these collaborations initiated?
- Who forced such collaborations?
- How the user finds information?
- What is the relationship of this benefits and the passengers' trade-offs, needs or expectations?

Sub-objectives of Data sharing among TSPs research

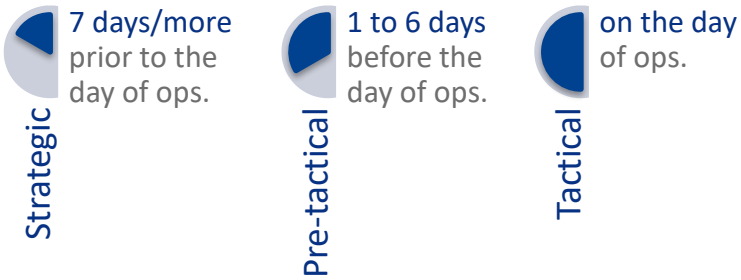
1. Data that can be shared among TSPs from bibliographical research

Data availability by TSP and usability of TSP's data to another TSP of diff. mode

2. Data that can be shared among TSPs updated/harmonized after workshop

3. Definition of final data set that can be shared among TSPs

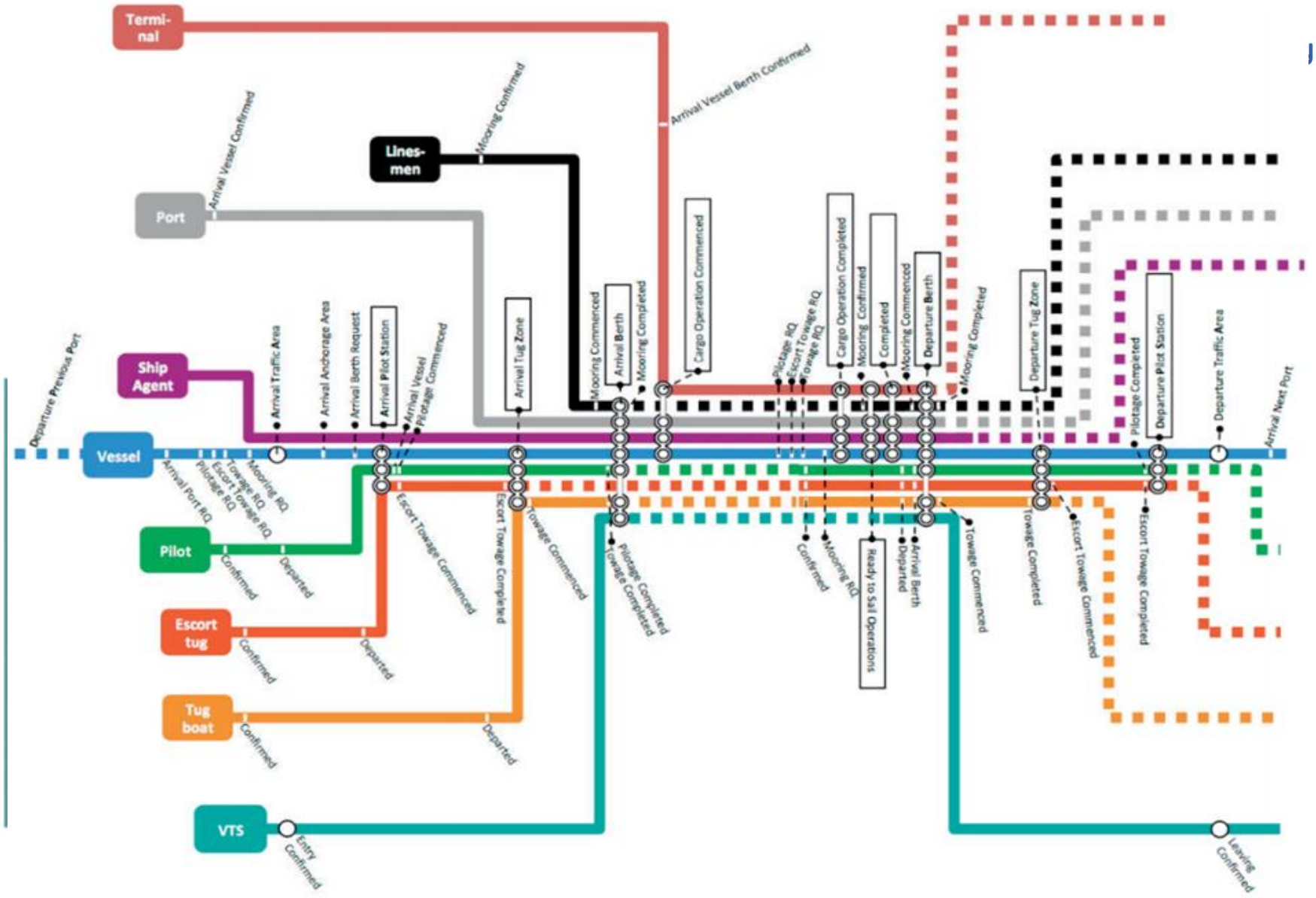
Data that can be shared among TSPs from bibliographical research



1. To **identify** the TSPs and **other stakeholders** that are involved in data sharing process in:
    - air transportation (e.g., air traffic service providers, airlines, ground handling agents and airport operators)
    - PT, Maas, DRT (e.g., mobility management players, telecommunication companies, payment processors, PTOs and TSPs)
    - rail and maritime transport (e.g., infrastructure manager, rail operator, port authority, Vessel Traffic Control, sealines, meteorological)

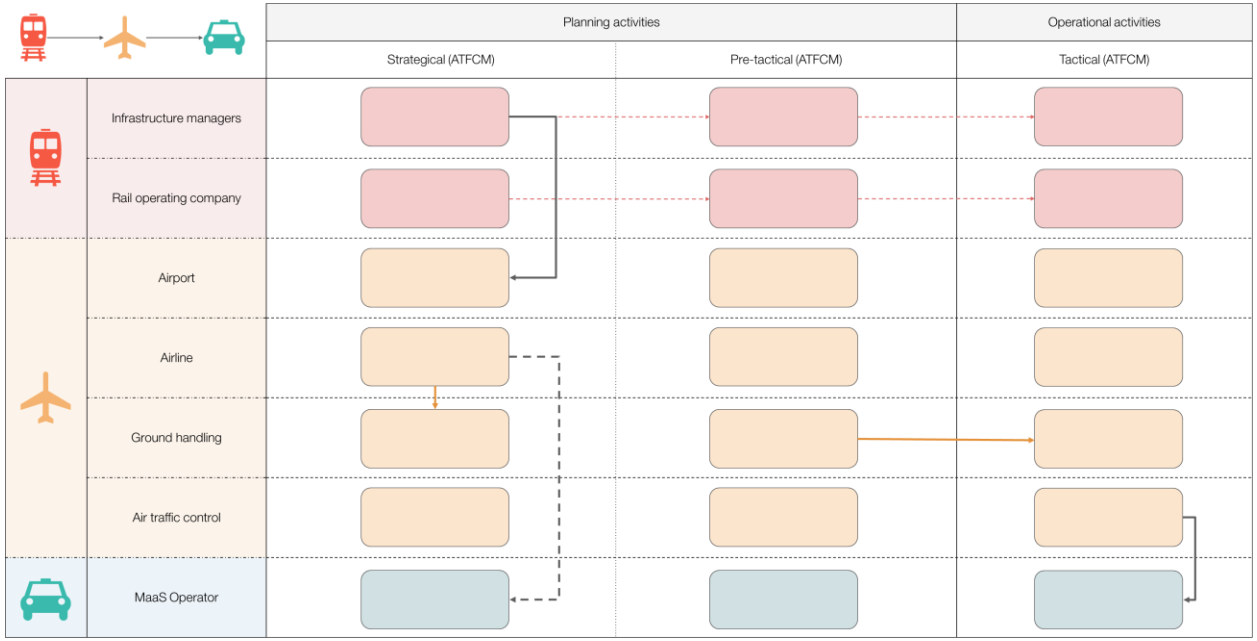
2. **Research literature**, SESAR projects and other studies related to TSPs operations pointing out what are the data requirements and data generated by each TSP at each phase (strategic, pre-tactical and tactical):
    - air transportation
    - PT, Maas, DRT
    - rail and maritime transport

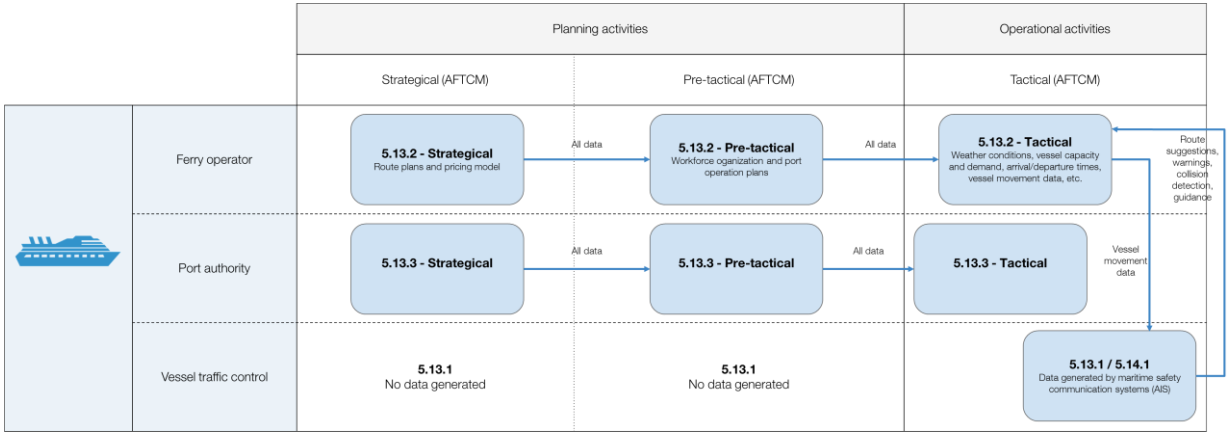
Data provided by main TSP in the multimodal chain



Data Flow diagrams

1. **Airplane** as the main leg
   1. Train → Airplane → Train
   2. Metro → Airplane → Bus
   3. Bus → Airplane → MaaS
   4. MaaS → Airplane → Metro
   5. Car → Airplane → Car
2. **Train** as the main leg
   1. MaaS → Train → Bus
   2. Bus → Train → MaaS
   3. Car → Train → Car
   4. Metro → Train → Metro
3. **Bus** as the main leg
   1. Train → Bus
   2. Metro → Bus
4. **Ferry** as the main leg
   1. Train → Ship → MaaS
   2. MaaS → Ship → Train
   3. Bus → Ship → Bus



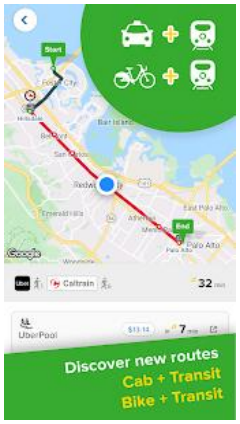


Travel Companions

1. Webservice to have the Smart Contracts Framework (SCF) →Interface of operators
2. Travel Companion app →Interface to the user
   - Information provision
   - Mobility Packages and D2D travelling

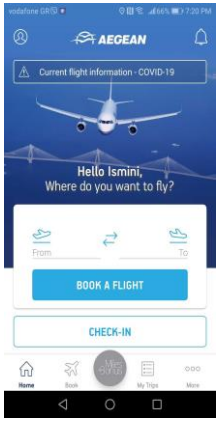
1 Examine data coming from existing travel companions and airlines booking & check-in apps

Citymapper



AMB Mobilitat

Aegean app



2 How a Smart Contracts Framework (SCF) can be integrated to a Travel Companion?
What about new types of datasets coming from new transport means (e.g., flying cabs)?

3 Is digitalization and automation decreasing or increasing complexity?

SYNAIR Contact

If you have any questions or like to **learn more about SYN+AIR**:

SYN+AIR Website: http://syn-air.eu/

SYNAIR Twitter: https://twitter.com/synairproject

SYNAIR LinkedIn: https://www.linkedin.com/groups/9051558/

SYN+AIR Coordinator: Ismini Stroumpou ismini@sparsity-technologies.com

Stay tuned for SYN+AIR's 1st stakeholders worshop that will be conducted on 22nd of September during IMC (https://www.imcmobilitycongress.com/en/)
(participation will be on site and online so please do not hesitate to contact me.

SYN+AIR

Project presentation for EUROCONTROL Passenger-centred mobility workshop

Thank you very much for your attention!

This project has received funding from the SESAR Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No [894116]

SESAR JOINT UNDERTAKING

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