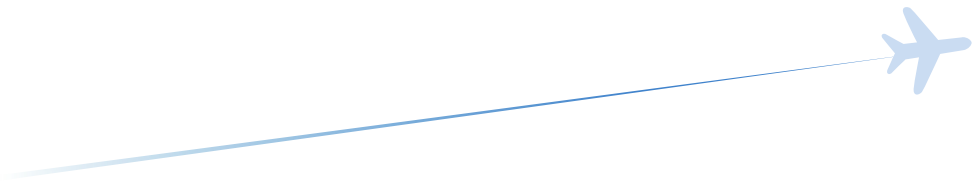

TSPs' Collaboration and Data Sharing parameters

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SYN+AIR

SYNERGIES BETWEEN TRANSPORT MODES AND AIR TRANSPORTATION

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Abstract[1]

The present document reflects the work conducted within Task 3.2, which goal is to explore the business policies, the barriers and the opportunities behind transport service providers TSPs collaboration. Deliverable 3.2 details the process, the research and the TSPs engagement activities that were accomplished to identify the willingness of TSPs to collaborate.

That is achieved through a thorough literature review of collaboration strategies and the close examination of noteworthy cases of TSP collaboration. This analysis is enriched by an extensive overview of research projects and past or ongoing collaborations within the transport sector, in order to identify best-practices and pitfalls of collaboration.

10 interviews with TSPs and other stakeholders of the mobility ecosystem to present the project's main objectives and discuss the policies and the business logics of TSPs, was the approach that was followed, to collect insights and determine the willingness of TSPs to collaborate through the identification of their motives, hindrances and opportunities. The inputs gathered from the interviews were further debated during the workshop with TSPs that was organised on 22 September 2021 in Sitges, Spain. The TSPs provided feedback and comments for the project and for the ongoing situation on different transport modes such as metro, bus, taxi, aviation etc, details about their business policies, information for past/ongoing collaborations, new ideas for collaboration and shared their data exchange ideas and their readiness to share data with other stakeholders. All these findings are documented in this report.

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1 Introduction

The main objective of this deliverable is to identify the motives, opportunities and hindrances for TSPs' willingness to collaborate, especially in terms of data sharing, for the betterment of the travel experience of the travellers. These will be tackled during the task 3.2 "Data collection through TSPs' engagement activities".

The first objective of the task is to research the willingness of TSPs to collaborate. For that purpose, an extensive literature review is carried out to investigate the ways in which TSPs collaborate and to be able to classify the different types of collaboration in terms of their function and goals. The literature review is supported by a thorough examination of some ongoing collaborations of the transport sector that provide some indication regarding the opportunities for data sharing and the different collaboration schemes that can be found (in chapter 2). The analysis is expanded by a cataloguing of initiatives and research efforts, as they are presented in Table 3 and Table 4 in Annex A.

The second objective of the task is to further explore the willingness of TSPs to collaborate, through a series of in-depth interviews with TSP representatives and technology providers. The goal that is set out by SYN+AIR is to conduct at 10 interviews[2] with experts of the field, in order to receive their feedback on the findings of T3.1 and to record their viewpoints on the collaboration between among TSPs.

Lastly, in the task that led to this deliverable, a session at the 1st SYN+AIR stakeholders' workshop was dedicated to discuss with transportation sector's experts regarding the findings of this report and get their insights. The scope of this session was to identify policies and business logics of TSPs and clarify data sharing possibilities and constraints. The participants were to explore ways of facilitating the execution of a customer journey through sharing of data and are asked to identify additional available structured datasets that would enable a seamless door-to-door travel.

Disclaimer:

The document is GDPR compliant and in line with the regulations of the personal data protection. All the needed actions about the interview participants and their rights have been stated in the ethics deliverable D1.1 and D1.2.

2 Literature research and relevant works

2.1 Collaboration strategies in the Transport sector

This chapter aims to identify the different types of collaboration in the transport sector. Robert Zippel, the technology leader within Accenture's travel industry practice, states: "A seamless travel experience for airline customers depends on the ability among TSPs to collaborate effectively and participate in a broader travel ecosystem spanning the spectrum of aviation, travel and tourism industry.". The transport network can meet the fast-changing requirements of customers through exchange of real-time data among different providers. Additionally, collaboration is believed to assist a firm by maximizing the return on the investment, by helping the firm to achieve competitive advantages, and by providing the direction for new opportunities as E.Ku et al. (2012) state.

During the recent years transport systems are undergoing a change focusing on collaboration among different stakeholders. An innovative way of operating business that is gaining ground is collaborating across industries, in order to meet the consumer requirements. This collaborative economy has already shown some positive effects and provides numerous opportunities as B-hive mentions in the article "Collaboration in the travel and tourism industry: The need for greater collaboration to sustain future growth" (Marshall, 2018). Within this framework, companies across the world are pursuing new collaborations or expand existing ones, both inside and outside of their field of specialty. This phenomenon is referred to as *ecosystem convergence* and in order to take full advantage of it for providing better experience to travelers, travel and tourism industries should set common grounds for collaborating.

Currently, where technology keeps on evolving and new types of companies emerge, it is crucial for companies in the transport/travel sector to adapt to this new era of digitalization and simultaneously recognize the resonance of new types of companies, such as Uber and AirBnB. In order to make efficient collaborations in the transport sector, companies should focus on personalizing customer experiences, since travelling is now considered as a necessity for everyone. It is important that intertwined parties have a common purpose that inspires them and are open to sharing their knowledge, based on mutual trust and openness. Moreover, aiming to achieve seamless door to door journeys will require institutions to work together, within a -what is often referred to as- shared economy. The main opportunities of such collaborations are that companies, no matter their size can achieve growth, profit increase and overall success. Companies can expand their clientele by collaborating with different types of businesses and by doing so different customers can be approached. Their product/service it's possible to receive input from different perspective and improve the overall quality, because experts from different areas will contribute, providing their knowledge for a higher productivity level. Another key point to working in partnerships is the potential exchange of ideas, technology, perspective and resources among companies. As a result, increase in price or in sales can be achieved in the competitive system. Additionally, different companies know the needs of customers from different perspective and when these needs are shared among them, it is possible to create a product/service closer to the customers' needs. Finally, collaborating companies can share their resources and reduce costs, hence significantly reducing their exposure to risks (American Express, 2021).

With the above said it is important to note the repercussions from collaborative ecosystems due to their complex nature. It is possible that companies might lose customers. This is because while cooperating with others and mix their cultures and notion, companies might redefine their goals and that could result to customers' disapproval. Moreover, when companies with different culture collaborate, they might aim to achieve different goals or have difficulties in communication. Additionally, companies might have difficulties keeping up with the demands of others and that might drag down the reputation of both parts.

Despite the difficulties outlined above, as B-hive mentions (Marshall, 2018), partnerships among companies will continue to evolve in the future in the travel ecosystem and companies should adapt with these changes in order to survive. Being able to survive they need to be competitive in the market and since the market operates with partnerships, companies should adapt this approach.

There is a limited amount of documented past and ongoing collaborations that involve a public Travel Service Providers, and according to Robert Hrelja et al. (2016), collaborations in the public transport literature are limited. An exhaustive list of collaboration cases was created and presented in the Annex A. Based on the identified cases, it is crucial to investigate the two key types of collaborative transport: **vertical** and **horizontal**.

In **vertical** collaboration different modes collaborate in order to provide transportation services. Partners operate in distinct parts of transportation network and these coalitions can go beyond service providers. Vertical collaboration takes part among complementary stakeholders of transport and wider sector. For example, bus operators can collaborate with museums and offer special deals to tourists. In the scheme of vertical collaboration, the different activities of travelers are split up in order to determine all aspects of their requirements and offer opportunities for customers. Vertical collaborations consider all levels of planning and operating activities of customers.

In **horizontal** collaboration, multiple providers cooperate in the same section of transport chain and share the same or overlapping parts of transport network. An example of horizontal collaboration is when different providers accept requests and exchange them to improve efficiency of journeys. In this way, passengers may share the same mode (e.g., bus or train) effectively collaborating as object of transport. In the study of Cruijssen et al. (2007) the main objectives from horizontal coalitions are mentioned. These are the optimization of vehicle capacity, the reduction of limited utilization of vehicles and the elimination of costs that are not part of their competencies.

In order to understand the multi-stakeholder collaboration in urban transport, it is vital to address the interaction of stakeholders operating in the field. Figure 1 depicts the relations among stakeholders in the transport network.

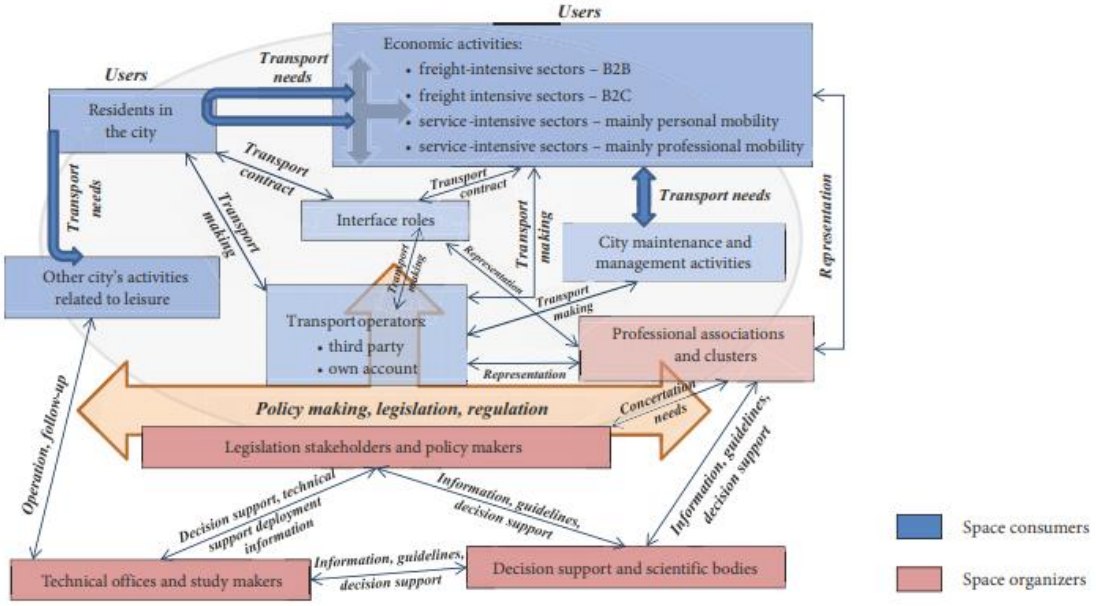

Figure 1: The main stakeholders related to urban transport and their interactions (Reference: Gonzalez-Feliu et al. 2018)

According to Gonzalez-Feliu and Morana (2011), collaboration in transport may appear in different levels: transactional, informational and decisional.

As far as **transactional collaboration** is concerned, urban transport, either for passengers or for freight transport, is based on transactions and a contractual basis (Quinet, Vickerman 2004). Collaboration is characterized mainly by transactional data exchange, the techniques of which need to be standardized. Transactional collaboration is mostly considered as the basic condition, in order to establish a collaborative system (Gonzalez-Feliu, Morana, 2011). Referring to the third level of collaboration (i.e., decisional), unified transactions need to be determined among different stakeholders in advance.

Informational collaboration concerns the mutual exchange of information among different stakeholders (mainly transport carriers, customers, users and public authorities) and it is the most common type of collaboration in urban transport (Pohl 2001). Such an information can be used for organizational issues (optimization-based information exchange), for customers' information or for service purposes – Mobility-as-a-Service (MaaS).

Decisional collaboration concerns the different possibilities of collaboration in transport planning and management (Gonzalez-Feliu et al. 2013b; Muñoz-Villamizar et al. 2017) and can belong to different planning stages (strategic, tactical, and operational).

Figure 2 demonstrates the collaboration schemes of each level in correlation with the different type for the stakeholders involved.

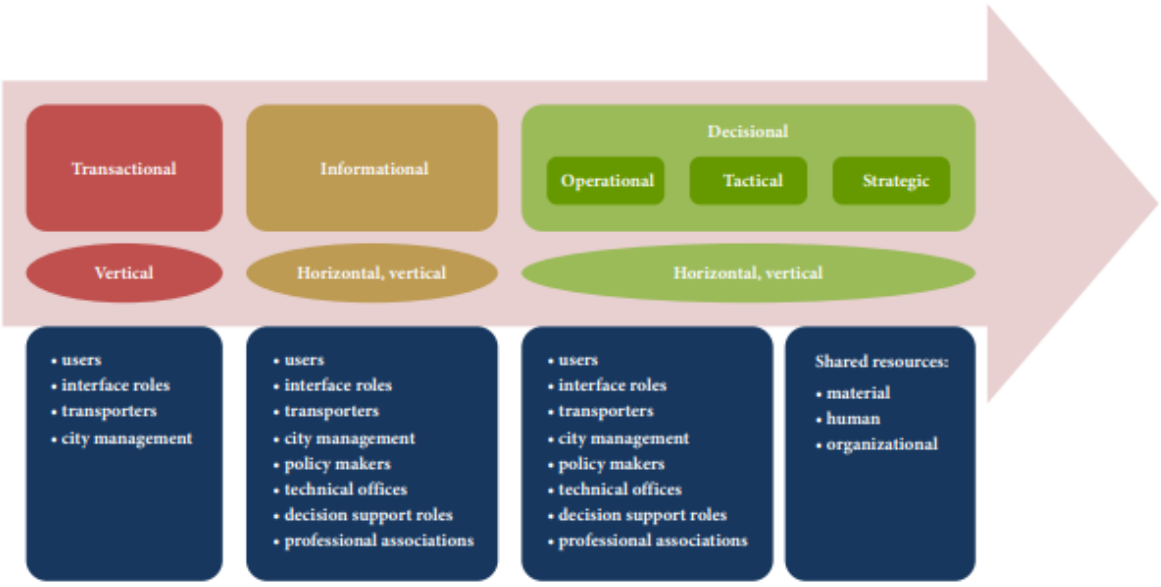

Figure 2: Types of collaboration and their links to urban transport planning (Reference: Gonzalez-Feliu et al. 2018)

2.2 Motives, hindrances, and opportunities of current collaboration practices

Thought the literature research past and on-going collaborations were identified. The collaborations presented below are mapped based on the different types. The past/on-going collaborations provide insights related with the TSPs and are useful for the interviews to identify the common ground. It is crucial to mention that this report details some of the past and on-going collaboration trying to provide the whole spectrum of collaborations as they were presented in the previous chapter. The knowledge gained about the types of collaborations and examples of collaborations which will be further described below created the Figure 3.

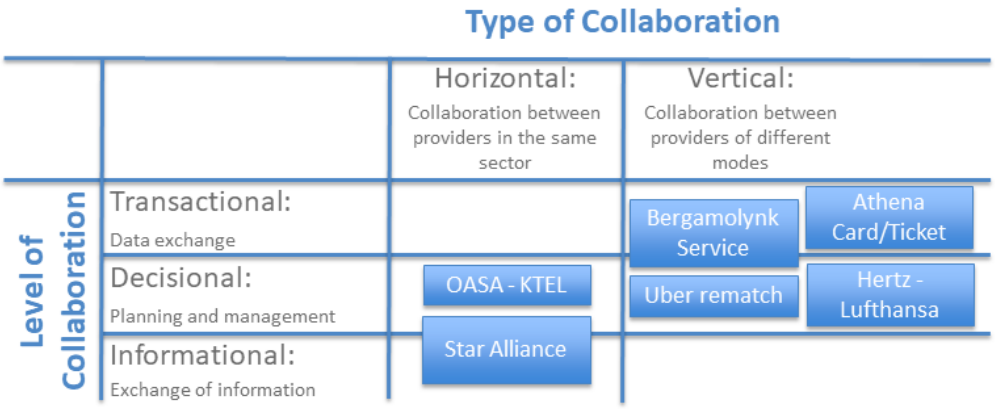

Figure 3: Types of collaborations and examples

2.2.1 The collaborations mapped in the figure are going to be further described in the following chapters.Star Alliance

Use Case Name	Star Alliance
Description	Global airline collaboration, sharing knowledge among airlines and offering smoother transfers to customers.
TSPs involved	Air carriers, airports
Level of collaboration	Informational, decisional
Type of collaboration	Horizontal

Star Alliance is a well-known global airline collaboration which currently has 26 member airlines, each with its own style of service. It constitutes a horizontal type of collaboration, since it refers to a partnership among TSPs of the same type (i.e., airlines) and its level of collaboration is informational and decisional. Star Alliance offers smooth transfers across an extensive global network, together with rewards for frequent international travelers. Secondly, it offers customers a vastly expanded network through code-sharing agreements, making sales and connections more efficient, and thus reducing flight times and costs for passengers. On the other side of the equation, air carriers can benefit in a variety of ways from this collaboration. They have the opportunity to analyze flight schedules and share facilities, resources and know-how. In this way they can offer the highest quality of services and customers would prefer them.

In order to further improve the customer journey, Star Alliance has launched a Digital Service Platform (DSP). The platform collects data from an individual member airline or third-party sources and provides them to all members, enabling them to build it into their own customer-facing digital applications. For example, Lufthansa uses the DSP technology to provide baggage tracking information for customers on journeys that include flights from other star alliance airlines. The longer-term aim is to allow customers to use any member airline's website or mobile application to obtain all the information they need for travel on several Star Alliance member airlines.

2.2.2 Collaboration of OASA with Intercity Bus Company (KTEL):

Use Case Name	Collaboration of OASA with Intercity Bus Company (KTEL)
Description	KTEL provides 200 buses to OASA, in order to strengthen the transport service in Attica.
TSPs involved	Bus operators
Level of collaboration	Decisional
Type of collaboration	Horizontal

OASA is the transport authority of public transport in the metropolitan area of Athens Greece, and KTEL is a bus transport provider of intercity travel in Greece. Amidst the COVID-19 pandemic, in October 2020, the collaboration between OASA and KTEL was announced. The aim of this collaboration was to strengthen the transport service in the region of Attica with the addition of 200 city buses from KTEL, falling within the responsibility of OASA. This type of collaboration is at a horizontal and decisional level. This collaboration was included in the broader planning for enhancement of the Athens urban transport fleet with the scope of improving the level of service to passengers.

In addition to the indirect yet apparent benefits for the passengers of OASA, which are that its bus fleet is strengthened and the customer reliability towards the OASA company grows, the Intercity Bus Company (KTEL) also benefits from this collaboration directly. KTEL will be receiving part of the incomes according to the pre-arranged agreement. More specifically, the project corresponds to a predefined offered price per vehicle-kilometer traveled. Additionally, in times where the use of KTEL has been limited, providing its buses to OASA is an opportunity to exploit them, instead of underusing them.

These kinds of collaborations can be fulfilled among any type of companies who have similar vehicle types, in order to strengthen the feel of one, when the other underuses its vehicles.

2.2.3 Single Automatic Fare Collection System (ATHENA Card/Ticket – electric ticket)

Use Case Name	ATHENA Card/ Ticket
Description	Single card/ticket for using different transport modes in the region of Attica.
TSPs involved	Bus, Trolleybus, Tram, Subway and Suburban railway operators
Level of collaboration	Transactional
Type of collaboration	Vertical

The ATHENA Card is a collaboration between Public and Private Sector for a 12-year period. This system covers all buses, trolleybuses, trams, subways and suburban railways, that serve the geographical area where OASA operates. This type of collaboration is vertical, and it is in a transactional level of collaboration. ATHENA Card is

a rechargeable plastic electronic card that can be either personalized or anonymous. Holders of this card can use all transport modes in the region of Attica, and it is suggested for regular public transport users.

One of the benefits for the transport providers is that the required equipment is common for all transportation modes collaborating. Hence, the technology required for the procedure of maintenance is the same. As far as the passengers are concerned, their transfers are facilitated, as it is not required to buy more than one ticket. Additionally, a fairer pricing policy and distribution of travel costs can be achieved. Moreover, due to the fact that ATHENA Card is rechargeable, it is easier to use and environmentally friendly.

2.2.4 Hertz – Lufthansa collaboration

Use Case Name	Hertz – Lufthansa
Description	Customers who fly with Lufthansa benefit when renting cars from Hertz.
TSPs involved	Renting cars company, air carrier
Level of collaboration	Decisional
Type of collaboration	Vertical

The collaboration between Hertz and Lufthansa is at a vertical and decisional level. This partnership aims at a seamless travel experience, combining air and road journeys and offering wide range of mutual benefits. When renting a car with Hertz the customer could benefit multiple times the amount of frequent flyer award miles of Lufthansa. Additionally, customers experience a smooth transaction from air to road, since a car will be waiting for them as soon as the aircraft lands.

These kinds of collaborations are beneficial for both parts. This is because, Lufthansa is able to offer a more complete travel experience to their customers by providing a booking of both a rental car and a plane ticket within one reservation, and on the other hand, Hertz is able to promote their products and services through a promoted offer for a car on a discount.

2.2.5 Uber rematch

Use Case Name	Uber rematch
Description	When an uber driver drops off a rider at the airport, they can be matched within 2-3 minutes with another customer.
TSPs involved	Airports, ridesharing companies
Level of collaboration	Decisional
Type of collaboration	Vertical

Uber collaborates with over 200 airports globally in order to efficiently connect drivers with riders going to/coming from the airport. These types of collaborations are vertical and refer to decisional level of collaboration. With uber rematch, when a driver drops off a rider at the airport can be matched within 2-3 minutes with another customer. In this way, the number of vehicles in the terminals are reduced as well as the rider waiting times at the curb. Rematch improves airport efficiency and enhances the customer experience.

However, not all collaborations between Uber and airports are working. A glaring example is that of LAX airport (Los Angeles International Airport) where Uber was banned from making pickups outside LAX's terminals, since October 2019. Instead, passengers wishing to get picked up by Uber should take a shuttle to a parking lot next to a specific terminal. This decision was taken because LAX airport found that Uber vehicles amplified the road congestion outside of the airport terminals.

2.2.6 Bergamolynk service

Use Case Name	Bergamolynk service
Description	Passengers who book tickets from Kiwi.com and travel through Milan Bergamo Airport are provided a QR code offering them exclusive services in the airport.
TSPs involved	Airports, online travel agencies
Level of collaboration	Decisional, Transactional
Type of collaboration	Vertical

Bergamolynk is a new service which allows travelers to plan their journey more efficiently when using Milan Bergamo Airport as a connection hub for more than 100 destinations in Europe. This product was launched by Milan Bergamo Airport in collaboration with Kiwi.com, the online travel agency. Bergamolynk aims to offer seamless journey experiences to passengers, providing an exclusive QR code which offers them the opportunity to use all the exclusive services available in the airport. For example, passengers have access to special areas for security checks and they can bypass queues. This service is user friendly and at the same time facilitates procedures for travelers.

Both parties benefit from this collaboration. On the one hand, Milan Bergamo Airport uses the advanced technology of kiwi.com to provide exclusive services to passengers and at the same time it benefits from the extra advertisement at Kiwi.com. Thus, the transit passengers travelling through Milan Bergamo Airport could increase. On the other hand, Kiwi.com can expand its clientele, since it offers this kind of product. Additionally, Kiwi.com, known for its innovative perception, would be part of such a pioneering concept in the travel sector.

3 Interviews with Transport Service Providers

3.1 Methodological approach

The scope of the interviews is to expand the understanding of the TSP perspective on the prospect of collaborating with other TSPs. A direct long-form interview allows the research to delve deeper into the mindset of operators and transport experts, regarding what the barriers and opportunities of collaboration are.

Regarding the selection process of the interviewees, the rationale is to examine the viewpoints of a **diverse set of field experts**, ranging from representatives from the rail, air, bus, taxi. The interviewees were both from the private and public sector. The organizations that were interviewed are presented in Table 1 below, detailing the modes that they employ, the organization type and the participants of each interview.

Table 1: List of interviewed organisations

Organisation	Organisation Type	Modes	Interviewer
OASA	Public Transport Company	Bus, Train, Metro, Tram, Trolley	AETHON
Taxiway	Taxi service federation	Taxi	AETHON
UITP	International Association of Public Transport	All public transport modes	AETHON
AEGEAN Airlines	Commercial Air Carrier	Airplane	AETHON
GSP Belgrade	Public Transport Company	Bus, Trolley, Tram	UB-FTTE
<restricted>	Airline expert	Airplane	UB-FTTE
AMTAB SpA	Urban Transit Service Provider	Bus	POLIBA
Ferrotramviaria SpA	Private Railway Company	Train	POLIBA
AMTU	Regional Transport Authority	Bus, Train, Tram	UPC/Sparsity
TMB	Public Transport Company	Bus, Metro	UPC/Sparsity

The diversity of the viewpoints that were collected during the interviews, was further augmented by the diversification in terms of region since the respondents represent organisations that function within the four participating countries respectively. In addition, the organisations were both from the public and the private sector.

The aim is to determine the policies and business logics surrounding data sharing in terms of how the organisations function currently through the interviews with the representatives. The discussion focuses on determining the willingness of TSPs to collaborate through the identification of motives, hindrances and opportunities for data sharing and collaboration in general.

The collection of structured datasets that are produced or required is in the scope of the interviews, in addition to unstructured information (e.g., policies concerning COVID-19 measures, common ticket policies, or sharing the remuneration given to users in case of delays, or other criteria which can provide insights into the depth and various aspects of the collaboration among TSPs that are not easily formalised).

All the interviews were complying with GDPR rules as it is claimed in SYN+AIR's ethics deliverables (D1.1 and D1.2) and processes. The presented information and opinions in this document are those of the interviewees and do not necessarily reflect the official policy of the transport company.

3.2 Layout of the interview and objectives

The main objectives of each interview are to determine policies and business logics of TSPs for collaborating, comprehending the importance of data sharing and why TSPs are hesitant to share data, collect real-world views on prospect collaborations, testimonies, and existing collaborations and discuss hypothetical responses to real problems as captured within the customer journeys and the conducted survey. The interviews aimed to be an open discussion which will not last more than 1 hour since the availably of the interviewees is restricted. A power point presentation including finding of the project was shared with the interviewees and open-ended questions were posed. The interviews adhere to the following structure:

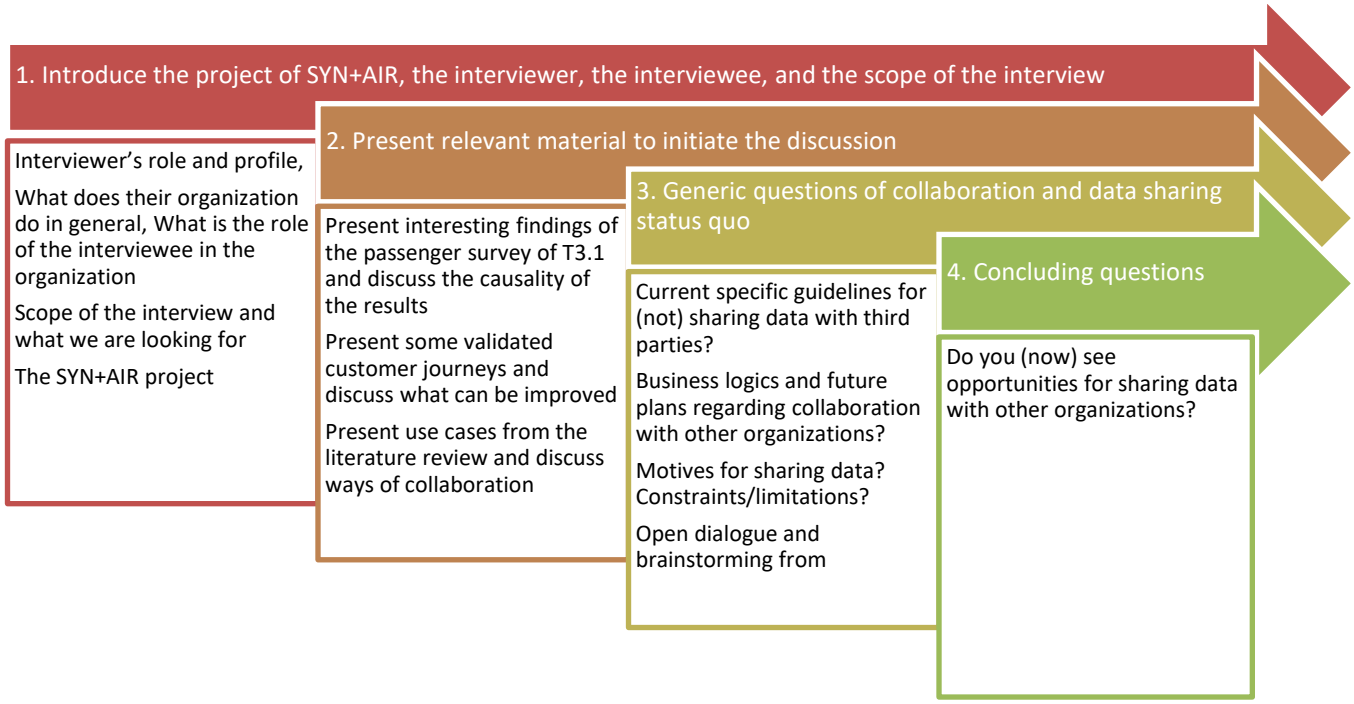

Figure 4: Interview structure

An example of the template presentation can be found in Annex B.

3.3 Outcome of the interviews

Thanks to the TSPs participation meaningful input was collected and all the key insights and the input of the interviews were transcribed. All the interviewees where familiar with the subject and the presented material. The synopsis of the results and collected information is presented below. The information gathered is classified in 5 different categories while the number in bracket for each statement indicates how many TSPs claimed the same suggestion.

1. Feedback/comments: Includes the comments related with the project and the transport system.
2. Business Policy and barriers: Includes the input related with the existing business policies and the barriers that affect the TSPs collaboration.
3. Past/Ongoing Collaborations: Includes the information related with past or ongoing collaborations that the interviewees have experienced.
4. New ideas for collaboration: Includes new ideas proposed by the TSPs in order to foster the collaboration between them.
5. Data gathered and data exchanged: Includes information related with the data that the TSPs may need to provide or to retrieve to achieve an interoperable trip.

1. Feedback/comments

Feedback related with the survey and Customer Journeys of T3.1 was collected during the interviews. Moreover, the TSPs expressed their opinion, and they commented the travellers' choices. The main comments received are the following:

- 5 TSPs claimed that the survey results are reasonable. (5)
- The airlines are not flexible, and they are not willing to create new collaborations. (1)
- The most frustrating factors that affect mode choice are the price and reliability of the mode. (1)
- Airports should provide clear information related to moving through the airport (between airport terminals), presented in the interactive maps, otherwise the lack of such information could frustrate even experienced passengers. (1)
- The main TSP's hindrance to collaborate could be the profitability. (1)
- People prefer the car when they need to use more than one travel mode to reach their final destination, but younger travellers and tourists do not mind changing mode and therefore an integrated single ticket will be interesting for them. (2)
- Younger people are the main customers of a rail service. Their main request of young passengers is to know in advance how to travel to/from the airport or other destination in order to plan their journey. (1)
- It is important to inform the passengers about the land side transport services. (2)
- Metro better serves people with luggage or reduced mobility passengers as it hasbetter infrastructure for such needs. (1)
- The waiting time at the station compared with the trip duration might affect travellers' mode choice to the airport. (1)

- The survey results from Greece seems reasonable since reaching the airport with PT it is uncomfortable, unreliable, confusing, time consuming and one needs to change numerous modes. (2)
- Positive comments for the project were expressed, and all participating stakeholders admitted that they stand to gain through the demonstrated types of collaborations. (1)
- The airlines are willing to collaborate since they want to provide a complete product and they want to make their tickets' experiences more attractive. (2)
- The assumption for the Customer Journey (CJ) of the budget traveller and the family traveller aren't reasonable since the parking in some countries is an expensive solution while cost of taxi for a family may be expensive as well. (1)
- The results of the survey are reasonable since the travellers may not know the language of the country, so they don't know how to travel with PT. The taxi and the rental car are 2 better options. (1)
- In Spain travellers use car because of comfort and time penalty (fear of being late), Metro because it's reliable and has good connectivity and bus because of the frequency and the low price. (1)

2. Business Policy and barriers:

The collaboration of the different modes might be affected by the different business policies of each TSP. The business insights and the operational processes are stated below:

- PT operators are not flexible to create new contracts and collaborate with new contractors. (1)
- The bus is more flexible than the metro. The metro is not flexible because of the employees and trains availability (1)
- It's difficult to add exceptional routes and change the bus schedule as a consequence of the drivers' shift restrictions., Moreover, the buses are not flexible to change their schedule the same day. (1)
- PT operators know the number of passengers that travel by metro but they don't know the exact number of passengers that travel by bus. (1)
- The only way to adjust the metro service is when the PT authorities have specific information such as the exact number of passengers, their arrival times, and their final destination. (1)
- The transport plan of Athens is based on a survey made 16 years ago (O-D data collected in 2006). (1)
- Private companies don't trust the governmental organisations thus they will foster collaborations with private companies. (2)
- Airline company would be interested to cooperate with other TSPs, but non-flexible airline schedule might be a barrier. (1)
- The resistance of the national rail companies concerning the consideration of air transport demand in their planning, is a problem. (2)
- It's difficult for a PT to become a demand responsive mode. (1)

- It's easier to collaborate when you are creating a win-win collaboration especially without the need to exchange profit. (2)
- It's not easy to align all the timetables with all the flights but TSPs can adjust their timetable with the popular flights. (2)
- The idea to drop-off the luggage before reaching the airport (e.g., metro station) requires special safety procedures of luggage transport, which influence and increase the travel cost. (2)
- It is difficult for the airline companies to collaborate with the PT since the PT are neither reliable nor appealing to customers and creates a new risk to the airlines. (2)
- The routes of the PT are not developed with respect to the airport demand but to respond to the local PT travel demand. (2)
- A main issue is the coordination among the rail and PT to better serve the airport. (1)
- A subsidy from the government could help the implementation of integrated services. (1)
- The problem is that the planning horizons of the modes are different with respect to the air transport system. Air transport is more flexible than PT that works on seasonal timetabling with fixed routes. (1)
- The relationship of the inland TSPs with the airlines is difficult because the former believes that airlines don't care what happens out of the gates. A TSP tried to agree to selling rail tickets on the plane, but the collaboration was unsuccessful since they avoid selling the tickets in case a flight was delayed. (1)
- Difficulties in collaboration since the transport system is fragmented and a lot of TSPs and different actors are involved. (1)

3. Past/Ongoing collaborations:

The TSPs expressed collaborations of different modes that either their company had fostered or still is. Moreover, other cases that the interviewees have faced as travellers were also examined. The main collaborations discussed are the following:

- A Rail company used to promote taxi through simultaneous taxi booking on train ticket issuing. The taxi price was fixed, and a specific taxi driver was assigned for each passenger. (1)
- A taxi federation collaborates with Olympic air and Aegean airlines, and they transfer the pilots and the crew to the airport. The airline informs the federation every month about the pilots'/crews' schedule and 3 days before, about the pick-up time. The taxi driver knows the pilot's/crews' name and is waiting him/her. The same collaboration scheme is feasible for air passengers as well. (1)
- An airline company had its own buses and drivers with the possibility of coordination with airline mainstream services, for example, extended check-in or similar activities for passenger when the road to the airport is congested. Later, a private TSP took over this bus service as well as City Transport Company which provided one bus line connecting airport and Belgrade city centre. (1)
- Loyalty cards motivate people to use specific modes. (1)

- KLM proposed to passengers to take the train from Brussels to Amsterdam and travel by plane from Amsterdam. The traveller booked 1 ticket for both modes and before using the train he/she validated the single ticket in the train station. This option was cheaper than travelling to Holland by plane. (1)
- Internet and mobile connectivity for making calls and connect to the internet while one is using PT. (1)
- Vienna airport has a huge stand with information and prices, and also demonstrated the links for PT tickets' booking. (1)
- AEGEAN airlines give a discount to reach the airport with a private car and park it at the airport. They propose the air parking when one is booking a ticket instead of PT. (1)
- In Moscow the passengers have the possibility to check-in their luggage at the central station of Moscow and then just go to the airport and depart. The passengers can drop off their luggage many hours or even days before their flight. (1)
- Two train operators created a commercial agreement so the customers can buy a unique ticket to travel from/to airport with both rail companies. (1)
- A train operator agreed with airport company (Aeroporti Puglia) to place displays inside the airport with real-time information about train timetables. (1)
- Agreements were set with air transport providers (Ryanair, Alitalia) and rail companies to sell rail tickets on planes. After a short period, this project was stopped since airline companies created some obstacles on selling the tickets on board. (1)

4. **New ideas for collaboration:**

After discussing existing collaborations, a brainstorming session regarding new ideas was initiated. The TSPs suggested new ways of collaboration and what actions should be taken to provide a seamless door to door journey. The new ideas proposed are presented in the following part:

- A mobile application presenting all available modes and their information. (1)
- The airlines should promote other modes and especially rail. (1)
- Book a taxi when booking an airline ticket. The airlines could collaborate with the local taxi providers and determine fixed prices. (1)
- The taxi federation is interested to collaborate with PT through the creation of a single ticket for PT and taxi. (1)
- Information about the PT service should be delivered directly at the airport. Better directions for reaching the bus stops locations and buses' departure time should be provided by the airport. This requires a collaboration with the airport company to place some displays with PT departure time inside the air terminal. It's feasible to inform about the real time position of the buses. (1)
- The bus and the metro can work complementary. (1)
- PT could provide flexible transport – Demand Responsive Transport. (1)
- Inform the passenger about the bus capacity and the waiting time at the bus stop. (1)

- The PT operator could add more bus routes and more buses in order to cover the increased demand. (1)
- The taxi federation is willing to collaborate with the airlines and they can offer reliable and secure services to the passengers. They can offer a lower price to the airline's passengers. (1)
- The interviewee strongly supports the idea of an integrated multimodal transport and see it as a very near future. The key prerequisite for implementation is integrated platform which should be used to determine profit distribution among TSPs involved. The main strategy is to put the user in focus, therefore, TSPs should serve users instead to transport them. (1)
- The new integrated multimodal transport (single ticket) cannot be cheaper than the existing not coordinated service. (1)
- Priority services for passengers who travel with family could be provided as a part of integrated ticket. (1)
- A single platform with one interface where all the available modes are presented, and you can book your ticket. The purpose is to convert data into actionable information. (1)
- An increasing implementation of bar codes and QR codes can facilitate usage of the single e-ticket. (1)
- Make a single ticket and provide more information per leg. The single ticket will save time and provide a better travel experience. (6)
- Interoperability of the timetables of different TSPs. (2)
- Joint ticketing for inland modes and airlines. (2)
- Collaboration between the airlines and buses/taxis to transfer the luggage. (1)
- Collaboration between different operators and shops to enhance the experience of tourists. (1)
- Collaboration of a PT with a private bus company to create a single ticket. (1)
- Collaboration with Aeroporti Puglia should be activated to put displays inside the airport with real-time information about bus departure time. Even if they do not expect high gains due to the low PT demand, in order to improve traveller experience, agreements with airline companies could be set. For example, it should be allowed the use of PT by showing the boarding card as PT ticket. (1)
- The single ticket, the timetable alignment and the information at the airports are successful factors for a seamless journey. (3)
- Inform the traveller with the available PT of his/her destination after the ticket reservation, this information improves the airlines product. (1)

5. <u>Data gathered and data exchanged:</u>

The TSPs were asked questions related to their data sharing culture; what kind of data they collect and if they would be willing to share their data with other TSPs. Moreover, existing collaborations showed that TSPs share specific data in order to collaborate and align their services, therefore the participants expressed their data needs which are presented in the following list:

- PT operators collect data from the sensors so they know when a bus has a lot of passengers. (1)

- PT operators don't know what type of data can be shared with other TSPs and when, they are only creating open data which are considered shared. (1)
- The taxi federation collects real time data of their vehicles, and they are willing to share them and create win-win collaborations. Moreover, they also have historical data to share if a collaboration comes up. (1)
- The taxi federation would like to know when the flight will arrive and how many passengers are travelling in order to get to the airport. They will go to airport if they receive a request, they will not be waiting at the airport. (1)
- The taxi federation would like to know the name of the passenger and his/her arrival time. (1)
- Interviewee is willing to collaborate and thinks that data sharing would not be a problem. (3)
- Airline needs mostly data on the operational level related to passengers and their luggage. Luggage data, in the case of existence of the remote check-in, could help in planning the number of workers needed for check-in activities. (1)
- Realtime GTFS data are freely available for all the AMTAB PT services. So, airport management could create such a traveller information service by themselves. (1)
- A PT operator has free GTFS data that are sufficient to return real-time position of the whole bus fleet. (1)
- Airlines doesn't collect demographic characteristics and they believe that if they add a question when the passenger books a ticket, most probably the passengers will skip it. (1)
- The data about the air schedule or delays are not needed, the TSPs need just to increase the frequency of the rail service and then align the timetables to other modes. (1)
- AEGEAN airlines would like to know if a passenger will be delayed or will lose the flight. If AEGEAN knows in advance (30' before the flight) that a passenger will miss the flight, AEGEAN will try to change their ticket for another flight. (1)
- AEGEAN airlines doesn't have demand data for all the air travellers and doesn't know where the passengers go after their arrival. (1)
- The airport authorities know who arrives, from which origin, the airline that was travelling and the exact passenger flow in the airport. The airports could provide data related with the flow and the capacity. (1)
- The airport knows the exact days and hours when the flow is high. The airport has data from all the airlines. (2)
- A TSP will need Timetables, flight info, availability of alternative modes, location of modes, number of passengers/passenger flow: all this information is collected from the airport. The airport could send this info to the TSPs and the TSPs will know the demand in advance in order to adjust their timetables (1)
- PT is positive to collaborate, has open data to share with other TSPs and are willing to share all the timetable data and the occupancy rates of the modes. (1)

Each interviewee expressed their different perspective but the 3 main statements that were most stated are:

1) The project and the survey results of T3.1 are reasonable

2) The single ticket, the timetable alignment and the information at the airports are the success factors for a seamless journey

3) The TSPs are willing to collaborate and to share data

The input gathered during the interviews is the starting point to expand the discussion and collect more insights. The aim is to expand the knowledge gained during the interviews and create a structured discussion during the workshop to validate the findings of the project until now. In addition, the aforementioned statements and the unstructured information collected during this task are crucial input for the T3.3 "Determination of collaboration and data sharing goals" which aims to define the collaboration goals between TSPs.

4 Collaboration Workshop with Transport Service Providers

4.1 Workshop goal and structure

Project's main goal is the creation of a Smart contract framework to foster the collaboration between the TSPs in order to provide a seamless door to door travel. Fruitful feedback was collected through the interviews which was expanded and validated in the TSPs workshop that was held on 22 September 2021 in Sitges, Spain. The main objective of the workshop was the collection of information regarding the willingness of TSPs to collaborate. The input from the interviews and the Customer Journeys developed in T3.1 were presented during the workshop. The workshop was organised by the UPC (WP6 Leader) and invitations were sent to the Advisory Board and the interview participants. The workshop had 3 parallel sessions of 45 minutes total duration (Business Policy, Data exchange and Technology exploration), 3 different groups and was conducted in a hybrid communication manner (onsite and online participants). More details regarding the workshop structure and its organisation can be found in D6.6. Eventually, 5 TSPs participated on site and 20 online.

4.2 Prepare workshop material

Different supporting material was shared with each group. A printed presentation was shared with the onsite participants within which specific paper sheets were listed for them to provide their input. The Miro Online Whiteboard collaboration tool was used for the online participants. The online participants were able to provide their input and discuss their ideas during the session. The agenda of the session was based on the interview structure and its main objective was to inform the participants about the project and the collaborations so as to foster an open discussion. The participants had the change to share their thoughts and their experience in each part of the agenda. The structure was the following:

- 01 Welcome to SYN+AIR: The first 5 minutes of the session were dedicated to describing the main objective of the workshop and to meet the participants.
- 02 Collaborate? No thanks! In the second section of the session the participants became acquainted with the aim of the project and a brainstorming session about the T3.1 survey results was held.
- 03 Activity I: The main goal of the Activity I was to make suggestions to the Customers Journeys, from the TSPs' perspective, that would improve the travel experience of the travellers. This activity lasted 15 minutes.
- 04 Activity II: The aim of this activity was to write down existing (or proposed/fictional) collaborations between TSPs focusing on both the operational and the planning aspects. The participants needed to answer 3 main questions:
    - 1) WHAT? Describe the synergy that is being offered
    - 2) HOW? WHY? Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs.
    - 3) WHY NOT? Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?

The total duration of this activity was 20 minutes.

- Closing Questionnaire: An optional closing questionnaire was shared among the participants to state the motives and the barriers that arise between the TSPs' collaboration.

Questions related with the data set and the data validation were posed by the Data exchange session and the results will be reported in the D4.1. The presentations are located in the Annex C.

4.3 Outcome of the workshop

The structure of the presentation fostered the discussion and the participants shared ideas and expressed identified barriers. Opinions and suggestions collected from the workshop were similar with the one documented in the interviews. The raw data from the workshop and TSP's input can be found in the Annex D.

The new proposed measures to be taken to foster the collaboration between the TSPs, improve user's experience (Activity I) and facilitate data sharing are the following:

- Wi-Fi connection enabling the usage of technological solutions.
- Standardisation of real time data.
- Sharing data between the TSPs.
- Flexibility of the public transport schedule.
- The alignment of the timetables of different modes.
- Clear information to the air travellers regarding the available modes and their cost, provided by the airport.
- Provide information about the available travel modes in terms of cost and time.
- Information for the available modes in the form of onsite posters, available QR to link to the available mode app/website.
- Suggestions to the travellers through MaaS apps.
- Give priority to the groups of travellers.
- Offer group tickets.
- A single point of booking and contact to facilitate the whole journey.
- Provide PRM assistance across the whole trip.
- Real time information about the accessibility (e.g., elevator not working).

Three incentives for collaboration were determined: **(i)** TSPs will gain more customers, **(ii)** the customer satisfaction will be increased and **(iii)** by doing so a positive network effect will be generated. The barriers that may block the collaboration are the business models of each company, the extra fee that might be needed to create a new integrated ticket and the responsibility that arises in case a disruption occurs.

Activity II of the workshop aimed to gather the existing collaborations among TSPs or even brainstorm on new ideas. The most popular synergies mentioned are stated in Table 2.

Table 2: Input from Activity II

#	What? *Describe the synergy that is being offered. What is offered to the travellers? What do the TSPs again?*	How? Why? *Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs*	Why not? *Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?*
1	[Proposal] Collaboration of: Taxi and Airplane, Bus and Train, Bus and Light mobility, car and bus, bus and airplane and train and airplane.	The TSPs will attract more users, exchange experience, offer a single trip experience. To achieve the aforementioned, TSPs need to have common open data policy.	There is a difficulty in clearing the responsibilities and defining the profit and the cost of a single trip. The single trip ticket should cost less than the different tickets.
2	[Proposal] Create a single ticket which ensures travellers D2D journey. The ticket will cost less and the TSPs will know in advance their occupancy.	The synergy will be offered by exchanging data and the ticket will be available to more citizens.	TSPs probably don't want to be assessed and don't want to show their business model.
3	[Proposal] Collaboration between the Airlines, the Bus and the MaaS providers. The TSPs will gain more customers.	The new collaboration will contribute to the TSPs sustainability but the travel recovery plan (what if a flight is delayed) should be defined.	The barriers for the synergy are: the amount of available vehicles, the capacity of mode, the cost and the data from the users that are needed.
4	[Proposal] Collaboration of: Airplane and Public Transport operators, Synergy on ticketing, On-demand public transit (DRT), Train and bus schedule alignment.	The different TSPs will gain profit from the collaboration, they will contribute to the reduction of CO2 emissions and climate change. New markets will be created and a need for travel recovery will appear.	The barriers of these synergies are the cost, the fact that the TSPs don't communicate with each other, the protection of their business intelligence and the stakeholders' unwillingness to ensure the travellers' satisfaction. the .
5	[On going collaboration] Ryanair collaborates with a Private Rail Company in Bari, and they are providing a single ticket [6 months contract].	When you book your airline ticket, the available modes from/to Bari appears, and you can book your rail ticket in the same website.	

Numerous participants stated during the discussion that special attention should be paid on the **GDPR** and that personal data must be shared in accordance to regulations. Moreover, the TSPs proposed a **single platform** to be installed in order to facilitate and make the collaboration more efficient and enable all TSPs involved in the data sharing process to access data. In addition, a lot of participants proposed the creation of **a single ticket** for which the profit share for TSPs involved in the multimodal chain should be predefined. The **profit share of TSPs** will be different, and each TSPs should find their own interest to enter the cooperation. The profit will depend on the price of the single ticket. Some participants believe that the single ticket should have lower price compared to the case

when passengers buy many different tickets, while other think that it is not possible to have lower price since you provide an upgraded product. In addition, the survey's answers prove that TSPs' most important motives for collaboration are the profit and the reduction of travel time for the end user. On the other hand, the two most important barriers are the GDPR data privacy and the restrictions arising from the business models of the organizations.

5 Conclusions

In conclusion, the present deliverable puts forward the existing and the type of collaborations and mainly the opinion and the willingness of TSPs to collaborate which will be used for the upcoming stages of SYN+AIR project in order to define the collaboration goals and the smart contract framework. The insights collected through the engagement activities describes the opportunities and the common view of the Transport service providers to collaborate. Moreover, the survey results and the customer journeys created in the previous tasks were presented to the TSPs and their comments were collected.

Based on the literature, there are collaboration that have already been fostered but many of them have faced difficulties. The input gathered at the interviews and the workshop concludes that the TSPs are willing to collaborate and the main idea that can be addressed is the creation of a single ticket and the clear definition of the profit and the responsibility of each TSP. Although, the airports should share information related with the inland modes and all the TSPs should follow a common data standard to avoid data exchange barriers.

Last but not least, the results that have already been originated at the project were validated and confirmed by the transport stakeholders meaning that the project findings contribute to the transport field and the project main goal will have a meaningful impact to the sector.

All the above results were collected thanks to TSPs participation and willingness to support the project. The SYN+AIR consortium would like to thanks kindly all the stakeholders involved in the T3.2

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Annex A Past Research Projects on the collaboration of TSPs

This section aims to investigate the willingness of TSPs to collaborate through the close examination of TSP collaboration as it can be found in past research, past studies, and completed innovation initiatives. The chapter is divided into two discrete parts:

- Table 3 presents the collaboration of land TSPs with each other (including maritime TSPs), and
- Table 4 presents the collaboration between TSPs where at least one TSP is an air carrier or an airport

Table 3: Past research on the collaboration of non-air TSPs

Paper	TSPs involved	Description of Collaboration	Results / Findings
Yashiro and Kato, 2019	High-speed rail (HSR) with intercity bus services	Implementation of intermodal system, considering seamless connection between HSR and intercity buses	1) The acceptance of a new intermodal system in the intercity transportation market from both users and suppliers; (2) Clear incentives for cooperation among stakeholders with expected benefits from asset-sharing and joint marketing activities; (3) an excellent intermodal service package including the short transfer distance, a unified ticketing system, an integrated timetable and schedule adjustment, special discounting, and the coordinated design of train/bus bodies; (4) a win–win solution for the shortcomings of the existing travel modes; and (5) a learning process about the effects for existing operators with flexible operator strategy adjustments.
Lowe and Wright, 2018	Improving intramodality between bicycles and buses, which involve Voluntary professional association's (VPA's) and agent of bus operators	How (VPA's) can contribute to the achievement of societal goals by developing and implementing multi-stakeholder, industry-wide initiatives that aim to improve the extent of inter-modality for users of bicycles and buses, in	The Victorian bikes on buses initiatives is a case study example on how VPA's (or industry representative bodies) can contribute towards the achievement of societal goals like improving public health, reducing the rate of growth of congestion, and reducing transport emissions.

		Victoria, over the long term.	
Li and Xia, 2021	Ride-hailing, bus and rail transit	How the emergence of ride-hailing and shared bikes impact public transportation.	The results show that, first, the emergence of ride-hailing reduces bus ridership but increases rail transit ridership. Second, the introduction of shared bikes reduces bus passenger volume but increases rail transit passenger volume. Finally, the legitimation of ride-hailing positively moderates its influence on rail transit but negatively moderates its influence on buses.
Liu et al., 2019	feeder buses, bike-sharing systems	Optimising the fleet size and schedules of feeder buses that connect metro and residential areas in the context of bike-sharing systems.	The findings can assist transit authorities in making optimal feeder bus operating policies to provide high-quality fixed/demand-responsive transit service. Also, the proposed optimization framework helps transit authorities in the decision-making process to weigh the profits against service quality, e.g. how many buses should be procured to achieve a win-win situation for both passengers and operators.
Bruzzone et al., 2020	e-bike-sharing and demand-responsive transport systems	The potential integration of an electric bike-sharing system and a semi-flexible demand-responsive transport system to effectively solve poor operational performance in Velenje, Slovenia.	The integrated system would increase the number of settlements with daily and frequent access to the train and bus stations and to public functions downtown, thus allowing citizens to access public transit and sharing services independently and to choose them for their daily commute.
Brown et al., 2020	scooter, bike, and car parking	Investigated parking practices as well as the frequency and types of parking violations of three types of vehicles operating on city sidewalks and streets: e-scooters, bikes, and motor vehicles.	Motor vehicles impede access far more (24.7%) than bikes (0.3%) and e-scooters (1.7%). Findings suggest that micro mobility companies are just one of several technology-enabled transportation services that should motivate cities to rethink parking policies.
Zhu et al., 2020	bike-sharing and scooter sharing mobility	Constructing the paths and estimating repositioning trips and	Results suggest that scooter sharing has a better performance than bike sharing in terms of the increased sharing frequency

		the fleet sizes, as well as providing comparative analysis of bike-sharing and scooter-sharing activities in Singapore	and decreased fleet size. On the other hand, high repositioning rates of shared scooters indicates high maintenance cost for rebalancing and charging.
Odeck and Høyem, 2020	car ferry services, public transport	Assess the impact of competitive tendering (CT) on the operational costs and the impact on market concentrations in the case of the Norwegian car ferry sector.	The results showed that: (i) implementation of CT significantly lowered operational costs; and (ii) market concentration increased.
Interreg, 2020	Rail transport, MaaS, bus, maritime	Reporting the best practices of the collaboration between various travel modes and ports.	Building the capabilities of transportation planners and authorities to identify new approaches in organizing sustainable transport connected to port areas.

Table 4: Past research on the collaboration of air TSPs

Paper	TSPs involved	Description of Collaboration	Results / Findings
	Air transport and high-speed rail (HSR)	The use of railway services as a supplement to the airline's network of services is being examined. The paper explores the benefits and limitations of the model of integration at Heathrow airport.	Airlines benefit from free slots and lower environmental costs, social and economic benefits of better integration transportation services are also achieved. Major constrain: air–rail facilities are difficult to finance, construct, and operate.
Albalate et al., 2014	Air transport and high-speed rail (HSR)	By supply-oriented analysis, the impact of HSR on air service frequencies and seats offered by airlines in France, Germany, Italy and Spain is empirically studied.	HSR can provide feeding services to long haul air services in hub airports, particularly in hub airports with HRS stations. It also might serve as a complementary mode to relieve congestion at airports by providing short-haul services.

Clewlow et al., 2012	Airport–rail partnerships (how are they formed, implemented, and how they affect broader demand for aviation systems)	Overview of Airport rail connectivity in Germany, France and US, such as hourly intercity trains to and from Frankfurt Airport and to Bonn and Cologne; In 2001/02 Lufthansa paid DB Bahn for every seat in a separate train car; from 2003 travellers were able to block a certain fixed number of seats, with the option of cancelling seats up to 7 days in advance.	Key factors that appear to contribute to a successful airport–HSR connection: Infrastructure: the rail station should be located at the airport Schedule and frequency - timetables should be coordinated Market characteristics of the airport: key factors for increasing number of passengers are congestion reduction and the role of HSR lines as feeder service for international flights.
Press Corner of Austrian Airlines	Austrian Airlines and the Austrian Federal Railways (OBB)	Starting form 8 up to 30 daily railway connections between Linz Central Railway Station and Vienna Airport from 2014 and up to 35 daily railway connections between Salzburg Central Railway Station and Vienna Airport from 2017 with an Austrian Airlines code-share flight number.	Austrian Airlines and ÖBB registered their 100,000th AIRail passenger. In 2019 three million passengers have used the OBB AIRail to travel to and from Vienna Airport in an environmentally friendly manner.
https://trains.klm.com/be/en	KLM Royal Dutch Airlines with Thalys (French-Belgian HSR operator) and French railways (SNCF)	Passengers from various French cities may travel to Paris CDG Airport and passengers from Belgium may go to Schiphol (from Antwerp) or CDG (from Brussels)	KLM authorities recognized speed as a key factor both for the train itself and for transfer process at the airport. On offered destination, train journey takes very similar time as air travel. HSR ticket is included in the price of air ticket.
www.railway-technology.com	Swiss International Air Lines and Swiss Federal Railways (SBB)	Strategic partnership in order to expand intermodal services within Switzerland. Cooperation is known as Airtrain, and the air-rail service is available between Zurich Airport and the SBB stations in Basel, Lugano and Geneva.	SWISS reduced Zurich-Geneva flight frequencies due to Covid-19 pandemic, but offered selected SBB trains between Geneva station and Zurich Airport assigned with SWISS flight numbers. Travel on these trains is included in the flight ticket.

https://en.wikivoyage.org/wiki/Rail_air_alliances	Three segments of cooperation: airlines that use land transport in cases when offer of additional flight is impossible; special offer of tickets combining a flight with a rail or bus and a luggage transport from city centers to airports on behalf of airlines	A single ticket for the journey by bus or rail from an airport to final destination can be booked with flight, on a single ticket. In article an overview of air and rail/bus cooperation between services worldwide is presented.	Benefits of the cooperation for passengers: -usually, the price of intermodal journey is less than two separate tickets -saving time needed to research and book further ground journey.
Vesperman and Wald, 2011	Frankfurt: Airport operator (Fraport), the main airline at the airport (Lufthansa) and the railway company (Deutsche Bahn)	Check-in area at the rail station that has a direct link to the airport's automated baggage handling system; services on high-speed trains to the Cologne and Stuttgart; single ticket and business or economy class has corresponding seats on the train.	After a drop in intercity train traffic in 2006 without obvious reason, followed a six-year steady increase in air–rail traffic. Train connections in Frankfurt brought major changes concerning modal split and also significant reduction of short-distance flights. Position of an ''intermodal manager'' at the airport is been created.
Li et al. (2018)	Air-rail cooperation	Paper summarizes a complete list of air-rail cooperation cases around the world and classify them on partnership level. Levels of cooperation: low (reserve online, cancelation assist, special discounts) and Medium and High (code sharing, FF program, integrated tickets, schedule coordination, end-to-end services).	The location of the rail station has the largest impact on the partnership level (rail station within the airport). In Asia, partnership levels are significantly lower compared with those in Europe. In order to encourage air-rail cooperation, environment taxes can be leveraged.
https://en.wikivoyage.org/wiki/Rail_air_alliances	Air and bus transportation	Air France/KLM offer shuttle bus service with its own flight code between the Montreal-Dorval Airport and Ottawa Train Station with both airlines. Lufthansa offers bus connections between Frankfurt and	The Air France/KLM bus connection takes 2 hours and the buses arrive and depart 2 hours from the connecting flight, allowing for delays. The bus-operated flight stretches are usually bookable with intercontinental flights operated by Lufthansa and can be

		several cities in Germany and in France (ride lasts up to 2h 45min to Strasbourg).	impossible or very expensive to book with intra-European flights.
https://avianca.com	Air and bus transportation	Columbian airline Avianca and FlixBus entered into a partnership that enables passengers to get totally free and direct to or from Munich-Franz Josef Strauss International Airport to multiple cities in Germany, Austria, Switzerland, Italy, and Czech Republic.	24 hours after purchasing flight to Munich on Avianca website, a passenger receives a mail with a code that is redeemable for a journey with Flixbus and the details of the bus ride are reserved on FlixBus website.
Sabel, 2004	Airlines and airport operators mainly through examples of cooperation in United States	Presents legislative background of the agreements and examples of various kinds of agreements (exclusive which provides that only that airline will have the use of the specific facilities usually for 15 to 30 years or non-exclusive meaning that the airport can re-lease those areas to other carriers if they are not fully used).	Newly arrived carriers may have problems with long-term, exclusive contracts between established carriers and airport operators who most often use the proceeds from such contracts to finance airport construction and expansion projects, the benefit of which, on the other hand, also belongs to newly arrived carriers.
Albers et al., 2005	Lufthansa and Munich airport	The paper examines the potential for cooperation between airlines and airports, concerning capacity, marketing and security. Lufthansa's financial participation in the construction of the terminal enables the airline to significantly influence the planning and implementation of the terminal.	Strategic (capacity oriented) alliances will likely increase in the future. In the case of Munich airport, benefit is the reduction of costs and lower investments because the airline pays a share, but there are also savings in human resource management. For airline, the benefit is also organizing personnel for the new facility, also design (e.g., wall decoration in corporate colours) etc.
Futuretravelexperience.com	Gatwick Airport and easyJet	Gatwick Airport has been investing in its integration and data platforms which can provide passengers with information in real	As a result of this project, live data from Gatwick Airport's information systems and the passenger's flight itinerary, are integrated into the easyJet Mobile App.

		time to its airline partners.	
Vilar et al., 2011	Airlines, alliances	The paper analyzes the benefits of large airlines that have become members of the 3 major alliances (Star Alliance, Oneworld, SkyTeam) compared to airlines that have decided not to become members or have not been admitted to alliances during 2005-2008.	Based on the increase of Revenue Passenger Kilometre, Passenger Load Factor and Available Seat Kilometres, group of non-aligned members got higher increases than the aligned group. Furthermore, the alliance that seems to be most successful is Oneworld.
Schosser and Wittmer, 2014	Airlines, alliances	The paper explains the differences in the estimates of the synergy and the achieved synergies in the recent mergers of airlines with special focus on geographical influence factors, considering merging of Air France - KLM, IAG, Delta/Northwest, United/Continental, LATAM, Avianca-TACA	Due to larger synergy potential in domestic mergers and among airlines from less mature markets, in Europe airlines expect total synergies to be 2.6% of combined pre-merger revenues, while North American airlines estimate 3.7% and Latin American airlines as much as 6.3%.
A-CDM manual	A-CDM (Airport Collaborative Decision Making) is about partners (the airport operator, aircraft operators, the air navigation service provider, ground handlers, network manager, de-icing companies, support services) working together and making decisions based on information that has the exact same meaning for every partner involved. It is	-A-CDM Information Sharing - CDM Turn-round Process – describes the progress of a flight from the initial planning to take off - Collaborative Management of Flight Updates – exchanging Flight Update Messages and Departure Planning Information messages between Network Manager and an A-CDM - Variable Taxi Time Calculation - Collaborative Pre-departure Sequence is the	Benefits of the use of A-CDM for: -aircraft operators (improved awareness about the location and status of the aircraft, accuracy of arrival times at destination, good fleet prediction, reduced CO2 emission) - airport operators (reduced apron and taxiway congestion, reduction of ground emissions, better use of resources etc.) -ground handling companies (accurate arrival information, efficient use of resources, increased predictability etc.) -passengers (reduced missed connections, reduction in delays)

	implemented in 30 airports across Europe.	order that aircraft are planned to depart - CDM in Adverse Conditions	

Annex B Interview presentation

The interview discussion was based on the following presentation

Interview & Today's agenda

- Goal: "Determine policies and business logics of TSPs in relation to data sharing, along with the willingness to collaborate regarding motives, hindrances and opportunities for achieving seamless travel"
- Agenda:
  1. Participants and Project Introduction ~ 5 min
  2. Passenger Survey (May 2021) ~ 5 min
  3. Customer Journeys ~ 15 min
  4. Types/Levels of Collaboration ~ 10 min
  5. Data ~ 10 min
  6. Open Discussion ~ 15 min

SYN+AIR Interviews with TSPs 2

Who is who

AETHON Engineering
Transport innovation company
Athens, Greece

Stella Noutsou
Chief Project Officer
Transport Engineer

Konstantinos Mavromatis
Technical Officer
Transport Engineer

What about you?

Your profile
Your expertise
Your role

SYN+AIR Interviews with TSPs 3

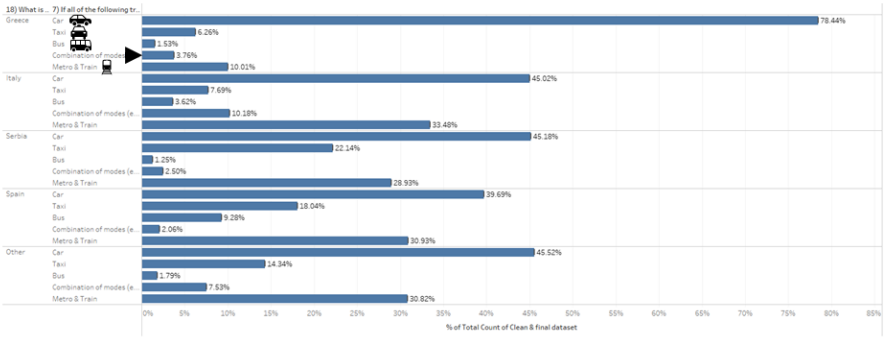
The SYN+AIR project

SYNAIR will **develop a framework of contractual agreements** among TSPs that aim to **define data exchange among TSPs** that share the common goal of **getting the passenger to the destination through a multimodal chain of trips.**

SYN+AIR Interviews with TSPs 4

Passenger Survey (May 2021)

- 2199 respondents, 4 countries: ES, GR, IT, SR
- If all modes were available, which one would you choose?



SYN+AIR Interviews with TSPs 5

What we need from you

	Present	Future
Planning	identify 'pain points'	how could it be done differently?
Operational		

opportunities: what could you do?
motives: why do it?
hindrances: why not?

	Example 'pain points':	Possible solutions:
	"timetable of buses is unknown"	Collaborate with an air company to present timetable info to arriving passengers
	"my train is delayed today"	Collaborate with the bus operator (or MaaS) to provide alternative options
	"my baggage was delayed so I missed my train"	Collaborate with airport to compensate passengers that have missed a connecting train
	"I don't know where the bus stop is"	Collaborate with technology providers to enable precise indoor navigation

SYN+AIR Interviews with TSPs 6

Customer Journey: Axel flies to his meeting in Belgium

Axel | Business Traveller — **SYN+AIR Customer Journey 4.2**

	To the airport	At the airport	From the airport
Journey			
Actions	• Issues a paper ticket on the vending machine in order to get a receipt • Boards the train, but cannot find a seat to sit at, as it was not possible to reserve a seat in advance	• Already checked-in on his phone, he heads straight to the security check and his gate	• He rides a train, since it is the fastest option • He wants to book a taxi • He then transfers to a taxi for the last mile, since it's too far to walk
Needs & Emotions	• Cannot afford to get caught in traffic, therefore he chooses to travel by train • Needs to get a receipt for all trip segments • He finds trains to be much more reliable than other modes	• Needs to squeeze the time of all processes as he has a long day ahead	• He would like to reserve a taxi while in the train but he doesn't know which application to use

opportunities: what could you do?
motives: why do it?
hindrances: why not?

SYN+AIR Interviews with TSPs 7

Customer Journey: Nisha needs some additional assistance

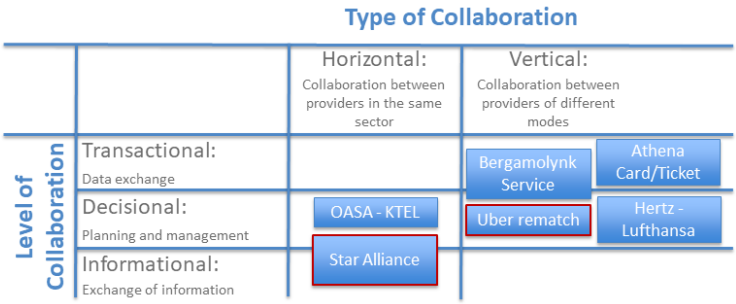
Berta | Short Break Traveller — **SYN+AIR Customer Journey 7.3**

	To the airport	At the airport	From the airport
Journey			
Actions	• Her husband picks her after work (35%) and they go directly to the airport where they will leave a car during the weekend. She made a reservation at airport's parking	• Takes coffee before check in or if she has enough time goes to restaurant • Berta flies often (50%) and therefore does not find any airport operation to be stressful	• Since it is her first time at the destination (45%) she decides to take a taxi
Needs & Emotions	• She need to be able to find reserved parking place easy and she would like to have application to show her how to reach that place		• She is tired and she wants to reach hotel as soon as possible

opportunities: what could you do?
motives: why do it?
hindrances: why not?

SYN+AIR Interviews with TSPs 8

Types and Levels of collaboration



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Existing use cases: examples

Use Case Name	Uber rematch
Description	When an uber driver drops off a rider at the airport, they can be matched within 2-3 minutes with another customer.
TSPs involved	Airports, ridesharing companies
Level of collaboration	Decisional
Type of collaboration	Vertical

[Use 'Header and Footer' to insert name of the presentation] 10

Existing use cases: examples

Use Case Name	Star Alliance
Description	Global airline collaboration, sharing knowledge among them and offering smoother transfers to customers.
TSPs involved	Air carriers, airports
Level of collaboration	Informational, decisional
Type of collaboration	Horizontal

[Use 'Header and Footer' to insert name of the presentation] 13

Data

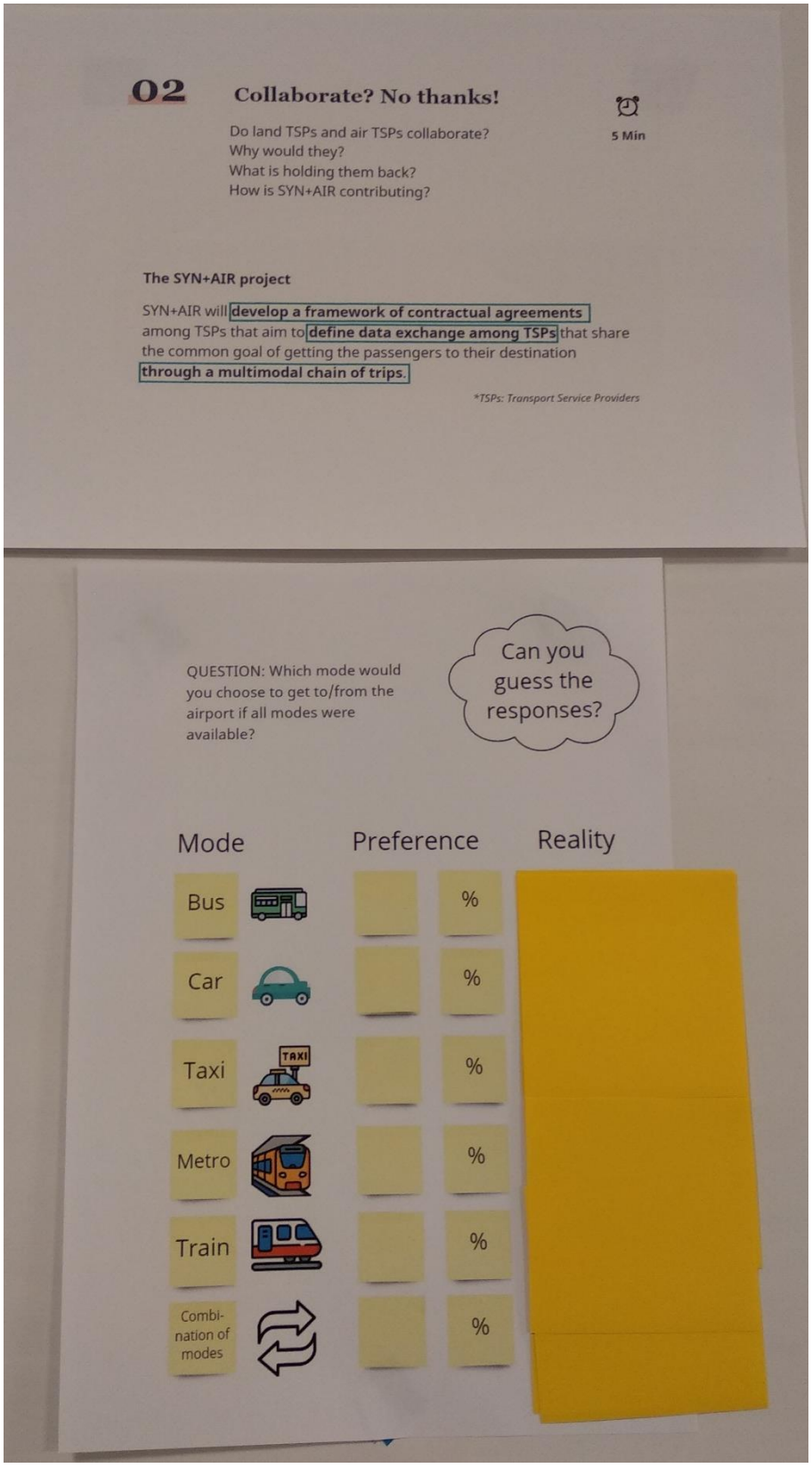
- What data do you need? When?
- What data do you offer? When?

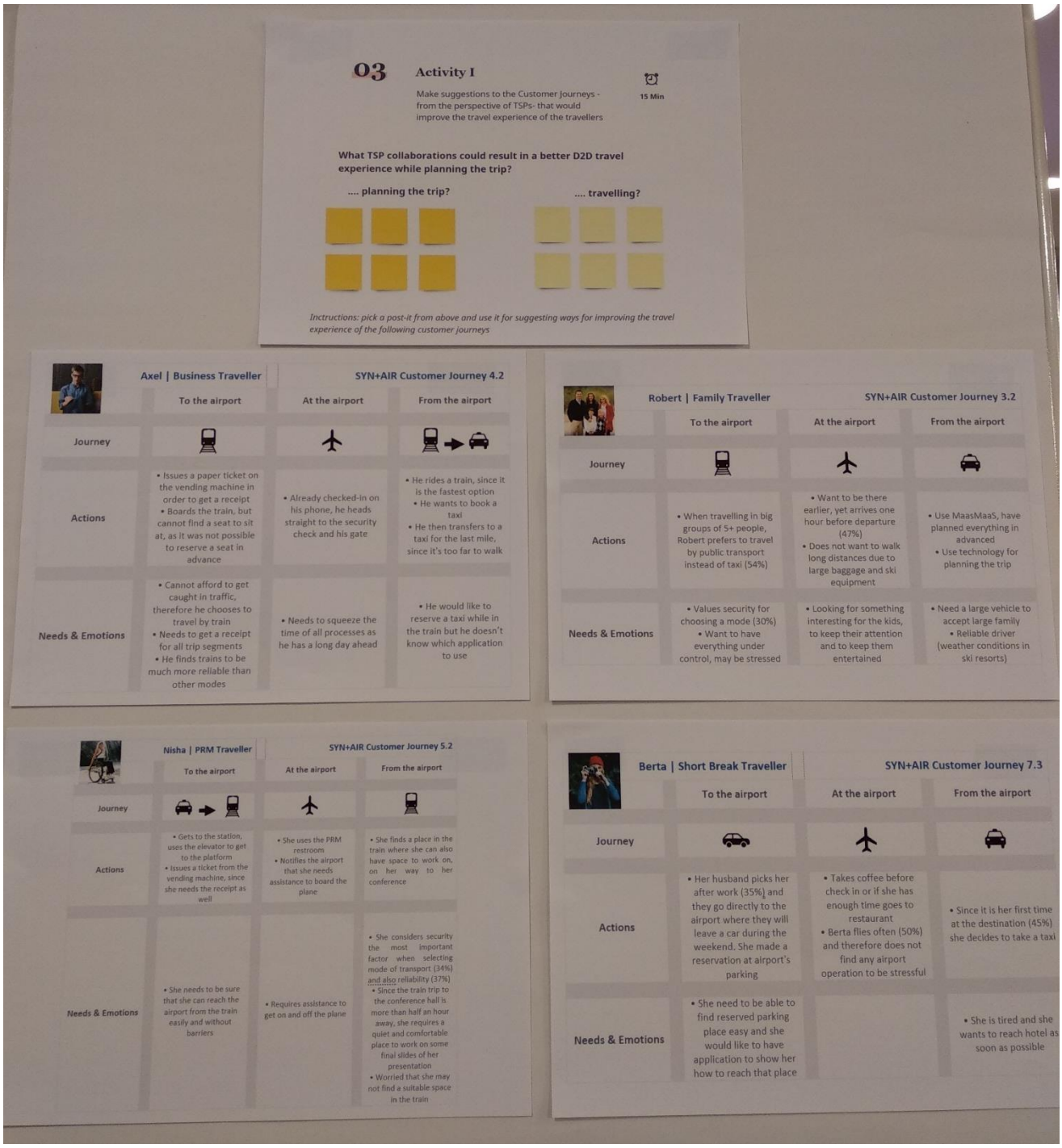
SYN+AIR Interviews with TSPs 16


SYN+AIR: Synergies between transport modes and air transportation
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
Founding Members
The opinions expressed herein reflect the author's view only.
Under no circumstances shall the SESAR Joint Undertaking be responsible for any use that may be made of the information contained herein.

Annex C Workshop Material

For each group different supporting material was prepared. The onsite participants shared their input through physical means (Papers, post-it etc.). The material for the on site participants (Group A) is presented below:


02
Collaborate? No thanks!
5 Min
Do land TSPs and air TSPs collaborate?
Why would they?
What is holding them back?
How is SYN+AIR contributing?
The SYN+AIR project
SYN+AIR will develop a framework of contractual agreements among TSPs that aim to define data exchange among TSPs that share the common goal of getting the passengers to their destination through a multimodal chain of trips.
*TSPs: Transport Service Providers
QUESTION: Which mode would you choose to get to/from the airport if all modes were available?
Can you guess the responses?
Mode
Preference
Reality
Bus
Car
Taxi
TAXI
Metro
Train
Combi-nation of modes
%
%
%
%
%
%



03 Activity I

Make suggestions to the Customer Journeys - from the perspective of TSPs- that would improve the travel experience of the travellers

15 Min

What TSP collaborations could result in a better D2D travel experience while planning the trip?

.... planning the trip?

.... travelling?

Incrtuctions: pick a post-it from above and use it for suggesting ways for improving the travel experience of the following customer journeys

Axel | Business Traveller — **SYN+AIR Customer Journey 4.2**

	To the airport	At the airport	From the airport
Journey			
Actions	• Issues a paper ticket on the vending machine in order to get a receipt • Boards the train, but cannot find a seat to sit at, as it was not possible to reserve a seat in advance	• Already checked-in on his phone, he heads straight to the security check and his gate	• He rides a train, since it is the fastest option • He wants to book a taxi • He then transfers to a taxi for the last mile, since it's too far to walk
Needs & Emotions	• Cannot afford to get caught in traffic, therefore he chooses to travel by train • Needs to get a receipt for all trip segments • He finds trains to be much more reliable than other modes	• Needs to squeeze the time of all processes as he has a long day ahead	• He would like to reserve a taxi while in the train but he doesn't know which application to use

Robert | Family Traveller — **SYN+AIR Customer Journey 3.2**

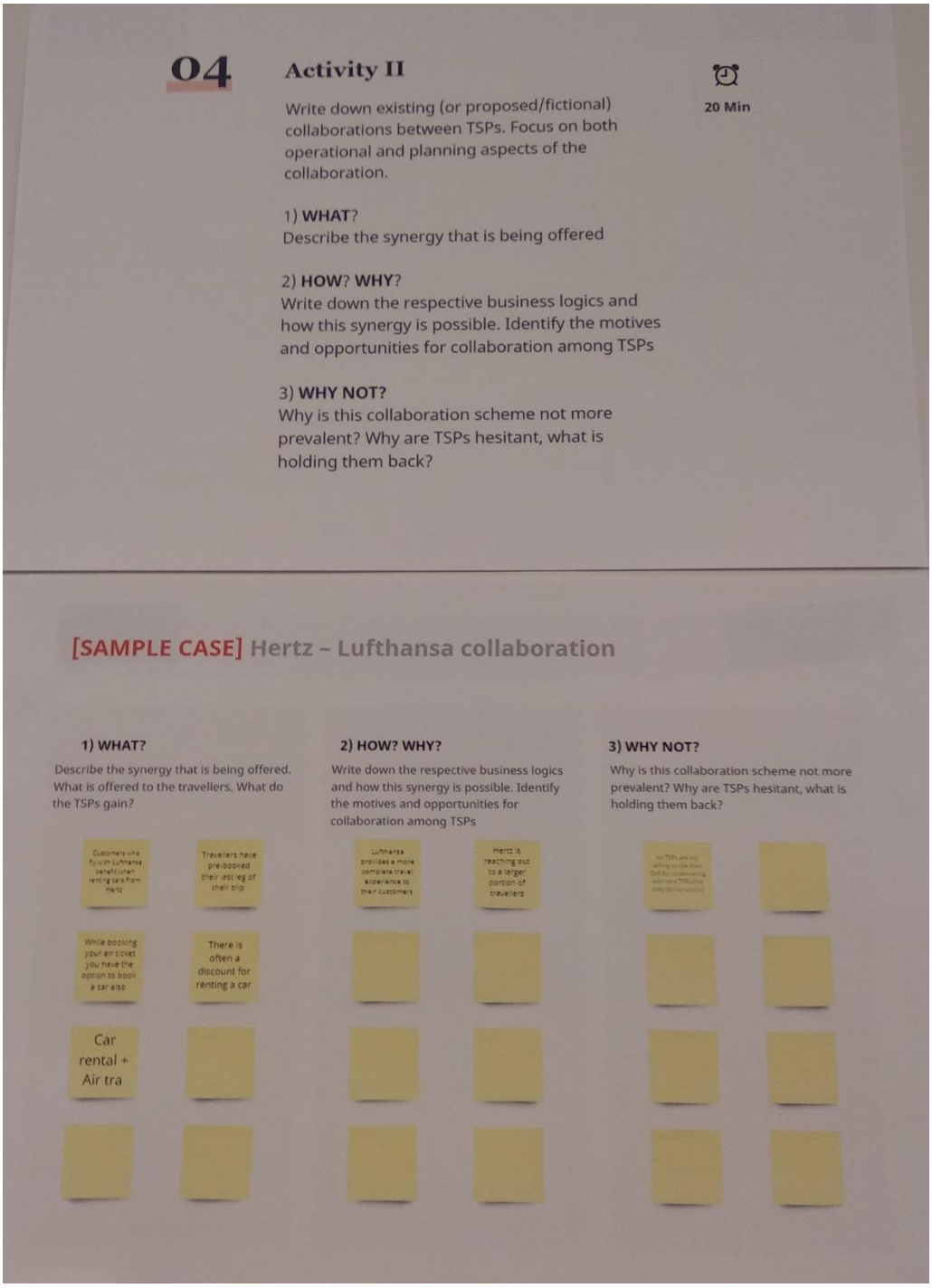
	To the airport	At the airport	From the airport
Journey			
Actions	• When travelling in big groups of 5+ people, Robert prefers to travel by public transport instead of taxi (54%)	• Want to be there earlier, yet arrives one hour before departure (47%) • Does not want to walk long distances due to large baggage and ski equipment	• Use MaasMaaS, have planned everything in advanced • Use technology for planning the trip
Needs & Emotions	• Values security for choosing a mode (30%) • Want to have everything under control, may be stressed	• Looking for something interesting for the kids, to keep their attention and to keep them entertained	• Need a large vehicle to accept large family • Reliable driver (weather conditions in ski resorts)

Nisha | PRM Traveller — **SYN+AIR Customer Journey 5.2**

	To the airport	At the airport	From the airport
Journey			
Actions	• Gets to the station, uses the elevator to get to the platform • Issues a ticket from the vending machine, since she needs the receipt as well	• She uses the PRM restroom • Notifies the airport that she needs assistance to board the plane	• She finds a place in the train where she can also have space to work on, on her way to her conference
Needs & Emotions	• She needs to be sure that she can reach the airport from the train easily and without barriers	• Requires assistance to get on and off the plane	• She considers security the most important factor when selecting mode of transport (34%) and also reliability (37%) • Since the train trip to the conference hall is more than half an hour away, she requires a quiet and comfortable place to work on some final slides of her presentation • Worried that she may not find a suitable space in the train

Berta | Short Break Traveller — **SYN+AIR Customer Journey 7.3**

	To the airport	At the airport	From the airport
Journey			
Actions	• Her husband picks her after work (35%) and they go directly to the airport where they will leave a car during the weekend. She made a reservation at airport's parking	• Takes coffee before check in or if she has enough time goes to restaurant • Berta flies often (50%) and therefore does not find any airport operation to be stressful	• Since it is her first time at the destination (45%) she decides to take a taxi
Needs & Emotions	• She need to be able to find reserved parking place easy and she would like to have application to show her how to reach that place		• She is tired and she wants to reach hotel as soon as possible



For the online participants the Miro Online collaboration board was used. The participants were able to add comments and input in the presentation. The presented material is attached below.

01 Welcome to SYN+AIR

Business policy segment

5 Min

Workshop main objective

Determine **policies** and **business logics** of TSPs* in relation to **data sharing**, along with the **willingness to collaborate** regarding **motives**, **hindrances** and **opportunities** for **achieving seamless travel**

**TSPs: Transport Service Providers*

Presented by:

AETHON ENGINEERING

AETHON Engineering
Transport innovation company
Athens, Greece

Stella Noutsou
Project Manager
Transport Engineer

Konstantinos Mavromatis
Technical Manager
Transport Engineer

Get comfy, take a seat, grab a post-it and write your name+organisation in the correct list

Transport Service Providers	Technology Providers

02 Collaborate? No thanks!

5 Min

Do land TSPs and air TSPs collaborate?
Why would they?
What is holding them back?
How is SYN+AIR contributing?

The SYN+AIR project

SYN+AIR will **develop a framework of contractual agreements** among TSPs that aim to **define data exchange among TSPs** that share the common goal of getting the passengers to their destination **through a multimodal chain of trips.**

**TSPs: Transport Service Providers*

QUESTION: Which mode would you choose to get to/from the airport if all modes were available?

Can you guess the responses?

Mode	Preference		Reality
Bus		%	2.6%
Car		%	55.5%
Taxi		%	12.6%
Metro		%	17.0%
Train		%	7.0%
Combi-nation of modes		%	5.0%

03 Activity I

Make suggestions to the Customer Journeys - from the perspective of TSPs- that would improve the travel experience of the travellers

15 Min

What TSP collaborations could result in a better D2D travel experience while planning the trip?

.... planning the trip?	.... travelling?

Inctructions: pick a post-it from above and use it for suggesting ways for improving the travel experience of the following customer journeys

Robert | Family Traveller	To the airport	At the airport	From the airport
Journey			
Actions	• When travelling in big groups of 5+ people, Robert prefers to travel by public transport instead of taxi (54%)	• Want to be there earlier, yet arrives one hour before departure (47%) • Does not want to walk long distances due to large baggage and ski equipment	• Use MaasMaaS, have planned everything in advanced • Use technology for planning the trip
Needs & Emotions	• Values security for choosing a mode (30%) • Want to have everything under control, may be stressed	• Looking for something interesting for the kids, to keep their attention and to keep them entertained	• Need a large vehicle to accept large family • Reliable driver (weather conditions in ski resorts)

SYN+AIR Customer Journey 3.2

	Nisha | PRM Traveller		SYN+AIR Customer Journey 5.2
	To the airport	**At the airport**	**From the airport**
Journey			
Actions	• Gets to the station, uses the elevator to get to the platform • Issues a ticket from the vending machine, since she needs the receipt as well	• She uses the PRM restroom • Notifies the airport that she needs assistance to board the plane	• She finds a place in the train where she can also have space to work on, on her way to her conference
Needs & Emotions	• She needs to be sure that she can reach the airport from the train easily and without barriers	• Requires assistance to get on and off the plane	• She considers security the most important factor when selecting mode of transport (34%) and also reliability (37%) • Since the train trip to the conference hall is more than half an hour away, she requires a quiet and comfortable place to work on some final slides of her presentation • Worried that she may not find a suitable space in the train

	Axel | Business Traveller	SYN+AIR Customer Journey 4.2	
	To the airport	At the airport	From the airport
Journey			
Actions	• Issues a paper ticket on the vending machine in order to get a receipt • Boards the train, but cannot find a seat to sit at, as it was not possible to reserve a seat in advance	• Already checked-in on his phone, he heads straight to the security check and his gate	• He rides a train, since it is the fastest option • He wants to book a taxi • He then transfers to a taxi for the last mile, since it's too far to walk
Needs & Emotions	• Cannot afford to get caught in traffic, therefore he chooses to travel by train • Needs to get a receipt for all trip segments • He finds trains to be much more reliable than other modes	• Needs to squeeze the time of all processes as he has a long day ahead	• He would like to reserve a taxi while in the train but he doesn't know which application to use

	**Berta | Short Break Traveller**		**SYN+AIR Customer Journey 7.3**
	To the airport	**At the airport**	**From the airport**
Journey			
Actions	• Her husband picks her after work (35%) and they go directly to the airport where they will leave a car during the weekend. She made a reservation at airport's parking	• Takes coffee before check in or if she has enough time goes to restaurant • Berta flies often (50%) and therefore does not find any airport operation to be stressful	• Since it is her first time at the destination (45%) she decides to take a taxi
Needs & Emotions	• She need to be able to find reserved parking place easy and she would like to have application to show her how to reach that place		• She is tired and she wants to reach hotel as soon as possible

04 Activity II

20 Min

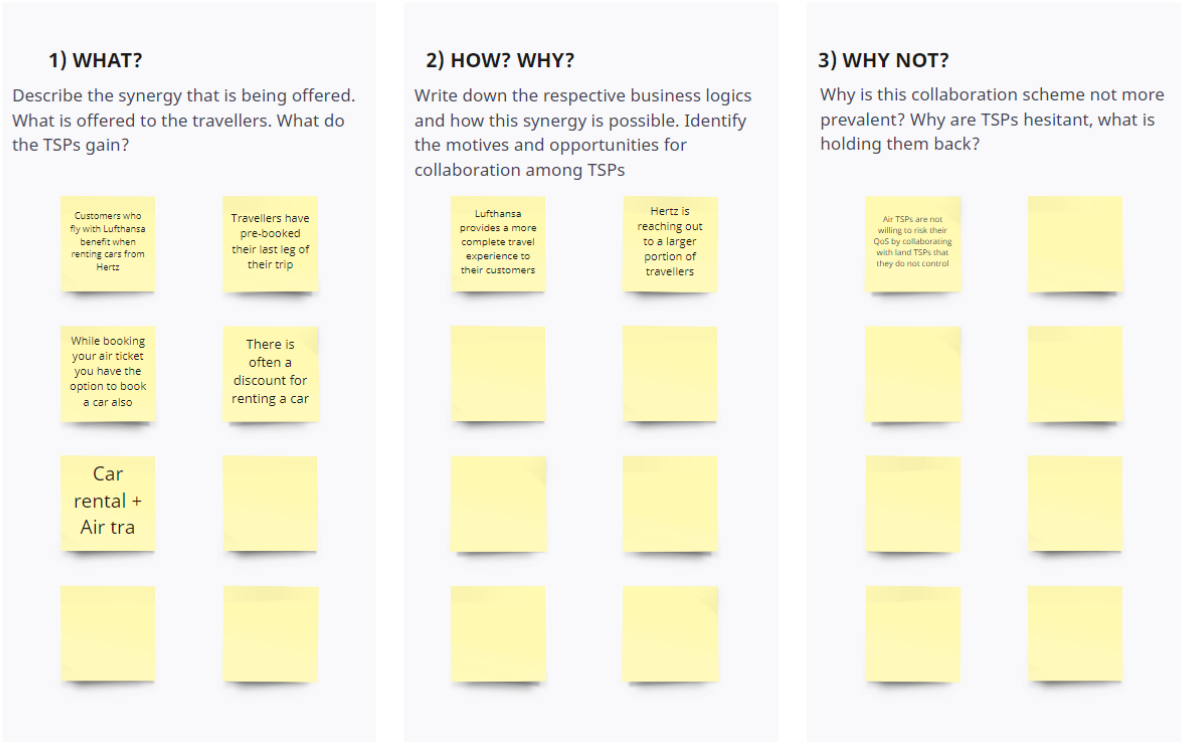
Write down existing (or proposed/fictional) collaborations between TSPs. Focus on both operational and planning aspects of the collaboration.

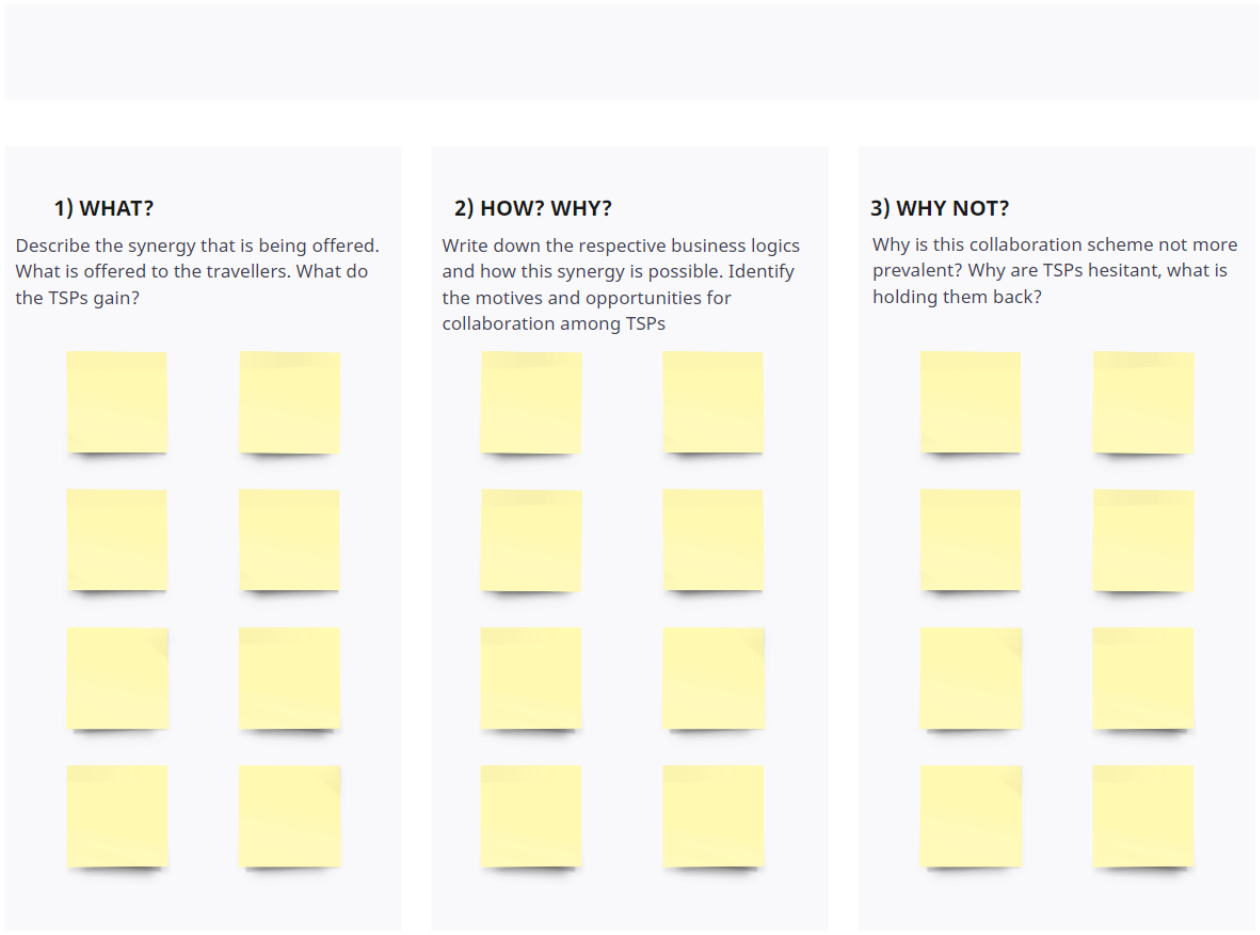
1) **WHAT**?
Describe the synergy that is being offered

2) **HOW**? **WHY**?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs

3) **WHY NOT?**
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?

[SAMPLE CASE] Hertz – Lufthansa collaboration




1) WHAT?
Describe the synergy that is being offered. What is offered to the travellers. What do the TSPs gain?
2) HOW? WHY?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs
3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?

05

Wait, don't go yet!

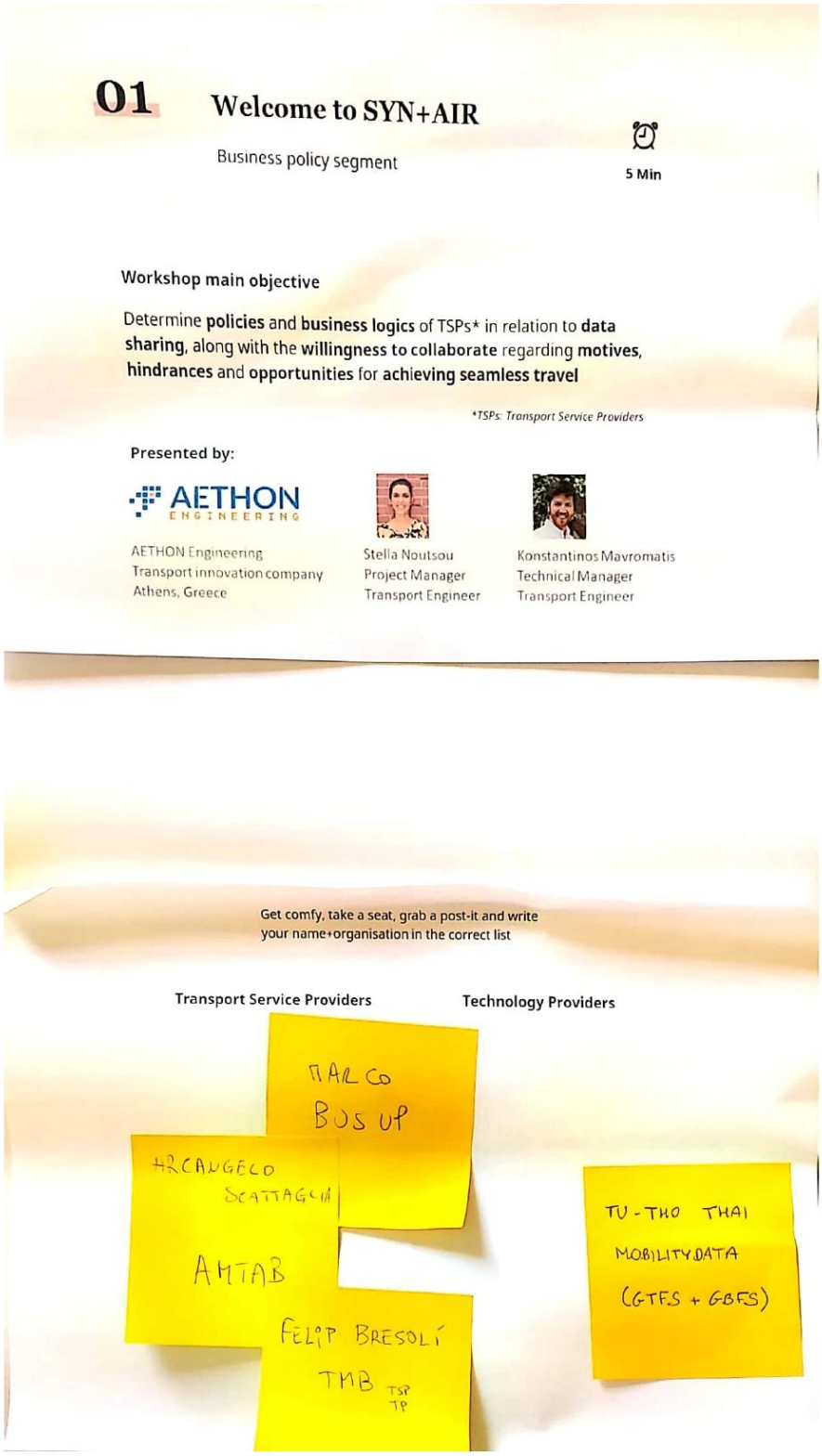
Each person chooses a persona template below. Fill it out for an archetypical user within the segment you have selected.

2 Min

Follow this link to answer 5 short questions:
https://docs.google.com/forms/d/e/1FAIpQLSdQTxsJrLG8V5R5fZKfc7rjmhcBzaHvXs906WvWeGOEQr2JSw/viewform?usp=sf_link

Annex D Collected Data

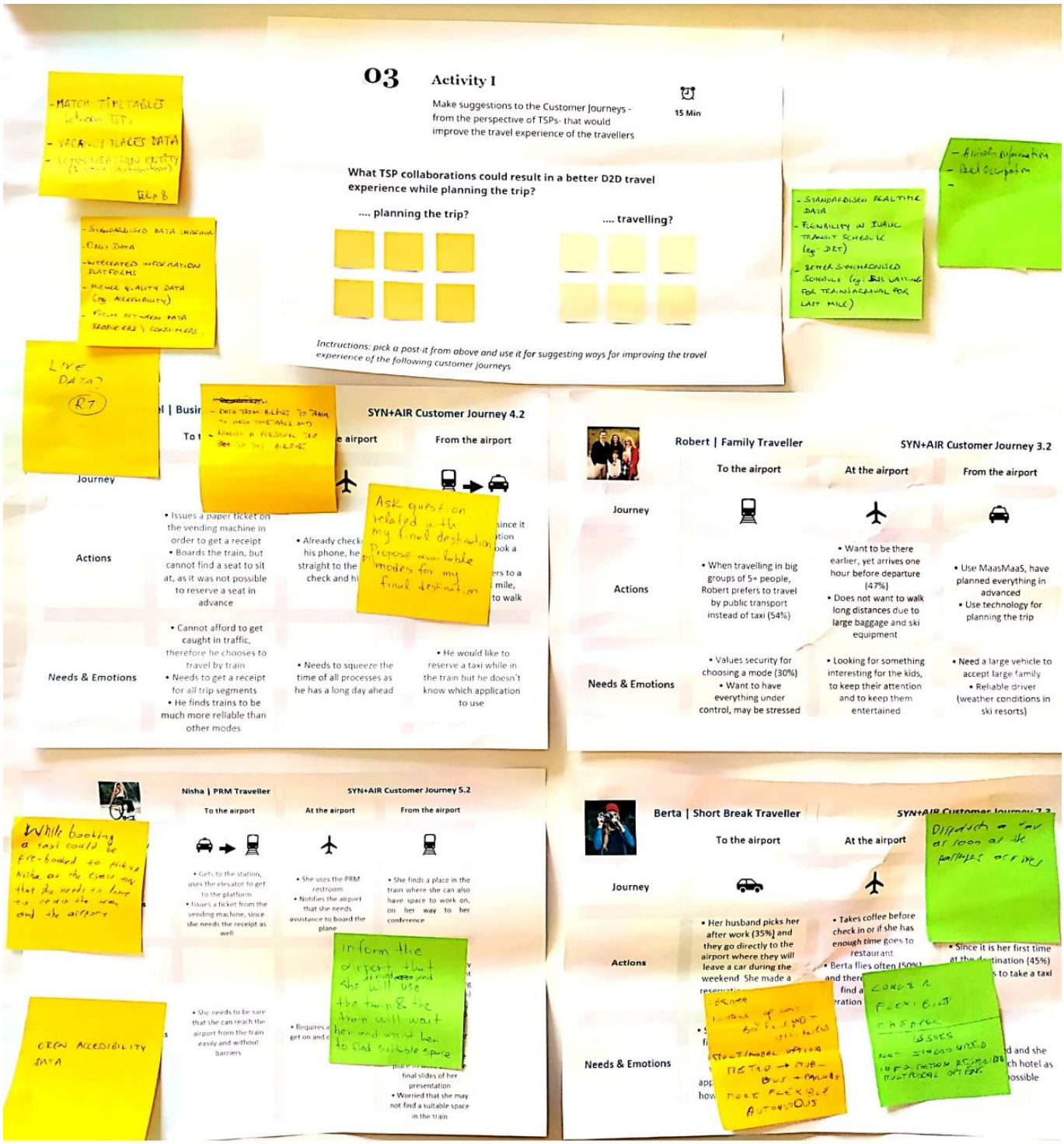
The input collected from the Group A is the one listed below:

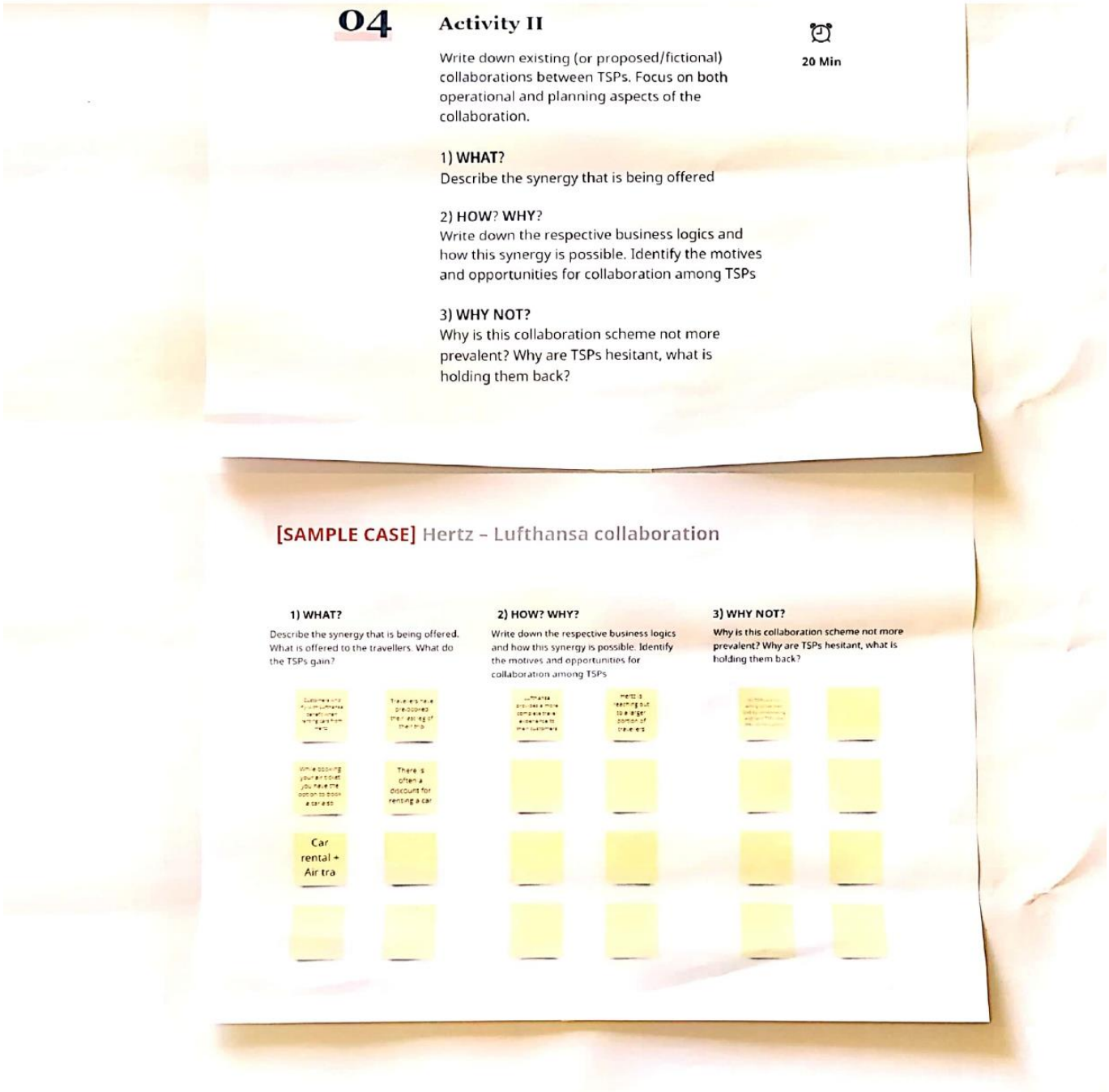


QUESTION: Which mode would you choose to get to/from the airport if all modes were available?

Can you guess the responses?

Mode		Preference		Reality
Bus		~~15~~	%	2.6%
Car		40	%	55.5%
Taxi		50	%	12.6%
Metro		5	%	17.0%
Train		15	%	7.0%
Combi-nation of modes		5	%	5.0%


03 Activity I
Make suggestions to the Customer Journeys - from the perspective of TSPs- that would improve the travel experience of the travellers
15 Min
What TSP collaborations could result in a better D2D travel experience while planning the trip?
.... planning the trip?
.... travelling?
Instructions: pick a post-it from above and use it for suggesting ways for improving the travel experience of the following customer journeys
SYN+AIR Customer Journey 4.2
Journey
Actions
Needs & Emotions
From the airport
Robert | Family Traveller
SYN+AIR Customer Journey 3.2
To the airport
At the airport
From the airport
Nisha | PRM Traveller
SYN+AIR Customer Journey 5.2
Berta | Short Break Traveller
Ask questions related with my final destination. Propose available modes for my final destination
Inform the airport that she will use the train & the train will wait her and assist her to find suitable space
While booking a taxi could be pre-booked to pick Nisha at the exact time that she needs to leave to reach the train and the airport
OPEN ACCESSIBILITY DATA
Dispatch a taxi as soon as the luggages arrive



04 Activity II

20 Min

Write down existing (or proposed/fictional) collaborations between TSPs. Focus on both operational and planning aspects of the collaboration.

1) WHAT?
Describe the synergy that is being offered

2) HOW? WHY?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs

3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?

[SAMPLE CASE] Hertz – Lufthansa collaboration

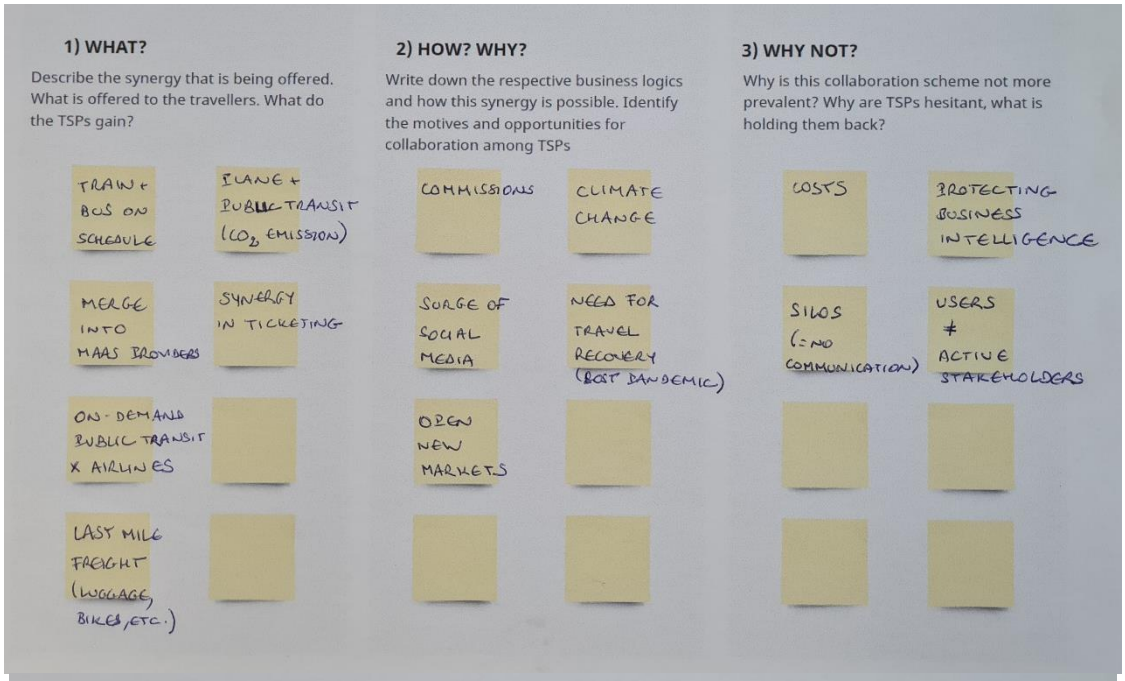
1) WHAT?
Describe the synergy that is being offered. What is offered to the travellers. What do the TSPs gain?

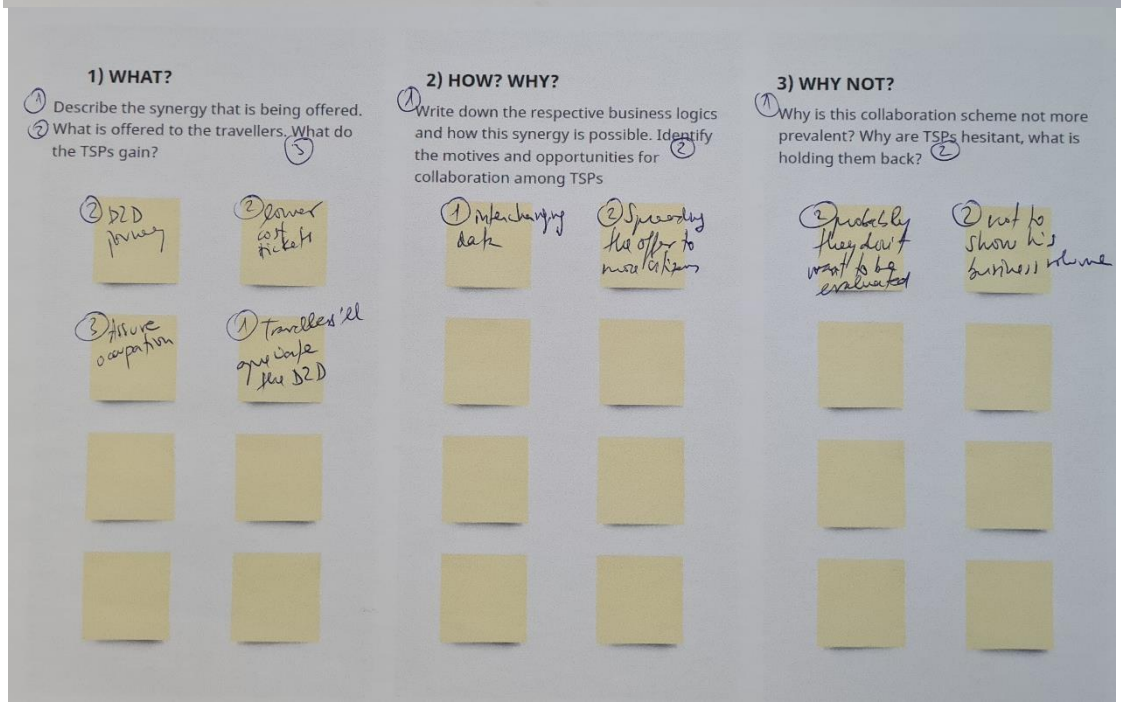
2) HOW? WHY?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs

3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?

There is often a discount for renting a car

Car rental + Air tra


1) WHAT?
Describe the synergy that is being offered. What is offered to the travellers. What do the TSPs gain?
TRAIN + BUS ON SCHEDULE
PLANE + PUBLIC TRANSIT (CO_2 EMISSION)
MERGE INTO MAAS PROVIDERS
SYNERGY IN TICKETING
ON-DEMAND PUBLIC TRANSIT X AIRLINES
LAST MILE FREIGHT (LUGGAGE, BIKES, ETC.)
2) HOW? WHY?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs
COMMISSIONS
CLIMATE CHANGE
SURGE OF SOCIAL MEDIA
NEED FOR TRAVEL RECOVERY (POST PANDEMIC)
OPEN NEW MARKETS
3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?
COSTS
PROTECTING BUSINESS INTELLIGENCE
SILOS (= NO COMMUNICATION)
USERS ≠ ACTIVE STAKEHOLDERS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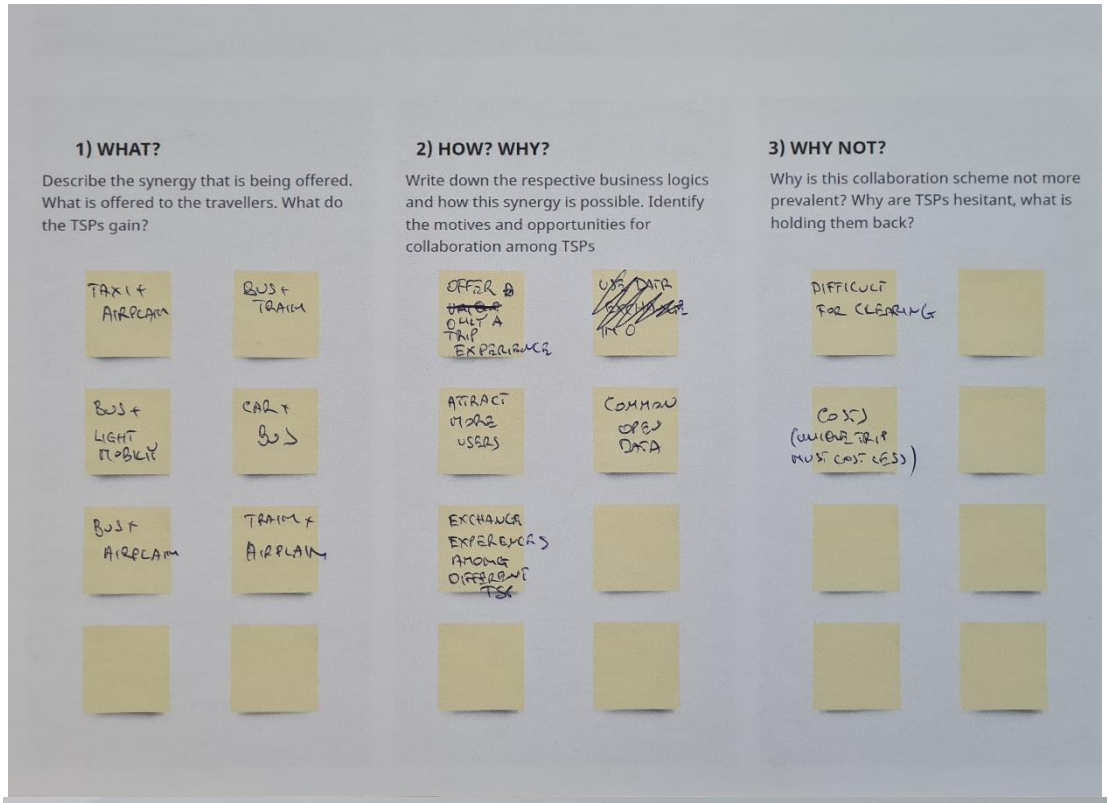
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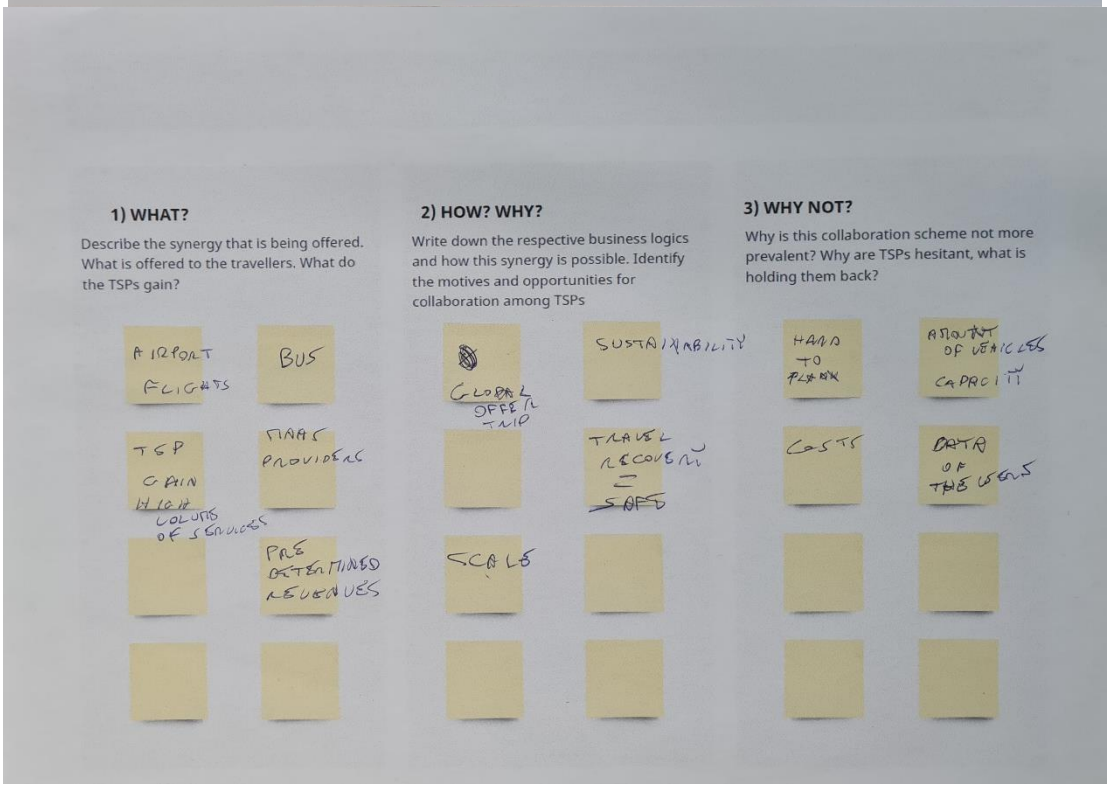
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs
3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?
TAXI + AIRPLANE
BUS + TRAIN
BUS + LIGHT MOBILITY
CAR + BUS
BUS + AIRPLANE
TRAIN + AIRPLANE
OFFER A QUALITY TRIP EXPERIENCE
ATTRACT MORE USERS
COMMON OPEN DATA
EXCHANGE EXPERIENCES AMONG DIFFERENT TSP
DIFFICULT FOR CLEARING
COST (HIGHER TRIP MUST COST LESS)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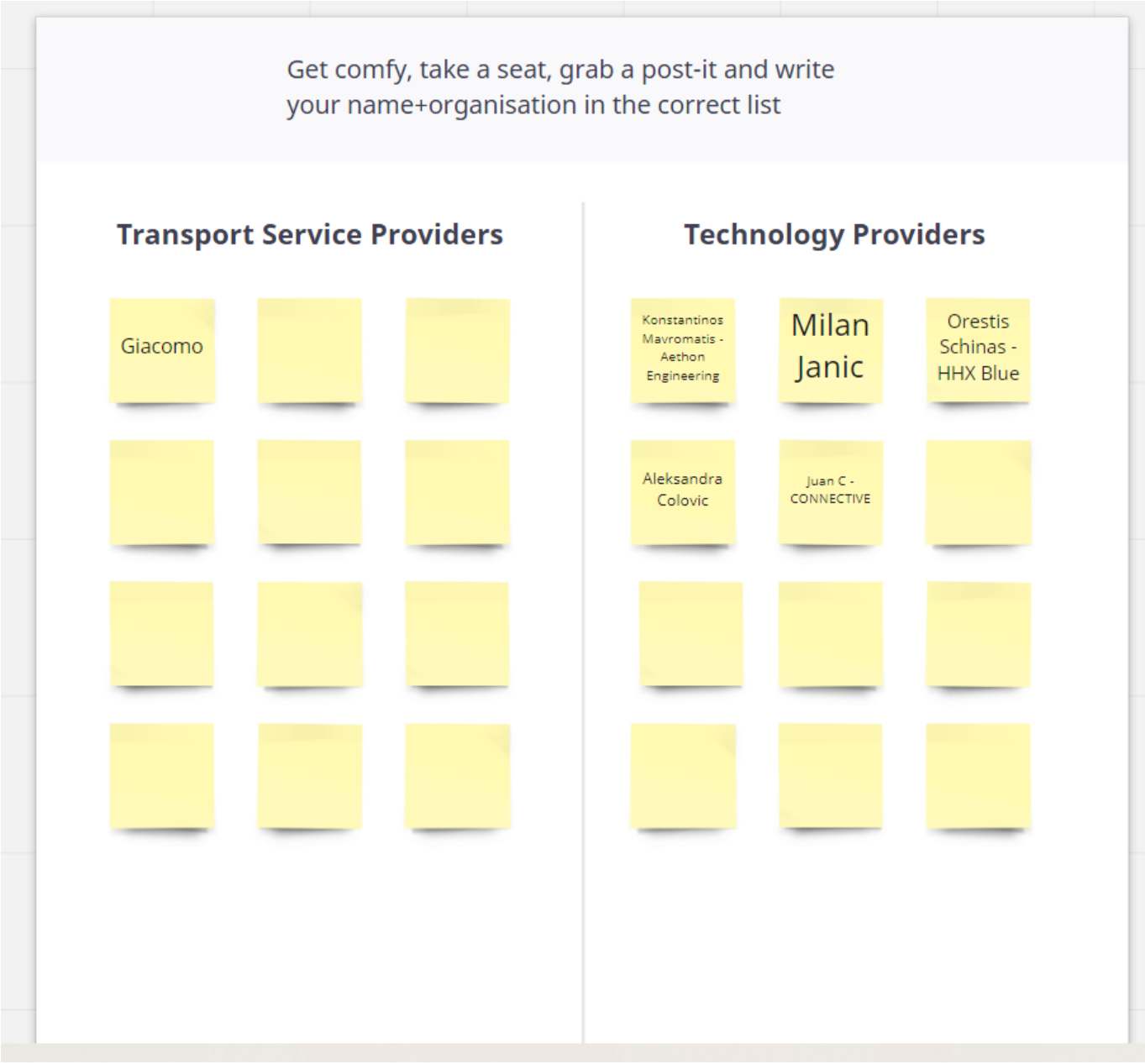
2) HOW? WHY?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs
3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?
AIRPORT FLIGHTS
BUS
TSP GAIN HIGH QUALITY OF SERVICES
FINAL PROVIDERS
PRE DETERMINED REVENUES
GLOBAL OFFER TRIP
SUSTAINABILITY
TRAVEL RECOVERY
SCALE
HARD TO PLAN
COSTS
AMOUNT OF VEHICLES CAPACITY
DATA OF THE USERS

Input from Group B:

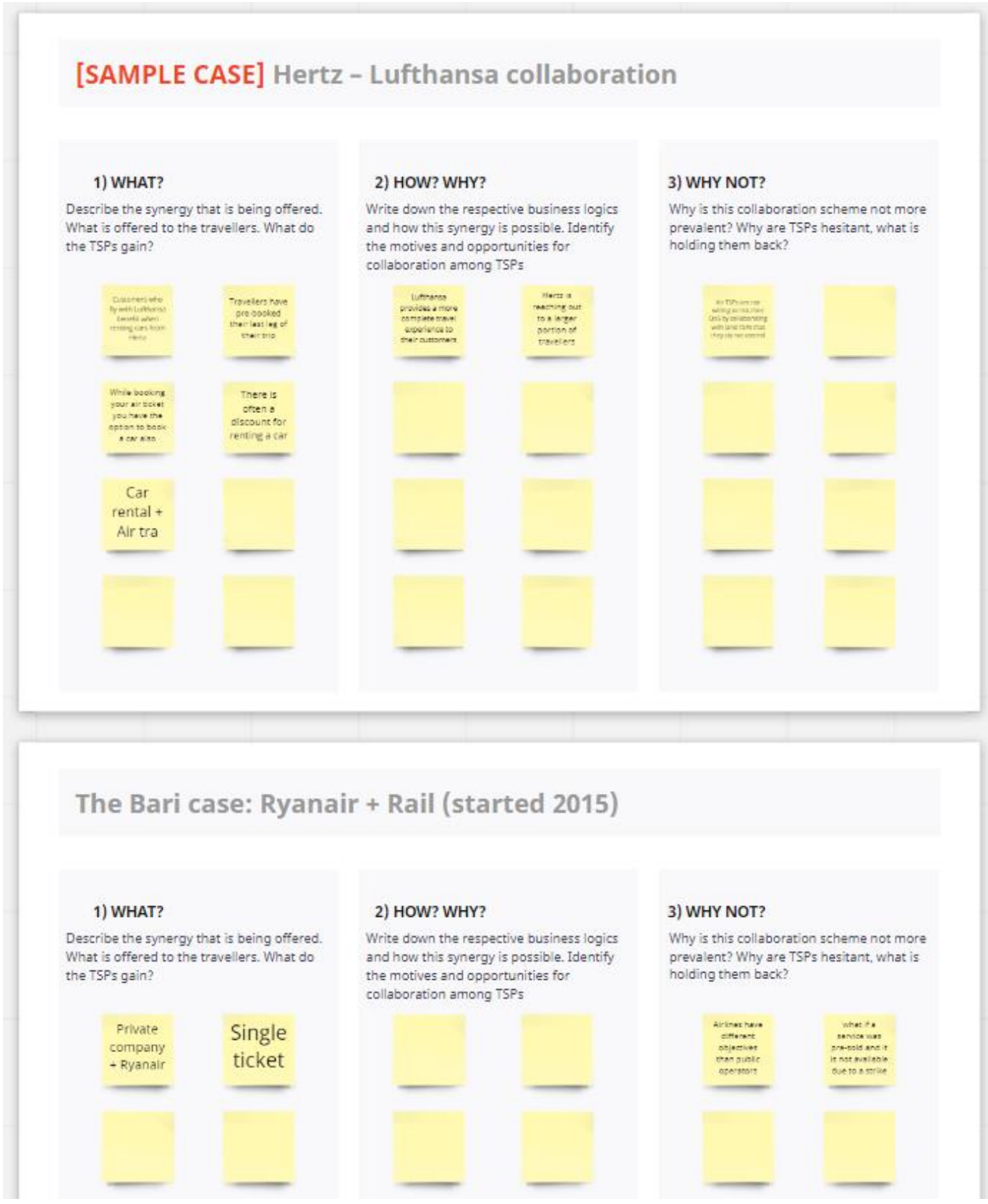


QUESTION: Which mode would you choose to get to/from the airport if all modes were available?

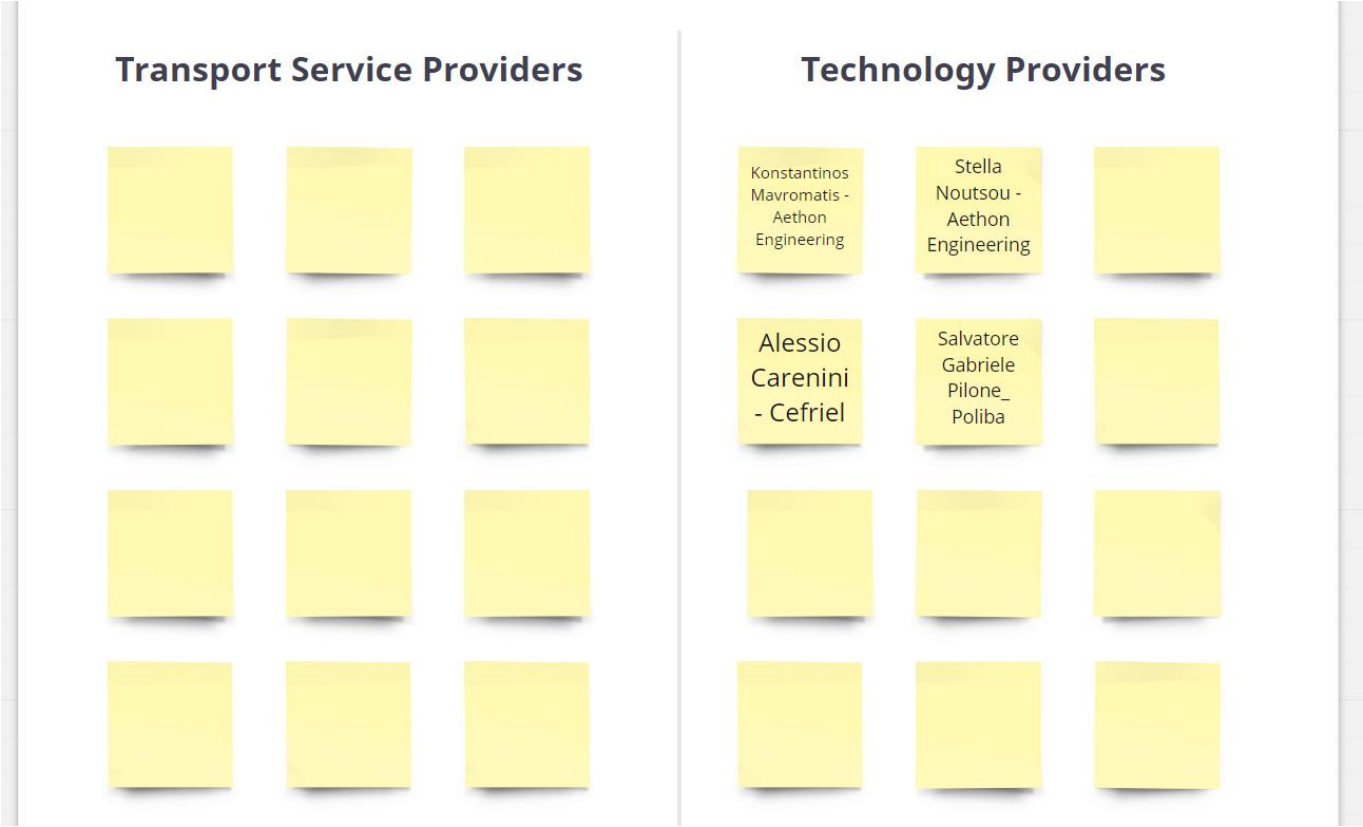
Can you guess the responses?

Mode		Preference		Reality
Bus		<10	%	2.6%
Car		50	%	55.5%
Taxi		20	%	12.6%
Metro		10	%	17.0%
Train		10	%	7.0%
Combi-nation of modes		>0	%	5.0%


Berta | Short Break Traveller
SYN+AIR Customer Journey 7.3
To the airport
At the airport
From the airport
Journey
Actions
• Her husband picks her after work (35%) and they go directly to the airport where they will leave a car during the weekend. She made a reservation at airport's parking
• Takes coffee before check in or if she has enough time goes to restaurant
• Berta flies often (50%) and therefore does not find any airport operation to be stressful
• Since it is her first time at the destination (45%) she decides to take a taxi
Needs & Emotions
• She need to be able to find reserved parking place easy and she would like to have application to show her how to reach that place
• She is tired and she wants to reach hotel as soon as possible
What to expect at the origin and destination airport: Which modes are available. And at what cost!
Who is responsible to provide this information?? (e.g. in USA, the airport provides this information)
Who is responsible to provide this information?? The airport could be the enablers of a seemless journey
WI-FI for enabling technological solutions



Input from Group C:


Transport Service Providers
Technology Providers
Konstantinos Mavromatis - Aethon Engineering
Stella Noutsou - Aethon Engineering
Alessio Carenini - Cefriel
Salvatore Gabriele Pilone_ Poliba

QUESTION: Which mode would you choose to get to/from the airport if all modes were available?

Airtaxi??

Mode		Preference		Reality
Bus			%	2.6%
Car		2 vote	%	55.5%
Taxi			%	12.6%
Metro		2 votes for main mean	%	17.0%
Train		1 vote	%	7.0%
Combi-nation of modes			%	5.0%

Inctructions: pick a post-it from above and use it for suggesting ways for improving the travel experience of the following customer journeys

Comparison among available alternatives in terms of cost & time

Propose a train that arrives at the right time for not missing the flight

Offer group tickets / possibility to buy tickets for other people & group discounts

Suggestions to the traveller (e.g. through MaaS apps)

Give priority to the groups

Dora: Information Kiosk for the available modes (cost, travelling time, conditions of transport)

Real-time monitoring of the status of the flight and notifications to the traveller

A single point of booking and contact to facilitate the whole journey. Given so much journey cancellation due to COVID trying to cancel all aspects of your journey is difficult and challenging to re-book

Robert | Family Traveller — **SYN+AIR Customer Journey 3.2**

	To the airport	At the airport	From the airport
Journey			
Actions	• When travelling in big groups of 5+ people, Robert prefers to travel by public transport instead of taxi (54%)	• Want to be there earlier, yet arrives one hour before departure (47%) • Does not want to walk long distances due to large baggage and ski equipment	• Use Maas, have planned everything in advanced • Use technology for planning the trip
Needs & Emotions	• Values security for choosing a mode (30%) • Want to have everything under control, may be stressed	• Looking for something interesting for the kids, to keep their attention and to keep them entertained	• Need a large vehicle to accept large family • Reliable driver (weather conditions in ski resorts)

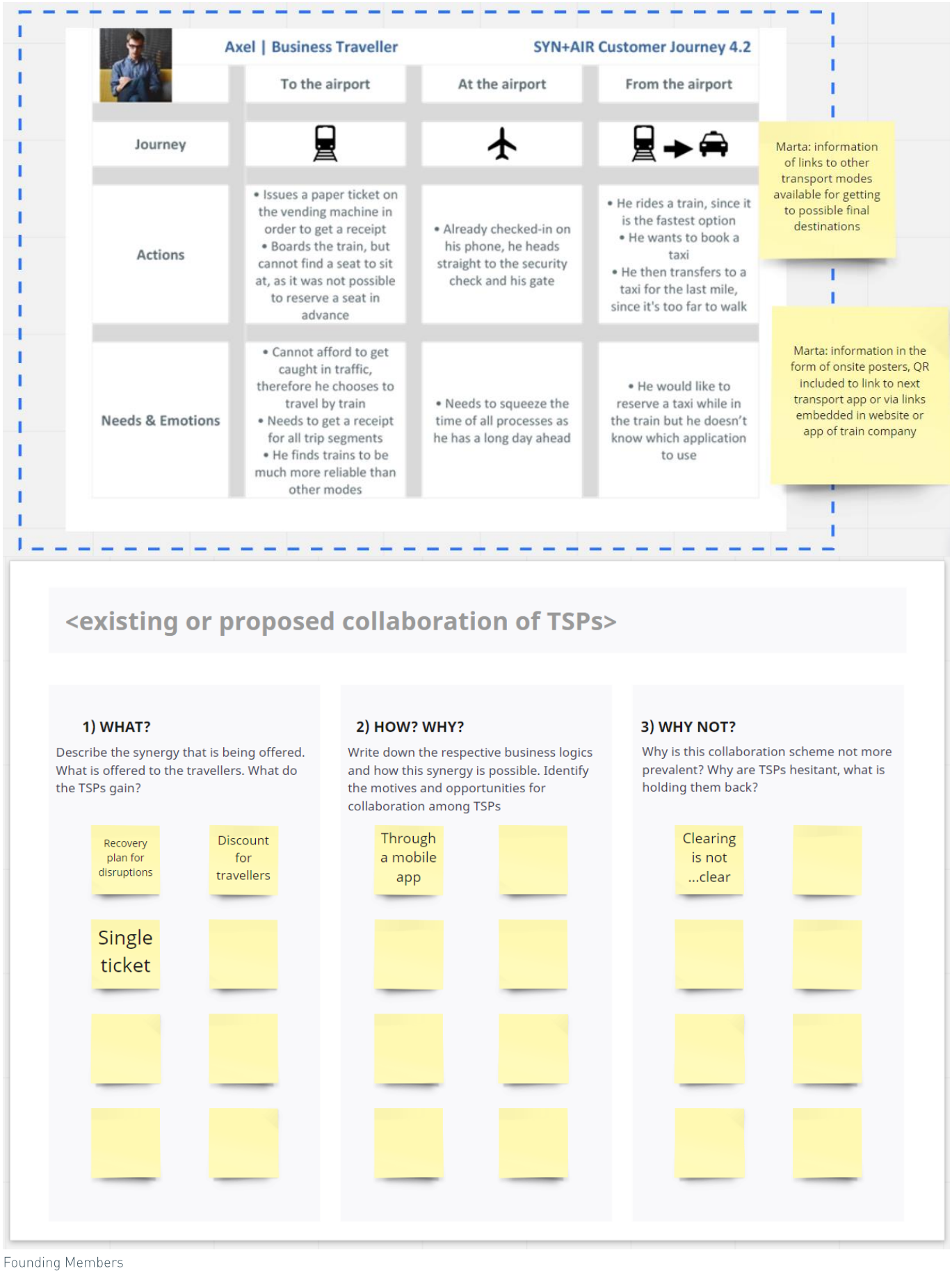
Possibility to book assistance across the whole trip in a one-stop-shop

Nisha | PRM Traveller — **SYN+AIR Customer Journey 5.2**

	To the airport	At the airport	From the airport
Journey			
Actions	• Gets to the station, uses the elevator to get to the platform • Issues a ticket from the vending machine, since she needs the receipt as well	• She uses the PRM restroom • Notifies the airport that she needs assistance to board the	• She finds a place in the train where she can also have space to work on, on her way to her conference
Needs & Emotions	• She needs to be sure that she can reach the airport from the train easily and without barriers	• Requires assistance to get on and off the plane	• She considers security the most important factor when selecting mode of transport (34%) and also reliability (37%) • Since the train trip to the conference hall is more than half an hour away, she requires a quiet and comfortable place to work on some final slides of her presentation • Worried that she may not find a suitable space in the train

Real time information about accessibility e.g. elevator not working

Navigation taking into account accessibility e.g. avoiding stairs, visual beacons to navigte indoors

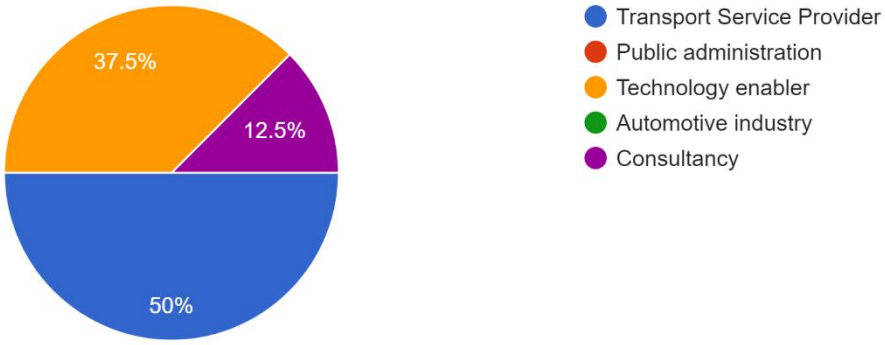

Axel | Business Traveller
SYN+AIR Customer Journey 4.2
To the airport
At the airport
From the airport
Journey
Actions
• Issues a paper ticket on the vending machine in order to get a receipt
• Boards the train, but cannot find a seat to sit at, as it was not possible to reserve a seat in advance
• Already checked-in on his phone, he heads straight to the security check and his gate
• He rides a train, since it is the fastest option
• He wants to book a taxi
• He then transfers to a taxi for the last mile, since it's too far to walk
Needs & Emotions
• Cannot afford to get caught in traffic, therefore he chooses to travel by train
• Needs to get a receipt for all trip segments
• He finds trains to be much more reliable than other modes
• Needs to squeeze the time of all processes as he has a long day ahead
• He would like to reserve a taxi while in the train but he doesn't know which application to use
Marta: information of links to other transport modes available for getting to possible final destinations
Marta: information in the form of onsite posters, QR included to link to next transport app or via links embedded in website or app of train company
<existing or proposed collaboration of TSPs>
1) WHAT?
Describe the synergy that is being offered. What is offered to the travellers. What do the TSPs gain?
Recovery plan for disruptions
Discount for travellers
Single ticket
2) HOW? WHY?
Write down the respective business logics and how this synergy is possible. Identify the motives and opportunities for collaboration among TSPs
Through a mobile app
3) WHY NOT?
Why is this collaboration scheme not more prevalent? Why are TSPs hesitant, what is holding them back?
Clearing is not ...clear

Annex E Survey results

The results from the optional closing questionnaire are attached below:

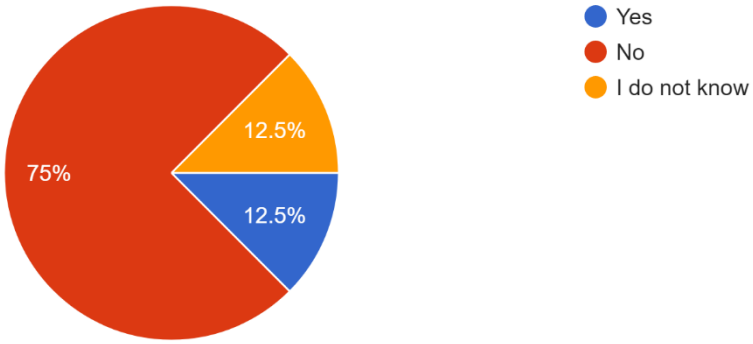
What organisation do you represent?

8 responses



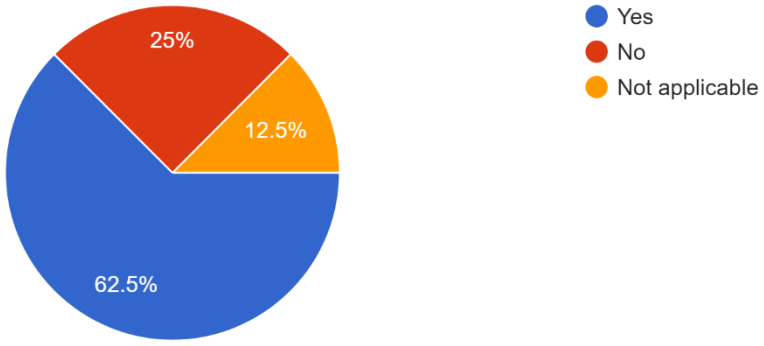
Does your organisation pay another agency/company to acquire the data it needs?

8 responses

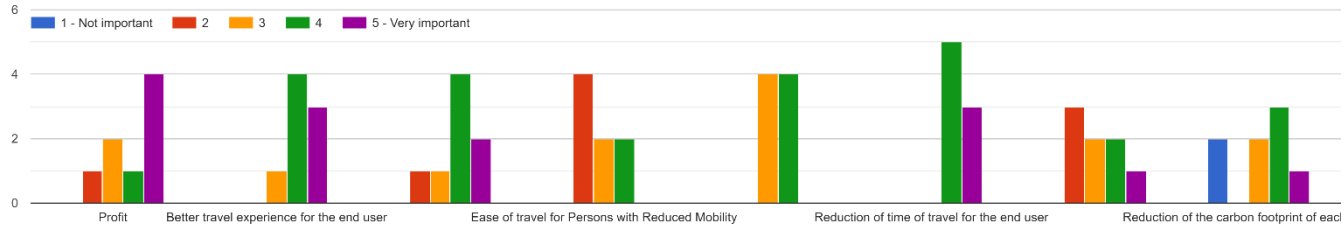


Is your organisation currently collaborating with another agency/company for providing mobility services?

8 responses



Rate the following motives for the collaboration among Transport Service Providers



Rate the following barriers for the collaboration among Transport Service Providers