Deliverable D.T1.1.2 short version

Current Uptake of Travel Information Services - Features and requirements of current JP users

Version: 3.0

Dissemination level: Public

WP: WPT1 – A.T1.1 Ex-ante Analysis and current uptake of JP

Author: LINKS

Document Information

Authors

Maurizio Arnone		LINKS
Tiziana Delmastro		LINKS
Stefano Pensa		LINKS
Alexander Fazari		LINKS

Peer-Review

Name	PartnerNo	Organisation
Andrej Tibaut		UM-FGPA
Nenad Čuš Babić		UM-FGPA
Sara Guerra de Oliveira		UM-FGPA

Document History

Date	Version	Summary of changes	Dissemination
02/11/2020	0.3	Survey revision and dissemination by ATE FoT CEREMA LINKS ARIA	Travel information service providers
09/12/2021	0.7	Ch. 3 draft results	OJP implementers
17/12/2020	0.8	Revision of ch. 3 based on contributions from 5T STA ARIA VAO	
15/01/2021	1	LINKS integration and final preliminary version	Project partners
25/01/2021	1.3	BLIC revisions	
15/02/2021	2	UM FGPA review	
23/02/2021	2	Final version	Project partners
26/02/2021	3	Sorth public version - draft	Public

Preface

Acronym:	LinkingAlps
Title:	Innovative tools and strategies for linking mobility information services in a decarbonised Alpine Space
Project number:	740
Start Date:	01-10-2019
End Date:	30-06-2022
Call number:	4th call
Priority:	Priority 2 - Low Carbon Alpine Space
Specific objective:	SO2.2 - Increase options for low carbon mobility and transport

Glossary/Abbreviations

Terms	Definition
ARIA	Regional Agency for Innovation and Purchasing Ltd.
CMTo	Metropolitan City of Turin.
Computing interface	An interface that allows the exchange or collection of data between two different systems.
FoT	Federal Office of Transport.
GTFS	General Transit Feed Specification: a common format for public transportation schedules and associated geographic information.
JP	Journey Planner: a system that is calculating the journey for a given request. It is able to accept requests directly from end-user services.
NeTEx	Network Timetable Exchange (CEN/TS 16614 ff).
OJP	Open Journey Planning: standard for communication for distributed journey planning (CEN/TS 17118:2017)
OJP user	An end-user service provider that is using OJP services from JPs to provide an end-user service.
Real time data	The real time of a particular means of transport at a particular stop; only sent after the arrival/departure of the vehicle at a particular stop.
RRA-LUR	Regional Development Agency of the Ljubljana Urban Region.
SBB	Swiss Federal Railways.
Service	Technical, self-sufficient unit that bundles related functionalities into a complex of topics and makes them available via a clearly defined interface.
SIRI	Service Interface for Real time Information (CEN/TS 15531).
STA	South Tyrolean Transport Structures.
VAO	Traffic Information Austria.
5T	Private company focused on Intelligent Transport Systems (ITS) solutions and operating the Mobility Management Centre of the City of Torino and of Piedmont Region.

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1 Introduction

This Document forms the second deliverable of Activity A.T1.1 in WPT1 of the LinkingAlps project. The objective of WPT1 - A.T1.1 "Ex-ante Analysis and current uptake of JPs" can be summarized in two main tasks.

Task 1 deals with the ex-ante analysis of the current features of local Journey Planners (JPs) and the uptake of innovations (such as the Open Journey Planning API - OJP). It intends to summarize the main technical information on the participating systems involved in LinkingAlps as the basis for the interoperability of the OJP services and the development of the distributed system.

Task 2 deals with the current uptake of travel information services and aims to collect information about the current use of the participating systems (e.g. type of requested information, type of users and end-users, etc.) and about potential OJP users' features and their needs and requirements for multimodal travel information services.
In particular, it investigates:

- Current routing request volumes (e.g. number of accesses, users, requests, access frequency, peak periods) that the OJP will have to deal with;
- Relevant target end-users that the OJP will address;
- Needs and requirements (about e.g. transport modes, type of requests, filtering criteria, etc.) of current multimodal travel information end-user services to support the OJP further development.

In order to reach these three goals, two main actions were carried out:

1. Design and distribution of a **dedicated survey addressed to multimodal travel information end-user application providers**;
2. Integration of the survey results with more detailed activity and performance indicators about the local JPs involved in the LinkingAlps project, collected from the OJP implementers - **Uptake analysis of participating local journey planners**.

Deliverable D.T1.1.2 presents the results obtained in Task 2 through the two listed actions.

2 Methodology

This chapter describes the methodology followed to design and structure the survey addressed to multimodal travel information service providers and to define and collect data from the OJP implementers (uptake analysis).

2.1 Survey for multimodal travel information service providers

The main objective of the survey was to collect and give useful information to OJP implementers about needs, requirements and accessibility standards of their potential future users (in terms of both application providers and end-users).

The starting point for designing and defining aspects to investigate within the survey, addressed to the current multimodal travel information end-users service providers, has been the analysis conducted within the WPT1 – A.T1.1 Task 1 (Ex-ante Analysis) to assess the main features of the journey planners involved in the LinkingAlps project.

The designed questionnaire aims to investigate:

- the main features of the multimodal travel information services, target end-users, access and routing request volumes of current travel information services;
- the needs and requirements for future users and adopters of the OJP for multimodal travel information services.

Furthermore, it aims to investigate the traveller service providers' potential interest in the future distributed system and their willingness to interact and use it.

The survey is structured into six sections:

1 - **Main features and target end-users** of the multimodal travel information services currently provided by the respondents: this section aims to collect information about the typology of services and associated users, type of provided information and interfaces used for collecting data, as well as the volumes of accesses and routing requests.

2 - **Geographical coverage:** aims to identify the geographical area and related scale currently covered by the interviewees' services, the plans or intentions to extend the spatial coverage and any feedback about opportunities of integration of cross-border information.

3 - **Transport modes:** investigates the modes already considered to provide routing results by the interviewees' travel applications and those mostly required by the end-users.

4 - **Additional information and filtering criteria:** this section takes into account all the aspects and the most relevant features that could be combined with the routing results or that could be used for refining the results (e.g. transport mode, arrival or departure time, travel time, travel distance, travel cost, carbon footprint), with specific attention to the accessibility aspects.

5 - **Languages:** this section focuses on the current provided languages and desired ones for further implementations and developments of the provided services.

6 - **Tickets and fares:** assesses the needs for fare information and ticket purchase services, even though ticketing and booking options are not a core objective of the LinkingAlps project and will not be supported by the LinkingAlps service.

Project partners were strongly involved in the design process of the survey and in identification of potential respondents, that were selected among multimodal travel information service providers, considering them as a good proxy also for their end-users. The final version of the questionnaire consists of 35 questions (reported in Appendix) and its participation time has been estimated in approximately 20 minutes.

2.2 Uptake analysis of current OJP implementers' local journey planners

The uptake analysis was carried out to have a preliminary overview on how much the current travel information systems, participating in the LinkingAlps project, are used and fulfill the travellers' requests and how the users interact with the current OJP implementers' trip planners. The aim of the analysis was not to compare the OJP implementers to one another, but rather to integrate some survey results and provide more detailed information on current routing request volumes.

The most important goal was indeed to investigate the volumes and peak periods of the requests done to each system in order to estimate the total requests that the future OJP will have to deal with, distinguishing between the types of requests, filters and optimization criteria and the different request channels (API, mobile app, desktop app). Moreover, the performance of the trip planners (e.g. response time, systems crashes and unfulfilled requests etc.) was also investigated.

This was possible through the definition, collection and analysis of some Activity and Performance indicators.

The activity indicators include:
- the number of accesses to each JP;
- the number of users (if they can be identified by a login/IP/cookies or other tools allowing to distinguish which and how many accesses are carried out by the same user);
- the number of requests received by each JP;
- the number of requests per type of request available in the JP (i.e. Origin/Destination - O/D requests, stop times requests, accessibility information request, real time requests);
- the number of O/D requests personalised by mode (asking for or removing a specific mode changing the default filters);
- the number of O/D requests personalised by other available filters (i.e. by departure/arrival time, by stops, by product category)
- the number of O/D requests per available search optimisation criteria (i.e. number of O/D requests optimised by transfer time, by number of interchanges, by fastest path, by shortest walking distance);
- the number of O/D requests per type of start and end location (i.e. number of requests per address, per stop, per POI, etc.);
- the number of requests per provided language;

- the number of requests done by end-users (from the JP front-end);
- the number of requests done by a third party "JP user".

The performance indicators include:
- the average response time per type of available request (i.e. per O/D requests, per stop times requests, per accessibility information requests, per real time info requests, per fare and ticketing requests);
- the average response time per O/D requests personalised by available filters (i.e. by mode, by departure/arrival time, by stops, by product category);
- the average response time per O/D requests with available search optimisation criteria (i.e. requests optimised by transfer time, by number of interchanges, by fastest path, by shortest walking distance);
- the number of unfulfilled requests (system crashes).

The first step of the data collection required all the OJP implementers to fill in a table including all the selected indicators and to specify which of them are available and can be provided, for which years and time periods and in which data formats, as well as to indicate which other type of available data can be useful for the purpose of the uptake analysis. This allowed to detail the following data request and collection that was separately sent to all the OJP implementers able to provide some data.

3 Actors and data collection

This chapter describes how potential respondents were defined, selected and contacted to answer the designed survey. Moreover, it explains how the collection of data was carried out both in terms of questionnaire replies and of activity and performance indicators provided by the OJP implementers.

3.1 Survey for multimodal travel information service providers

The questionnaire was conducted online via Microsoft Form module from the 2nd November 2020 to the 4th December 2020. During this time, a reminder was sent every 10 days to potential respondents to encourage their participation in the survey.

Potential respondents were selected mainly within the whole Alpine Space area, but also in the neighbouring countries. They were identified by the partners (with a partner responsible for each Country: **LINKS** for Italy, **CEREMA** for France, **FoT** for Switzerland and Licthenstein, **ATE** for Austria Germany, Slovenia, Northern and Eastern Europe) based on their current activity related to multimodal travel information provision and in particular to their current routing services. Some of the potential interviewees were contacted also due to their previous participation to European projects or networks (e.g. Linking Danube, Eu-Spirit) on the topics of linking mobility information services. More than 60 potential respondents, located in 22 European countries, have been contacted. Selected companies and bodies belong to different categories, for example:
- Public bodies such as regional or local Authorities responsible for public transport regulation and management of touristic promotion;

- Public transport companies;
- ICT companies, mostly focused on providing technologies to third parties (such as transport companies), often supplying customized solutions to multiple companies from different regions;
- Mobility as a Service (MaaS) providers, with a business based on the integration of various forms of transport services into a single mobility service accessible on demand.

Among the contacted potential respondents, 20 companies from seven different countries took the survey (Table 3.1).

Table 3.1: Respondents of the survey addressed to multimodal travel information service providers

Company Name	Country	Provided Service
Bratislavská integrovaná doprava a.s.	Slovakia	Mobile Application IDS BK and the www.idsbk.sk website
Bratislavská integrovaná doprava a.s. is a transport operator that covers transport services in the Bratislava region and some parts of the Trnava region with an integrated public transport system. They provide regional travel information via IDS BK mobile app and the idsbk.sk website.		
Cefriel	Italy	Travel information services integrated in third parties' websites
Cefriel (Italy) is a consulting company that deals with offering consulting and training services. It is particularly active in the fields of technological innovation and information technology and provides multimodal travel information services to be integrated in third parties' websites.		
Consorzio Granda Bus	Italy	Granda Bus Route Planner powered by MyCicero on www.mycicero.it/gbus/TPWebPortal
Consorzio Granda Bus is a public transport operator of the Piedmont region, Italy. They provide a regional public transport route planner (based on GrandaBus public transport services and regional trains) powered by myCicero.		
Consorzio Turistico Valchiavenna	Italy	Route planner available on www.valchiavennabike.it
Consorzio Turistico Valchiavenna is a consortium for the touristic promotion of heritage and activities in Valchiavenna, Italy. Their website provides a route planner (based on Muoversi in Lombardia via the API powered by E015 digital ecosystem promoted by Regione Lombardia) enabling users to reach the departure of bike paths in the covered area.		
Kordis JMK	Czech Republic	Route planner available on www.idsjmk.cz
Kordis JMK is the company that coordinates transit services, executes and maintains the integrated transport system within the entire area of the South Moravian region. They provide a national route planner and were partners of the Linking Danube project.		

Company Name	Country	Provided Service
La Métropole Mobilité	France	Route planner available on www.lepilote.com
La Métropole Mobilité is a public transport operator providing multimodal travel information and route planning in the Aix-Marseille metropolis. They provide regional travel information via LePilote application for smartphones and via LePilote website.		
Netcetera	Switzerland, Liechtenstein	Mobile Application Wemlin
Netcetera is a Swiss software company. They provide passenger real time information and ticketing through the Wemlin application and website in Switzerland.		
NUGO	Italy	Route planner available on www.nugo.com/nugoweb
NUGO provides MaaS services at a national scale in Italy via a mobile and a web application.		
OpenMove	Italy	Mobile Application OpenMove
OpenMove is a MaaS provider in the Trentino region. Their service is based on the app WAY that allows the user to find information on mobility and conveniently purchase tickets with their smartphone, drawing on a fully integrated mobility offer.		
PluService s.r.l.	Italy	Mobile Application myCicero
PluService s.r.l. is an ITS company that provides smart mobility information services for Public Transport operators. It provides MyCicero travel information application based on a travel planner and a ticket purchase service at national level in Italy.		
Région Grand Est	France	Route planner available on www.fluo.eu
Région Grand Est is a French regional Authority that provides a route planner integrating the regional rail, urban and school transport via the fluo.eu website. Fluo calculates all door-to-door routes in the Grand Est region and its surroundings (as far as Île-de-France and neighbouring regions).		
Regione Piemonte	Italy	Route planner available on turismo.muoversinpiemonte.it
Regione Piemonte is an Italian regional Authority that provides a service powered by 5T and based on Muoversi in Piemonte JP, in cooperation with local governments and public transport operators. The customized service Turismo Piemonte helps end-users to find trip solutions for reaching cultural and heritage points of interest by public transport.		

Company Name	Country	Provided Service
Sadem Spa	Italy	Mobile Application Arriva MyPay or www.torino.arriva.it website
SADEM Spa is a public transport operator in Piedmont Region acquired by the Arriva Group (DB company) and merged together with other public transport companies within Arriva Italia-Torino. They provide travel information and ticketing via the smartphone application ArrivaMyPay.		
TPL FVG scarl	Italy	Route planner powered by MyCicero available on www.tplfvg.it/it/il-viaggio/travel-planner
TPL FVG is the association of all public transport companies operating in Friuli Venezia Giulia Region. Their web application, powered by MyCicero, provides route calculation and ticket purchase service.		
Trentino Trasporti s.p.a.	Italy	Mobile Application Muoversi In Trentino
Trentino Trasporti s.p.a. is a public transport operator in Trentino Alto Adige Region in Italy. Their web application provides route calculation for public transport on a regional scale. The application also allows users to buy tickets based on the OpenMove app.		
Ubique Innovation AG	Switzerland	Mobile Application Viadi Zero
Ubique Innovation AG is a Swiss full-service provider for software and solutions based on modern technologies. Through the Viadi Zero app, they provide Swiss public transport timetables, journey planner and ticketing also for the Swiss Federal Railways.		
VVT - Verkehrsverbund Tirol Gesmbh	Austria	Mobile Application Smartride and www.smartride.vvt.at website
VVT - Verkehrsverbund Tirol Gesmbh (Transport Association of Tyrol Ltd.) is the transport association of Tyrol and the Regional Traffic Information Provider. Their solution is based on the smartphone application SmartRide and a website application, both based on VAO travel information service.		
Zou	France	Route planner available on www.zou.maregionsud.fr
Zou is a public transport operator providing multimodal travel information and route planning in the Provence Alpes Côte d'Azur region via mobile and website application.		
ZüriMobil	Switzerland	Mobile Application ZüriMobil
ZüriMobil is a collaboration between the Zurich Public Transport (VBZ), the Transport Department and the Civil Engineering Office. It provides a journey planner app for the city of Zurich based on HaCon technologies.		
Unknown company	Switzerland	different modules in Mobile Applications
One respondent filled in the survey without the proper name of both the company and the provided service.		

The large size of the set of potential respondents (European multimodal travel information service providers) and the difficulties in selecting a representative sample, as well as the low number of real respondents (20 out of more than 60 contacted companies) affected the results significance. The main outcomes are not statistically representative, but still provide interesting information for the purpose of the LinkingAlps project.

3.2 Uptake analysis of current OJP implementers' local journey planners

Among the six OJP implementers, partners of the LinkingAlps project, four were able to provide part of the requested data. (LUR and SBB were not included in this part of the analysis since, due to the ongoing development of their systems, they are not yet collecting and monitoring any activity data).

Some data was declared available but was not provided by the OJP implementers due to the difficulties in collecting and/or processing the rough data. Data related to the last 3 years (2018-2020) was requested, in order to have a common temporal window for all the participants. However, not all the required time slots (daily, monthly and yearly data for the 3 years) were available and/or provided. In some cases data was only available for 2020. The number of requests is the only activity indicator made available by all the involved partners. Few implementers were able to provide access and user figures or details about the type of requests, the request channels (web app, mobile app, API), filters and languages. None of them was able to provide details about the most requested modes. Furthermore, the available data was estimated, calculated and provided in different ways so it is barely comparable: for example, the number of requests to the journey planner was obtained either as the number of users' interaction with the trip planner web page or through the processing of real data and log files analysis. The type of requests was either estimated through average percentages related to users' behaviours or calculated based on real rough data.

The data about the performance indicators, such as the number of unfulfilled requests and average response times, were not provided since they are not constantly monitored and collected. Only general numbers were provided by the OJP implementers who already calculated the average response times of their JPs for a technical session aimed to define the requirements of the future distributed system.

Due to all the above reasons and to the presence of sensitive data, only aggregated figures and a minimal part of the entire uptake analysis (shared among the project consortium) is included in this public document.

4 Data Analysis

This chapter presents and assesses the main results obtained from the survey and from the analysis of the data provided by the OJP implementers. As explained in the previous chapter, since data related to the participating JPs is often sensitive, heterogeneous and not comparable, only a part of the uptake analysis results can be presented. For this reason, the following paragraphs include a complete overview of the received survey replies (structured into six sections, based on the questionnaire sections) and where possible some integrations and additional information extracted

from the uptake analysis of participating local journey planners are also reported and commented in specific text boxes.

4.1 Main features and target end-users

The first section of the survey concerns the "Main features and target end-users" of the multimodal travel information service provided by the respondent. In this section, information about relevant aspects of the service (such as typology, information provided and associated users) is collected. In addition to this, other aspects like methods and preferences of getting information from partners or third parties and issues related to service provision are investigated. Finally, some information about the volumes of accesses and requests with related trends and peaks are taken into account.

The target end-users, to which almost all the travel information services provided by the respondents are addressed, are **frequent users**, such as commuters (19 out of 20 services), and **tourists** (16 out of 20 services). However, 16 respondents selected more than one reply and their services also focus on other kinds of users, such as **special needs users** and **other non-frequent users**. Two respondents selected "other" users and stated that their service is especially addressed to local citizens and, in general, all passengers within the Integrated Transport System of their Region (fig. 4.1). The collected replies show that interviewees' services are addressed to a wide range of user types and do not focus on a single target end-user. Consequently all the information provided with the following answers encompasses different point of views and types of end-user applications.
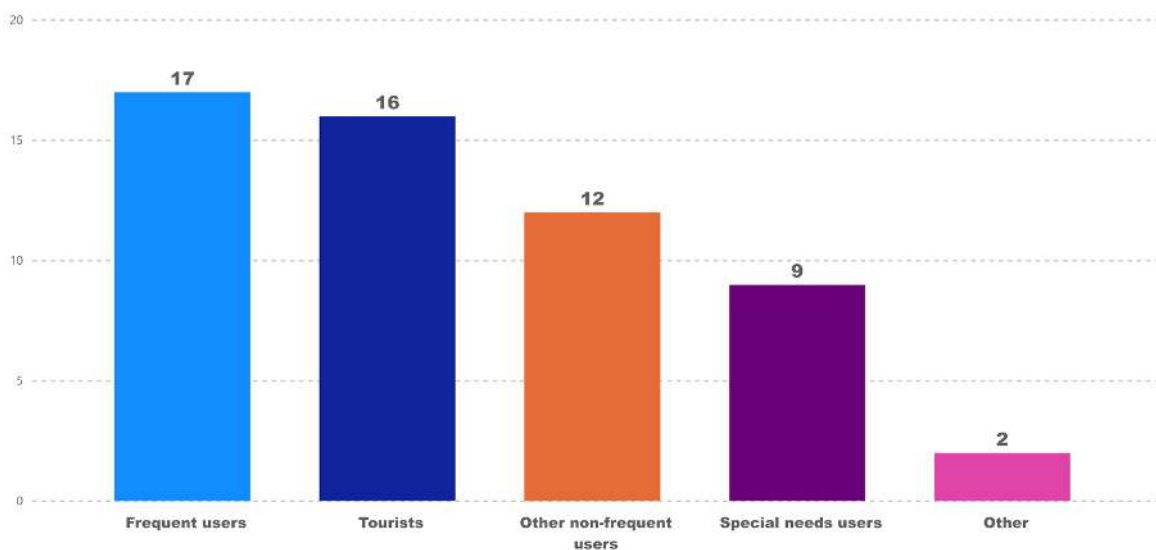

Figure 4.1: End-user target groups to which the service is addressed

The most provided travel information services reflect the target end-user groups and are: **public transport timetable information**, **public transport ticketing information** and **multimodal travel planner**. Seven companies also supply **touristic information**; five respondents provide a **MaaS platform**. Three interviewees added, among the other supplied services, the provision of information

related to car parking, bike sharing, car rentals; payment and booking for several services; permits for LTZ, bike&ride, kiss&ride (fig. 4.2).
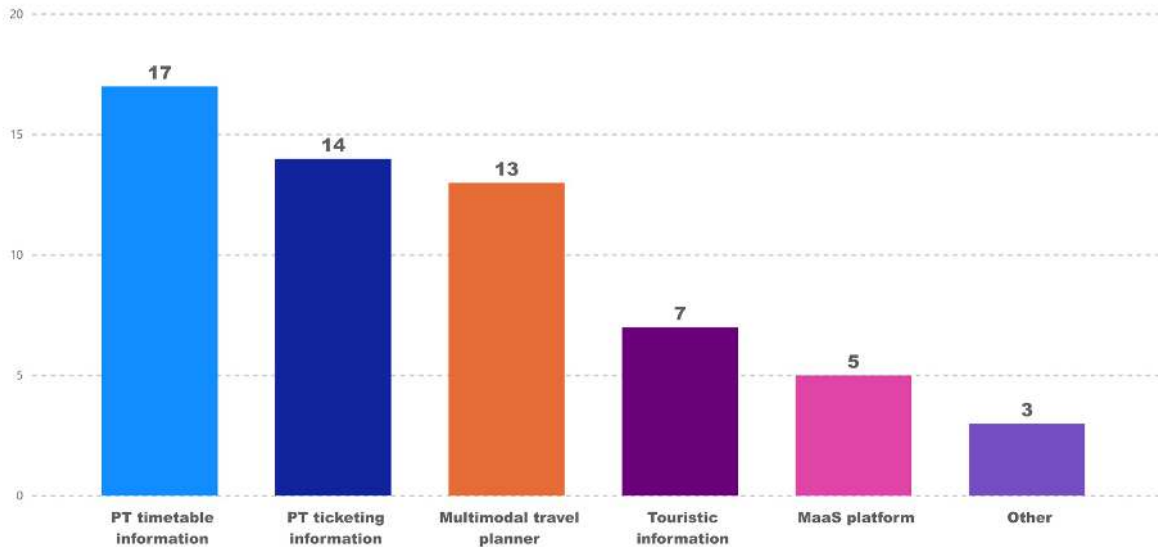

Figure 4.2: Services provided to end-user target groups

Travel information and data are being collected by 18 out of 20 respondents either **from individual transport and/or mobility operators** or **from Public Authorities that own public transport and mobility service data,** or both of them. Only five companies collect data from a single source while the other 15 combine data flows from different sources. Other used data sources, stated by respondents, are also mobility operators such as parking operators or taxi operators. One company is also a data owner and uses only its own data (fig. 4.3).
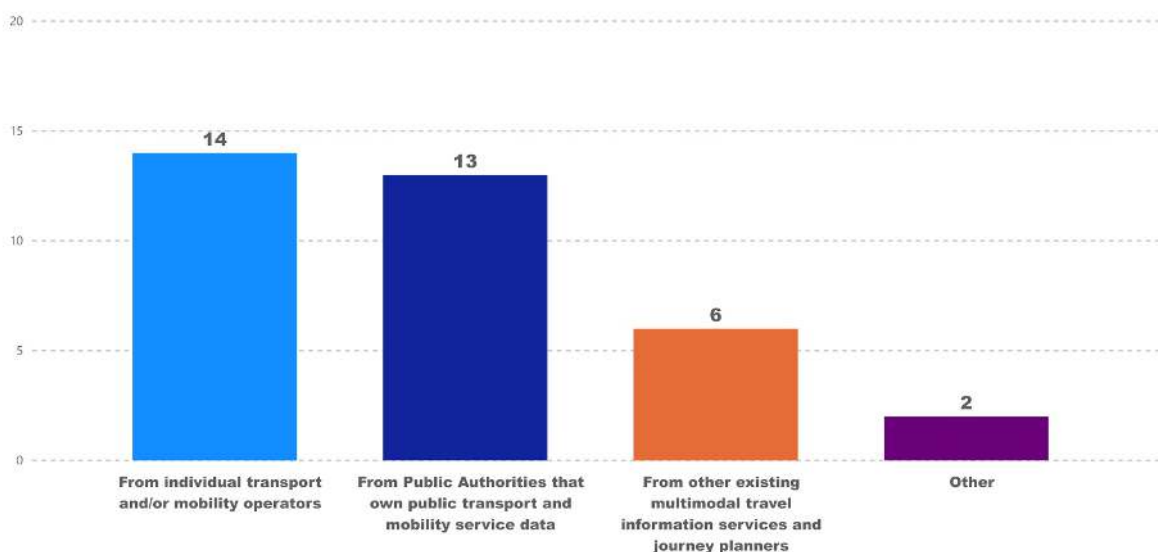
Figure 4.3: Sources of the travel information provided to end-users

As previously highlighted, most of the respondents (15 out of 20) combine multiple data sources for providing information to their end-users and almost all of them (13) get it via **direct access (e.g. GTFS, NeTEx, SIRI)**. 17 respondents access data via **computing interface** (by either individual operators or multimodal travel information services). The open answer also highlighted the availability of other data providers, such as mobility operators or infrastructures managers (e.g. to collect parking data via smart meters, sensors or access systems), but none of the respondents clarified in which way this data is accessible (fig. 4.4).

A relevant aspect is that 12 companies use a single mode for collecting data, five companies combine computing interface access with direct access to data and three companies use all the proposed solutions.
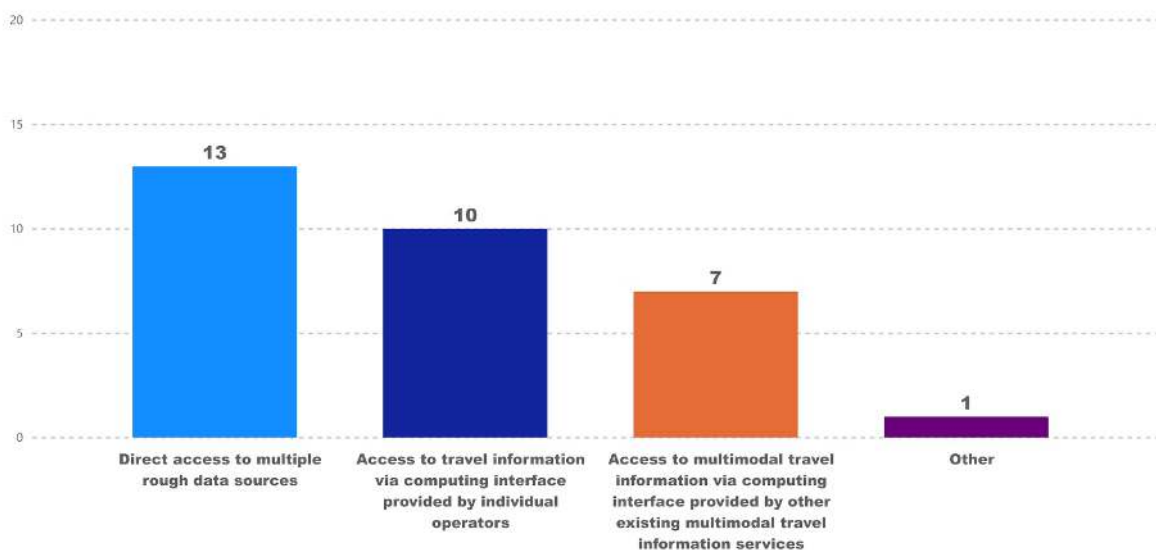

Figure 4.4: Access mode to different sources of the provided travel information

The opportunity to **interface directly with a single exchange service able to provide an already integrated, complete and seamless travel information**, such as the LinkingAlps distributed system, is important for 15 of the interviewed companies. Companies that already have their own route planner (mainly MaaS providers) consider this opportunity less relevant or have no opinion (fig. 4.5).
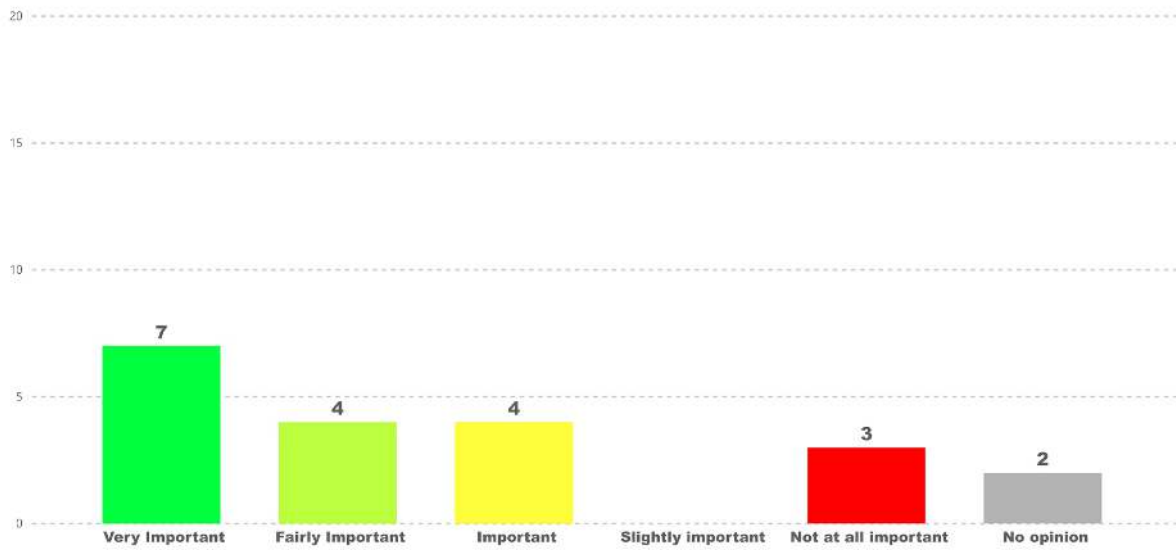
Figure 4.5: Importance of the opportunity to interface directly to a single exchange service providing already integrated, complete and seamless multimodal travel information

All the companies pointed out some issues that affect their service provision. The highlighted lacks and limitations show that providers have to deal with a daily increasing need of providing effective, updated and real-time information. The aspects that the majority of respondents indicate as relevant in affecting their services are related to the availability of **cross-border travel information**. They are also very interested in providing high quality service for **specific transport modes requests** related to users' special needs, **ticketing** and **smart mobility** services (fig. 4.6).
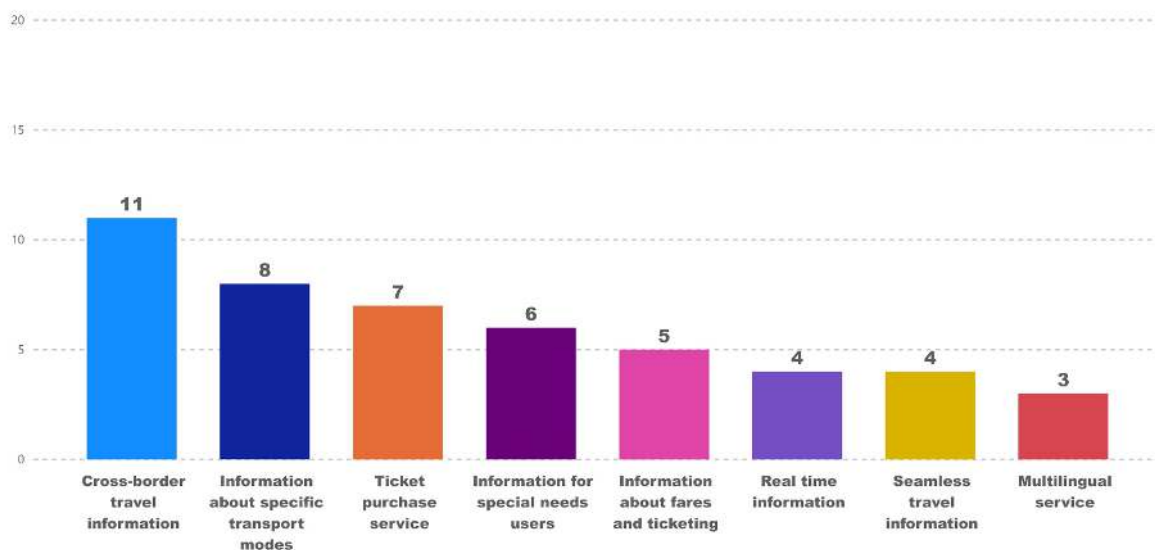

Figure 4.6: Aspects of services currently affected by lacks and limitations

The businesses of the respondent companies are very different, for this reason the visibility and the presence on the web is not so relevant for all of them. Furthermore, even the ones that mainly base

their activity on the web have a wide range of access and routing request volumes per month. There are six companies that have no information about accessing numbers, there are five companies with, on average, less than 100.000 accesses per month, there are four companies with a number of accesses between 100.000 and 1.000.000, and there are three companies with a range of accesses from 1.000.000 and 2.000.000 per month. There is an out-of-range company that provides information at a national scale for the whole railway system, that indicates a number of accesses of 100 million. Four companies have less routing requests per month than accesses. In the other cases, the number of routing requests per month is up to three times larger than the number of accesses. However, the ratio between the number of requests and the number of accesses stated by the respondents is 0.51. Summing up, although the sample of respondents is not statistically representative, these figures show that potential users have very different volumes of accesses and requests.

Regarding the peak periods of requests (during the day, week, month and year), the majority of the respondents do not have this information. What is possible to notice, even from the low number of received replies is that there are two main peaks during the day, one in the early morning, between 6.00 am and 9.00 am, and a second one in the afternoon, between 3.00 pm and 6.00 pm (fig. 4.7), mainly corresponding to peak traffic hours that often coincide with home-to-work and work-to-home trips (this trend is evident in different European Countries[1] and especially in Italy[2] from where most of the respondents are from). During the week it is not possible to identify any peak, but a strong reduction of the requests during the weekend is clear (fig. 4.8). Monthly accesses show two peak periods (fig. 4.9): the first one in December-January and a second one in August - September (mainly corresponding to the timetables changes).

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[1] Ermans, T. et al., Travel between home and work: current situation and perspectives for action for companies, Brussels Studies - The e-journal for academic research on Brussels, Notes de synthèse, 2018.
Manley, E. et al., Spatiotemporal variation in travel regularity through transit user profiling, Transportation 45, 703–732, 2018.
BMVI, Mobility in Germany 2017 - Short Report, 2019

[2] Noussan, M. et al., Urban Mobility Demand Profiles: Time Series for Cars and Bike-Sharing Use as a Resource for Transport and Energy Modeling. Data 4, 108, 2019.
Iavicoli, S. et al., Documento tecnico sull'ipotesi di rimodulazione delle misure contenitive in relazione al trasporto pubblico collettivo terrestre, nell'ottica della ripresa del pendolarismo, nel contesto dell'emergenza da SARS-CoV-2, INAIL e IStituto superiore della Sanità, 2020.
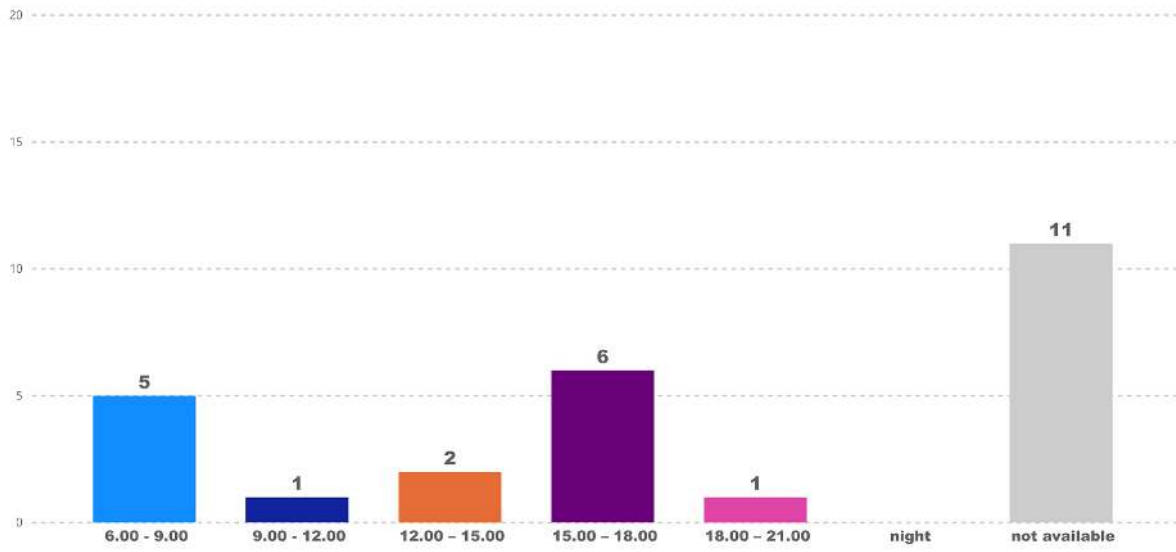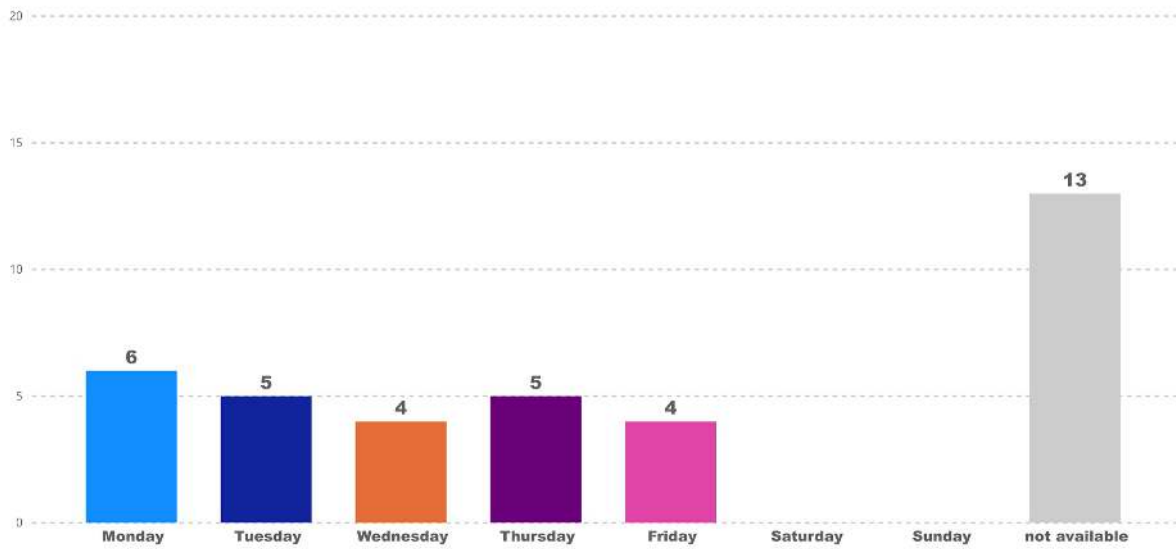
Figure 4.7: Peak period of requests during the day
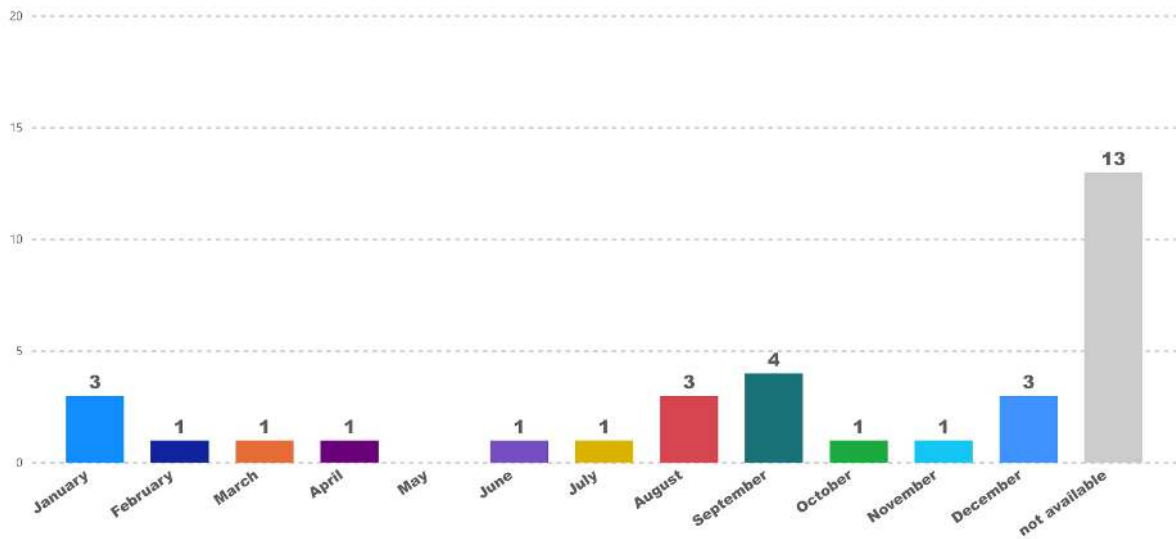

Figure 4.8: Peak period of requests during the week

Figure 4.9: Peak period of requests during the year

Number of requests to the journey planners participating in the LinkingAlps project

The number of requests to the OJP implementers' journey planners, examined within the uptake analysis, was obtained either as the number of users' interaction with the trip planner and route calculation web pages or through the processing of real data and log files analysis. The provided figures are then affected by the heterogeneity of the available data and by the different methodologies used to collect and estimate it. However, the analysis returned some preliminary indications about the volumes and peak periods of the requests that the future OJP will have to deal with. As observed for the access volumes to the interviewed multimodal travel services, also the trip requests received by the different JP services currently involved in the project show a wide range of volumes going from less than 10.000 to more than 500 million per year. This wide range is also the mirror of the different geographical scales of the JP services that ranges from the provincial to the national scale. The maximum number of requests received by all the JPs reaches a peak of almost 60 million trip requests per month and 2 millions requests per day.

Some outcomes of the survey for multimodal travel information service providers are confirmed by the uptake analysis results: although there are no recurring peak months and there is no correlation between the peak months and either the type of service or the year of analysis, the number of requests per day seems to be weakly affected by the day of the week, with a strong reduction of the requests during the weekend period. Moreover, the hourly peaks are mainly corresponding to the rush traveling hours: the main peak is usually recorded between 5 pm and 6 pm.

Only two OJP implementers provided the number of requests received by three different channels: mobile app, desktop app and API. Although the requests done by mobile app are generally higher

than the other channels, the requests done via API have constantly increased in the past years and in 2020 the volumes of requests are almost equally split between mobile application and API (48% and 47% of the total requests respectively), while the web application is the least used channel.

4.2 Geographical coverage

Respondents are from seven different countries, so their services provide information for different areas and at different geographical scales (fig. 4.10). Six companies provide information at a **national scale** in Switzerland (3), Italy (2), Austria (1) and Liechtenstein (one company, also providing information for Switzerland). Other companies work at a more local scale, mainly **regional or provincial**. Eight companies work in Italian regions or provinces: the whole northern Italian regions (1), Lombardia (2), Piemonte (1), Friuli Venezia Giulia (1), Cuneo province (1) and Trento province (2). Three companies work in French areas (at conurbation or regional scale): Métropole Aix – Marseille (included Provence and Arles), Grand Est and Provence Alpes Côte d'Azur (PACA). One company from Switzerland covers only the Zurich Area (local scale); two respondents are from Czech Republic and Slovakia: the first one provides its service within the South Moravian Region, the second covers the Bratislava region and, partially, the Trnava region.
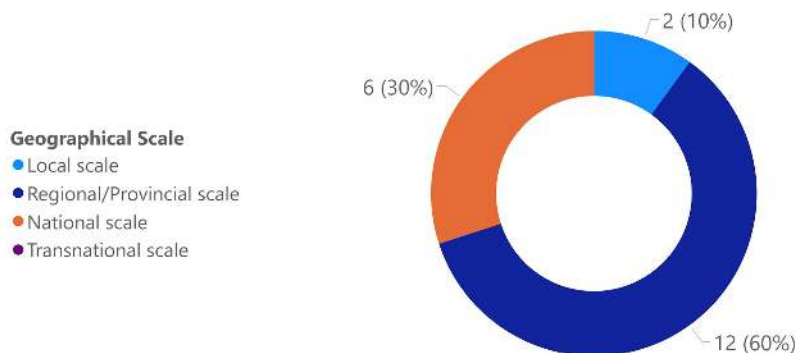

Figure 4.10: Geographical scale covered by services

The majority of the respondents (12 out of 20) are **planning to extend their services to neighbouring areas** and other four companies are interested in doing it. Nevertheless, it looks like there is not any correlation between these plans and the area dimension they currently cover. In the same way, areas of interest for a possible extension of the services are not strictly related to the current supply: all the companies are interested in extending their services to neighbouring areas at each level (provincial, regional or national) independently from the scale they actually cover. Just two of the participants are interested in enlarging their current covered areas to specific places (fig. 4.11).
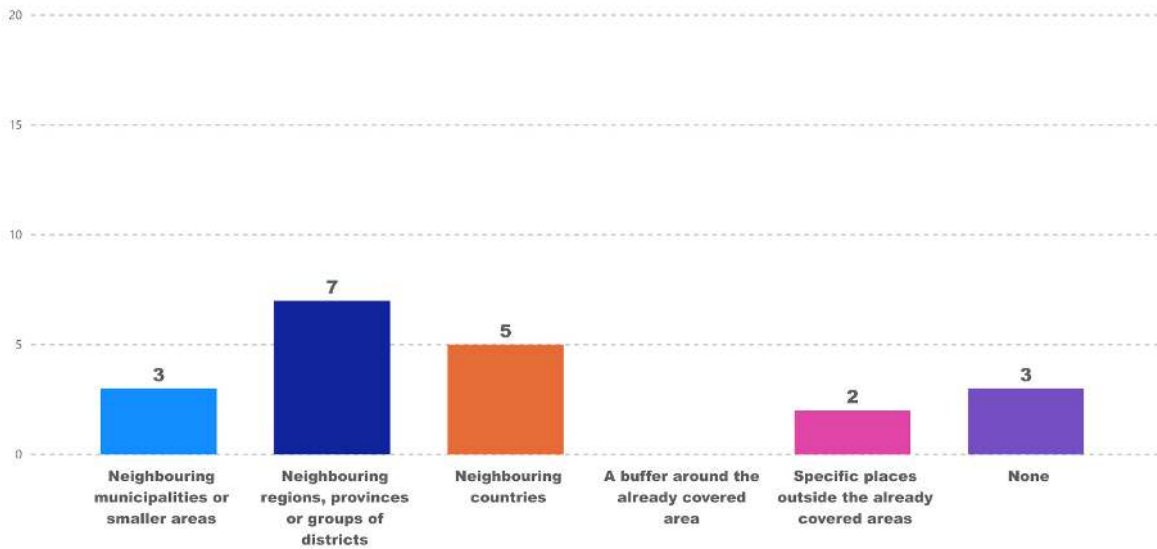
Figure 4.11: Areas of interest for extending geographical coverage of services

The main reasons that limit the ability to extend the spatial coverage of the systems are mainly related to the data exchanging process (difficulties in **collecting and updating data** of further areas or difficulties in **exchanging information** with neighbouring systems) and to **economic issues** (high developing and management costs). On the other hand, **data quality** and **competitiveness** between existing applications are not so relevant barriers (fig. 4.12). Although the low relevance of data quality for the geographical coverage extension, the **availability of reliable and seamless information about cross-border transport services** is generally important for the purpose of interviewed services (fig. 4.13).
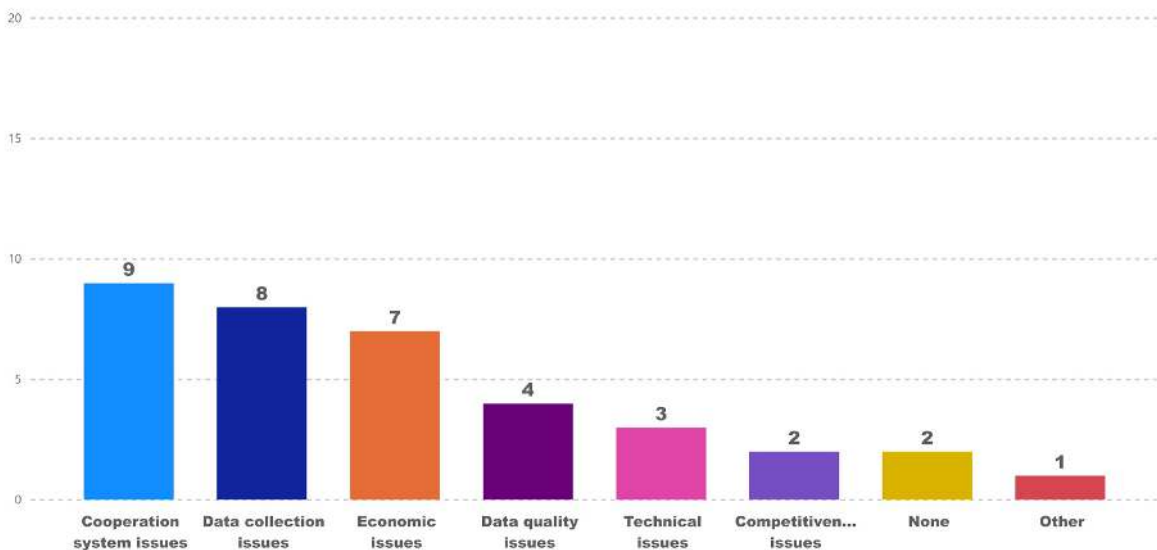

Figure 4.12: Barriers encountered in extending the geographical coverage of services
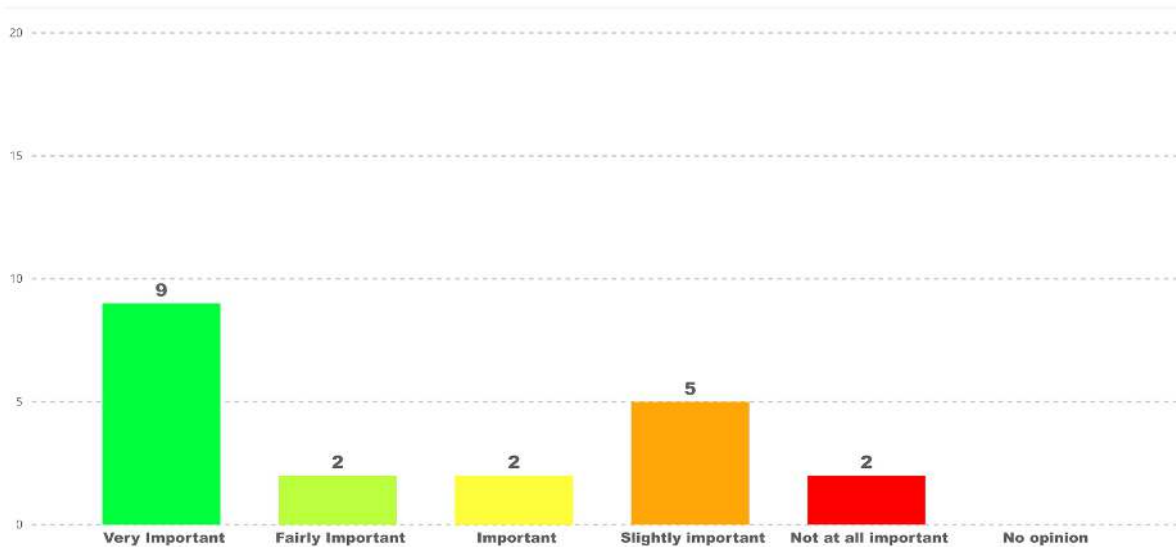
Figure 4.13: **Importance of the availability of reliable and seamless information about cross-border transport services**

4.3 Transport modes

The Transport modes section aims to investigate the modes already considered to provide routing results and those mostly required by the end-users.

There are several relevant outcomes from the question on current modes included in the routing response options provided to the end-users. First of all, all the respondents provide **public transport mode** (e.g. bus, tram, metro, train) solutions within their routing service: the 25% of respondents provide information only about public transport (without including any additional mode). Even though **ferry** and **cableways** are generally considered as public transport modes, less than a half of the respondents include them in their services. More than 50% of respondents include **walking** as an additional mode to public transport, while 45% of respondents provide information on more than 6 different modes, but none provide information on **private collective modes** of transport (e.g. private long-distance buses like Flixbus, Blablabus). Finally, three respondents selected the answer "**other**" (fig. 4.14) since they provide information about **parking**.
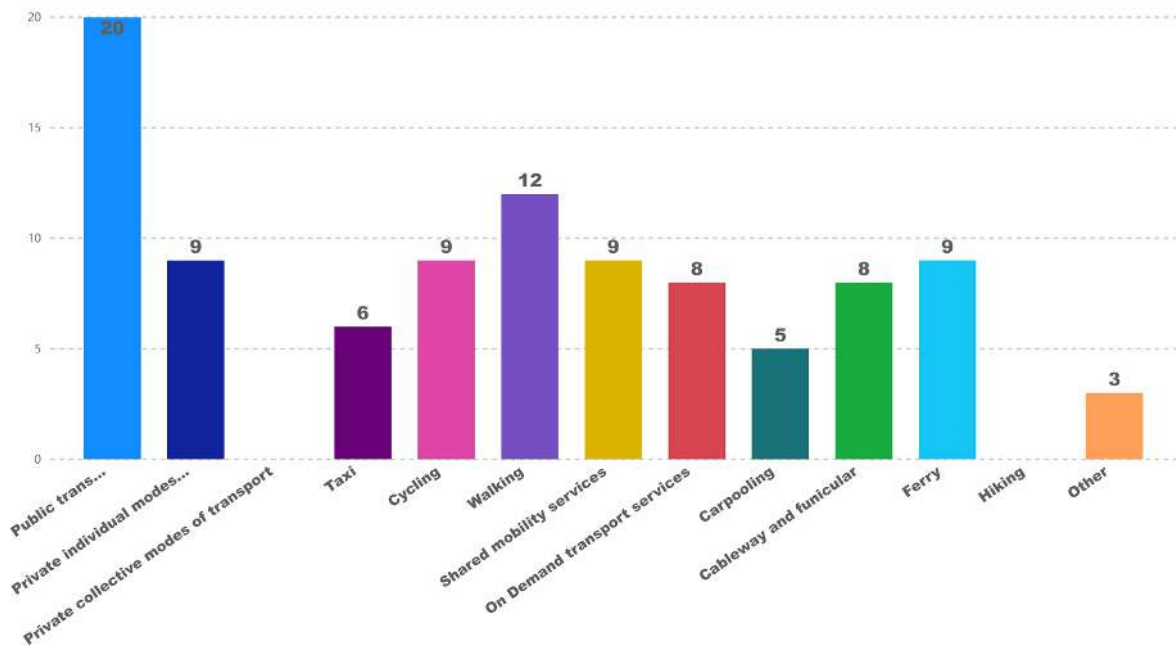
Figure 4.14: Transport modes currently included in the routing results provided to the end-users

The other two questions about transport modes are intended for investigating which are the most interesting modes for being included in current services and which of them should be considered together with public transport to provide optimal multimodal routing results.

The first question reveals that **shared mobility services** (e.g. car, bike, scooter, etc.), **on demand transport services** (Demand Responsive Transport) and **carpooling** are the most relevant modes that current multimodal travel information providers would like to include in their applications. Nevertheless, four different respondents declare that they do not have any interest in including new modes within their supply and only two of them already provide information about more than seven different modes (Fig. 4.15).

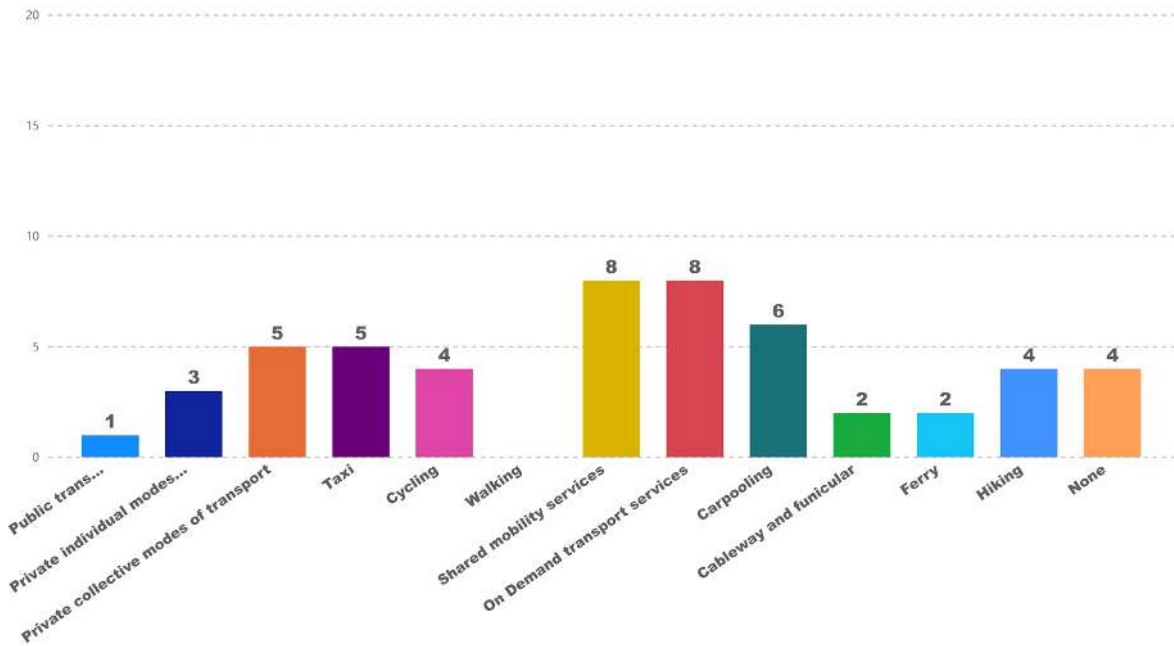**Figure 4.15: Further relevant transport modes to include in respondents' services**
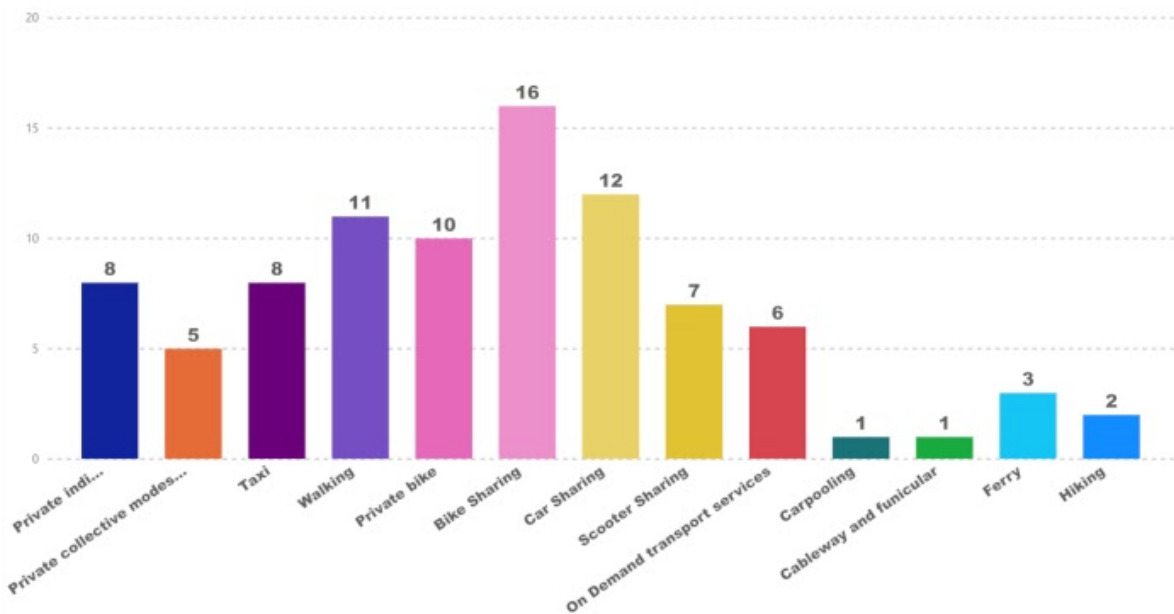

Figure 4.16: Transport modes that should be combined and integrated with public transport for optimal multimodal routing results

Regarding the modes needed to provide optimal multimodal routing results, replies show that micro-mobility and shared mobility modes are becoming more and more relevant for the interviewed

travel information service providers (and their end-users). Thus, **bike sharing** services is the most common reply followed by **walking**, **car sharing** and **private bike** (fig. 4.16).

4.4 Additional information and filtering criteria

Additional information and filtering criteria section takes into account the most relevant aspects and features that can be used for refining the routing results, with a specific attention to accessibility aspects.

The first question is about the criteria available for end-users to filter (or adjust) routing results so that they can select the ones that fit their specific needs. Replies reveal that the more relevant aspects for filtering routing results are related to time (**Arrival/Departure time**, **Travel time**) and **cost**. Other important aspects, more related to comfort, are the **transport mode** and the **number of transfers**. No other aspects are really relevant. It is very interesting that, probably due to current COVID-19 restrictions, mainly regarding social distancing, one respondent suggests to include **personal safety** as a possible aspect to select (Fig. 4.17).
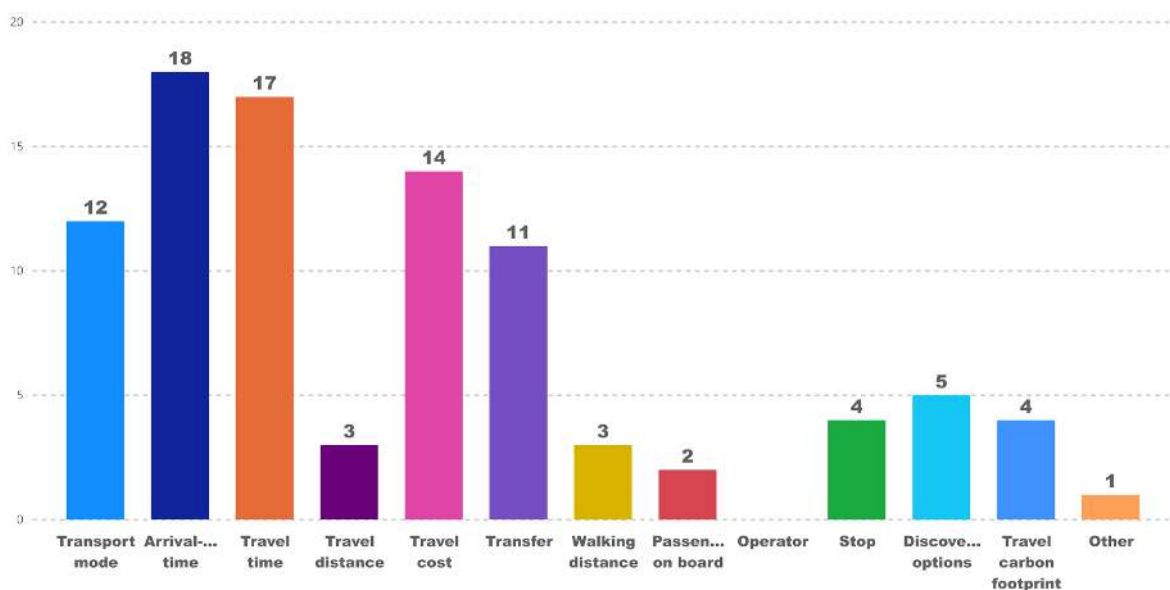
Figure 4.17: Criteria available for end-users to filter (or adjust) routing results

Accessibility information for special need users (e.g. presence of wheelchair ramps, stairs, lifts, barrier-free services) and **other accessibility information for all users** (e.g. road works, service disruption) are the most relevant aspects to take into consideration for adding useful information to routing solutions and were chosen respectively by 17 and 16 out of 20 respondents (multiple replies were allowed). **Tickets and fare information** are also considered a very relevant aspect (fig. 4.18).
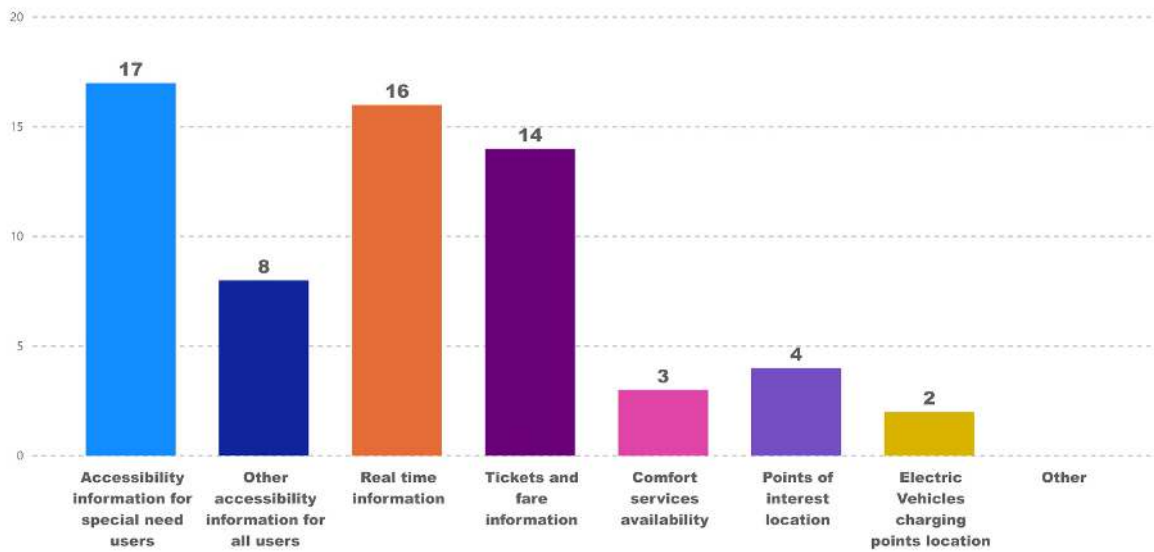
Figure 4.18: Relevant additional information that should be provided for each routing result

Regarding the accessibility information, the respondents identified some aspects as more valuable than others (fig 4.19). **Barrier-free stations/stops** (e.g. stations accessible to special needs users) and **barrier-free mobility services** (e.g. buses, trains accessible to special needs users) are indeed the most relevant and only one respondent did not select at least one of these options. The **service disruption** is almost at the same level of importance, since 13 respondents selected it. 40% of respondents highlighted the availability of bike transport on board as relevant information.

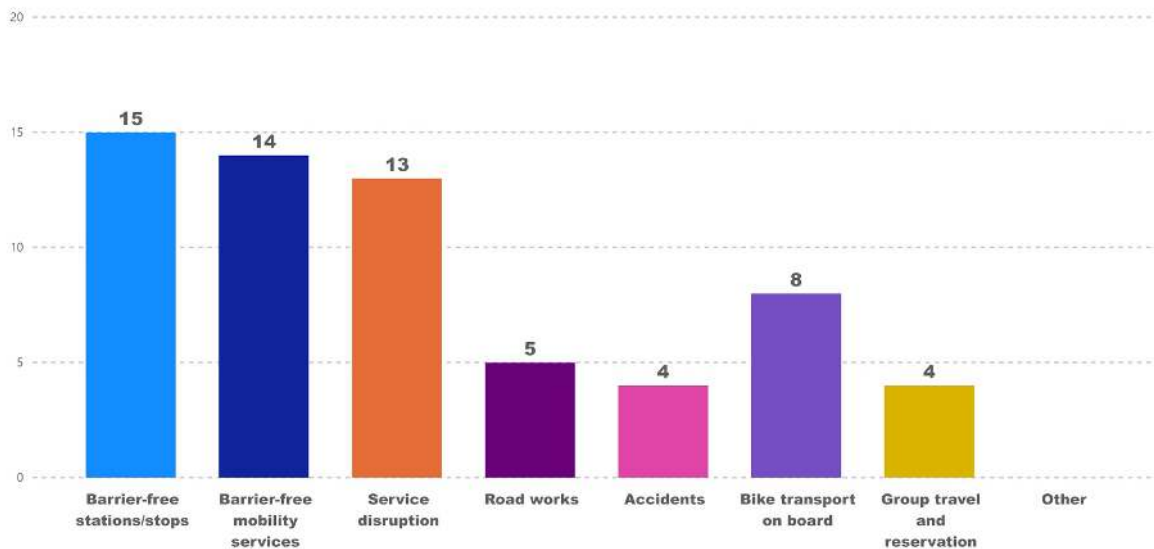**Figure 4.19: Relevant accessibility information that should be provided for each routing result**

Requests by filters to the journey planners participating in the LinkingAlps project

Within the uptake analysis of participating local journey planners, none of the OJP implementers provided information about the requests filtered by mode of transport and only few were able to provide detailed information about requests personalised by other filters or optimisation criteria (e.g. trip requests by "least changes", "least time", "least walking"). The collected data shows that the least trip time is by far the most important factor for the passengers (with 90% or more of the requests), followed by the least changes (number of transfers), and the least walking between the origin and destination. This outcome confirms the replies related to the most relevant criteria to filter (or adjust) routing results selected by the survey respondents.

The analysis of the performance indicators highlighted that filtering or optimisation criteria, as well as other parameters such as origin/destination type, type of operators etc. strongly influence the response times of the participating JPs. On average, it emerged that trip requests response times can vary from a lower bound of 500ms to an upper bound of 3 seconds, while location information requests (including reverse geocoding and finding stops) can vary from a minimum time of 80ms to a maximum of 300ms. Such measures are also dependent on different methods used by each implementer to carry out the load tests or on the iterations needed to get the final routing results.

4.5 Languages

Five companies provide the service only in the official language of the region in which they operate. This also means that services that cover multilanguage regions are available in more than one language (e.g. Switzerland, Trentino Alto Adige). In order to extend the accessibility of their services to a potential international audience, 15 out of 20 companies provide the service also in English (fig. 4.20). Two companies highlighted the availability of at least one additional language of a neighbouring Country, while only two respondents affirmed to provide five or more languages, showing a more international attitude.
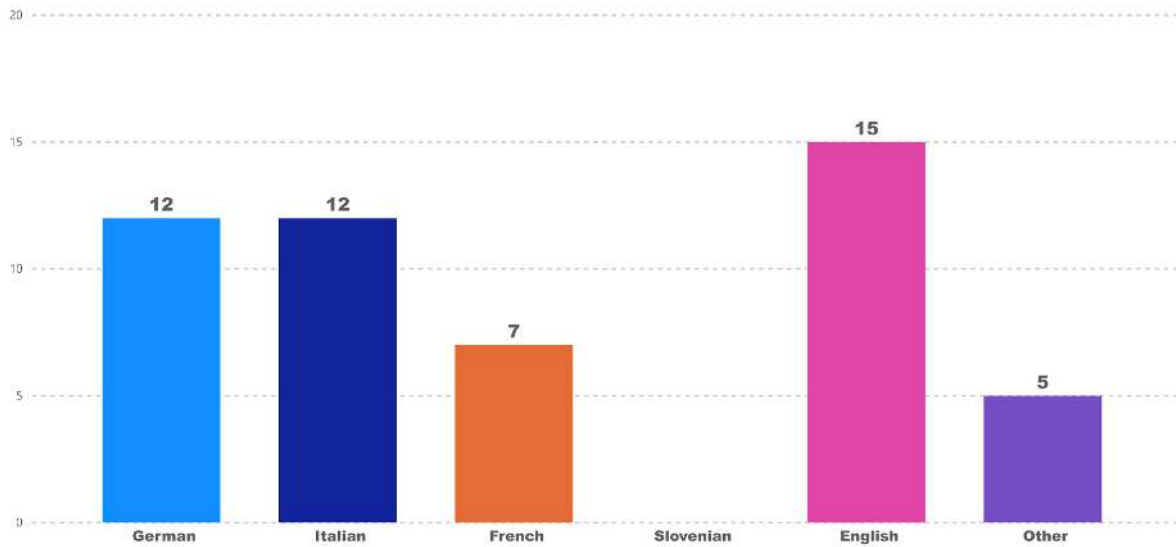
Figure 4.20: Languages in which the services are currently provided

Regarding languages of interest for future implementations (fig. 4.21) it is possible to recognize three different behaviours:

- Six companies have not any interest in widening their language supply. All these companies already provide the services in more than three different languages.
- Seven companies showed interest in developing the service availability in at least one more language of a neighbouring country.
- Seven companies are planning to give a more international profile to their services adding one or more languages among the most common in Europe, that means English, French, German and Spanish. Someone specifically wrote "every language" helpful "for tourists".

Figure 4.21: Additional languages that travel information service providers would like to provide

Requests by language to the journey planners participating in the LinkingAlps project

Within the uptake analysis of participating local journey planners the number of trip requests by language was not provided by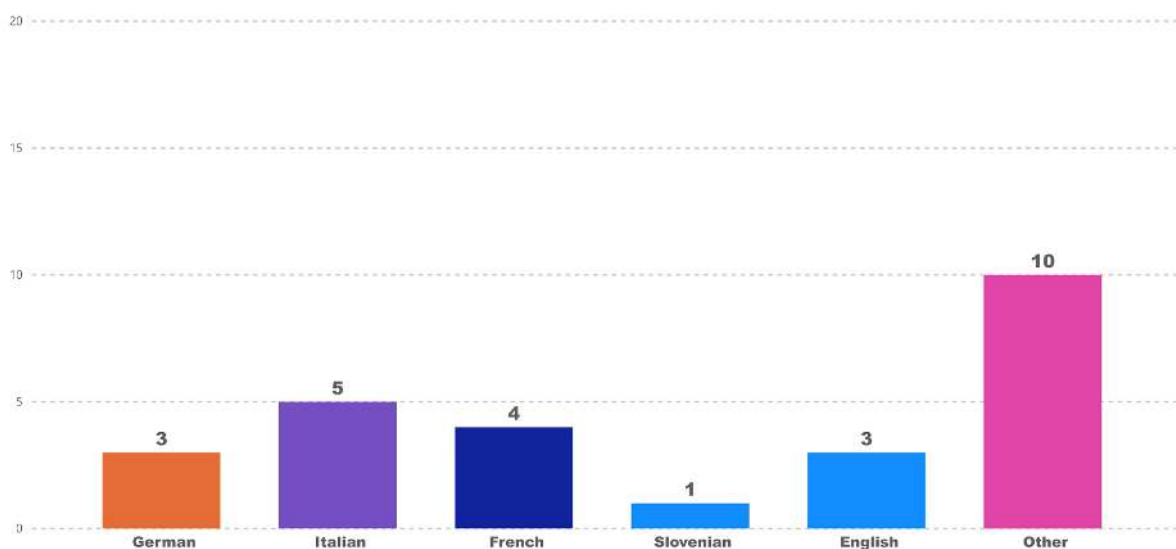 all the participating OJP implementers, however the available data shows that from 80% to more than 90% of the requests are received in the journey planner native language, followed by English which covers almost the whole remaining part of requests. This partially confirms the fact, outlined by the survey, that some multimodal travel information service providers are not interested in implementing languages different from English and their native language.

4.6 Tickets and fares

Regarding the availability of information about tickets and fares, all the respondents pointed out and agreed on the relevance of providing the **total trip cost** to the end-users (fig.4.22). Furthermore, three other aspects are considered relevant. The first one is providing information about the types of **available payment options** (selected 11 times), followed by the **types of available tickets** (10 replies) and the information about **where to buy the tickets** (9 replies).
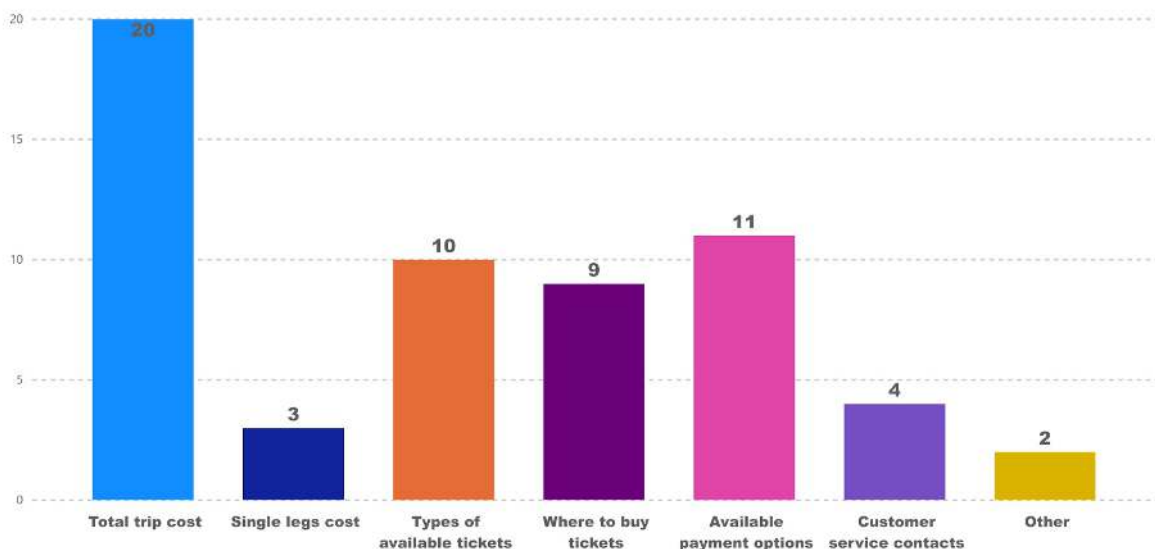
Figure 4.22: More relevant fare information to be provided for routing results

Five companies are not currently providing any ticketing and fare information to their end-user. One of these companies highlights a lack of sources, meaning that this kind of information is currently not available for all the operators, while the other four companies declare that they are not interested in this kind of service or that it's currently available via other third parties channels. All the other 15 companies provide at least the **total trip cost**, and seven of them also provide the **cost of** every **single**

leg of the resulting trip-chain. Several companies also provide additional information related to tickets and fares (**types of available tickets**, **where to buy tickets**, **available payment options** and **customer service contacts**) (fig.4.23).
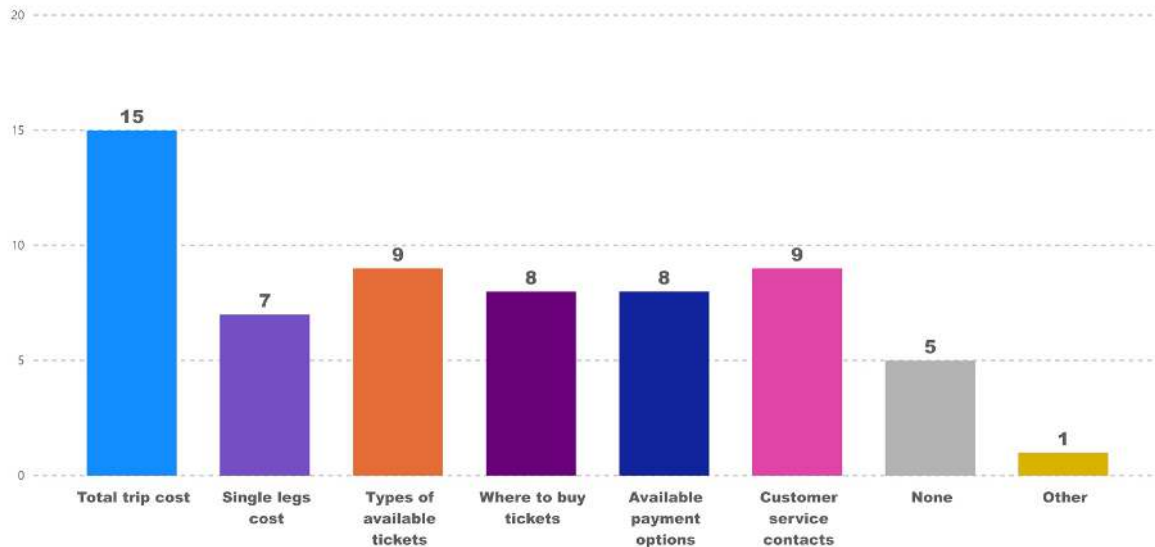
Figure 4.23: Fare information currently provided for routing results

All companies but one consider important the possibility to buy transport tickets directly online for having a more effective service that fits the end-user needs. In particular, 13 companies think that this feature is **very important** for the purpose of their service and 11 companies think it is valuable also for the end-user experience (fig. 4.24, fig 4.25).
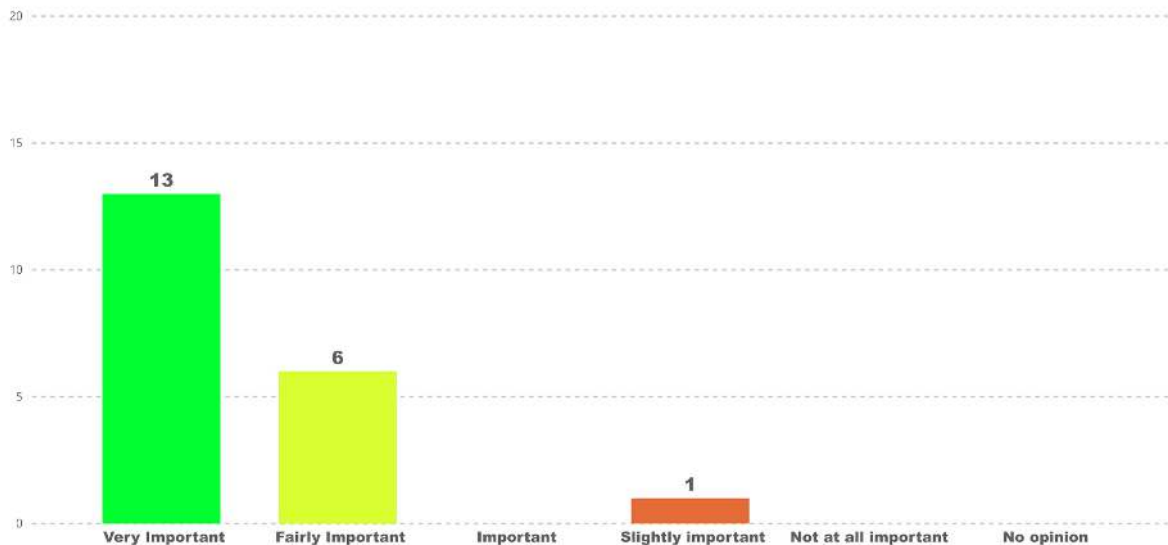
Figure 4.24: Importance, for the service, of having online ticket purchase availability
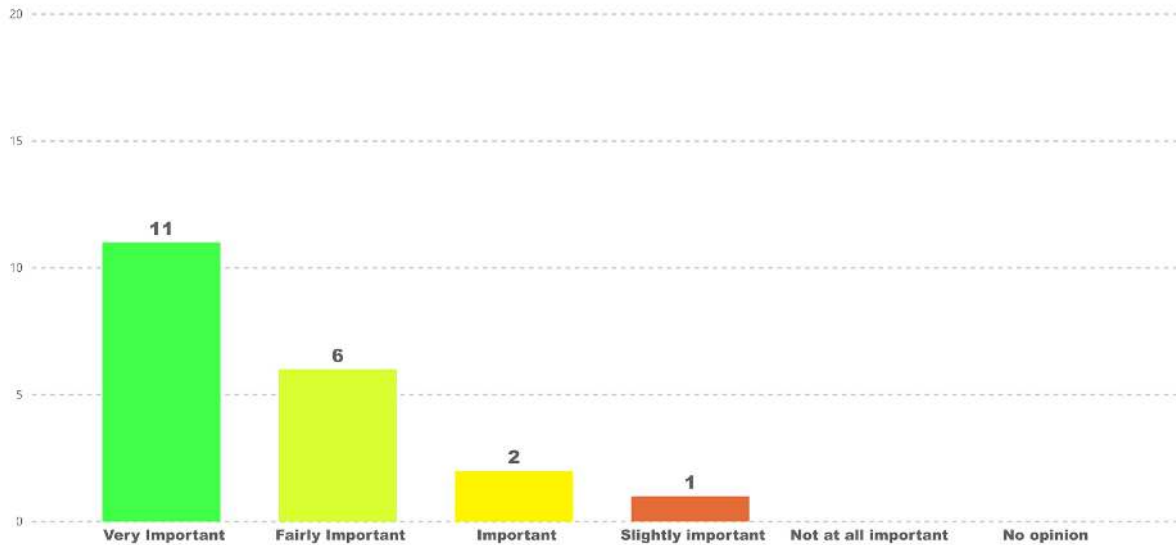
Figure 4.25: Importance, for the customer, of having online ticket purchase availability

5 Conclusions

Given the variety of multimodal travel information services and of their providers, it was not possible to select and interview a statistically significant sample of respondents; for these reasons some aspects and results of the survey should be investigated in greater detail to validate the outcomes. For many topics investigated within the survey it is not possible to identify a clear correlation with both the kind of business of the respondents and their interest in specific features and developments for their own services. It is also quite difficult to define the importance of some aspects rather than others. Nevertheless, the survey returns some very interesting outcomes. Moreover, some experiences were conducted across Europe in the last decade that could help in assessing some aspects of the results with more accuracy. The "Study on ITS Directive, Priority Action A: Provision of EU-wide multimodal travel information services under the ITS Directive 2010/40/EU"[3] (Consultation period: 2/09/2015 – 24/11/2015 8/12/2015), in particular, is a public consultation with the objective of collecting the opinions of stakeholders and interested parties, including EU citizens and private and public organisations, and gaining evidence on the issues related to the provision of EU-wide multimodal travel information services. The study starts from bases already established by previous

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[3] Study on ITS Directive, Priority Action A: The Provision of EU-wide Multimodal Travel Information Services - D5 Final Report European Commission Directorate-General Mobility and Transport Under Framework Contract MOVE/C3/SER/2014-471 - May 2016

documents such as "Towards a European Multi-Modal Journey Planner[4]" carried out in 2011 and aimed at defining the needs and functionality of a European multimodal travel planner.

Considering the LinkingAlps project goals and vision, the survey pointed out some major issues:

- The **availability of cross-border travel information** has been highlighted as a relevant point. In particular, the **lack of reliable and seamless information about cross-border transport services** (indicated by 55% of the responding companies) results as a crucial topic that affects interviewed services and their future extension and development. This information should have a certain quality level and should include specific details on transport modes, ticketing and smart mobility services.
- Companies mainly prefer to use a single access mode for collecting data, or at least to combine similar technologies (e.g. computing interface). One of the main implications is that they are very interested in the opportunity to **interface directly to a single exchange service** able to provide an already integrated, complete and seamless travel information, such as the LinkingAlps distributed system. The lower are the IT skills of the company the higher is the interest in a complete and ready to use solution. This is a confirmation of some general thoughts, which already emerged in Provision of EU-wide multimodal travel information services:
  - data should be interoperable;
  - common data standards can help enhance the consistency, re-use and exchange of travel and traffic data across the EU;
  - data formats and exchange protocols used across the EU in all Member States should be harmonized.
- Extensions of the services are limited not only by restrictions due to data exchanging processes such as interoperability and standardization, but also, as a consequence, by high labour costs associated with data collection, system implementation and integration of different data sources that is definitely not a simple task to be carried out by the interviewed operators (especially the smallest ones). Such as in the previous case, this is again a confirmation of the outcomes highlighted by the Provision of EU-wide multimodal travel information services.
- The **number of accesses and requests** done to the interviewed travel information services show a wide range of volumes (depending on many different factors such as, for example, the core business of the application providers or their interest in the web presence). Considering the maximum number of requests per month (reaching up to 55 million) pointed out by service providers, an average of around 2 million calls per day can be estimated to manage all the potential routing requests (coming from the interviewed services). This outcome is also confirmed by the uptake analysis of current OJP implementers that highlight a maximum number of calls per month around 60 million. Combining both the analyses, a potential

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[4] Towards a European Multi-Modal Journey Planner" - ITS ACTION PLAN - FRAMEWORK SERVICE CONTRACT TREN/G4/FV-2008/475/01 - D6 – FINAL REPORT, Lyon, 13 September 2011

number of daily calls larger than 2 millions should be considered to satisfy requests from both current OJP implementers' and future adopters' trip planning services.

- Although all services mainly base their business on public transport information provision, it is clear that they are looking for ways to meet the new mobility needs of their end-users. There is a more and more widespread interest in adaptive services and in particular in **micro-mobility** (e.g. 90% of respondents consider at least one among private bike, bike-sharing and scooter-sharing modes to be relevant to integrate in the multimodal routing calculation), **shared mobility** services (85% of the respondents already include them within their routing results or consider them a further relevant transport mode to include in their service) and **on demand transport** services (80% of the respondents already provide on demand service information or would like to include it in their services). Cycling and bike-sharing were considered as transport modes to be included in routing engines already in the "Provision of EU-wide multimodal travel information services under the ITS Directive 2010/40/EU" with more than 60% of preferences.

- Additional information related to multimodal routing results surely improves the attractiveness of the services, even if it is difficult to identify which information is the most important, given the different end-user needs of the interviewed service providers. However, 90% of the interviewed multimodal travel information service providers point out that the availability of the **accessibility information** is extremely important, **in particular information related to special needs users,** such as the presence of wheelchair ramps, stairs, lifts and barrier-free services (85% of the respondents).

- **Real Time data** availability is considered a relevant aspect within the routing planner tools by 80% of the respondents for both arrival/departure times and unplanned disruption information. This is also confirmed by the "Provision of EU-wide multimodal travel information services under the ITS Directive 2010/40/EU" results.

- Even though **ticketing and booking** options are not a core objective of the LinkingAlps project and are not supported by the LinkingAlps service, the survey section related to tickets and fares returns a high interest on these aspects. 100% of the respondents indicate the online ticket purchase as an important service, in particular 95% of them consider it very or fairly important for their application and 85% consider it very or fairly important also for their customers. The **total trip cost** is considered by all the respondents the most important fare information to be provided to the end-users. Once again, this confirms the data, collected in 2015 by the Provision of EU-wide Multimodal Travel Information Services consultation, that highlighted the interest in the availability of ticketing options for more than 70% of the involved stakeholders.

Appendix

Survey on multimodal travel information end-user service providers' needs

THE LINKINGALPS PROJECT (www.alpine-space.eu/projects/linkingalps (http://www.alpine-space.eu/projects/linkingalps))

Cross-border travellers often face the problem that travel information for the entire route is not visible at a glance. In most cases, travellers have to switch between the information systems of the different operators, regions or countries in order to plan their entire journey. The LinkingAlps project addresses this problem in the Alpine Space (AS). The aim is to create a standardised exchange service of travel information between different travel information service providers. In this way, information can be exchanged between different systems and compiled into a continuous travel chain.

Travellers can thus easily view the entire trip from start to destination on a single service and traveller service providers can thus easily access the new complete travel information through specific API requests to a single service.

GOAL OF THE SURVEY

The following questionnaire aims to investigate:
- the main features, target end-users, access and routing request volumes
- the needs and requirements for multimodal travel information

of the current traveller service providers that will be potential users and adopters of the future LinkingAlps service.

GUIDELINES

The survey is addressed to multimodal travel information service providers and is structured into six different categories:

1. "Main features and target end-users" of the multimodal travel information service currently provided by each respondent: for collecting information about the types of services and associated users and the volumes of accesses and requests;

2. "Geographical coverage": for identifying the current covered geographical area and plans to extend it and to integrate cross-border information;

3. "Transport modes": for investigating the modes already considered to provide routing results and those mostly required by the end-users;

4. "Additional information and filtering criteria": for defining the most relevant features and

information to be combined with routing results;

5. "Languages": for investigating provided and required languages;
6. "Tickets and fares": for assessing the need for fare information and ticket purchase service, even though ticketing and booking options are not a core objective of the LinkingAlps project and not supported by the LinkingAlps service.

Participating in this survey should require no more than 15 minutes.

The deadline for the submission of the survey is December 4th, 2020.

The survey results will be published and available on the LinkingAlps website within the project results section (www.alpine-space.eu/projects/linkingalps/en/project-results (http://www.alpine-space.eu/projects/linkingalps/en/project-results))

The survey is anonymous and collected data will be handled and processed in compliance with art. 13 of EU's General Data Protection Regulation, GDPR (EU Regulation 2016/679).

CONTACTS

If you have any question regarding the survey, please get in touch with:
Stefano Pensa stefano.pensa@linksfoundation.com
(mailto:stefano.pensa@linksfoundation.com)
Tiziana Delmastro tiziana.delmastro@linksfoundation.com
(mailto:tiziana.delmastro@linksfoundation.com)

The LinkingAlps project is co-financed by the European Union via Interreg Alpine Space

* Required

Main features and target end-users

1. Which is the name of your affiliation (company/public body)? *

2. What is the name of the multimodal travel information service that you provide? *

[   ]

3. Which end-user target groups does your service address? *
   (if you choose "Other", please specify your choice in the corresponding text box)

   ☐ Frequent users (e.g. commuters, students, etc.)

   ☐ Special needs users (e.g. people with limited mobility, the elderly, etc.)

   ☐ Tourists (e.g. hikers, mountain bikers, families, etc.)

   ☐ Other non-frequent users (e.g. healthcare patients, businesspeople, people going shopping, etc.)

   ☐ [   ]
   Other

4. What is your service providing to each addressed target group? *
   (if you choose "Other", please specify your choice in the corresponding text box)

   ☐ Touristic information

   ☐ Public transport ticketing information

   ☐ Public transport timetable information

   ☐ Multimodal travel planner

   ☐ MaaS platform

   ☐ [   ]
   Other

5. From which source do you get the travel information that you provide (directly or after processing it) to your end-users? *

(if you choose "Other", please specify your choice in the corresponding text box)

☐ From individual transport and/or mobility operators (mobility service providers, including my affiliation)

☐ From Public Authorities that own public transport and mobility service data (including my affiliation)

☐ From other existing multimodal travel information services and journey planners

☐ [   ]

Other

6. In which way do you get the travel information that you provide (directly or after processing it) to your end-users? *

(if you choose "Other", please specify your choice in the corresponding text box)

☐ Direct access to multiple rough data sources (e.g. GTFS, NeTEx, SIRI)

☐ Access via computing interface to travel information (rough or processed data) provided by individual operators

☐ Access via computing interface to multimodal travel information (processed and integrated data) provided by other existing multimodal travel information services

☐ [   ]

Other

7. For the purpose of your service, how important is the opportunity to interface directly to a single exchange service providing already integrated, complete and seamless multimodal travel information? *

  ◯ Very Important

  ◯ Fairly Important

  ◯ Important

  ◯ Slightly important

  ◯ Not at all important

  ◯ No opinion

8. Are you interested in being contacted again to be updated on the development of the LinkingAlps project and to collect your opinion on organisational and operational requirements for a durable decentralised transnational travel information exchange system? *

  ◯ Yes

  ◯ No

9. Which are the aspects of your service currently affected by lacks and limitations? *

(if you choose "Other", please specify your choice in the corresponding text box)

- [ ] Seamless travel information
- [ ] Cross-border travel information
- [ ] Information about specific transport modes (e.g. sharing modes, bikes, taxis)
- [ ] Real time information
- [ ] Information for special needs users
- [ ] Information about fares and ticketing
- [ ] Ticket purchase service
- [ ] Multilingual service
- [ ] [   ]

  Other

10. Do you approximately know the number of accesses and requests to your service? *

- ○ Yes
- ○ No

11. What is the average number of accesses that you receive per month? *

[   ]

The value must be a number

12. What is the average number of routing requests that you receive per month? *

The value must be a number

13. Why not? *

14. Is there a peak period of requests during the day (check the cell(s) indicating peak hours)? *

☐ 6.00 - 9.00

☐ 9.00 - 12.00

☐ 12.00 – 15.00

☐ 15.00 – 18.00

☐ 18.00 – 21.00

☐ night

☐ not available

15. Is there a peak period of requests during the week (check the cell(s) indicating peak day(s))? *

- [ ] Monday
- [ ] Tuesday
- [ ] Wednesday
- [ ] Thursday
- [ ] Friday
- [ ] Saturday
- [ ] Sunday
- [ ] not available

16. Is there a peak period of requests during the year (check the cell(s) indicating peak month(s))? *

- [ ] January
- [ ] February
- [ ] March
- [ ] April
- [ ] May
- [ ] June
- [ ] July
- [ ] August
- [ ] September
- [ ] October
- [ ] November
- [ ] December
- [ ] not available

Geographical Coverage

17. Which geographical scale is your service covering? *

(if you choose "Other", please specify your choice in the corresponding text box)

○ Local scale (municipalities, urban areas, touristic areas)

○ Regional/Provincial scale (regions, provinces, districts, groups of districts)

○ National scale

○ Transnational scale

○ [   ]

Other

18. Which is the geographical area currently covered by your service? *

[   ]

19. Do you plan to extend your service to neighbouring areas? *

○ Yes

○ No

20. Which further areas would you like to include in your service (even if not planned)? *
(if you choose "Other", please specify your choice in the corresponding text box)

- ○ Neighbouring municipalities or smaller areas
- ○ Neighbouring regions, provinces or groups of districts
- ○ Neighbouring countries
- ○ A buffer around the already covered area
- ○ Specific places outside the already covered areas (e.g. main cities, specific areas)
- ○ None
- ○ [   ]
  Other

21. Which are the main barriers encountered so far to extend the geographical coverage of your service? *
(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ Data collection issues (e.g. difficulties in collecting and updating data of further areas)
- ☐ Data quality issues (e.g. data of further areas are not reliable or detailed enough according to my needs)
- ☐ Economic issues (e.g. high developing and management costs)
- ☐ Technical issues (e.g. lack in technical requirements)
- ☐ Competitiveness issues (e.g. other route planning services already on the market)
- ☐ Cooperation system issues (e.g. difficulties in exchanging information with neighbouring systems)
- ☐ None
- ☐ [   ]
  Other

22. For the purpose of your service, how important is the availability of reliable and seamless information about cross-border transport services? *

○ Very Important

○ Fairly Important

○ Important

○ Slightly important

○ Not at all important

○ No opinion

Transport Modes

23. Which transport modes is your service currently including in the routing results provided to the end-users? *

(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ Public transport (e.g. bus, tram, metro, train)
- ☐ Private individual modes of transport (e.g. car, motorcycle)
- ☐ Private collective modes of transport (e.g. private long distance buses like Flixbus, Blablabus)
- ☐ Taxi
- ☐ Cycling
- ☐ Walking
- ☐ Shared mobility services (e.g. car, bike, scooter, etc.)
- ☐ On Demand transport services (Demand Responsive Transport)
- ☐ Carpooling
- ☐ Cableway/funicular
- ☐ Ferry
- ☐ Hiking
- ☐ [_____]

  Other

24. Which further transport modes would you like to include in your service?
Choose the 5 most relevant options for your service *

(if you choose "Other", please specify your choice in the corresponding text box)

- [ ] Public transport (e.g. bus, tram, metro, train)
- [ ] Private individual modes of transport (e.g. car, motorcycle)
- [ ] Private collective modes of transport (e.g. private long distance buses like Flixbus, Blablabus)
- [ ] Taxi
- [ ] Cycling
- [ ] Walking
- [ ] Shared mobility services (e.g. car, bike, scooter, etc.)
- [ ] On Demand transport services (Demand Responsive Transport)
- [ ] Carpooling
- [ ] Cableway/funicular
- [ ] Ferry
- [ ] Hiking
- [ ] _____

Other

25. For the purpose of your service, which are the most relevant transport modes that should be combined and integrated with public transport (buses, trams, metro, trains) in order to provide optimal multimodal routing results? Choose the 5 most relevant options for your service *

(if you choose "Other", please specify your choice in the corresponding text box)

- [ ] Private individual modes of transport (e.g. car, motorcycle)
- [ ] Private collective modes of transport (e.g. private long distance buses like Flixbus, Blablabus)
- [ ] Taxi
- [ ] Walking
- [ ] Private bike
- [ ] Bike Sharing
- [ ] Car Sharing
- [ ] Scooter Sharing
- [ ] On Demand transport services (Demand Responsive Transport)
- [ ] Carpooling
- [ ] Cableway/funicular
- [ ] Ferry
- [ ] Hiking
- [ ] _____

Other

Additional information and filtering criteria

26. In your opinion, which are the most relevant criteria (whether you provide it or not) to filter and/or adjust the provided routing results? Choose the 5 most relevant options for your service *

(if you choose "Other", please specify your choice in the corresponding text box)

- [ ] Transport mode (results provided only by specific transport modes)
- [ ] Arrival/Departure time (results at specific arrival or departure times)
- [ ] Travel time (results with minimum travel time)
- [ ] Travel distance (results with minimum travel distance)
- [ ] Travel cost (results with minimum travel cost)
- [ ] Transfer (results with minimum number of interchanges or minimum transfer time)
- [ ] Total walking distance (results with minimum walking distance)
- [ ] Number of public transport passengers on board
- [ ] Operator (results with services provided by specific transport operators)
- [ ] Stop (results including one or more specific intermediate stop – via option)
- [ ] Discovery options (results including touristic routes and points of interest)
- [ ] Travel carbon footprint (results with minimum emission levels e.g. in terms of CO_2)
- [ ] [   ]

Other

27. In your opinion, which is the most relevant additional information (whether you provide it or not) that should be provided for each routing result? Choose the 3 most relevant options for your service *

(if you choose "Other", please specify your choice in the corresponding text box)

☐ Accessibility information for special need users (e.g. presence of wheelchair ramps, stairs, lifts, barrier-free services)

☐ Other accessibility information for all users (e.g. road works, service disruption)

☐ Real time information (e.g. service delays, accidents, congestion, number of passengers on board)

☐ Tickets and fare information

☐ Comfort services availability (e.g. Wi-Fi, electrical supply, toilets on board)

☐ Points of interest location (e.g. touristic places, restaurants, bars, hospitals, etc.)

☐ Electric Vehicles charging points location

☐ [text box]

Other

28. In your opinion, which is the most relevant accessibility information (whether you provide it or not) that should be provided for each routing result? Choose the 3 most relevant options for your service *

(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ Barrier-free stations/stops (e.g. accessible to special needs users)

- ☐ Barrier-free mobility services (e.g. buses, trains accessible to special needs users)

- ☐ Service disruption

- ☐ Road works

- ☐ Accidents

- ☐ Bike transport on board

- ☐ Group travel and reservation

- ☐ [   ]

  Other

Languages

29. In which languages is your service currently provided? *

(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ German

- ☐ Italian

- ☐ French

- ☐ Slovenian

- ☐ English

- ☐ [text box]

    Other

30. In which other additional languages would you like to provide your service? *

(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ German

- ☐ Italian

- ☐ French

- ☐ Slovenian

- ☐ English

- ☐ [text box]

    Other

Tickets and fares

31. In your opinion, which is the most relevant fare information to be provided for each routing result? Choose the 3 most relevant options for your service *

(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ Total trip cost
- ☐ Single legs cost (in case of trip chains)
- ☐ Types of available tickets (e.g. daily tickets, group tickets)
- ☐ Where to buy tickets (e.g. station, online ticketing)
- ☐ Available payment options
- ☐ Customer service contacts (e.g. phone, e-mail)
- ☐ [_____]

  Other

32. Which of the previous information are you currently providing to your end-users? *

(if you choose "Other", please specify your choice in the corresponding text box)

- ☐ Total trip cost
- ☐ Single legs cost (in case of trip chains)
- ☐ Types of available tickets (e.g. daily tickets, group tickets)
- ☐ Where to buy tickets (e.g. station, online ticketing)
- ☐ Available payment options
- ☐ Customer service contacts (e.g. phone, e-mail)
- ☐ None
- ☐ [_____]

  Other

33. If none, why are you not providing it?

34. For the purpose of your service, how important is the possibility to buy transport tickets directly online? *

- ○ Very Important
- ○ Fairly Important
- ○ Important
- ○ Slightly important
- ○ Not at all important
- ○ No opinion

35. For your end-users, how important is the possibility to buy transport tickets directly online? *

- ○ Very Important
- ○ Fairly Important
- ○ Important
- ○ Slightly important
- ○ Not at all important
- ○ No opinion

Thank you for taking the time to answer the survey.