

INFORMATION TECHNOLOGIES FOR SHIFT TO RAIL

D8.8- Conclusions and recommendations of the Experts' Groups

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REPORT CONTRIBUTORS

Name	Company	Details of Contribution
Yves Amsler	UITP	First draft
Guido Di Pasquale	UITP	First draft
Cristina Hernández	UITP	First draft
Delphine Grandsart	EPF	Reviewer
Petr Buchnicek	Oltis Group	Reviewer
Maria Laura Trifiletti	RINA C-BE	Quality Check

EXECUTIVE SUMMARY

This report represents the findings and conclusions of the external support provided by two Experts Groups as defined in the DoW, which carried out their activities during 2015, 2016, 2017 and eventually will participate in the project final event during the TRA2018 (April 2018).

The report concludes that the Expert Groups in IT2Rail provided interesting strategic pieces of advice, key not only for the project itself but for the following developments within Shift2Rail IP4. In terms of performance, this kind of Experts Groups enjoy a high reputation for supporting the EU projects: facing challenges and helping the consortium to overcome them (such as the Ethical Privacy and Security Expert Group) and engaging with final users from all over the EU (End Users Expert Group).

The report identifies several advices and agreements to fulfil with success the deployment of the IF, as well as several challenges to be considered in the following IP4 projects, knowing that the main results of IT2Rail will be public, except background information and patents.

Regarding the various tools covered by IT2Rail, some key recommendations were:

- One of the most innovative aspects of digitalization of travel and transportation is not merely technological: it is a radical change in how more and more customers use mobility in their daily life especially in relationship with the appearance of new business models, particularly business platforms such as FlixBus, BlaBlaCar, Uber and others. They can use digitalization to leverage opportunities afforded by multisided markets through acting as trading platforms between consumers and services (EUG conclusion);
 - o Mobility as a Service (MaaS) and integration of mobility offers force the traditional transport operators to enter this market to make them able to compete with the emerging players offering door to door mobility (3rd EUG meeting);
 - o MaaS can be a solution to overcome barriers of ticketing integration, with a unique invoice at the end of the month to the customers (3rd EUG meeting);
 - o After sale is still an issue and today Trip Tracking is not solving it. Again a MaaS scheme could provide the customer with a clear reference and contact point for the after sale issues (4th EUG meeting);
- Shopping module: A customer should have the possibility to associate different profiles to the same traveller and to get optional solutions based on these profiles (4th EUG meeting);
- Booking & Ticketing module: Booking & Ticketing third party distribution is technically feasible and demonstrated, however legal and business aspects have not been explored enough and have often been barriers for the deployment (3rd EUG meeting);
- Booking & Ticketing module: Third party distribution is a challenge from the business and revenue point of view. The business models should be clearly identified as well as the benefits for actors involved (3rd EUG meeting);
- Travel companion module: Navigation is a must, but user requirements should be considered (4th EUG meeting);
- Trip tracker module: Trip Tracker is a useful functionality but a business model for it should be identified (4th EUG meeting);



- Trip tracker module: Maximum acceptable time for calculation time of trip alternatives depends on the customer's confidence in the calculation process. As conclusion, it was proposed a maximum of 2 minutes for the calculations (4th EUG meeting);
- Travel Companion module: A customer should have the possibility in the shopping module (see above) to associate different profiles to the same traveller and to get optional solutions based on the profile he/she selects (4th EUG meeting);
- Travel Companion module: When travelling abroad, a new app linked to your destination needs to be downloaded and learned by the traveller. A more geographically horizontal approach (e.g. CityMapper) is desirable, having the same interface everywhere;
- Business analytics module: Regarding the business analytics module, the more pieces of information you have, the more you can check if the pieces of information are fake or not. Therefore, travellers may be able to rate each aspect of their journey separately and clearly (each leg) and may be rewarded if they give feedbacks (2nd EUG meeting);
- It would be helpful to have a real one stop shop, but operators and authorities in charge of services operated under public service contracts still prefer to have the control of the journey planning;
- Web of Transportation key issues:
 - o Use of social networks is essential to attract customers (2nd EUG meeting);
 - o Trust is a major issue for the implementation of the Web of Transportation (3rd EUG meeting).

For more information regarding the entrance in the market system and the potential impacts of the IF, please read the “White Paper on Adaptation and Openness of Business Ecosystem” (part of the D7.8 studies Pack).

Other “horizontal” evidence, not linked to a specific module, is summarised below:

- **Baseline: The “Web of Transportation” does not collect (or need) any data of any kind – also applied to personal data.** It provides means to publish certain assets under work flow management. It is designed to give full control on security protocols and access to services to the interacting partners;
- Output 1: When public transport cannot answer their needs, customers first choose the new mobility providers for the convenient price. Furthermore, they continue using it because of the positive experience they have;
- Output 2: Complementary services on buses generate new data which could be fed to the service providers thanks to the business analytics module of IT2Rail. The more data you have, the more customized the customer's trip may be;
- Output 3: With regard to commercial services (services operated without public service obligations), the more data and services are opened, the greater is the benefit to the community. IoT may accelerate the growth of the data pool that can be exploited by the Travel Companion;
- Output 4: It is key to comply with the General Data Protection Regulation in Europe (onwards GDPR)¹. One should always consider legal aspects from the beginning for achieving the best service/product design in the long term, e.g.:

¹[Regulation \(EU\) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC \(General Data Protection Regulation\).](#)



- It should be clear for the user that only basic functionality is provided without data consent. All others shall depend upon acceptance by the customer which should always be asked for;
- It should be always added in the specifications that the information is erasable if someone wants to opt out of his consent - any personal information, in the whole system;
- If needed, lawyers may be involved in ticketing projects to avoid further (and later) problems.

For more information regarding the Personal Data Protection and other ethical, privacy and security issues, please read the “White Paper on Security and Privacy aspects of Shift2Rail – IP4” (part of the D7.8 studies Pack).

Furthermore, the Experts’ Groups outlined certain areas of specific interest that the IP4 programme could, *inter alia*, consider:

- Output 1: Autonomous vehicles are expected to become increasingly common. Services based on such vehicles could be integrated as part of the Travel Companion.
- Output 2: The Crypto-Identity could be considered as a possible solution for the User Identity management in IT2Rail;
- Output 3: Cyber-security aspects could be also considered, in particular in sense of terrorist attack.



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LIST OF ABBREVIATIONS

A	Attended
A-REL	Additional release
C-REL	Core release.
AC	Alberto CILLERO
AL	Adrian LUPAU
AVDE	Achim VON DER EMBSE
BS	Bernard SCHWOB
CB	Cristophe BADESCO
CD	Cecile DUEME
CH	Cristina HERNANDEZ
CMM	Catherine Maria MINCIOTTI
DR	David ROBERT
DS	Daniel SCHMIDT
E	Excused
EB	Eric BIABIANY
EC	European Commission
ECa	Edouard CARPENTIER
EDB	Erik DE BUCK
EG(s)	Expert Group(s)
EM	Elvino MONTEIRO
EPSG	Ethical, Privacy and Security Group
EU	European Union
EUG	End Users Group
EV	Eric VELAY
F-REL	Final release
FD	Franck DUMORTIER
FL	Florence LABARRE
GDP	Guido DI PASQUALE
GDPR	General Data Protection Regulation
GM	Guido MARIOTTA
GS	George STAMATOIU
IP	Innovation Programme
IT	Information Technologies
IT2Rail	Information Technologies for Shift to Rail (EU project)
JB	José BERTOLIN
JC	Jerome CLAUZURE
JK	Jona-Moritz KUNDEL
JM	Jan MÖELLMANN
JS	John STAFFORD
JU	Joint Undertaking
JUr	Jordi URMENETA
JW	Javier WARLETA
LEA	Law Enforcement Authorities
LLa	Laurent LAUDINET

Lli	László LIBOR
LM	Leyre MERLE CARRERA
MAAP	Multi-Annual Action Plan (of Shift2Rail)
MaaS	Mobility as a Service
MaB	Martin BRENNAN
MB	Mihai BARCANESCU
MF	Marco FERREIRA
MS	Mary SHARP
MZ	Marc ZESIGER
NFC	Near Field Communications
NIS	Network and Information Systems
NW	Nora WINNIGER
O	Online connexion
PB	Petr BUCHNICEK
PNR	Passenger Name Records
PRM	People with Reduced Mobility
PTA	Public Transport Authorities
PTO	Public Transport Operator
RG	Rafael Juan GONZALEZ HERNANDEZ
RS	Riccardo SANTORO
S2R	EU programme: Shift2Rail
SDS	Stefania DI SERIO
SERA	Single European Railway Area
SG	Stefanos GOGOS
SH	Scott HEATH
SP	Stefano PERSI
TJ	Tom JONES
TT	Taoufik TAZI
UITP	International Association of Public Transport
UNIFE	Union of the European Railway Industries
WPx / WP(s)	Work Package x / Work Package(s)
YA	Yves AMSLER

REFERENCED DOCUMENTS

This section lists the document reference number, title, revision, and date of all documents referenced in the specifications document (see table 1).

TITLE	REVISION	DATE
Shift2Rail Joint Undertaking Multi-Annual Action Plan (MAAP)	REV3	26/11/2015
Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) <i>Appearing in the Executive summary, 4th EUG meeting, 1st, 2nd and 3rd EPS meeting, Ethical, Privacy and Security group conclusions</i>	Version issued the 27 April 2016	13/11/2017
Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (NIS Directive) <i>Appearing in the 1st EPS meeting</i>	Version issued the 5 July 2016	13/11/2017
Directive (EU) 2016/681 of the European Parliament and of the Council of 27 April 2016 on the use of passenger name record (PNR) data for the prevention, detection, investigation and prosecution of terrorist offences and serious crime (PNR Directive) <i>Appearing in the 1st EPS meeting</i>	Version issued the 27 April 2016	13/11/2017

Table 1: Referenced Documents

1. INTRODUCTION

This deliverable “D8.8 Conclusions and recommendations of the Experts’ Groups” focus its attention in a final evaluation and wrap up of the Experts’ Groups created for the project “Information Technologies for Shift to Rail” -onwards IT2Rail-).

IT2Rail² is a so-called “Shift2Rail Lighthouse Project”, one of the projects paving the way for the works of the ambitious Multi Annual Action Plan – also called MAAP- of the Shift2Rail³ Joint Undertaking (onwards JU). IT2Rail is dedicated to the “Innovation Programme 4” (onwards IP4) of Shift2Rail (onwards S2R), targeted at generating innovative Information Technologies (onwards IT) solutions for attractive Railway Services.

The main goal of IP4 is to put the travellers at the centre of the system. IP4 enable the development of solutions providing a seamless travel experience by giving access to a complete multimodal travel offer, which connects the first and last mile of long distance journeys across Europe. This experience will be proposed to the traveller in a friendly way, by hiding all the multiplicity, heterogeneity and complexity of the interactions needed to achieve it.

The final evaluation of the Experts’ Groups (onwards EGs) in IT2Rail (the End Users Group – onwards EUG- and the Ethical, Privacy and Security experts Group –onwards EPSG-) was launched at the end of the project so to have an overall picture of the impact on the project and of the future activities developed in IP4. This report provides an assessment of the IT2Rail project as a whole and presents an assessment of the impact of the advices in an IP4 perspective. The evaluation provides recommendations that are relevant to the implementation of the current activities developed under the framework of the IT2Rail project and the IP4 programme.

The D8.8 purpose is as follows:

“Report presenting the minutes of the meetings, together with any specialised report/opinion prepared by the external experts.”

IT2Rail provides a preliminary technical demonstration based on the application of a semantic web in the transport sector, a test of the future so-called “Web of Transportation”. The overall objective of the EGs was to facilitate and enlarge the future implementation of the “Web of Transportation” as it is conceived thanks to the Interoperability Framework developed and tested in IT2Rail. The “Web of Transportation” may leverage the path for a seamless multimodal travel in Europe. However, it may also create new challenges:

- Privacy, security and ethical issues are always on the spotlight in such type of projects. These three topics are a cornerstone of any sustainable multimodal system. Making transport seamless all across Europe is a complex task. However **the “Web of**

²www.it2rail.eu

³Shift2Rail JU is as a Public Private Partnership between the European Commission (onwards EC) and the Rail Industry aiming at introducing breakthrough innovation to all parts of the railway sector.



Transportation” does not collect (or need) any data of any kind – also applied to personal data. It provides means to publish certain assets under work flow management;

- The appearance of the “Web of Transportation”, once applied the semantic technologies to the transport sector, trigger the convergence between (1) the new mobility trends, (2) societal mainstems and (3) a change of paradigm in the transport sector. Vehicles are removed by new travel experiences, cheaper and attractive enough, and across Europe. A new mobility system centred in the traveller (not in the vehicle) is in the spotlight. In this framework, new solutions proposed via research and innovation activities addressing the transport sector, like the ones developed in IT2Rail, should be presented and discussed with the main key users influencing the Web of Transportation. They were represented in the EUG.

As described above, each of the Experts’ Group deals with a specific challenge and area of knowledge to analyse. Considering their pieces of advice for a successful deployment of the solutions developed in IT2Rail, to have 2 different groups dealing with specific issues was an interesting and useful approach.

To complete the whole vision and set of advices for a correct development and implementation of the IF technologies, the Advisory Board brings expertise regarding the whole project vision and, in particular, the IP4 goals as in it described in the deliverable “D8.9 Conclusions and recommendations of the Advisory Board”.

2. EXTERNAL BODIES IN IT2RAIL

The IT2Rail EGs are the Ethical, Privacy and Security EG (onward EPSG) and the End Users EG (onward EUG). The recommendations concerned not only the case of the project, but also the later implementation of these services into real-life environments by Shift2Rail (also referred to as S2R).

1. The EPSG, made of Ethical, Privacy & Security experts, dealt with ethical issues and the protection of individual rights. Due to the nature of the project, there is a need to ensure the compliance with the ethical and legal requirements linked to the privacy and data protection issues, compliance with the EU privacy and data protection legislation, ethical and societal acceptance, as well as any other aspects that are at stake;
2. The EUG, made of mainly transport operators'/organising authorities' representatives (both urban and mainline), was created to help clarifying the various situations in terms of market needs, constraints and opportunities at EU level, to advise during the mid-term discussions and to make recommendations and to comment the expected outcomes of the project and the follow-up. Significant importance was given to:
 - the use of data (e.g. data consolidation and quality, data exchange and data sharing between stakeholders, guarantees on the right usage of data, how to qualify the data, what is the relationship with 'open data', etc.); and
 - the potential impact of the new systems and services on passengers, including their acceptance levels.

Some of the point above were discussed in both EGs.

These Expert Groups Bodies were liaised with the IT2Rail Management Committees and relevant Work Packages – onwards WPx / WPs.

2.1 END USER'S GROUP

2.1.1 MEMBERS

This Expert Group is made up of 10 external experts (indicative figure), mainly from transport operators'/organising authorities' representatives (both urban and mainline), but also passengers' representatives. The composition of this group is presented in the table below (see table 2).

Name	Company	Attendance to meetings
Christophe BADESCO	KEOLIS	1, 2

Name	Company	Attendance to meetings
Alberto CILLERO	ALSA	3, 4 Subs of Mr. Rafael Juan GONZALEZ HERNANDEZ
Erik DE BUCK	Treintrambus/EPF, Belgium	1, 2, 3, 4
Stefania DI SERIO	ALMAVIVA	3, 4
Rafael Juan GONZALEZ HERNANDEZ	ALSA	2 Replaced by Alberto CILLERO
Scott HEATH	NETWORK RAIL	3
Jesús HERRERO	ATUC	Joining for the 5 th Meeting
Florence LABARRE	RATP/Ixxi, France	2, 3, 4
Libor LASZLO	OTL Oradea, Romania	1, 2, 3, 4
Adrian LUPAU (subs f Mr. Libor Laszlo)	OTL Oradea, Romania	1,
Bernard SCHWOB	AFIMB	1 – Joint the Advisory Board Group after the 2 nd meeting
George STAMATOIU	Metroul Bucuresti, Romania	1, 2, 3, 4
Marc ZESIGER	BLS, Switzerland	1, 3

Table 2: End Users Group members

2.1.2 MEETINGS

According to the D8.3 “Mandate and composition of Experts Group and Advisory Board” the original overview of the meetings’ schedule was defined based on the general development of the project, avoiding any fixed schedule, in order to ensure the necessary flexibility. Tentatively, this EUG would have meet throughout the lifetime of the project 5 times. Final schedule confirmed 4 meetings, preserving the last one to invite the EUG experts to the IT2Rail final event.

Meetings took place as follow:

- First meeting: Berlin, Germany (VBB Office, Hardenbergplatz 2, 10623 Berlin). 08/06/2016;
- Second meeting: Rome, Italy (1 Piazza della Croce Rossa, 00161 Roma). 02/12/2016;
- Third meeting: Madrid, Spain (Mar Egeo 4, San Fernando de Henares 28830, Madrid). 26/04/2017;

- Fourth meeting: Madrid, Spain (Mar Egeo 4, San Fernando de Henares 28830, Madrid). 27/04/2017;
- Fifth meeting: Expected to be done during the IT2Rail final event to show the EUG the final results during the TRA2018 (date foreseen: Between 19-21 April 2018, Vienna).

The main focus of each meeting was as follows:

- First meeting: Presentation of the whole project;
- Second meeting: The Interoperability Framework and the Business Analytics (WP1 and WP6 respectively);
- Third meeting: Travel Shopping and Booking and Ticketing (WP2 and WP3 respectively);
- Fourth meeting: Trip Tracker and Travel Companion (WP4 and WP5 respectively);
- Fifth meeting: Final public demonstration of the results of IT2Rail.

2.1.3MINUTES

Minutes from each meeting are presented in the following pages.

First EUG meeting

<p>MINUTES OF MEETING</p> <p>WP8 – T8.4 1st EG End Users' Meeting</p>
<p>08.06.2016 – 09:30 – 17:30</p> <p>VENUE: VBB Office Address: Hardenbergplatz 2, 10623 Berlin, Germany</p>

Meeting organiser	Mihai Barcanescu, UITP
Phone number	+32-2-788 01 14

List of Participants

Name	Company	Status ⁴
Adrian LUPĂU (AL)	OTL Oradea	A
Bernard SCHWOB (BS)	AFIMB (Agence Française pour l'Information Multimodale et la Billettique)	A
Christophe BADESCO (CB)	Keolis	A
Cristina HERNANDEZ (CH)	UITP	A
Eric DE BUCK (ED)	Treintrambus	A
George STAMATOIU (GS)	Metroul Bucuresti	A
Guido MARIOTTA (GM)	Leonardo company / WP6 leader	A
Jan MÖELLMANN (JM)	DB Tegio	E
Jona-Moritz KUNDEL (JK)	VBB	A
László LIBOR (LLi)	OTL Oradea	A
Laurent LAUDINET (LLa)	Thales / IT2Rail WP3 leader	A

⁴A: Attended, E: Excused; O: Online connexion.

Name	Company	Status ⁴
Marc ZESIGER (MZ)	BLS	A
Mihai BARCANESCU (MB)	UITP	A
Nora WINNINGER (NW)	SNCF / IT2Rail WP5 leader	A
Petr BUCHNÍČEK (PB)	Oltis Group / IT2Rail WP4 leader	O
Riccardo SANTORO (RS)	Trenitalia / IT2Rail WP1 leader	O
Stefanos GOGOS (SG)	UNIFE / IT2Rail Coordinator, WP7 leader	A
Taoufik TAZI (TT)	Amadeus / IT2Rail WP2 leader	O
Yves AMSLER (YA)	UITP	A

Minutes

Time	Topic	Responsible
10:00	Introduction – Main activities of the End Users group as described in WP8	UITP
<p>MB made the opening remarks and thanked the participants for joining the meeting. He also conveyed the excuse of the absent End Users members and IT2Rail partners.</p> <p>MB then presented the agenda and the topics to be discussed. MB presented the IT2Rail Advisory Board and Consultative Bodies (cf. slides) as part of the WP8 developments.</p> <p>The two Consultative bodies, also called Expert Groups (EGs), were then presented:</p> <ul style="list-style-type: none"> - One dedicated to “End Users”, made up of representatives from various types of stakeholders, which will support the project at the technical level: review and comment deliverables, help the project solve technical problems, etc; - Another dedicated to “Ethical, Privacy and Security Issues”, made up of experts from these fields, with no vested interests, that would support the project partners to address these sensitive and specialised topics/aspects. <p>In a previous Advisory Board meeting (08/03/2016), it was suggested that, concerning the “End Users” Group, the WP7 (technical coordination and pilot) could collect all info and make a presentation to them. It is part of the Agenda.</p> <p>A ‘tour de table’ followed in order for all End Users meeting participants to present themselves.</p>		

Time	Topic	Responsible
10:05	General project presentation	UNIFE
<p>SG presented the project to the End Users members (cf. slides):</p> <ul style="list-style-type: none"> - General overview of the project (total budget, starting date, duration and partners); - The main project objectives (challenges and vision, objectives); - The project structure: A short overview of the project’s technical WPs; - The link with S2R; - Project’s expected outcomes & impact. <p>No questions were made.</p>		

Time	Topic	Responsible
10.15	WP1 Presentation – Interoperability Framework	Trenitalia
<p>RS presented (online connexion) a general overview of the IT2Rail WP1, the so-called “Interoperability Framework”: its framework, aim, main documentation and current development. He made emphasis on the meaning of IT2Rail as a project taking part into a bigger programme – Shift2Rail (S2R).</p> <p>He explained to the End Users meeting attendees the needs and framework of the project: why this project needs to be developed, the limits and focus of the current regulation, the meaning of the interoperability framework and the path proposed for a successful SERA (Single European Railway Area).</p> <p>Some practical examples followed (e.g. Format or describing a station is very different for SNCF, VBB, TRENITALIA, but it has been shown that it can be automatically transferred in an understandable way through a logical management) as well as the components and functional deliverables of the WP1.</p> <p>The presentation was followed by a Q&A session, the most important topics discussed being:</p> <ul style="list-style-type: none"> - BS asked about the formats that shall still exist apart from the IF solution (e.g. TRANSMODEL and fare products – specific to a charging model). RS answered that in IT2Rail there is no need of being specific. Therefore, the existing solutions shall be options... Sub-classes specific to a charging method, but overall concept that could understand automatically when you deal with a fare product and interpret it. - RS proposed an action: To describe the problem from each point of view of the user group members, so as to get a diagnosis of topics going beyond the demonstration for future research to be submitted to the EC. - BS proposed to compare the solutions of SNCF, TRENITALIA etc. RS agreed on the approach and made it broader: also airlines and public transport should be considered, as they are part of IT2Rail. 		



Time	Topic	Responsible
11.00	WP2 Presentation – Travel Shopping	Amadeus
<p>TT presented (online connexion) a general overview of the IT2Rail WP2, the so-called “Travel Shopping”, as the first action and challenge for a traveller when he wants to travel. The high level objectives were also presented (“one-stop-shop” customer shopping experience, provide to the customer the control of the shopping experience, etc..) as well as the main actors. These designations are based on the commonly developed IT2Rail Glossary, Ontology and Specifications (official deliverables), so they were agreed and shared between all the partners of the project.</p> <p>A short explanation about the Travel Companion (WP5) and the Business Analytics (WP6) was done, to figure out how they are fed and could feed the WP2 (Travel Shopping), e.g. with the score and opinions delivered and analysed in the business analytics WP (WP6).</p> <p>The travel Shopping components breakdown was presented, based on previous IT2Rail agreements and using Capella (tool used in IT2Rail). Some Travel Shopping functions were presented following the sale structure. Later, a schema summarizing the “provide offers scenario” and how the different actors may interact was also presented.</p> <p>Finally, a briefing about the status and the following steps, particularly 2 integration steps of the WP2 in a workshop (June 2016) and within the WP7 (later) were presented to the End Users meeting group.</p> <p>The presentation was followed by a Q&A session, the most important topics discussed being:</p> <ul style="list-style-type: none"> - BS asked RS about the carbon footprint: Is it a preference of the traveller, or is it a “best” offer automatically provided? RS answered it could be both. 		



Time	Topic	Responsible
11.25	WP4 Presentation – Trip Tracker	Oltis Group
<p>To optimize the time, WP3 was switched to the afternoon sessions. All the attendees agreed. PB presented (online connexion) a general overview of the IT2Rail WP4, the so-called “Trip Tracker”, starting with the reasons to need it, in other words, the limitations of the current systems: limited amount of information to the passengers regarding their travel plans, in case of irregularities no feedback to the travellers, etc... PB explained how the WP4 proposes a way for the traveller to monitor irregularities in his way (real-time data, alerts) and to find the best way to solve them (proposing alternatives⁵). Therefore, for this WP development it is key to consider the impact of a disruption in a travel, e.g. cancellation, postponement, low impact (e.g. unavailability of services on-board).</p> <p>It was highlighted that the WP4 system does not follow the traveller, but the traveller follows his/her path through the system. Regarding privacy and security items, this aspect seems to be significant.</p> <p>A short explanation about the Travel Companion (WP5) was done, to explain the display of the information. More details were presented later.</p> <p>The Trip Tracker architecture and work breakdown structure were presented as well as the logical functions. Explanations were based on previous IT2Rail agreements (official deliverables) and using Capella.</p> <p>Finally, a briefing about the status (ontology finalized) and the following steps (implementation phase –C-REL⁶- entered) was presented. Some open questions to be solve in the following months were also presented, e.g.:</p> <ul style="list-style-type: none"> - The technology can handle the mechanism, but the data needed should be better investigated; - Sources of information should be available and not altered: it is important to assure this process, with no impact in the original data sources. 		

⁵ Business rules for reallocation are very complex.

⁶ C-REL: Core release.



Time	Topic	Responsible
12.00	WP6 Presentation - Business Analytics	Leonardo Company
<p>To optimize the time, WP5 was switched to the afternoon sessions. All the attendees agreed. GM presented a general overview of the IT2Rail WP6, the so-called “Business Analytics”, starting with the current activities: the Business Analytics combines data from various sources (internal and external sources, e.g. Eventful⁷, OpenWeatherMap, Twitter and Instagram for Advising travellers):</p> <ul style="list-style-type: none"> - by correlating events, - by transforming data into useful information, and - by computing a set of indexes in order to answer a set of analytical questions. <p>GM explained how the Business Analytics module is focused on leveraging social, mobile, structured and unstructured data to obtain valuable, actionable insights that allow rail operators, product/service providers, Traveller/Transport Enterprises to make better decisions. Final goals are:</p> <ul style="list-style-type: none"> - to increase quality of service and revenues, - to better adapt their level of service to the passengers demand, and - to optimise their operations to bring and retain more people on the train-urban mobility. <p>The main principles leading the design of the module are:</p> <ul style="list-style-type: none"> - Data-driven approach (from several fields); - Interoperability⁸; - Open data. <p>The actors involved in the IT2Rail business ecosystem (traveller, business user, data provider, social network, transport service operator) and use cases proposals (analyse travel data, analyse travel events and analyse social data) were also presented. Some references to the common ontology were made when needed.</p> <p>Then, a briefing about the current status and the steps up to July 2016 was done:</p> <ul style="list-style-type: none"> - The first version of the Business Analytics specifications was released in 2015; - A second version was released during April/May 2016 (submitted to EC); - External data sources have been identified and described in a technical report (available on the IT2Rail cooperation tool); - The software development for the C-REL is ongoing (ready in July 2016). The following steps to be finalised before the summer break are: <ul style="list-style-type: none"> - The Presentation layer (dashboards reporting indicators and KPIs) of the Business Analytics is in progress (ready for late June); - This front-end will contain some indicators concerning the Milan-Rome travel leg (described in the Corridor use case, WP7 task); 		

⁷World’s largest collection of events.

⁸IT2Rail modules are designed in order to build a self- consistent platform able to add ‘on-the-fly’ new components that enrich the abilities of the whole system.

Time	Topic	Responsible
12.00	WP6 Presentation - Business Analytics	Leonardo Company
<p>- Weather forecast information (rain, snow, clouds cover, etc) will be included as map layers (mid-July).</p> <p>The functionalities proposed for the current (C-REL) and following releases (A-REL and F-REL) were also presented:</p> <ul style="list-style-type: none"> - C-REL: <ul style="list-style-type: none"> - Charts and graphs showing the performances of the rail system will be included (ready for mid-July); - Final integration of the Presentation component, indicators, dashboard and geographical information (end of July). - A-REL⁹ and F-REL¹⁰: <ul style="list-style-type: none"> - To advise traveller which events might attend during his/her stay based on his/her preferences; - To inform the travellers of weather conditions foreseen for his/her journey; - To provide to the travellers information about different point of interests nearby the places that are visiting (e.g. museums, hospitals, hotels, restaurants, etc...); - To suggest the travellers the best date to book a journey (e.g. two weeks or one month before the departure date) at the cheapest fare; - To inform the travellers about the services feedbacks by crawling messages of the social network platforms (e.g. Twitter and Instagram). <p>Therefore, the following steps would be:</p> <ul style="list-style-type: none"> - Deliver the software modules for the Core Release related to the Transport and Travel Intelligence (end of July); - Develop connectors for gathering information from external data sources (Eventfull, OpenweatherMap, Twitter and Instagram) to be used in the later releases of the BA module (A-REL, F-REL); - Plan a meeting (June or July 2016) with Trenitalia (WP1) and Politecnico di Milano in order to define the usage of preferences model for improving the computations of the Business Analytics module; - Integrate results performed by the IT2Rail Business Analytics within the Travel Companion mobile app (A-REL, F-REL). <p>Some open questions to be solve in the following months were also presented to improve the module, e.g.:</p> <ul style="list-style-type: none"> - To find other data sources to be used in order to feed the Business Analytics module; - To find other valuable indicators for reporting functionalities; - How to make actors inclined to provide their data? 		

⁹A-REL: Additional release.

¹⁰F-REL: Final release.



Time	Topic	Responsible
12.00	WP6 Presentation - Business Analytics	Leonardo Company
<ul style="list-style-type: none"> - To identify other innovative models and algorithms to be applied on the available information of the Business Analytics. 		

Time	Topic	Responsible
13.30	WP3 Presentation – Booking and Ticketing	Thales
<p>LLa presented a general overview of the IT2Rail WP3, the so-called “Booking¹¹ and Ticketing¹²”, starting with the general goal of the WP: the Booking and ticketing WP3 defines the elements needed for multiple booking systems and ticketing systems to interoperate. As a result the WP3 will always consider the uttermost distributed scenario for any given situation. This principle will ease the identification of every business entity with one or many WP3 defined elements.</p> <p>Then LLa explained the reasons to develop a Booking and Ticketing WP, in other words, the advantages that this system may offer to the transport sector. The WP3 promotes service architecture for the following reasons:</p> <ul style="list-style-type: none"> - Service eco-system: a provided service should be independent from the rest of the services; - Loose coupling: a modification of a service should not impact (or to have a minimum impact) on the other services; - Contractual interface: a service commits on its interfaces; - Implementation agnostic: a service definition is independent from its implementation. <p>A short explanation about the concepts used in the WP3, based on the common ontology, was done, introducing the concepts of: “entitlement”, “token” and “embodiment” (and their relationship) and “travelepisode”.</p> <p>In addition, thanks to the Internet of Things (IoT) in relationship with WP5 (Travel Companion) an IT2Rail compliant system, it is possible to self-describes its AccessSystems (gates, validators...) in term of interfaces in order to match it with the WP5 Travel Companion communication capabilities, so to issue the most appropriate token and/or issue an embodiment if needed.</p>		

¹¹Controlling availability constraints on products.

¹²Issuing “Tickets”, enabling the travel of the passenger.

Time	Topic	Responsible
13.30	WP3 Presentation – Booking and Ticketing	Thales
<p>However, LLa stressed that this is a non-intrusive technology, in other words, a layer added to the legacy system, a support of legacy systems with minimum impact.</p> <p>Two high level descriptions of the main functions in WP3 were done, based on a Capella's schema: main functions and, with more details, main functional scenarios for the C-REL. A schema about the exchanged data was also presented to have an overview of the complexity of the system.</p> <p>The use cases proposed were also explained as simple use cases: only pre-paid products in a co-modal environment. In a later release they will be developed towards two steps processes for booking and payment. The WP3 use cases are also closely linked with the WP2 Travel Shopping as an offer that contains all the elements needed for the ticketing issuing, including the fare media issuing if necessary at shopping time.</p> <p>Then, the developments proposed to be done in the different releases were summarized:</p> <ul style="list-style-type: none"> - C-REL: WP3 partner will demonstrate air, train, coaches and urban ticketing systems compliant with IT2Rail WP3 specification V2 focusing on Token issuing use case. No payment is considered, dynamic interface is not addressed and entitlement issuing is partial. C-REL delivery is planned for end of July. - A-REL: WP3 partners will consider payment mechanism (simulated) and dynamic interface will be integrated. - F-REL: WP3 partners will demonstrate the full scope of IT2Rail on the WP7 defined corridor. This demonstration will include: <ul style="list-style-type: none"> - Multiple mode of transportation: Air, Train, Coaches, and Urban (considered as a single mode); - Multiple validation forms: QRCode, Qualipso triangle 2... <p>Finally, a briefing about the status and the following steps was presented, as well as the status of the main tasks in WP3:</p> <ul style="list-style-type: none"> - Task 3.1 Booking & Ticketing Ontology → Active; - Task 3.2 Booking & Ticketing Specifications → Active; - Task 3.3 Booking & Ticketing software components implementation → Active; - Task 3.4 WP3 Proof of concept integration and support to IT²RAIL Pilot → Non active. <p>The following steps will be mainly focused on the C-REL:</p> <ul style="list-style-type: none"> - Implementation of the C-REL software component compliant with WP3 specification V2 (focus on stand-alone iT2Rail services for each mode); - Start WP3 C-REL integration: definition of test cases for each mode; - Deployment on the WP7 verification & testing platform – pending. <p>The presentation was followed by a Q&A session, the most important topics discussed being:</p> <ul style="list-style-type: none"> - BS insisted on the fact that the Interoperability Framework shall not overwhelm existing legacy systems (especially for ticketing systems). This idea should be accepted; 		

Time	Topic	Responsible
13.30	WP3 Presentation – Booking and Ticketing	Thales
<ul style="list-style-type: none"> - RS answered explaining that the IT2Rail consortium may work with legacy systems (VBB, SNCF, TRENITALIA). However there is a need to confirm that adding functions and business models is not a migration task (not interoperability but increased services – e.g. Mobility as a Service with a bill at the end of the month); - LLa confirmed that the Interoperability Framework is a tool to build bridges between models and standards, based on a user centric approach. Therefore a gradual integration in the framework is also possible, considering other systems (and respecting them) at the own pace of each actor. 		

Time	Topic	Responsible
14.15	WP7 Presentation – Technical coordination	Thales
<p>LLa continued with the presentation of the IT2Rail WP7, the so-called “Technical coordination”. He explained that the W P7 is not producing technical element on its own, it is centred on Technical Coordination and global IT2Rail demonstration. It is needed because of the complexity of the project and the differences in the background of the 27 IT2Rail partners (Air, rail, coaches and urban specialists, transport operators, industry players...).</p> <p>The tasks, as described in the DoW, were presented in a logical order, as well as the current status of the WP7.</p> <p>Tasks and current status:</p> <ul style="list-style-type: none"> - Task 7.1 - Initiation, and technical monitoring of the IT²RAIL Project (methodology and technical consistency); <ul style="list-style-type: none"> - Status: <ul style="list-style-type: none"> - Providing template for specification and test document Tooling (Capella modeller, SVN configuration management, change management: in progress); - Methodology: Simplified ARCADIA methodology embedded into Capella modeller. - Task 7.2 - Preparation of Implementation activities (coordination of specifications); <ul style="list-style-type: none"> - Status: First versions had different granularity leading to delays and corrective action (using a common shared engineering model). V2 are being integrated. - Task 7.3 - Preparation of Pilot Testing Activities (pilot use case definition, corridor definition, stakeholder coordination); <ul style="list-style-type: none"> - Status: Initiated by collecting available assets from the IT2Rail partners. - Task 7.4 - Pilot Testing Activities (integration platform, integration reports); <ul style="list-style-type: none"> - Status: In progress: <ul style="list-style-type: none"> - Collect of partners constraints, e.g. physical ticketing devices being connected to legacy system; existing infrastructure and security constraints, etc... 		

Time	Topic	Responsible
14.15	WP7 Presentation – Technical coordination	Thales
<ul style="list-style-type: none"> - Heterogeneous technical environments; - To be maintained for the Shift2Rail IP4 duration. - Task 7.5 – IT2RAIL White Papers (studies). Non active. <p>The corridor was presented as an activity in progress. This demonstration would be based on realistic data/environment leveraging the consortium assets. Main criteria to define the corridor were: different travellers cultures should be included in the corridor, a multi-modal approach, interoperability is tested, key functions are proved, schedule & budget constraints, demonstration understanding, participants' collaboration and known of existing agreements.</p> <p>The following steps were also presented:</p> <ul style="list-style-type: none"> - T0 : Kick-off meeting 05/2015 (done); - C-REL: Release of Core Functions 09/2016 (in progress); - A-REL: Release Additional Functions 03/2017 (not started); - F-REL: Release of Final Functions 09/2017 (not started); - Final review 11/2017 (not started). 		

Time	Topic	Responsible
14.45	WP5 Presentation – Travel Companion	SNCF
<p>NW presented a general overview of the IT2Rail WP5, the so-called “Travel Companion”. She referred to this WP as the integration between the other WPs. Indeed, the Travel Companion must generate means to validate and inspect the travel and provide interchange navigation, all based on a graphical and user friendly interface.</p> <p>NW reminded the end Users meeting attendees the high level objectives of the WP5:</p> <ul style="list-style-type: none"> - To build a friendly display to the traveller covering all the human-machine interfaces; - To store all user personal data¹³; - To implement the key concepts of unique traveller identifier, smart device and virtualized data store, for a new door-to-door traveling experience; - To orchestrate all the components of the IT2Rail project in order to perform the key functions developed by other WPs: Buying tickets with travel shopper (WP2), booking, paying, and getting ticket with booking and ticketing (WP3), being informed for disruption with trip tracker (WP4), analyse travel usage with business analytics (WP6), and - To use the interoperability framework proposed for the IT2Rail project (WP1). 		

¹³E.g. development of a unique digital identifier to access traveller details & preferences stored in the cloud.

Time	Topic	Responsible
14.45	WP5 Presentation – Travel Companion	SNCF
<p>The technical flow diagram was also presented based on the Capella tool diagrams. The main WP5 components were also described, as well as their repartition / relation.</p> <p>The tasks, as described in the DoW, were presented in a logical order, as well as the current status of the WP5 (including its deliverables).</p> <ul style="list-style-type: none"> - Task 5.1 Travel Companion Ontology → Active; - Task 5.2 Travel Companion Specifications → Active; - Task 5.3 Travel Companion Software Components implementation → Active; - Task 5.4 Proof of concept integration → Non active. <p>NW presented the following steps mainly focus on the C-REL development:</p> <ul style="list-style-type: none"> - Finalization of the C-REL software development (focus on the interfaces between Travel companion and other WPs); - Start WP5 C-REL integration : technical configuration + testing; - Deployment on the WP7 verification & testing platform <p>No questions were made.</p>		

Time	Topic	Responsible
15.15	General discussion on future work of End Users EG	ALL
<p>The IT2Rail partners presented to the End Users members the technical progress of the project and the current situation. A short ‘tour de table’ followed in order for all End Users meeting participants to present their main interest. The main focus of the group is the market impact: how the project could impact in the current market development and implementation in Europe.</p>		

Time	Topic	Responsible
15.40	AOB and Closure of the Meeting	UITP
-		

Action List¹⁴

N°	Description	Responsible	Deadline
1	Continue discussion on the open points raised by the IT2Rail partners.	IT2Rail partners	Next End Users meeting
2	Solve the technical open questions and topics before the next End Users meeting	IT2Rail partners	Next End Users meeting
3	Present clear topics for discussion to the next End Users meeting	IT2Rail partners	Next End Users meeting

¹⁴The actions listed in the tables shall be copied in the Action List table relevant to the Board/SP/WP.

Second EUG meeting

<p>MINUTES OF MEETING</p> <p>IT2Rail – End User Group</p> <p>2nd meeting. WP8/T8.4</p>
<p>02.12.2016 – 09:30 – 17:00</p> <p>VENUE: TRENITALIA</p> <p>Address: 1, Piazza della Croce Rossa, 00161 Roma (Italy)</p>

Meeting organiser	Cristina Hernández de la Poza, UITP
Phone number	+32-2-788 01 12

List of Participants

Name	Company	Status
Adrian LUPAU (AL)	OTL Oradea, Romania	E
Catherine Maria MINCIOTTI (CMM)	Leonardo Company	A
Christophe BADESCO (CB)	KEOLIS	A
Daniel SCHMIDT (DS)	HaCon	A ¹⁵
Erik DE BUCK (EDB)	Treintrambus/EPF, Belgium	A
Florence LABARRE (FL)	RATP/Ixxi, France	A
George STAMATOIU (GS)	Metroul Bucuresti, Romania	A
Guido DI PASQUALE (GDP)	UITP	A
Guido MARIOTTA (GM)	Leonardo Company	A
Jan MOËLLMANN (JM)	DB REGIO	E

¹⁵Partially connected by webmeeting.

Name	Company	Status
Jerome CLAUZURE (JC)	AFIMB (Agence Française pour l'Information Multimodale et la Billettique)	E
Libor LASZLO (LLi)	OTL Oradea, Romania	A
Marc ZESIGER (MZ)	BLS, Switzerland	E
Rafael Juan GONZALEZ HERNANDEZ (RG)	ALSA	A
Riccardo SANTORO (RS)	TENITALIA	A
Stefania DI SERIO (SDS)	ALMAVIVA	E
Stefanos GOGOS (SG)	UNIFE	A
Yves AMSLER (YA)	UITP	E

Minutes

Time	Topic	Responsible
09.30	Welcome and Opening of the Meeting	UITP
<p>GDP made the opening remarks and thanked the participants for joining the meeting. He also conveyed the excuse of the absent EUG members. A 'tour de table' followed in order for all EUG meeting participants to present themselves.</p>		

Time	Topic	Responsible
09.35	IT2Rail – End User group guidelines	UITP
<p>The End User Group (EUG) is formed by 10 experts and practitioners of IT, transport & mobility, highly interested and studying the possibility to engage with IT2RAIL technologies. Not being members of the Consortium, the EUG gives an Independent vision and assessment of the project objectives.</p> <p>EUG Objectives:</p> <ul style="list-style-type: none"> ○ Regularly follow the project's activities ; ○ Assess the project's results, concepts & solutions in an objective way; ○ Find answers to your own feasibility questions about introducing the IF and Business Analytics for future mobility service scenarios; 		

Time	Topic	Responsible
09.35	IT2Rail – End User group guidelines	UITP
<ul style="list-style-type: none"> ○ Share opinions with other members of the EUG; ○ Provide a wider representativeness of Public Transport Authorities (onwards PTAs) & Public Transport Operators (onwards PTOs), enlarging the project’s outreach. <p>GDP reminds the EUG about confidentiality:</p> <ul style="list-style-type: none"> ○ Experts have signed a contract with confidentiality rules; ○ Any written or oral communication on these subjects and any communication of documents to the third parties is subject to the prior approval of UITP. <p>GDP reminds general info to the experts:</p> <ul style="list-style-type: none"> ○ Have the contract signed; ○ Inform UITP about the bank details: you received a bank identification form that should have been filled in and signed it; ○ Use the UITP reimbursement form to claim the travel cost: <ul style="list-style-type: none"> ▪ Keep carefully all your tickets as well as your boarding cards (<u>going and return</u>), in order to officially claim for your reimbursement; ▪ Maximum of 700 €/travel; ▪ We would like to stress that we need to apply the EC rules for this reimbursement (original tickets, etc...). ○ Be informed: Register to the IT2RAIL Newsletter on www.it2rail.eu and follow IT2RAIL on its websites and Twitter @IT2Rail <p>GDP presented the Agenda and meeting methodology. A “World Café” methodology was adopted to ensure the active participation of the experts to the topics.</p>		

Time	Topic	Responsible
10.00	Technological enablers for future mobility service scenarios	TRENITALIA
<p>This session was presented and conducted by Riccardo Santoro (RS), Trenitalia. The session was focusing on the following issues:</p> <ul style="list-style-type: none"> ✓ Future mobility service scenarios: distribution pipeline vs. trading platforms and how it affects Customers and Providers; ✓ How Customers/Providers will be affected by the new mobility service scenarios in the era of “platform businesses”; ✓ Examples of how this particular technology is going to support/affect the market for mobility, particularly in the light of the Ubers, AirBandBs, BlaBlaCars, etc: 		

Time	Topic	Responsible
10.00	Technological enablers for future mobility service scenarios	TRENITALIA
<ul style="list-style-type: none"> ○ It is about to allow people to live their experience. For IT2Rail, it is important the user has a smartphone (that can be used as a travel companion); ○ End users look for efficient travel experiences: additional services like famous chefs in the train restaurant or movies are considered just complementary by travellers and positive only if their travel experience is efficient; ○ Looking at Jane`s travel (a use case of IT2Rail), her goal is to meet a friend and not to travel itself. What is behind her final goal, she doesn`t care; ○ Therefore the TSP has to change the product to sell: not tickets anymore but travel experience (e.g. we do not buy a ticket to make a phone call); ○ IT2Rail is creating the technology for the introduction of this new products in the mobility market, which will be analysed and promoted in a new S2R project called GoF4R (http://www.gof4r.eu/); ○ We have to move from the concept of “Journey planner” and meet the customers` expectations, providing them with life and emotional experience. To do that, we have to create the conditions to have compatible information from different transport services; ○ The combination of information from different sources that creates a value for the customer is called <i>network effect</i>; ○ The customer becomes a consumer of network products: a product has much more value if it can be connected to another product; ○ In order to reduce interoperability costs, we need to solve the semantic heterogeneity problem. A way to solve it the creation and use of the web of transport data, as developed in IT2Rail; ○ At legal level, who has the responsibility of the customers` travel? Which TSP does take this risk? ○ Regulation is also a key aspect. It was created to protect the passenger, but it was created before the technology revealed to be enabler of new disruptive services; ○ The example of Airbnb is illuminating: it is a trading platform that generates the network effects and it is self-feeding. Airbnb is taking advantage of lack of regulatory framework and has started selling travel experiences in 2016; ○ Free flights have been promised by Ryanair: this would be possible because Ryanair gets revenue from other entities like airports, sponsors, etc. This is the same business model as Google (Google gets tons of money per click action); ○ IT2Rail has a new model that can make rail more attractive. New products, unthinkable today, can come up from the network effect (e.g. wine experience, honey moon, etc.); ○ Questions: <ul style="list-style-type: none"> ▪ What about legacy regulatory frameworks? 		

Time	Topic	Responsible
10.00	Technological enablers for future mobility service scenarios	TRENITALIA
<ul style="list-style-type: none"> ▪ Do they limit or facilitate adoption? ▪ How can representatives of end users become engaged in this evolution? <p>Sum up:</p> <ul style="list-style-type: none"> ○ Customer is at the center; ○ This means that TSP products are to be compatible with the life of customer; ○ This need certain technology that introduce problems that other industries have already experienced; ○ We need to understand the economic determines otherwise the Rail sector gets beat by Flixbus or Ryanair with free transport; ○ We need to understand it otherwise at the end of the project we do technology that no one understand. 		

Time	Topic	Responsible
11.00	Interoperability Framework: Status	TRENITALIA
<p>In this session, RS presented the current status of the Interoperability Framework:</p> <ul style="list-style-type: none"> ✓ Systemic approach and releases - C-REL, A-REL ✓ Presentation of the last developments of IT2Rail <p>The problem of semantic heterogeneity was explained in detail as the main barrier to be overcome to have interoperability of services. We operate under the open world assumption and accept the existence of many standards. Customers and operators in digital market join and leave at will.</p> <p>RS explained the Interoperability Framework principles, underlining that in IT2Rail there is no centralized platform. Status of IF components was presented.</p>		

Time	Topic	Responsible
11.40	Business analytics: Status	LEONARDO COMPANY
<p>In this session, Guido Mariotta (GM) presented the current status of the Business Analytics:</p> <ul style="list-style-type: none"> ✓ Systemic approach and releases - C-REL, A-REL ✓ Presentation of the last developments of IT2Rail 		

Time	Topic	Responsible
11.40	Business analytics: Status	LEONARDO COMPANY
<p>GM explained how the Business Analytics module enriches the IT2Rail platform by providing Travel & Transport Analytics. The module combines data from various sources (internal and external to the system) in order to provide meaningful information for all IT2Rail users.</p> <p>The BA module includes:</p> <ul style="list-style-type: none"> • Social media (e.g. twitter), • Tool that measure the quality of service, • Collection of reviews from Trip Advisor; • Machine learning • Development of a mobile App to collect feedback from users • Happening viewer. 		

Time	Topic	Responsible
12.10	Q&A	ALL
<p>After the presentation from RS and GM, the experts were asked to comment and ask questions:</p> <ul style="list-style-type: none"> • RG from ALSA: is there any link between the IF and Artificial Intelligence (AI)? • RS: in IT2Rail we do not create intelligent systems, however the system can return intelligent results if the input is a set of axioms and inferences. • RS: Semantic Web is already used in many applications (e.g. Facebook), the only one not using it is the transport sector, because we still use tickets. User don't care about the ticket, the systems must recognize user and all the info should be in the cloud. 		

Time	Topic	Responsible
13.30	World Café roundtable #1: Interoperability Framework	TRENITALIA
<p>RS asked the experts to answer the following question: <i>The most important aspect of digitalization of Travel and Transportation is not technological, but the shifting or emerging of radical changes in how our Customer use mobility in their daily life especially in relationship with the appearance of new business models, particularly platform businesses such as FlixBus, AirB&B and others who can use digitalization to leverage externalities afforded by multi-sided markets and acting as trading platforms between consumers and providers of services. The Interoperability Framework is an interoperability solution explicitly designed to equip the Travel Service Providers with the tools needed to face this challenge, leveraging its opportunities. Is</i></p>		

Time	Topic	Responsible
13.30	World Café roundtable #1: Interoperability Framework	TRENITALIA
<p><u>your Company interested in the topic of new services and trading platforms and what is the approach towards data sharing?</u></p> <p><u>ALSA:</u></p> <ul style="list-style-type: none"> • RG: ALSA is very interested, is facing to new companies like FlixBus and needs to react. ALSA has created a new sister company for Ride-sharing (Uber-like) but drivers must be licensed. The general position of the company is protective: it is needed to create regulation trying to apply to the new market and entrance. • RS: do you have ICT advantage compared to Uber? • RG: No but we have advantage to own the customers and we can offer more services. • RS: when you create a subsidiary, do you give them the autonomy they need? • RG: not really. The main idea is that this is an experiment to test new business models. • RS: the problem of the traditional companies is that they are too slow to react to societal changes compared to the new sharing economy's companies that more agile. <p><u>IXXI:</u></p> <ul style="list-style-type: none"> • FL: cities have less and less budget to develop new Applications; and at the same time there are third parties like CityMapper and Moovel that provide Apps for free as in London. Ixxi can not compete with such Start Ups. • RS: considering that IT2Rail is providing specifications, would Ixxi be interested to develop a Travel Companion based on IT2Rail specs? • FL: yes but only at local level. • FL: in Lyon, a successful multimodal App was developed within the EU Project OPTICITIES. However the Public Transport Operator Keolis does not want to use it because it does not want to promote other transport modes. The development of a Travel Companion depends quite a lot on political decision (e.g. the Major's strategy). <p><u>KEOLIS – Open data and data sharing:</u></p> <ul style="list-style-type: none"> • CB: we want to promote something for our customers. We don't like the Lyon multimodal App because we are not payed to give our data to Lyon. Keolis gives data to companies developing App for Keolis and not for others. • CB: open data policies are complicated; you cannot assume that since data is available then the operator offers it for free to anyone. Operators are willing to open data only if it is clearly demonstrated that thanks to that they will earn more money and customers. Anyway Keolis did not use the Opticities APP in Lyon also because in that period the city was renewing the contract with them. • CB: if we open, we have to be sure that also competitors open <p><u>EPF – Quality of Data:</u></p> <ul style="list-style-type: none"> • EDB: we have to keep in mind the importance of quality of data. If a user gets wrong information, then he will not use the App anymore. 		



Time	Topic	Responsible
13.30	World Café roundtable #1: Interoperability Framework	TRENITALIA
<ul style="list-style-type: none"> • RS: it is true but it should not be a barrier. Several platform (e.g. dating platforms) collapsed because of bad data. Also Twitter is now suffering because of false information. • RS: Taken this into account, which mechanisms could we adopt to prevent the publication of bad data? Should we create mechanisms to punish bad data providers? • EDB: it is very complicated to implement and make it work. • RS: we could generate mechanisms that allow still bad quality of data but able to check the quality and warn the data consumer. Regulation is needed. • Ixxl: in France the public authority guarantees the quality. <p><u>METROUL:</u></p> <ul style="list-style-type: none"> • GS: positive towards the multimodal App/Travel Companion; however in Romania there are some political/communication issues because operators do not speak to each other even though they are all public operators; • RS: have you considered to be in a wider network as a Travel Expert, in order to offer additional multimodal services? • GS: No, but this should be asked to the local government that owns data and services. <p><u>OTL:</u></p> <ul style="list-style-type: none"> • OTL: Open data depends from government because they are the owner of data; they can open if they gain value and money. <p><u>CONCLUSIONS:</u></p> <ul style="list-style-type: none"> • RS: in the next EUG meeting the IT2Rail consortium may try to demonstrate you that you don't get money selling data itself but from its exploitation; • RS: the findings of this study will be shared with the EUG. The results of IT2Rail will be public, except background information and patents. IF and web services developed in the project will be available on the web; • RS: the more people open data and services, the more is the benefit for the community. The question is who open first? We have to understand that the cost of non-attracting a customer to shift to rail and PT, could cost more than open data. <p><u>ACTIONS:</u></p> <ul style="list-style-type: none"> • Experts to send additional comments via email to UITP and RS; • RS to elaborate the if and how the feedback from experts will be considered in IT2Rail; • Consortium to share the study that proof that value of data is in its proper exploitation. 		



Time	Topic	Responsible
15.00	World Café roundtable #2: Business analytics	LEONARDO COMPANY
<p>GM asked the following question: according to what you have learned in the BA presentation, how can these software solutions be applied in the commercial solutions for improving the proposal offered to the travellers?</p> <ul style="list-style-type: none"> • ALSA: we have analysed BlaBlaCar phenomena. Customers first choose BlaBlaCar for the convenient price, but they continue to use it for the positive travel user experience. Today user experience, use of social networks are essential to attract customers. In addition, complementary services on buses generates new data to feed the Business Analytics. The more data you have, the more customized is the customer’s trip. • GM: do you send any questionnaire to the customers after the trip ? • ALSA: customers do not want long and boring questionnaires and often only negative experiences are reported by customers. • GM: how do you incentivize customers to give a feedback on the service? • ALSA: gamification and rewards • GM: do you design specific movies in the Bus? • ALSA: no, the service is outsourced, but the customer have several choices. • Keolis: quality of service is mandatory in our contract, but it is meant from the point of view of the PTA and not the customer. • Keolis: today we do not have KPIs representing the customer point of view. • Ixxl: the city council should take into account the customer experience and feedback, but it has not the right tool to do it. • EPF: Do not ask too much to the customers. Don’t make an extra form because it will fail. • Ixxl: Sunset EU project (http://sunset-project.eu/) created an App to help people change behavior; this app uses gamification. <p>GM asked the following: IT2Rail is going to design a prototype algorithm that takes into account the user behavior to build the travel solution. Do you think it’s worthwhile to design these kind of platforms in which the Traveller’s experience is the main focus?</p> <ul style="list-style-type: none"> • OTL: what if the Happening is cancelled? • GM: Good question. We didn’t think of it. We could think of a plan B. In general, it is up to the user profile; the algorithm should suggest alternatives via the trip tracker component. Currently we do not have a tool for the detection of event cancellation. • RS: we will use Annotations and it will be cheap to create them. For instance, an event like the mid-term event could be added simply through a html file. • Ixxi: I use Netflix, they suggest movies based on behaviour analysis; good but then you start stopping discovering other movies. You lose the opportunity to change and watch something different. The same risk can apply to mobility. 		



Time	Topic	Responsible
15.00	World Café roundtable #2: Business analytics	LEONARDO COMPANY
<p>Do you think it would be convenient to add IoT capabilities to the Business Analytics?</p> <ul style="list-style-type: none"> • ALSA: Yes, we do use Internet of Things for maintenance. It's useful for the operators but not for the customers. We can monitor the state of awareness of the driver. It's not my business in the company but there's a project tied to the IoT. • EPF: You could monitor the load of the car, for example. Some problems could be avoided if you know in which subway car there's more room, for example. Sensors in this manner are useful. You could maybe suggest (<i>over the loudspeaker</i>) in a train/metro station. • Metroul: What happens if for instance I like rough bicycle paths and others don't? For me, it's OK, but maybe for someone else it's not that good. It's difficult to rate this. What happens if the journey is OK except for, maybe, the last leg which was awful? How do you rate the whole journey? For instance, I'm writing on Instagram and I'm saying that car 8 has garbage. How can anyone be sure it isn't a fake alert? • GM: Good questions, to be considered in BA. It happened to me when I was designing emergency systems. The more data you have, the more you can check if the data is fake or not. • Metroul: user should be able to rate each aspect of his/her journey. • OTL: users should be rewarded if they give feedbacks. • GM: to be considered in F-REL. 		

Time	Topic	Responsible
16.30	Presentation of other S2R projects: ATTRACKTIVE, Co-Active and GoF4R	HaCon, Trenitalia
<p>Daniel Schmidt presented the new projects ATTRACKTIVE and Co-Active remotely (GoToMeeting session).</p> <p>This session was informative for the experts that will be involved in the future EUG meetings on the topics of the Travel Shopper, Booking&Ticketing, Travel Companion and the Trip Tracker.</p> <p>RS finally introduced to the experts the new S2R project GoF4R, focused on the Governance of the IF.</p>		

Time	Topic	Responsible
16.55	Conclusions	UITP
<p>No decision about a potential date for the next meeting was made. ACTION: UITP to check with the consortium and to propose a set of potential dates for the next EUG meeting (2017).</p>		

Action List

N°	Description	Responsible	Deadline
1	Experts to send additional comments via email to UITP and RS	EUG members	ASAP
2	Elaborate if and how the feedback from experts will be considered in Interoperability Framework specifications.	Trenitalia	March 2017
3	Elaborate if and how the feedback from experts will be considered in Business Analytics specifications.	Leonardo Company	March 2017
4	Check with the consortium and to propose a set of potential dates for the next EUG meeting (2017).	UITP	January 2017



Third EUG meeting

<p>MINUTES OF MEETING IT2Rail – End User Group 3rd meeting. WP8/T8.4</p>
<p>26.04.2017 – 09:00 – 17:30</p> <p>VENUE: INDRA Address: Mar Egeo 4, San Fernando de Henares 28830, Madrid (Spain)</p>

Meeting organiser	Guido Di Pasquale, UITP
Phone number	+32-494-49 77 83

List of Participants

Name	Company	Status
Achim VON DER EMBSE (AVDE)	HaCon	A
Alberto CILLERO (AC)	ALSA	A
Christophe BADESCO (CB)	KEOLIS	E
Daniel SCHMIDT (DS)	HaCon	A
Edouard CARPENTIER (ECa)	THALES GROUP	A
Eric BIABIANY (EB)	SNCF	A
Erik DE BUCK (EDB)	Treintrambus/EPF, Belgium	A
Florence LABARRE (FL)	RATP/Ixxi, France	A
George STAMATOIU (GS)	Metroul Bucuresti, Romania	A
Guido DI PASQUALE (GDP)	UITP	A
Jan MOËLLMANN (JM)	DB REGIO	E

Name	Company	Status
Jerome CLAUZURE (JC)	AFIMB (Agence Française pour l'Information Multimodale et la Billettique)	E
John STAFFORD (JS)	RSSB	A
José BERTOLIN (JB)	INDRA	A
Leyre MERLE CARRERA (LM)	INDRA	A
Libor LASZLO (LLi)	OTL Oradea, Romania	A
Marc Zesiger (MZ)	BLS, Switzerland	A
Martin BRENNAN (MaB)	RSSB	A
Nora WINNINGER (NW)	SNCF	E
Petr BUCHNICEK (PB)	OLTIS GROUP	E
Scott HEATH (SH)	NETWORK RAIL	A
Stefania DI SERIO (SDS)	ALMAVIVA	A
Tom JONES (TJ)	AMADEUS	A
Yves AMSLER (YA)	UITP	A

Minutes

Time	Topic	Responsible
09.20	Welcome and Opening of the Meeting	UITP
<p>GDP (UITP) made the opening remarks and thanked the participants for joining the meeting. He also conveyed the excuse of the absent EUG members. A 'tour de table' followed in order for all EUG meeting participants to present themselves.</p>		

Time	Topic	Responsible
09.30	IT2Rail – End User group guidelines	UITP
<p>The End User Group (EUG) is formed by 10 experts and practitioners of IT, transport & mobility, highly interested and studying the possibility to engage with IT2RAIL technologies. Not being members of the Consortium, the EUG gives an independent vision and assessment of the project objectives regarding the impact as potential customers of the Interoperability Framework (onwards IF).</p>		



Time	Topic	Responsible
10.00	Travel shopping	Amadeus + HaCon
<p>DS (HaCon) and TJ (Amadeus) presented the objectives of the Travel Shopping component. Functional architecture overview as well as the status/next steps of developments in IT2Rail and Co-Active were provided. Q/A and discussion:</p> <ul style="list-style-type: none"> • EDB (EPF): are the projects dealing with passenger rights and compensation? <ul style="list-style-type: none"> ○ TJ: in booking and ticketing, it is part of the data flow info and passengers can have access to information to know if their travel has been affected by disruption. • EDB (EPF): the responsible for user’s travel should always be the service provider issuing the ticket. • MaB (RSSB): how do you see the transition between IT2Rail and Co-Active? <ul style="list-style-type: none"> ○ DS: yes we can reuse a lot of things but not everything. ○ DS: a lot of outcomes from IT2Rail can be reused, e.g. re-use Capella model, reuse specifications and requirements; however the implementation can be different. 3 projects are working with Capella and need to be aligned; ○ TJ: ontology need to grow with new domains, maintaining coherence within the projects. • JS (RSSB): What is the methodology adopted to capture all the requirements across travel shopping? How do you guarantee that all needs from all users and modes are captured and considered? <ul style="list-style-type: none"> ○ ECa: via identification of use cases and using Capella. The process adopted starts from the identification of Use cases, followed by the extraction of functionalities and their implementation. • MaB (RSSB): how can we contribute to the requirements? <ul style="list-style-type: none"> ○ AVDE: We can provide Capella model but maybe do not help. ○ YA: Capella not easy to understand for not specialist, we should find another way. ○ DS: maybe better via review of intermediate deliverable. • SDS (Almaviva): is there any connection with CEN for the ontology? <ul style="list-style-type: none"> ○ YA: IT2Rail not working with standards, but with concepts. IT2Rail is developing as much generic concept as possible. Should be agreed with all standardization body. GoF4R project is looking at the relationship with CEN/CENELEC. ○ ECa: we do not put standards on other standard, but semantic relationship between ontology languages. The aim is to enable machines to speak together. The main challenge is to populate the data base with data and services. • GDP: what does an organization need to do to become an IT2Rail travel expert? <ul style="list-style-type: none"> ○ TJ (Amadeus): you need to find out about ontology, make a mapping with my service. Publishing the system with the annotation. You have to register it in the IT2Rail service registry. ○ ECa: we have deliverable in IT2Rail that explains how to become a travel expert. 		

Time	Topic	Responsible
11.30	Booking & Ticketing	Thales (support from INDRA & Amadeus)

In this session ECa presented the objectives of the Booking & Ticketing component from the Travel expert and end user perspectives. Functional architecture overview as well as the status/next steps of developments in IT2Rail and Co-Active were provided.

Q/A and discussion:

- **LLi** (OTL): as Travel service provider what should I do to integrate my systems with the Booking & Ticketing component?
 - **ECa**: A travel service provider has to adapt the web service with annotations following the IT2Rail specifications. There is the data part and the execution part. Then a travel service provider has to register the service in the IT2Rail registry.
- **MZ** (BLS): what is the effort to integrate it?
 - **ECa** and **DS**: VBB use case will serve as valuating the effort taken to integrate it.
- **GDP**: what about legacy systems?
 - **ECa**: you will use the existing systems, IT2rail is to enable Pan-European booking and systems
- **JS** (RSSB): what is the involvement of EPF? Have they been involved?
 - **ECa**: for now it is more B2B, but they will be involved in the next step.
 - **EDB**: we have talked to our members to be more involved
- **JS** (RSSB): isn't it a risk to engage only operators to give requirements?
- **FL** (IXXI): why did you choose not to include final users?
 - **ECa**: in the validation part, the end-user has been considered with mobile device (NFC - Near Field Communications-)
- **SDS**: You have always shown the first slide with the user at the center, but from the following slides, the user disappears. How we can reflect this in the user perspective?
 - **DS**: the Storyboard shows that the origin of the development is based on a use case (Jane), for which you need the technical enablers (IT2Rail components).
- **FL**: whita a water-fall approach, you might design a solution that is not satisfying the needs of customers.
- **JS** (RSSB): that is the point; it should be an iterative process and involve end users, to be sure we do not have a gap.
 - **ECa**: yes, but for companies like Thales the end-user is the operator, that's why
- **EDB** (EPF): we really need the EPF to be more involved in the requirements collection
- **FL** (IXXI): in the TC, do you have a marketing, social study and experts in this direction in the consortium?
- **MaB** (RSSB): this is important for the market uptake. It would have been maybe better to look first at the market impact and then at the technical solutions.



Time	Topic	Responsible
11.30	Booking & Ticketing	Thales (support from INDRA & Amadeus)
<ul style="list-style-type: none"> ○ AVDE: we have Attoma who is doing a survey for user interface ○ ECa: it is difficult to sell what is on the back end of IT2Rail, that end users don't see, and TC is the most visible and questionable part. ○ ECa: end user approach allowed us to identify the pain of the traveller. The final report of IT2Rail will only report the user experience and completely user oriented. 		

Time	Topic	Responsible
13.30	Roundtable #1: Travel shopping	HaCon
<p>Topic 1: One stop shop</p> <p>DS (HaCon) asked the EUG the following: <i>Usually travellers plan their long distance trips stepwise instead of in an integrated way. This means they are planning (and buying) the long distance first and after that they are looking for suitable travel episodes for the first and last mile. This could lead to suboptimal solutions. (By the way how did you plan your trip to this meeting?). What is the future of mobility shops/platforms: one stop shops or specialized platforms, e.g. mode, long distance? Will the traveller/user change their behaviour in order to plan (and book) trips in a more integrated way using one stop shops? What are the main obstacles to make one stop shops a success? From the technology, cultural, legally ... side.</i></p> <ul style="list-style-type: none"> • None of us made this end2end calculation, someone uses platforms like Rome2Rio but just to check the information. • SDS (Almaviva): the long distance will drive our choice. The typical user is not ready for a one-stop shop. How do we change people behavior? • FL (IXXI): I have different logics in my mind when I choose the journey, different criteria for the origin place and destination. I would use IT2Rail Travel Shopping only for information but TRUST is a different matter. • JS (RSSB): the issue around the reliability and trust is not a fact but the emotional perception. • DS (HaCon): we have BA that analyses reliability (this operator is always late, etc...). • RSSB: is it possible to build a travel shopping tool that is adapted to user preferences? <ul style="list-style-type: none"> ○ DS: we want to have self-learning preferences: what you did in the past will update your preferences automatically. • EDB (EPF): as end user I would like to have a travel shopping tool with alternative suggestions according to different criteria (e.g. a cheaper solution that could include different modes or itineraries). 		



Time	Topic	Responsible
13.30	Roundtable #1: Travel shopping	HaCon
<ul style="list-style-type: none"> ○ DS: we distinguish preferences in whish (e.g. first class) and needs. ● RSSB: perception is important. It is important to know who the traveller is. ● FL (IXXI): who do you talk to fix the problems? The after sales must be improved and more reliable. For example when you deal with Expedia, you never know who is the responsible, you are redirected from a person to another. ● RSSB: TC or travel shopping are not the legal binding. They are not the legal tools, but only enablers. ● SDS: this is a commercial issue and the business model behind that is crucial. ● YA: today if you want to really guarantee no disruptions and solve it in one shot, all the TSPs should ask the customers to arrive so in advance that all customers' needs will no longer be preserved. ● GS (METROUL): from technical side, the travel shopping can be seen has a live repository for the providers. The providers upload the changes and the travel companion should announce it. The issue will be the trust in the application, not in the travel providers. Combining all providers in one stop shop put an issue if a change happens. ● FL (IXXI): the user knows that if the info given is wrong then the App is failing; the user doesn't care about the operators. If one of them fails, for the user all the network is failing. ● FL (IXXI): would you give and let some user experience the Apps? <ul style="list-style-type: none"> ○ Daniel: not in IT2R, but in ATTRACKTIVE and Cohesive. ● EDB (EPF): the cultural/geographical aspects should be taken into account in the design of a one-stop-shop App. <p>Topic 2 - 3rd Party Distribution</p> <p>TJ (Amadeus) asked the EUG the following: <i>The air sector is probably the one sector which has invested heavily in 3rd party distribution, selling approximately the same volumes as via their proprietary distribution channel. For one-stop-shops to become 'the norm' it is evident that the 3rd party distribution of non-air modes would need to increase. We know that there are various operator concerns about distributing their products and services via 3rd parties in connection with granting access to timetables and fares for the Travel Shopping step. What sort of concerns are there and to what are they linked? – Technology, market and business strategy, cost, regulatory, other? Can the technology foreseen in IP4 (as initiated by IT2Rail) assist in alleviating some of these concerns, and in what ways? What non-technological factors might remain which would need to be overcome?</i></p> <ul style="list-style-type: none"> ● TJ: this topic is from Travel provider perspective. Amadeus issues tickets on behalf of Airline operators. What about other sectors? What are the main concerns in opening and distributing services via third parties? ● RSSB: there was a study some years ago finding that: 		



Time	Topic	Responsible
13.30	Roundtable #1: Travel shopping	HaCon
<ul style="list-style-type: none"> ○ margins are reduced if opening ticket issuing to third parties; difficult to share a cake which is not big ○ operators know their customers and want to avoid bad effect ○ so one of the concerns is the revenue ○ if the operator changes data in real time, how do we ensure the right information to third party portal. <ul style="list-style-type: none"> ● TJ: so the point is that the brand and service of the operator could not be trusted anymore if the info is not correct in the third party ● RSSB: is there an issue with latency? We need to be sure that info is updated in real time. ● SH (Network Rail): the 3rd party distribution potentially gives away the investment done in branding. ● MZ (BLS): in Swiss all operators are investing in data, so this is an obstacle for the third party distribution ● SDS: now big operators want to be mobility leader so it is very difficult to enter in their market with a 3rd party proposition. It is important to understand the business model ● TJ: the added value would be earn more customer in other regions. The system needs to be flexible adapting to the different strategies of the operators. It needs to be customized from the TSP perspective, it is not one size fits all. ● RSSB: and it is related to the regional models, they have different business models <p><u>Conclusions:</u></p> <ul style="list-style-type: none"> ● It would be helpful to have a real one stop shop, but EUG still prefers to have the control of the journey planning; ● Trust is very important; ● Third party distribution is a challenge from the business and revenue point of view. The business models should be clearly identified as well as the benefits for actors involved. 		

Time	Topic	Responsible
15.15	Roundtable #2: Booking & Ticketing	AMADEUS, THALES
<p>Topic 1 - 3rd Party Distribution</p> <p><u>TJ (Amadeus) asked the EUG the following:</u> <i>Similar question as in Travel Shopping RoundTable but with a focus on the booking, ticketing and settlement features of a 3rd party one-stop-shop. What sort of concerns are there and to what are they linked? – Technology, licensing,</i></p>		



Time	Topic	Responsible
15.15	Roundtable #2: Booking & Ticketing	AMADEUS, THALES
<p><i>billing, settlement, market and business strategy, cost, regulatory, other? Can the technology foreseen in IP4 (as initiated by IT2Rail) assist in alleviating some of these concerns, and in what ways? What non-technological factors might remain which would need to be overcome?</i></p> <ul style="list-style-type: none"> • If a travel agency wants to sell DB in France, a legal entity has to be created which is costly. It is a fact that it prevents or stops 3rd party distribution. • GS (Metroul): what will be the 3rd party? I have an area where I provide my services. Who is the 3rd party interested to sell my services in the city? Or is this only a Pan-European issue? If the 3rd party can provide benefit to us, then I would be interested on it. • LLi (OTL): we are the only PT operator so users do not have choices. We have invested in marketing, we sell the city card. There is no room for third party to sell our tickets. • SDS: it has to be clear the benefit for the last mile operator. The number of people that can be reached is much higher if the information has been sold by the home retailer. Users are “forced” to take the taxi when they arrive at the destination airport, because it is difficult to find useful information on the local transport. • YA: we had a project in Integrated Fare Management in which Thalys, STIB and RATP worked together. It was rejected by the authorities because they did not see the business case. Also the legal aspects have to be considered. No one can sell tickets of Navigo pass, only RATP and SNFC can sell it. For the moment it prevents anyone to get data. It is a fact. As long as the Paris system is subsidized and fixed by authority, then you have to get the approval of the authority. It is not only a commercial issue. It was the same for Lisbon: the technical problem was solved, but not the legal one. This aspects should be investigated in GoF4R project. • SDS: the main problem is the business. In Italy, the 3rd party is reselling. If you applied a proper distribution then you need a strong clearing model. <p>Topic 2: Mobility as a Service</p> <p>ECa (Thales) asked the EUG the following: <i>A new wave of projects, promoted by private and public investment, is creating proof of concept to accelerate the deployment of Mobility-as-a-Service (MaaS) across Europe. A number of barriers still exist and regulatory and business frameworks are very different across European countries. IT2Rail could play relevant role for EU MaaS development. What is your definition of MaaS? Who would be the best provider for MaaS (operators, distribution channels, authorities ...)? What is the best way for Billing: Trip wise (in advance) vs. monthly bill (afterwards), Best prices guaranty? What can be included (Modes, Geographical coverage, How to share the revenue)?</i></p> <ul style="list-style-type: none"> • ECa introduced the MaaS concept and asked EUG view on MaaS. 		



Time	Topic	Responsible
15.15	Roundtable #2: Booking & Ticketing	AMADEUS, THALES
<ul style="list-style-type: none"> • GDP: also UITP is pushing MaaS with the Combined Mobility Commission. There are several examples among the UITP members like UbiGo in Gothenburg and Hannovermobil. • SDS: Trenitalia integrated with other modes in Piemonte through the same smart card (BIP). From the user perspective it is an integrated offer. • SH: the example of MaaS Global - Whim in Helsinki and UK. • SDS: the transport operators are forced to be also MaaS operators otherwise they will lose the market in the future. • YA: Uber could be used as complementary services but not competing. And not without any rules. • SDS: if MaaS has to change the paradigm then the role of authorities will be strong. • RSSB: S2R IP4 has a strategy to include MaaS in the vision. • AC (ALSA): <ul style="list-style-type: none"> ○ we are very interested in MaaS, we have urban-interurban-ect services. We are a network operator and we see it as an opportunity and we already do it at the information level. ○ we have services already in place: e.g. Madrid-Benidorm • RSSB: question to Alsa: how do you quantify if it is worthwhile to put in place a MaaS scheme? Have you got statistics? Before entering in the market of MaaS, some market research would be useful. • AC (ALSA): <ul style="list-style-type: none"> ○ No market research has been conducted in advance, but before the introduction of the new scheme, ALSA was losing passengers and now they are increasing. ○ The first step has been the integration of rail with buses, with a single integrated ticket whose price is the sum of the prices of the different legs included. No packages. • SDS: Moovit has just launched its own carpooling integrated with PT at information level but not at the ticketing level. The EU project Social Car is developing the algorithm that is connecting PT with carpooling. • FL (IXXI): in France the authorities are promoting the car pooling and Ixxi is now starting working with carpooling startups. The Public Transport Authorities are funding them. • RSSB: the carpooling is particular from the social and cultural point of view, linked to trust and mindset. • SDS: carpooling today is based on social reputation. You are rated and kicked off by the community, e.g. BlaBlaCar and Airbnb. 		
<p>Topic 3 – Integrated Tickets (Intermodality) vs. Multiple Tickets (Comodality)</p>		



Time	Topic	Responsible
15.15	Roundtable #2: Booking & Ticketing	AMADEUS, THALES
<p>ECa (Thales) asked the EUG the following: <i>In one sense Integrated Ticketing is currently (in terms of the number of passenger journeys) the most common form of Ticketing since most journeys are urban, and in most cities the public transport authority oversees a smart ticketing transport application which effectively integrates multiple urban transport mode services. Longer distance travel is in general, but not always, characterized by comodality. What are the perspectives for an increase of Integrated Ticketing in itineraries which incorporate longer distance transport modes? Could the end user (traveller)'s appreciation of Integrated Ticketing at local or urban level, extend to Integrated Ticketing for journeys over a longer distance? What is stopping the market from supplying Integrated Ticketing for all itineraries today? What are the relative costs of both ticketing solutions? What role does Technology play in promoting Integrated Ticketing, and what role could other factors play?</i></p> <ul style="list-style-type: none"> • LLi (OTL): we operate urban service and the integration of tickets gave us the possibility to offer discounted tickets, gaining new users. Although the service is subsidized, it is a win-win situation for operator and authorities. • AC (Alsa): the biggest problem for us is to integrate the regional services with the urban ones, because the local regulations are different. This is the real tricky point. • RSSB: ticketing integration is a political decision and not technical. • YA: in Paris Bus and metro ticketing is not integrated. It is a political decision. • SDS: maybe we should put on the table the fact that fare collection should be revised because is very complex in terms of integration. • YA: it is also related to administration; the Paris case is too complicated because there are many different modes. • SDS: because history says that the systems are done for operators and not for the clients. • YA: if Bus services are deregulated, how can they be integrated at EU level, not even integrated at local level and competing? • SH: this is where MaaS can overcome these barriers, with a unique invoice at the end of the month to the customers. <p>Conclusions:</p> <ul style="list-style-type: none"> • Booking & Ticketing third party distribution is technically feasible and demonstrated, however legal and business aspects have not be explored enough and have been often barriers for the deployment. • Mobility as a Service and integration of mobility offers are the challenge for the traditional transport operators. They are forced to enter to this market to compete with the emerging players offering door to door mobility. • MaaS can be the solution to overcome the barriers of ticketing integration, with a unique invoice at the end of the month to the customers. 		

Action List

N°	Description	Responsible	Deadline
1	Challenge: To understand how to have a wider adoption of the “one-stop-shop” when some end users still prefer to have the control of the journey planning	Potentially interesting for IP4 in S2R	-
2	Challenge: To build an environment of trust based on the IF	Potentially interesting for IP4 in S2R	-
3	Challenge: Third party distribution is seen as a challenge from the business and revenue point of view. The business models should be clearly identified as well as the benefits for the actors involved.	Potentially interesting for IP4 in S2R	-
4	Barriers: Legal and business aspects related to booking and business need to be further explored.	Potentially interesting for IP4 in S2R	-
5	Challenge: Integration of MaaS. MaaS can be the solution to overcome the barriers of ticketing integration, with a unique invoice at the end of the month to the customers.	Potentially interesting for IP4 in S2R	-

Fourth EUG meeting

<p>MINUTES OF MEETING</p> <p>IT2Rail – End User Group</p> <p>4th meeting. WP8/T8.4</p>
<p>27.04.2017 – 09:00 – 16:00</p> <p>VENUE: INDRA</p> <p>Address: Mar Egeo 4, San Fernando de Henares 28830, Madrid (Spain)</p>

Meeting organiser	Guido Di Pasquale, UITP
Phone number	+32-494-49 77 83

List of Participants

Name	Company	Status
Achim VON DER EMBSE (AVDE)	HaCon	A
Alberto CILLERO (AC)	ALSA	A
Christophe BADESCO (CB)	KEOLIS	E
Daniel SCHMIDT (DS)	HaCon	A
Edouard CARPENTIER (ECa)	THALES GROUP	E
Eric BIABIANY (EB)	SNCF	A
Eric VELAY (EV)	DIGINEXT	A
Erik DE BUCK (EDB)	Treintrambus/EPF, Belgium	A
Florence LABARRE (FL)	RATP/Ixxi, France	A
George STAMATOIU (GS)	Metroul Bucuresti, Romania	A
Guido DI PASQUALE (GDP)	UITP	A
Jan MOËLLMANN (JM)	DB REGIO	E

Name	Company	Status
Jerome CLAUZURE (JC)	AFIMB (Agence Française pour l'Information Multimodale et la Billettique)	E
John STAFFORD (JS)	RSSB	A
José BERTOLIN (JB)	INDRA	A
Leyre MERLE CARRERA (LM)	INDRA	E
Libor LASZLO (LL)	OTL Oradea, Romania	A
Marc Zesiger (MZ)	BLS, Switzerland	E
Martin BRENNAN (MaB)	RSSB	A
Nora WINNINGER (NW)	SNCF	A
Petr BUCHNICEK (PB)	OLTIS GROUP	A
Scott HEATH (SH)	NETWORK RAIL	A
Stefania DI SERIO (SDS)	ALMAVIVA	A
Tom JONES (TJ)	AMADEUS	E
Yves AMSLER (YA)	UITP	A

Minutes

Time	Topic	Responsible
09.00	Travel companion	SNCF + DIGINEXT
<p>NW (SNCF) and EV (DIGINEXT) presented the objectives of the Travel Companion component from the Travel expert and end user perspectives. Functional architecture overview as well as the status/next steps of developments in IT2Rail and ATTRACKTIVE were provided.</p> <p>NW and AVDE stressed the user-centric characteristics of the TC showing the “Jane” use case. AVDE showed as the TC is an open system which can be extended. There won't be one single TC, each organization may develop their TC.</p>		

Time	Topic	Responsible
10.00	Trip tracker	OLTIS + HaCon
<p>PB (OLTIS) presented the objectives of the Trip Tracker component from the Travel expert and end user perspectives. Functional architecture overview as well as the status/next steps of developments in IT2Rail and ATTRACkTIVE were provided.</p> <p>AVDE presented the new Trip Tracker features that will be developed in ATTRACkTIVE</p> <ul style="list-style-type: none"> ○ Inclusion of private transport (car sharing) and make prediction in advance (recovering plan) → e.g. If tomorrow rains, it is better if you take your car; ○ Crowd source: e.g. if the train is overcrowded, avoid to give that solution. 		

Time	Topic	Responsible
11.30	Roundtable #1: Trip tracker	Oltis+HaCon
<p>Topic 1: Trip tracking in general</p> <p>PB and DS asked the EUG the following: <i>There are different views/expectations on the scope of services provided under the name of Trip tracking.</i></p> <ul style="list-style-type: none"> ✓ <i>Do you consider the trip tracking a useful function?</i> ✓ <i>Which kind of functionality should be tracked?</i> ✓ <i>Who would pay for a trip tracker? End user, operator; ...</i> ✓ <i>Who should be responsible for trip tracking? An independent provider offering this service?</i> ✓ <i>What is your point of view regarding aftersales, re-accommodation and/or compensation issues?</i> <ul style="list-style-type: none"> • GS (Metroul): Trip Tracker is useful, but who will pay for it? End user think that it is good to have when they need. Like paying for insurance. • FL (Ixxi): people don't want to pay for this • SDS (Almaviva): For many existing systems, the service provider offer the trip tracking function for free. It is necessary to focus in the business model. • SH (Network Rail): It seems that the trip tracking sort of fits into MaaS, as a facility included in the package fee. • SDS: agree that it should be part of the MaaS offer, but in current services it is included in the contract that PT operators give info for free. • AC (Alsa): the problem is the cost of integration • SDS: the S2R should focus more on Business model • JS (RSSB): Trip Tracker is useful, but we have to make the difference between daily commuters and exceptional travellers. Business model is important. 		

Time	Topic	Responsible
11.30	Roundtable #1: Trip tracker	Oltis+HaCon
<ul style="list-style-type: none"> • SDS: different type of info and usually you just need few info. If you just tell me that the flight is cancelled without any further info then I am lost. • FL (Ixxi): I think end user will never pay for that. What we have experienced that this is part of the quality of services, so maybe the operator will pay for that. • YA: SNCF already provides the alternatives • PB (OLTIS): although current transport providers (e.g. SNCF) already provide information on alternatives, they might not give the best alternatives. • SDS: yes but you have a contract and already paid the ticket. Even if you can have a new solution, then you have to pay again. Trip tracking and on-trip information is perceived as a right from end users. • LLi (OTL): I would pay for the prediction function if it is not too expensive. • AVDE (HaCon): it could also be a sponsored feature like the Apps with advertising. • Who should be responsible for TT? <ul style="list-style-type: none"> ○ SDS: in case MaaS scheme, it is the MaaS provider responsible for it. In other contexts, it depends on the country and the local regulation. • GS (Metroul): if the journey is paid I don't have the interest to have info in alternative prices • PB: True, but with the trip tracker of S2R you can express your intention of booking and be informed on the best option (also cheapest). • SDS: have you ever changed your plan when you receive an info on best price. I have never changed. • All: yes if more convenient. • FL (Ixxi): it is important to have communication and right information in TT in case of emergency, having the possibility to communicate with other people. • After sales issues: <ul style="list-style-type: none"> ○ YA: the important info is to know the right company and contact that can propose you the alternative and the compensation. Trip Tracker is not enough if not connected with the after sales and not connected to passenger rights. ○ FL (Ixxi): Alternatives should be equivalent to the initial option. ○ SDS: the problem should be solved with the introduction of MaaS and a unique selling point. The real need is to have an App that gives you all the info for alternatives, included hotels and prices. ○ AVDE: this cannot be part of the Trip Tracker, because it is part of the contract between you and the travel provider. ○ YA: the first thing is that your travel provider must provide you alternative and compensation. ○ PB: agencies gives you better options because they deal with that every days. ○ JB (Indra): the ecosystem is more complex when you have other/more modes. With rail for example. 		

Time	Topic	Responsible
11.30	Roundtable #1: Trip tracker	Oltis+HaCon
<p>Topic 2: Calculation of alternatives</p> <p><i>When requested by the user, some alternatives to the original itinerary are to be calculated. Certainly it consumes some time. The calculation may be done in more iterations, if we have enough time to do that.</i></p> <ul style="list-style-type: none"> ✓ <i>When waiting for calculation of alternatives, what is the maximum time limit acceptable to end-users to keep them feeling comfortable?</i> • EDB (EPF): end user is always nervous, whatever the profile (business, tourist, etc) • SH (Network Rail): as long as you give the info on the waiting time, they can deal with that. Writing only "wait" generates frustration. Even 2 minutes can be accepted as long as you can trust it. Like the traffic light with the countdown. • GS (Metroul): I want the direction indoor navigation and the duration of downloading should be short. • NW (SNCF): it is the TC to provide the information when the user changes the trip by mistake. It is not tracked by the Trip Tracker component. • AVDE (HaCon): it is difficult to estimate the downloading time because it depends on the complexity of the station. It would be around few seconds because it is not necessary to download all the info of the current station. <p>Conclusions</p> <ul style="list-style-type: none"> • Trip Tracker is a useful functionality but a business model for it should be identified. Today it is not clear, potentially MaaS could integrate it as a function for the users with clear responsibility and business model. • After sale is still an issue and today Trip Tracking is not solving it. Again a MaaS scheme could provide the customer with a clear reference and contact point for the after sale issues. • Calculation time for alternatives: as long as you give the info on the waiting time, customers can deal with that. 2 minutes can be accepted as long as you can trust it. 		



Time	Topic	Responsible
13.45	Roundtable #2: Travel companion	SNCF+DIGINEXT
<p>Topic 1: Navigation</p> <p><i>Pan European travellers often do not know the location they are arriving at. As such, they can have difficulties to navigate, especially at interchanges and destination. Moreover, in order to deliver a door to door experience, the Travel Companion should use multiple transportation modes, including private ones. This is why it seems important to offer both indoor (inside the terminal) and outdoor navigation to users.</i></p> <p><i>What do you think:</i></p> <ul style="list-style-type: none"> • <i>How essential is the navigation component of the TC?</i> • <i>What do you expect to have as functionalities of the navigation component?</i> • <i>Between outdoor and indoor navigation, which one do you think is more important to the users?</i> <ul style="list-style-type: none"> • LLi (OTL): it is a must to have today. If in S2R you localize the user, then it is important to have the deviation recognition and give alert that you are in wrong place. • FL (Ixxi): how did you decide the requirements and functionality of Navigator? • RSSB: for a project of this magnitude I would expect some open surveys for users to collect requirements. • AVDE (HaCon): inputs provided by the EUG are very welcome and will be taken into account for ATTRACKTIVE. • GDP: in GoF4R we have a specific task on user requirements for the Travel Companion led by EPF. We will link this. • EDB (EPF): Concerns on Navigation-is the effort worth in developing navigation? I could move easily in many stations in Europe. <ul style="list-style-type: none"> ○ AVDE: in S2R we are investigating if indoor navigation can technically work ○ AVDE: I am convinced that there are some stations very complicated to navigate without a tool. • FL (Ixxi): the info you might need can be very basic, just the number of the platform/exit. • AVDE: you do not always have the right sign or signaling can be very complicated in certain stations. • FL (IXXI): but signs must be mandatory (not everyone has mobile phone) and the way of giving signs changes in different countries • SDS (Almaviva): sign is a must, but the Navigation App should provide help, e.g. when you look for the right exit of metro station versus your destination. • FL (Ixxi): the real plus of indoor navigation is having functionalities for PRM (e.g. when you need to know about escalators). • SH: deal with unforeseen situation and inform (works, etc) 		

Time	Topic	Responsible
13.45	Roundtable #2: Travel companion	SNCF+DIGINEXT
<p>Topic 2: Preferences</p> <p><i>User preferences are at the heart of a good user experience. They can make all the difference between a tiresome application where one always needs to filter his view because results are not relevant and a real assistant that anticipates their wishes. However, configuration of too many preferences is a troublesome task that is often overlooked by users and can even be a rejection factor.</i></p> <p><i>What do you think:</i></p> <ul style="list-style-type: none"> • <i>What kind of Preferences would be useful and which of them should be permanent? What additional preferences could be useful for PRM and other assistance needs?</i> • <i>How important would it be to have different profiles depending on the user's travel type? (e.g. business travel profile, family travel profile, ...)</i> • <i>Would users prefer to have their preferences accessible from all devices or stored in one device?</i> • <i>What particular data privacy issues would arise from sharing preferences in your TC? How would users rate the importance of data privacy?</i> <ul style="list-style-type: none"> • NW (SNCF) shows the list of current preferences, asking for suggestions for improvement to the EUG. What do you think should be included as preferences? • SDS: personal data could be permanent. • YA: personal data, related to payment, should be related to who pays the travel (e.g. the company for a business travel). • SH (Network Rail): you have a lot of preferences, it should be dynamic, impacting the environment? • NW: now you can store your permanent or overwrite the permanent with current preferences for the current journey. • SDS: is there possibility to choose the less pollutant journey? <ul style="list-style-type: none"> ○ NW: yes we are considering it. • AC (Alsa): are you considering the booking for group of people? • SDS: I would like to define different profiles (business, tourist), with different preferences (which usually are based on price and time). The cost of the taxi can be the highest of the total journey as well as of a shuttle bus when flying with Ryanair for example. • SH: the solutions should give priorities to your preferences (e.g. shuttle + Ryanair early in the morning) • NW: the complexity is solved in S2R with a scoring methodology. • All agree to have the possibility to have different profiles linked to you. • AC (Alsa): are you considering the frequency of traveling? Monthly, rare, etc. when you know the way, you do not need all the information, e.g. MY FAVOURITE JOURNEY • FL (Ixxi): I do not want to many information if not necessary, I want an efficient system. 		

Time	Topic	Responsible
13.45	Roundtable #2: Travel companion	SNCF+DIGINEXT
<ul style="list-style-type: none"> • SH : personal data has to be considered together with preferences to have calculation <p>Topic 3: Personal Data</p> <ul style="list-style-type: none"> • <i>Would they be inclined to share some personal information if this would offer some additional services? (e.g. automatically getting preferences from social network accounts or even mails, automatically filling search options from meetings in agenda, ...) Are there any specific personal information users would never agree to share?</i> <ul style="list-style-type: none"> • Avoid to store birth date. • Travel Companion will have to ask for permission of treatment of personal data according by the new General Data Protection Regulation (GDPR) 2018;. • SDS: if I give my personal data to Moovit, I know that they are the responsible, but in case of multi owners like S2R, how do I know who has my personal data? Who should I complain with in case of bad use of my personal data? It is necessary that the process of handling data is clear. • FL (Ixxi): even if you have your personal cloud, it is still SNCF/RATP who pays for the cloud, so the customer has to ask them to delete the data in the cloud. • EV (Diginext): the customer wants to know which operator uses their data. • SH (Network Rail): I give the consent to use my personal data only if I see benefits (e.g. I want my friend to know that I am at a party). • SDS: it is just important to ask the consent to use personal data and to decouple personal data with the identity. <p>Topic 4: Travel Companions business perspective</p> <p><u>About existing</u>: Today, Travel Companions are split into several groups: TCs specific to an operator or a geographic area, TCS specific to a transport mode... Each of these work well in its area of expertise but is constrained by it.</p> <ul style="list-style-type: none"> • Do you use or provide a Travel Companion? • What do you think as : <ul style="list-style-type: none"> ○ Customer ○ PT Operator ○ Information provider/developer • How do you get a Travel Companion corresponding to your expectations? 		



Time	Topic	Responsible
13.45	Roundtable #2: Travel companion	SNCF+DIGINEXT
<p><i>About a Pan European TC: The IT2rail and S2R ecosystems bring new perspectives for Travel Companions and enable new market opportunities:</i></p> <ul style="list-style-type: none"> • <i>Do you think there is a market for a Pan European Travel Companion? Who might provide it?</i> • <i>What are the main conditions and features which must be fulfilled for a Pan European TC to be useful?</i> • <i>Would you expect to see new kind of Travel Companions appear? If yes, what novelty would they bring?</i> <ul style="list-style-type: none"> • All use many different Travel Companions/Apps, based on the city and the situation. They are very useful but not perfect, you need to know what you want and how to search. • SDS: Almoviva provides the Trenitalia App, including ticketing. It is in the AppStore. • AVDE (HaCon): how do you find the Apps? What are the key words? • AC (Alsa): it is very easy to find the main operators App (ALSA, Trenitalia, SNCF, ect) and less for Apps provided by 3rd parties. Although there are good example as CityMapper or Moovit. • AVDE: we need very good advertising and key words • YA: at national bases you have the info on the best App, but if I go abroad which App should I need? The problem is the trust, are you confident with that App? • SDS: every time you go abroad I have to learn a new App with language challenges. That's why an App like CityMapper is useful, because you have the same interface everywhere. • AVDE: is it possible to create a Pan EU TC accepted by all EU citizens? <ul style="list-style-type: none"> ○ SDS: if there is a benefit then it is accepted. It is market driven. If Apps like CityMapper or Moovit covers EU and they are accurate and trusted then it is accepted. ○ FL (Ixxi): in India they have their own Uber, with many colors well accepted for their culture, probably unusable in Europe. ○ JB (Indra): user interface and experience can be different in different country. ○ SH: it is also based on the different generations, not only countries and culture. <p>Conclusions:</p> <ul style="list-style-type: none"> • Navigation is a must, but user requirements should be considered. • Possibility to have different profiles associated to the same person and have the solutions based on the selected profiles. • Refer to the General Data Protection Regulation (GDPR) 2018 for the personal data treatment and always ask for user consent. 		

Time	Topic	Responsible
13.45	Roundtable #2: Travel companion	SNCF+DIGINEXT
<ul style="list-style-type: none"> A Pan EU Travel Companion will be market driven. It is clear the benefit to use the same App when traveling around EU with the same user experience. 		

Time	Topic	Responsible
15.45	Next steps	UITP
<ul style="list-style-type: none"> Check the possibility to test and validate the Apps developed in IT2Trail during the last EUG meeting Link the Travel Companion development to GoF4R WP2 User demand. Next EUG meeting date to be fixed before summer. 		

Action List

N°	Description	Responsible	Deadline
1	Challenge: To identify a business model linked to the Trip Tracker. Potentially MaaS could integrate it as a function for the users with clear responsibility and business model.	Potentially interesting for IP4 in S2R	-
2	Challenge: After-sales. Again a MaaS scheme could provide the customer with a clear reference and contact point for the after sale issues.	Potentially interesting for IP4 in S2R	-
3	Possibility to have different profiles associated to the same person and have the solutions based on the selected profiles.	Potentially interesting for IP4 in S2R, Travel Companion	-
4	Particular efforts need to be done regarding the General Data Protection Regulation (GDPR) 2018 for the personal data treatment and always ask for user consent;	EPSG	Next EPS meeting



N°	Description	Responsible	Deadline
5	A Pan EU Travel Companion will be market driven. It is clear the benefit to use the same App when traveling around EU with the same user experience	Potentially interesting for IP4 in S2R, Travel Companion	-

2.2 ETHICAL, PRIVACY AND SECURITY GROUP

2.2.1 MEMBERS

The EG Ethical, Privacy & Security was composed of 5 ethical, privacy & security external experts dealing with ethical issues and the protection of individual rights. The experts were selected through an open and competitive call, outlining the experts' main tasks as well as the sought qualifications. The call was published on:

- The UITP website;
- The IT2Rail website;
- UITP Newsletter – EU express;
- LinkedIn;
- National Contact Points in different EU countries.

The required qualifications were:

- Experience gained in the privacy & security (IT) sector domain applied to passenger travel at European and international scale;
- Information Technology (IT) background;
- Knowledge of Web Technologies and semantic Web;
- Experience in Cyber Security aspects;
- Well-developed knowledge of papers review and sessions organizations, with an understanding of the technical and administrative affecting;
- Experience of working with decentralized teams and across cultures;
- Excellent written and oral English;
- Excellent communication and presentation skills;
- Well-developed analytical and problem-solving skills, with an ability to devise creative solutions to complex problems;
- Ability to maintain positive, collaborative, productive relationships with staff at all levels;
- Knowledge of UML is an asset;
- Knowledge of consumer's rights in the transport sector is an asset;
- Knowledge of the public transport sector is an asset;
- Willingness to travel.

16 CVs were received. They were carefully evaluated in respect to the requirements listed in the Call for Experts published by the UITP through different communication channels. Profiles received have been carefully evaluated in respect to the requirements listed in the Call for Experts published by the UITP through different communication channels. The selection process was performed early 2017 by an internal UITP commission that evaluated the experts according to their skills and experience in Ethical, Privacy, Security, Legal and Transport issues.

The commission selected the experts balancing the competences among them, in order to build a strong team with the ability to advice and support IT2RAIL Project in the Ethical, Privacy and Security issues.

Results (see table below) were presented to the IT2Rail consortium and the Advisory Board members during the 2nd Advisory Board meeting (18/11/2016, Brussels, Belgium). No particular remarks were done.

Candidate	Ethical	Privacy	(Cyber) security	IT	Legal/ policy	Transport
1		✓	✓	✓	✓	✓
2	✓	✓	✓	✓		
3		✓	✓	✓		✓
4	✓		✓	✓	✓	✓
5		✓	✓	✓		✓

Table 3: Ethical, Privacy and Security Group profiles

The final composition of this group is presented in the table below (see table 4 below).

Name	Background
Mary Sharp	School of Computer Science and Statistics, O'Reilly Institute, Trinity College, Dublin 2. In recent times the emphases of my research is in the area of Ethics related to IT and adaptive eLearning with respect to Medical eLearning systems.
Javier Warleta	Privacy & data protection consulting (www.datalear.com). Business development in security, defence & transportation sectors Legal, social and ethical advisory for H2020 proposals, with main focus on privacy and data protection.
Franck Dumortier	Senior Researcher at the Research Centre for Computer, Law and Society (CRIDS), university of Namur. Lecturer in cybersecurity law in the Master in Cybersecurity, Lecturer at « InfoSafe »: Certificate in management of the Security of

Name	Background
	Information Systems -Haute Ecole – ICHEC, UNAMUR – Brussels.
Stefano Persi	Business point of view of privacy, security and ownership. Focusing on ICT for transport and innovative data analytics services, privacy and security as well as ownership of data are at the core of our business.
David Robert	International Senior Data scientist. Analytics, Business and Competitive Intelligence, Machine Learning, AI and Blockchain Certified Big Data & Privacy Architect Author of “Zero Knowledge Proof Passenger Name Record”. Working with DBVA. Participating in Rail projects with SNCF.

Table 4: Ethical, Privacy and Security Group members

2.2.2 MEETINGS

According to the D8.3 “Mandate and composition of Experts Group and Advisory Board” the original overview of the meetings’ schedule was defined based on the general development of the project, avoiding any fixed schedule, in order to ensure the necessary flexibility. Tentatively, this EPSG would have meet throughout the lifetime of the project 5 times. Final schedule confirmed 3 face-to-face meetings, preserving time for conference-calls to discuss internally the final results and the achievements. In addition, several working days apart from the meetings where required.

Meetings took place as follow:

- First meeting: Paris, France (SNCF building, Campus Rimbaud, 10 rue Moke, Saint-Denis. Paris). 14/02/2017;
- Second meeting: Brussels, Belgium (221 Avenue Louise, 2nd Floor (UNIFE), 1050 Brussels). 06/07/2017;
- Third meeting: Paço de Arcos, Portugal (Rua Calvet Magalhães, 245, Paço de Arcos. 2770-153 Paço de Arcos (Portugal)). 29/10/2017.

The main content of each meeting was structured as follows:

- First meeting: Presentation of the whole project;
- Second meeting: Focused on the main structure and key areas of the project affecting the EPS issues – Whole project global analysis;
- Third meeting: Review of the main structure and proposal of EPSG key areas to be addressed in the project – EPSG issues global analysis.



To properly structure the discussion as well as to keep track of the results achieved by the EPSG, it was clear since the beginning that their inputs should be shown as key information presented in the “White Paper on Security and Privacy aspects of S2R IP4” (subtask 7.5.2).

2.2.3 MINUTES

Minutes from each meeting are presented in the following pages.

First EPSG meeting

<p>MINUTES OF MEETING</p> <p>IT2Rail – Ethical, Privacy and Security Group</p> <p>1st meeting. WP8/T8.4</p>
<p>14.02.2017 – 10:30 – 17:00</p> <p>VENUE: SNCF</p> <p>Address: Campus Rimbaud, 10 rue Moke, Saint-Denis. Paris</p>

Meeting organiser	Guido Di Pasquale, UITP
Phone number	+32-494-49 77 83

List of Participants

Name	Company	Status
Catherine Maria MINCIOTTI (CMM)	Leonardo	A
Cecile DUEME (CD)	SNCF	A
Daniel SCHMIDT (DS)	HaCon	A
David ROBERT (DR)	EPS Expert	A
Edouard CARPENTIER DE CHANGY (ECa)	THALES	A
Franck DUMORTIER (FD)	EPS Expert	A
Guido DI PASQUALE (GDP)	UITP	A
Guido MARIOTTA (GM)	Leonardo	A
Javier WARLETA (JW)	EPS Expert	A
Jordi URMENETA (JU _r)	Leonardo	A
José BERTOLIN (JB)	Indra	A
Mary SHARP (MS)	EPS Expert	A
Nora WINNINGER (NW)	SNCF	A

Name	Company	Status
Petr BUCHNÍČEK (PB)	Oltis Group	A
Rui LOURENCO (RL)	THALES	A
Stefano PERSI (SP)	EPS Expert	A

Minutes

Time	Topic	Responsible
10.30	Welcome and Opening of the Meeting	UITP
<p>Guido Di Pasquale (UITP) made the opening remarks and thanked the participants for joining the meeting. A 'tour de table' followed the Agenda presentation in order for all EPS meeting participants to present themselves.</p>		

Time	Topic	Responsible
10.35	IT2Rail – Ethical, Privacy and Security (EPS) group guidelines	UITP
<p>The Ethical, Privacy and Security Group (EPSG) is formed by 5 experts from different sectors and backgrounds working with ethical, privacy and security issues. Not being members of the Consortium, the EPSG gives an independent vision and assessment of the project objectives regarding the impact of legal and ethical aspects when treating personal data in the IT2Rail components.</p>		

Time	Topic	Responsible
11.00	Experts Round Table	EPS experts
<p>The EPS experts introduced them-self and main expertise, sharing key topics they would like to be addressed.</p> <p><u>Franck Dumortier:</u></p> <ul style="list-style-type: none"> Compliance with General Data Protection Regulation (GDPR): European regulation that replaces all national laws - directly applicable starting May 2018 (penalties up to 4% of total global annual turnover or €20m, whichever is the higher); 		



Time	Topic	Responsible
11.00	Experts Round Table	EPS experts
<ul style="list-style-type: none"> • Compliance with Directive on Security of Network and information systems (NIS directive)¹⁶; • Anticipate potential collaboration with Law Enforcement Authorities (LEAs); • Compliance with national laws implementing the PNR (Passenger Name Records) Directive¹⁷. <p><u>Mary Sharp:</u></p> <ul style="list-style-type: none"> • 20 years of evaluating EU projects in Ethics • 4 EU projects currently • Research area in Ethics, mainly in health : important area of ethics in tracking people <p><u>David Robert:</u></p> <ul style="list-style-type: none"> • General Data Protection Regulation (GDPR): requirements and specification matrix • Digital ID is a two-edged sword! • Main digital services required by the GDPR + eIDAS + ID2020 + PSD2 Open Banking. • Individualpersonaldata AuditabledressNumbers (ISAEN), Designed to serve GDPR's principles • Global Data Positioning System: <ul style="list-style-type: none"> • Where is my data? Who is using it? • Portability with or without erasure • Privacy by design • Aevatar: The first self-SovereignIdentity for PersonalData Ownership and Access control COOPERATIVE build on Block chain technology • VoYages-SNCF.com: The «Zero-Knowledge Proof» Passenger Named Record (PNR) <p><u>Javier Warleta:</u></p> <ul style="list-style-type: none"> • Engineering background, 70% of career transportation (mostly maritime sector) and 30% in security (3 years in Indra for business development in security) • Then moved to ethical area, setting up several companies 		

¹⁶[Directive \(EU\) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union](#)

¹⁷[Directive \(EU\) 2016/681 of the European Parliament and of the Council of 27 April 2016 on the use of passenger name record \(PNR\) data for the prevention, detection, investigation and prosecution of terrorist offences and serious crime](#)

Time	Topic	Responsible
11.00	Experts Round Table	EPS experts
<ul style="list-style-type: none"> • Goal: eliminate the gap between engineers and lawyers, not only regulations but also engineering requirements. • Compliance with GDPR will be mandatory • Personal data is not a commodity: we have to assess why we need the data to reach acceptability from all perspectives • Everyone has the right to be left alone • Definition of personal data: Any information that can be related to an identified or identifiable person is personal. We have to balance personal data privacy with the need of authorities to have information for safety reasons. <p><u>Stefano Persi:</u></p> <p>Expert in data sharing and data privacy: no more data ownership and owner, more data producer.</p> <ul style="list-style-type: none"> • CEO of Mosaic, 20 years in ICT industry, engineer: Telecom, Automotive, mobility, logistics, 10+ EU projects (FP6, FP7, H2020) • The question is what you get in exchange for your data, do you get extra functionality? • User should always have the possibility to deny the consent to give personal data, getting back only the basic services • Mosaic factor: projects about mobility : <ul style="list-style-type: none"> • MyWay FP7 project (finished) : Fully multimodal journey planner -> http://www.myway-project.eu/ <ul style="list-style-type: none"> • preferences, • needs • habits, • IMOVE - Mobility as a Service (H2020-2016 MG6.1, will start in May): idea is to have an offer mobility packages combining different transport modes. • Physical internet: 3rd party as a trustee. Mosaic factor 3 main lines : Data analytics / Innovation related to data / Ad hoc SW dev • Breakdown of personal mobility data : <ul style="list-style-type: none"> • Demand (preferences, needs, constraints, ...) • Offer (timetable, availability of seats, disruptions, ...) • Context (traffic, weather, reason of the journey...) • Small vs big data : data shared or not among companies • NeMO : Hyper Network for eMobility : H2020-GV-6-2015 • Vice Chair of Mobility and Logistics subgroup of BDVA (Big Data Value Association) : want to be more user-centric 		

Time	Topic	Responsible
11.30	IT2Rail and Shift2Rail (S2R) presentation	UITP
<p>Guido Di Pasquale presented Shift2Rail organization, IT2Rail-IP4 and how IT2Rail fits into it. New IP4 projects were introduced: GOF4R, ST4RT, CO-Active and ATTRAKTIVE.</p>		

Time	Topic	Responsible
11.50	White Paper	THALES
<p>Rui Lourenco (Thales) presented the objectives of the White Paper on EPS.</p> <p>The discussion will be used to feed the document with the first key elements to be considered in the White Paper and to prepare a draft of the Table of Content.</p> <p>The ToC will be circulated among partners and experts to collect feedback and to decide how experts can concretely contribute to it.</p> <p>No difference between sensitive and non-sensitive data: "John Smith" is not very discriminant, but saying that I am 141 years-old is very discriminant.</p>		

Time	Topic	Responsible
12.20	IT2Rail data management	SNCF, INDRA, OLTIS
<p>Cecile Dueme (SNCF), Jose Bertolin (INDRA) and Petr Buchniček (Oltis) gave an overview of the technical architecture of the IT2Rail Travel Companion and Trip Tracker.</p>		

Time	Topic	Responsible
14.30	Discussion	All
<ul style="list-style-type: none"> Stefano Persi : 		



Time	Topic	Responsible
14.30	Discussion	All
<ul style="list-style-type: none"> • Business models and Governance, objectives of GoF4R, should have been addressed before the technical development done in IT2Rail, to understand the potential of the technology. • David : <ul style="list-style-type: none"> • This project, like many IT projects, is closely related to the Smart City project. There are canvas that we should reuse, where privacy has been addressed; • Please start from regulations: eIVAs and GDPR. Cryptography should be considered. • Stefano : <ul style="list-style-type: none"> • We should distinguish the last-mile urban transportation and the long distance transport: urban transport operators don't usually use personal information like long-distance does; • Data should be collected to give better services to customers; • We should add in the Terms and Conditions that user get basic services if he doesn't give data. • David : <ul style="list-style-type: none"> • There is a purpose about identifying individuals: PMR for example; • There are standards already in place, where privacy has been studied, e.g. ticketing and NFC; • Privacy: collaboration with the enforcement. In the design, it is important to anticipate the fact that you will be asked for data from the police. • Franck Dumortier : <ul style="list-style-type: none"> • A Consent form for the processing of personal data should be created by IT2Rail • Consent has to be in a form distinguished from the rest of the legal aspects; • Consent should be as easy to cancel as it is to give; • Possibility to erase data anytime. The consent is given for a specific purpose and the user should be able to erase it anytime; • EU regulations have so many exceptions, that it is actually more a core regulation, each country has its own complementary laws: some aspects of the law are country-specific, but according to Javier, the national derogations should not apply here; • A Chief Data Officer must be identified in big companies (in France, before, it was a Correspondant Informatique Et Liberté). • Current use of personal data within IT2RAIL: Business Analytics <ul style="list-style-type: none"> • In IT2Rail, the Business Analytics component is collecting information from Twitter without user consent; 		

Time	Topic	Responsible
14.30	Discussion	All
<ul style="list-style-type: none"> • WP6 functionality for F-Rel: machine learning based on the feedback provided by TripAdvisor (score + comment). Warning by Franck Dumortier: the comment may be considered personal data; • Tripadvisor has been used to train the machine learning algorithm, but in the end, the comments that will be analysed are the ones provided within the IT2RAIL environment; • BA: it needs a Consent form for customers; • There is the obligation also when collecting personal data for research; • Now, H2020 projects should elaborate a DMP (Data Management Plan) - but we don't have them within IT2RAIL. • Definition of personal data is very clear: any info related to a person who is identified or can be identified. No difference is made if a piece of information is important or not, all information is at the same level in terms of regulation; • In transportation, there are also security and safety, not only privacy: in case of train accident, everyone wants to know who is in the train. Data collected for security depends on the national law that may go further than the EU laws: for example, Belgium asks rail operators to declare who is in the trains; • A Data Management Plan is necessary. Otherwise there will be problems with the Review; • Take example from the smart city and mobility projects: they are requested to submit a Data Protection Impact Assessment and a Data Management Plan; • Edouard: There is a data management document in the IT2Rail Description of Work, but it is on IPR (Intellectual Property Right); • Very surprising that the EC has not yet stressed these aspects: data management plan and consent form. • Trip tracker: <ul style="list-style-type: none"> • It is tracking the decision made by the users but not if the user has followed such decisions. There is no real time tracking. • How disruptions are handled by the Trip tracker? It is positive that we never track the info on the transport mode taken by the user • Inform the user that a Trip tracker can be activated and what means its activation. • David Robert: Trip Tracking should be as much as possible on app side. • Stefano Persi: But there are so many sources of information, and processing is complex, so it could not be done on the application. • Franck/Javier: Consent form should be clear about the added value of the Trip Tracking • IT2Rail data storage: 		

Time	Topic	Responsible
14.30	Discussion	All
<ul style="list-style-type: none"> • Why did we decide to store data in the Cloud and not in the device? This will be the first question to answer when we write the Data Protection Impact Assessment. • Where is the Cloud? There could be several Clouds, and even a Cloud on top of all the Clouds. Now INDRA Cloud (and Amadeus) is used in IT2Rail, but in the future there will be a federated Cloud system. State/write clearly – in the data management plan - that in the future there won't be only 1 Cloud; • Why is there a Cloud in a distributed environment? Because the user could have several devices from which he connects; • Franck Dumortier: Contractual clauses with Cloud operators should be subscribed. • User ID management: <ul style="list-style-type: none"> • Fare computation could be based on your age range and not exact age; • Identity and Authentication: social number could be signed by my CAF, IBAN could be certified by my bank ... • For example, the service provider may need an address : the crypto address; • There are currently various implementations: they are working now on the federation; • Unique EU ID is not possible: federation, relationships with different encrypted IDs. <p><u>Main Recommendations</u></p> <ul style="list-style-type: none"> • Compliance with General Data Protection Regulation (GDPR); • Privacy by design: more a commercial approach, not very useful in terms of specifications and engineering. However it is important because it is a reminder that Privacy should be considered since the specification phase of a project. • Develop a Data Management Plan <ul style="list-style-type: none"> • In general : never start data processing without going through a privacy check with the relevant authorities, it always becomes more complicated afterwards - even for research purpose that are not in the final solution. It can take no more than 1 month; • State in the data Management plan that it has been reviewed by the EPS experts. • Develop a Consent Form, to be delivered to EC; • Understand why EC has not asked for a data management plan and consent form; • Have a look at the security aspects. It could be interesting to study the impact on security in the sense of terroristic attack; 		

Time	Topic	Responsible
14.30	Discussion	All
<ul style="list-style-type: none"> • Add in the specifications, the fact that the information should be erasable if someone wants to opt out of his consent - any personal information, in the whole system; • "Privacy by Attributes" could be useful; • Cryptoidentity can be an answer : you want to avoid correlation, you could have a relationshipID (cryptoname) instead of a universal unique ID; • For future recommendations to S2R, it would be better first to study the market (GoF4R) and then technology. Involve cities in the market analysis; • Always consider legal aspects from the beginning: respect principles on data flow also in research projects. Involve lawyers in ticketing projects; • Business Analytics: suggestion is not to declare in the periodic report to EC that we have used personal data from Trip Advisor without a consent form; • Specify where data is stored; • It should be clear for the user that only basic functionality is provided without data consent; • The IT2R architecture should be open to many possibilities in terms of User ID management (forget Facebook ID). 		

Action List

N°	Description	Responsible	Deadline
1	Send a first set of recommendations: few bullet points	Experts	3/03/2017
2	Circulate a first draft of Table of Content and key elements of the IT2Rail White Paper on EPS	Rui	24/03/2017
3	Suggest specific topics to be discussed in the 2 nd and 3 rd EPS meetings	Experts + IT2R WP leaders	17/03/2017
4	Organise and Prepare the agenda for the next EPS meeting: go into details of WPs in terms of EPS.	UITP	14/04/2017



Second EPSG meeting

<p>MINUTES OF MEETING</p> <p>IT2Rail – Ethical Privacy and Security meeting</p> <p>2nd meeting. WP8/T8.4</p>
<p>06.07.2017 – 10:00 – 16:30</p> <p>VENUE: UNIFE</p> <p>Address: 221 Avenue Louise, 2nd Floor. 1050 Brussels (Belgium)</p>

Meeting organiser	Cristina Hernández de la Poza, UITP
Phone number	+32-2-788 01 12

List of Participants

Name	Company	Status
Achim VON DER EMBSE (AV)	HaCon	A
Cristina HERNANDEZ (CH)	UITP	A
David ROBERT	EPS expert	E
Franck DURMORTIER	EPS expert	E
Javier WARLETA (JW)	EPS expert	A
John STAFFORD	RSSB	A
Martin BRENNAN (MaB)	RSSB	A
Rui LOURENÇO (RL)	Thales	A
Stefanos GOGOS (SG)	UNIFE	A
Tom JONES (TJ)	AMADEUS	A
Yves AMSLER (YA)	UITP	A

Minutes

Time	Topic	Responsible
10.10	Welcome and opening of the meeting	UITP
<p>CH made the opening remarks and thanked the participants for joining the meeting. The absent of 2 EPS experts (Franck Durmotier and David Robert) was confirmed some hours before the meeting, due to unexpected events. Both were excused. A ‘tour de table’ followed in order for all the EPS meeting participants to present themselves.</p> <p>CH also confirmed with JW that the requirements to request the travel expenses and other linked cost were properly understood and agreed. No questions/remarks were done.</p>		

Time	Topic	Responsible
10.15	Wrap-up from last meeting held in February 2017	THALES
<p>RL presented the wrap-up from the last meeting. No further remarks were done.</p> <p>JW: informed the consortium about the latest piece of news in General Data Protection Regulation (GDPR) in Europe. The reform of data protection rules in the EU proposed by the EC in January 2012 had taken place. He explained in the main the content.</p> <p><i>“On 4 May 2016, the official texts of the Regulation and the Directive have been published in the EU Official Journal in all the official languages. While the Regulation will enter into force on 24 May 2016, it shall apply from 25 May 2018. The Directive enters into force on 5 May 2016 and EU Member States have to transpose it into their national law by 6 May 2018.</i></p> <p><i>The objective of this new set of rules is to give citizens back control over of their personal data, and to simplify the regulatory environment for business. The data protection reform is a key enabler of the Digital Single Market which the Commission has prioritised. The reform will allow European citizens and businesses to fully benefit from the digital economy.”¹⁸</i></p> <p>As this reform has not yet entered in forced, the specific details to comply with it are still unclear. Under EU law, personal data can only be gathered legally under strict conditions, for a legitimate purpose. Furthermore, persons or organisations which collect and manage your personal information must protect it from misuse and must respect certain rights of the data owners which are guaranteed by EU law. The new additional aspects are:</p> <ul style="list-style-type: none"> - The old legislation agreed on having a generic agreement when collecting personal data; - The new legislation reinforces the need of having a concrete agreement for each collection of personal data. Therefore generic agreements are not enough; 		

¹⁸<http://ec.europa.eu/justice/data-protection/>

Time	Topic	Responsible
10.15	Wrap-up from last meeting held in February 2017	THALES
<ul style="list-style-type: none"> - Secondary uses of previously collected personal data are not allowed, unless a new specific informed consent is obtained from the data subjects. For certain purposes (such as research), this obligation to obtain a new informed consent can be avoided, but in these cases, best technical effort must be applied in order to anonymise the data. 		

Time	Topic	Responsible
10.30	Security & Privacy White Paper	THALES
<p>RL presented the first draft for the Security & Privacy White Paper. It was developed by Thales. The goal of this document is:</p> <ul style="list-style-type: none"> - To discuss about the focus of the White Paper; - To agree on the targeted audience; - To agree on the structure proposed: Abstract, Introduction, IT2Rail building blocks, IT2Rail architecture, Security aspects to be considered, Privacy aspects to be considered, Standards, Future recommendations, References - To launch the discussion about some particular points – collected in the comments of the document, e.g. the need of some particular examples, the need of adding references to the current legislation, etc... <p>RL: Targeted audience presents 2 conditions: (1) people willing to implement / join IT2Rail ecosystem and (2) related to the transport sector.</p> <p>JW: When reading the abstract, the persona security and privacy topics are mixed. It is extremely important to establish the difference between them to continue with the analysis.</p> <p>JW: The ethical issues are related to the privacy. So indeed, we have in the main two topics to cover: (ethics + privacy) + (security).</p> <p>JS: Suggested the traditional scientific paper's structure for the abstract:</p> <ul style="list-style-type: none"> - Description of the problem; - Purpose – Motivational statement; - Methodology – Approaches; - Results - Conclusions – Implications. <p>MaB: Agrees with JS. In addition, we should agree on the focus of the White Paper. Not all the project is on the focus just the novelties proposed.</p> <p>YA: However the future new actors of the transport sector are a factor to be considered.</p> <p>CH: The shared cloud could be also an issue to be checked.</p>		



Time	Topic	Responsible
10.30	Security & Privacy White Paper	THALES
<p>JW: About the cloud, it is controversial, but the main problem is the real physical place where it is located.</p> <p>AV: Agrees with a about the focus of the White Paper: the novelties of the ecosystem proposed in IT2Rail.</p> <p>JW: According to my understanding, there is nothing particularly different from what it's done in the world, e.g. google, Amazon, etc...</p> <p>TJ: If we consider the IP4 programme, not only the IT2Rail project, there are more issues to be considered: to join the (semantic) web of transportation system, you just need to publish you service on the internet. Then you are part of the ecosystem. But there is no mechanism to confirm that you are not a criminal. This is an issue addressing the work developed in the WP1 – The core of the IT2Rail project.</p> <p>TJ: The only novelty in the project is the Interoperability Framework (onwards IF).</p> <p>AV: According to the IF, your private data may be stored and used worldwide – somehow. Anytime anyone can access.</p> <p>TJ: According to the IF there are 2 repositories: the ontology and the specifications. The rest of activities are proof of concepts of how it may work, accessories, applications as examples.</p> <p>MaB: Therefore, considering all this discussion, we should show we have look at these issues and we have found no problem.</p> <p>YA: Following TJ idea, the registers are open to trustful people. Only reliable information should be added. The key word for the potential implementation of the project is “trust”. He discussed about the idea of "certification" in order to build trust and confidence between stakeholders.</p> <p>TJ: However the distribution chain is not different from the current one.</p> <p>YA: I believe it could be. The challenge is to put distribution agreements altogether in the transportation sector to allow a door-to-door travel – This discussion continued in the afternoon session.</p> <p>CH: Wrap up from the morning:</p> <ul style="list-style-type: none"> - The structure of the abstract may be improved following the suggestions of MaB and JS – General agreement; - It is key to make a difference between privacy and security; - The White Paper should be focused only on the novelties proposed by IT2Rail - General agreement; - The White Paper will address slightly the items that are “not novelties” but could be sensitive. It will be done by listing the EU/national regulation that may applies. No further analysis will be done - General agreement. <p>RL added to the conclusions:</p>		



Time	Topic	Responsible
10.30	Security & Privacy White Paper	THALES
<ul style="list-style-type: none"> - Even if we do not describe how to comply with the GDPR we should describe the rules that may apply in a final list - General agreement. 		

Time	Topic	Responsible
13.30	White Paper contents: chapter by chapter contributions	THALES
<p>JW started the session in the afternoon with a presentation about his previous jobs. He suggested that to have a successful analysis:</p> <ul style="list-style-type: none"> - The conclusions should feed the requirements of the project – No further comments at this respect; - Right question to the right actors should be made. <p>Considering the second bullet point, CH started a session analysis the different building blocks¹⁹ proposed by RL in the first draft of the White Paper:</p> <ul style="list-style-type: none"> - First the analysis focused on the identification of key actors involved in each building block; - Secondly a privacy/security impact assessment per building block will be developed. These approach will allow to make the right question (discussed in the morning session) to the right actor (discussed in this afternoon session). <p>RL considers the building block 1 (IF) reviewed during the morning session. The discussion addresses the other building blocks.</p> <p>The discussion about the actors involved concluded in (ALL ATENDEES INVOLVED):</p> <ol style="list-style-type: none"> 1. Travel Companion: Retailers, Customers, Independent TC developers, Independent non-travel suppliers; 2. Shopping/Travel shopper: Search engine providers, Journey planners, Travel Service Providers (TSP); 3. Booking (new building block proposed): Distributors, TSP, Retailers; 4. Ticketing (component): Distributors, TSP*, Retailers (merchant), 5. Payment (new building block): Payment service providers, Banks, Credit card companies; 6. Validation – Control (new building block): Transport Operating career; 7. Settlement entitlement (new building block proposed): Distributors, IATA, BSP, TSP, Travel agencies – Third parties retailers, Retailers, Banks. <p>Pending building blocks are:</p> <ul style="list-style-type: none"> - Trip tracking / monitoring; 		

¹⁹Note that the building blocks are not exactly the Work Packages.

Time	Topic	Responsible
13.30	White Paper contents: chapter by chapter contributions	THALES
<p>– Business analytics.</p> <p>MaB suggested to build a matrix with this information, crossing actors and building blocks.</p> <p>MaB and JS identified this exercise as the methodology to be described in the abstract, according to the discussion in the morning session.</p>		

Time	Topic	Responsible
15.15	White Paper contents: further contributions (2)	THALES
<p>JW indicates that personal data means any information relating to an identified or identifiable natural person ('Data Subject'); an identifiable person is one who can be identified, directly or indirectly²⁰. Therefore, the position of a person is considered personal data to be protected.</p> <p>JW also explains 2 possible paths to follow after the first step of the analysis:</p> <ul style="list-style-type: none"> – Privacy by Design, frequently mentioned in privacy related papers (even in GDPR), which is basically a set of principles, but lacks from an elaborated methodology. – Privacy-preserving attribute-based credentials. Attribute Based Credentials (ABC) are a form of authentication mechanism that allows to flexibly and selectively authenticate different attributes about an entity without revealing additional information about the entity (zero-knowledge property). There are implementations already available, but their applicability to the particular case of IT2Rail project is unclear. <p>Both concepts are not in contradiction, but they are “completely different animals”, being the first one a somewhat vague approach and the second one a specific method to deal with a specific problem. Other key issues discussed per building block were (ALL ATENDEES INVOLVED):</p> <ul style="list-style-type: none"> – Travel Companion: <ul style="list-style-type: none"> – Linked to the personal data storage in the cloud; – Indoor navigation: this is a case where the traveller is located precisely in his/her local environment and manages the app. The information may not be transmitted to other stakeholders (tbc). – Trip tracker: CH stressed the need of doing a deep analysis of this building block <ul style="list-style-type: none"> – Linked to access to your travel information in real time; – Tracking the travel, not the traveller; – Proposing alternative routes in case of incident. It could be called “trip monitoring”. The trip tracker will be developed in IP4; – No advertising sent – Respecting the right of all citizens of being let alone; 		

²⁰EU Data Protection Directive (95/46/CE)

Time	Topic	Responsible
15:15	White Paper contents: further contributions (2)	THALES
<ul style="list-style-type: none"> - Business analytics: <ul style="list-style-type: none"> - Personal meta-data protection should be complied. It should be never allowed to profile a customer (even if he agrees). - Horizontal issues: <ul style="list-style-type: none"> - Mis-use of data: to be avoid; - IP4 topic - Aftersales (incident management <input type="checkbox"/> Not in IT2Rail scope); - Security and Privacy are key issues for the market uptake; - Apart from the “after trip” part of the “after sales” (for complain, compensation etc.) this function deals with the actions to be taken when the planned trip faces an incident for any reason during the trip: it relates to the commitments of the TSP regarding re-routing to reach the final destination, compensation etc. (in line with passenger rights and contractual agreements in the entitlement). <p>JW added that a particular attention should be paid regarding the ethical issues. Even if nothing new (especially regarding the privacy and security legislation), the White Paper should include what can be done to improve the current situation.</p>		

Time	Topic	Responsible
16:30	Conclusions & wrap up	UITP
<p>No decision about a potential date for the next meeting was made. No decision about the off-line of the experts was made.</p>		

Action List

N°	Description	Responsible	Deadline
1	To check/confirm with the different WP leaders the novelty of the IT2Rail project to be in the spot light of the EPS White Paper	Thales	Done
2	To agree on the targeted audience	Thales + task partners	Done
3	To agree on the building blocks	Thales + task partners	01/08/2017
4	To agree on the actors involved in each building block	Thales + task partners	01/08/2017



N°	Description	Responsible	Deadline
5	To propose a clear methodology to the EPS experts to contribute to the White Paper	Thales	07/09/2017
6	To share some information about the methodology proposed (privacy by attributes) applied to the IT2Rail case	JW	Done
7	To prepare the discussion for the next EPS meeting about some particular points: <ul style="list-style-type: none"> - Need of particular examples, - Need of adding references to the current legislation, Etc...	Thales	Before the next EPS meeting
8	To propose new dates to the EPS experts for their inputs/meeting.	UITP + task partners	Done

Third EPSG meeting

<p>MINUTES OF MEETING</p> <p>IT2Rail – Ethical Privacy and Security meeting</p> <p>3rd meeting. WP8/T8.4</p>
<p>29.10.2017 – 10:00 – 16:30</p> <p>VENUE: THALES Portugal</p> <p>Address: Rua Calvet Magalhães, 245, Paço de Arcos</p> <p>2770-153 Paço de Arcos (Portugal)</p>

Meeting organiser	Rui Lourenço, THALES
Phone number	+351 93 767 36 41

List of Participants

Name	Company	Status
Cristina HERNANDEZ (CH)	UITP	A
David ROBERT (DR)	EPS expert	E
Elvino MONTEIRO (EM)	Thales (Portugal)	A
Franck DURMORTIER (FD)	EPS expert	E
Javier WARLETA (JW)	EPS expert	A
Marco FERREIRA (MF)	Thales (Portugal)	A
Mary SHARP (MS)	EPS expert	A
Nora WINNINGER (NW)	SNCF	A
Petr BUCHNICEK (PB)	Oltis Group	A
Rui LOURENÇO (RL)	Thales (Portugal)	A
Stefano PERSI (SP)	EPS expert	A
Yves AMSLER (YA)	UITP	E

Minutes

Time	Topic	Responsible
10.10	Welcome and opening of the meeting	UITP
<p>CH made the opening remarks and thanked the participants for joining the meeting. The absent of an EPS experts (Franck Durmotier) was confirmed the same weeks, due to another short notice of work. He was excused.</p> <p>CH also confirmed with the experts that the requirements to request the travel expenses and other linked cost were properly understood and agreed, e.g. original boarding cards, etc.... No questions were done. She insisted on the fact that not all the experts have claimed their travels. In particular MS was welcome to do it soon (any travel claims or invoices addressing the EPS meetings were presented by MS). SP was also welcome regarding the 2nd EPS meeting (invoice and tickets to be sent to the UITP). CH insisted that due to the close finish of the technical activities of the project before the end of 2017), these payments should done asap. There were no further remarks.</p> <p>CH also informed the EPS experts that the WP4 and WP5 leaders were joining the meeting in case they have questions to address them. Regarding questions from the WP leaders, nothing had been proposed.</p> <p>ACTION: EPS experts to send the travel claims and invoices for the working days to the UITP.</p>		

Time	Topic	Responsible
10.15	IT2Rail Security & Privacy – Wrap-up from last meeting held in July 2017	THALES
<p>RL presented the wrap-up from the last meeting. No further remarks were done.</p>		

Time	Topic	Responsible
11.00	Ethics, Privacy & Security White Paper Abstract and Contents Presentation	THALES
<p>RL presented the second draft for the Security & Privacy White Paper. It was developed by Thales (Portugal) based on the discussions from the second EPS meeting in Brussels.</p> <p>Based on the information provided and the draft sent to the experts by email, a discussion followed. Main points, presented by topic, were:</p> <p>FOCUS OF THE WHITE PAPER:</p> <ul style="list-style-type: none"> - SP thought that a White Paper like the one developed should not trust completely in previous projects but build on them. E.g. considering the project's point of view, the activities developed could be explained. However when analysing the EPS perspective, 		



Time	Topic	Responsible
11.00	Ethics, Privacy & Security White Paper Abstract and Contents Presentation	THALES
<p>some of the conclusions addresses the activities that were developed at the beginning of the project. Therefore the White Paper should explain it: the optimal way of doing the project – even improving the steps already taken;</p> <ul style="list-style-type: none"> - RL agreed on this perspective, but always thinking in a pragmatic way: the content of the White Paper should be useful for the new-comers in the IT2Rail system; - SP insisted on the need for remaining open-minded. There is a high possibility of new things happening in the short term. It could be positive to identify the challenges, even if the solutions have not been still developed. In addition, new solutions (and probably better solutions, e.g. with a lower cost, quicker to be implemented, etc...) could be developed. The content of the White Paper could somehow suggest some solutions, but never define them as the only way to follow; - ALL agreed that IT2Rail is only a pilot, so new possibilities/solutions could happened in the short term. The proposal was accepted. <p><u>DATA COLLECTION:</u></p> <ul style="list-style-type: none"> - JW insisted on the fact that it is key to collect only the information needed, not more. He explained the need of applying 2 principles related to the data collection: <ul style="list-style-type: none"> - Data minimization; - Data proportionality. <p>In short, even if you have the consent of each traveller to collect a set of data, you are allowed to do it only if there is a purpose, never for collecting goals;</p> <ul style="list-style-type: none"> - SP insisted on the fact that the novelty of the project is the Interoperability Framework (onwards IF) applied to the transport sector in what was called “web of transportation”; - CH added that this is the WP1 core activity. The rest of the WPs, e.g. Travel Companion, Trip Tracker, etc... are only examples of what we could build thanks to the “web of transportation”; - MS considered that, even if the IF is the key aspect of the project, we should made some references to the data managed: what is happening to these data? How should it be destroyed? Etc...; - ALL agree on the data as one of the key issues to be addressed on the White Paper. The proposal was accepted. <p><u>DATA MANAGEMENT PLAN:</u></p> <ul style="list-style-type: none"> - SP requested the Data Management Plan. According to his experience, it is very important to pay attention to this plan since the very beginning of the project. Even if it could be improved, in the first part of the White Paper this document should be presented. In addition, a short reference to the external Committees involved in the project should be done; 		



Time	Topic	Responsible
11.00	Ethics, Privacy & Security White Paper Abstract and Contents Presentation	THALES
<ul style="list-style-type: none"> - RL agreed on sending the experts the document to add some references in the text; - CH insisted that these references should be minimal, to keep the focus in the challenges identified; - MS considered that a reference to the Data Management Plan would be interesting. She shared the point of view expressed by SP; - ALL agree on having a short reference in the White Paper. The proposal was accepted. <p>ACTION: RL to send the Data Management Plan to the EPS experts.</p> <p><u>OTHERS:</u></p> <ul style="list-style-type: none"> - SP added that in the picture proposed in the White Paper draft send by RL, Jane is representing “... <i>building a solution</i>...”. If Jane is not a software developed (Please note that Jane is representing a general traveller with no particular knowledge or background) she does not “<i>build a solution for her request</i>”. She is “<i>shopping the tickets for a travel and booking her place</i>”; - RL agreed on correcting the picture and/or deleting it from the White Paper. 		

Time	Topic	Responsible
13.30	White Paper discussion	THALES
<p>RL continued discussing about the “key aspects to considered” for the White Paper. Main points, discussed by topic, were:</p> <p><u>STANDARDS / FUTURE STEPS IN THE AREA:</u></p> <p>When analysing the last draft of the White Paper, there was a new section proposed: it was called “Standards”. RL drove the discussion about this section addressing both the content and the title. E.g. He originally proposed to have the General Data Protection Regulation (onwards GDPR) presented in this section. Based on the information provided and the draft sent to the experts by email, a discussion followed. Main points were:</p> <ul style="list-style-type: none"> - RL considered that the goal of the section was to show we are aware of the legislation developed in the Privacy and Security area; - JW agreed on the relevance of briefing the legal situation nowadays in this section. However he addressed the attention to make it brief! Indeed, a deliverable addressing the whole legislation focused on Privacy and Security may start with the human rights and continuing. It should not be the goal of the White Paper; 		

Time	Topic	Responsible
13.30	White Paper discussion	THALES
<ul style="list-style-type: none"> - ALL agreed that it was preferable having a short document addressing the EPS aspects of the IF, better than having a long document presenting a general and deep overview about the EPS legal situation; - RL considered that the content of this section may include some references to the governance of the IF. CH added that this topic is already on the scope of other S2R projects developed in the same Innovation Programme, the so called IP4 (please, consider that IT2Rail is a lighthouse project of the IP4). The project is called GOF4R²¹. The work should be not replicated. CH added that the solutions presented should be considered suggestions; - RL inquired about the convenience of discussing the Open Data in this section, as other S2R projects may also address this issue, somehow; - SP considered that instead of putting the open data on the spotlight, he would recommend something difference: the data quality. JW agreed on this approach. As an example quality data may also affect the credibility of the data. It may depend on the data source. Therefore, more pieces of information coming from this source, more credibility it has. RL agreed that trustfulness is a key issue, but data quality could be also discussed in the document; - Regarding the title of the section, to avoid further problems, SP queried about the convenience of a new title. He proposed “(European) Digital Single Market”. RL proposed “Future recommendations for further steps in the area”. SP proposed to remove the word “future”, as the recommendations were made today. All agreed. RL also proposed “Lessons learn”, paying attention to what should be done since the beginning of the project. It is in line with some recommendations made by SP in the morning session. RL insisted that the title could be agreed later on; <p>CH started a discussion about the ethical aspects of the White Paper. What should be mentioned? Based on the draft sent to the experts by email, a discussion followed. Main points were:</p> <ul style="list-style-type: none"> - JW would not focus the attention in this issue. He thought that a single paragraph explaining the potential ethical issues (e.g. right to be let alone, no discrimination according to our personal features, etc...) should be added. However he did not recommend to have longer discussions on this issues. Putting a flag on the potential ethical challenges should be enough. RL agreed on having a reference to the major ethical concerns. ALL agreed; - JW added a new point of view in the discussion: the experts have not talked about the acceptability of the project. According to his experience, a project could be properly designed but if the society does not accept it (when considering later steps, i.e. the final 		

²¹<http://www.gof4r.eu/>



Time	Topic	Responsible
13.30	White Paper discussion	THALES
<p>entrance in the market place / final implementation), it is worthless. A set of examples²² were discussed by the EPS experts to illustrate the importance of the acceptability and to discuss about the convenience of having it in the White Paper. MS pointed out the relevance of each traveller’s point of view, as each one may have his/her own criteria²³ to accept it. ALL agreed on the importance of proposing a forecast to improve the system acceptability. In this forecast different examples should be analysed. Moreover JW signalled that acceptability does not mean usability. Therefore this two concepts should not be mixed in the draft. RL considered that this proposal could enrich the White Paper and welcomed any references (maybe to other EU projects) in the next draft.</p> <ul style="list-style-type: none"> - ALL agree on having this section drafted in the next draft. The proposal was accepted. 		

Time	Topic	Responsible
16.00	AOB and next steps	THALES and UITP
<p>CH presented a planning for the next steps of the EPS experts and the White Paper IT2Rail partners, addressing:</p> <ul style="list-style-type: none"> - The White Paper content; - The schedule for the activities; - The EPS experts’ involvement. <p><u>WHITE PAPER CONTENT:</u></p> <p>After discussing with the EPS experts, the focus of the White Paper moved from the building blocks (proposed in the previous EPS meeting and in the draft <i>EPS White Paper - Draft 01.2.doc</i> attached to these meeting minutes) to the main EPS challenges detected. RL added on the convenience of drafting a set of key questions per challenge. ALL agreed that the main challenges were:</p> <ol style="list-style-type: none"> 1. Handling data (how? What in exchange? Data destruction, sharing data, calling back data, etc...) 2. Quality of data (mechanisms to deal with it: standards, governance, etc...) 3. Credibility of the new-comers (software issuers, data providers, ticket salesmen, etc...) 4. Acceptability (ethical issues) <p>Examples coming from the description of the building blocks (proposed in the second draft of the White Paper) would be proposed when addressing each challenge if possible.</p>		

²²E.g. If there is an accident that may accept your travel and the first message you receive from the system is an advertisement, you may reject the whole system.

²³Following the previous example (if there is an accident that may accept your travel and the first message you receive from the system is an advertisement...), not all the travellers would reject the system.



Time	Topic	Responsible
16.00	AOB and next steps	THALES and UITP

SCHEDULE:

The final plan, agreed by ALL is the following :

- 29/10/2017 - RL to send to the EPS experts the Data Management Plan;
- Week from the 1st to the 6th October: UITP and Thales (Portugal) drafting (1) the Minutes of the Meeting + (2) A third White Paper draft;
- 06/10/2017 – RL to send the documents (1) Minutes of Meeting + (2) New White Paper Draft sent to the EPS experts + (3) Assigned the different chapters to be drafted by each EPS expert, based on their comments and background;
- 10/10/2017 – EPS confirming the convenience of the chapters assigned;
- 18/10/2017 – EPS experts to send their contributions to RL (Thales Portugal). These contributions will include: (1) the chapters they are in charge of + (2) A review of the general text proposed in the third draft + (3) Comments to the Minutes of Meeting;
- 24/10/2017 – (1) RL to send to the EPS experts a last (fourth) White Paper draft; (2) CH to confirm the last version of the Minutes of Meeting;
- 31/10/2017 – EPS experts to send their contributions to RL (Thales Portugal). These contributions will address the whole last (fourth) White Paper draft;
- 03/11/2017 – Conference call²⁴ to be done with the EPS experts + RL (Thales Portugal) + CH (UITP) to clarify the comments on the draft.
- 03-04/11/2017 RL to issue the White Paper final version for the consortium review.

EPS EXPERTS’ INVOLVEMENT:

Regarding the efforts foreseen for the activities developed, it was agreed that:

- Each EPS meeting is considered a whole working day (8 hours) to be invoiced;
- 0,5 working days (4 hours) could be invoiced regarding the review of the second White Paper draft;
- 0,5 working days could be invoiced regarding the chapters drafting exercise;
- 1 working day (8 hours) could be drafted regarding the last draft review;
- 0,5 working days (4hours) could be invoiced for the conference call (attendance and confirmation of the Minutes).

The previous efforts should be considered as a proposal. In case an EPS expert requires longer time for an activity or more discussions need to be re-launched a new proposal will be sent the previous figures remain open to discussion.

²⁴CH proposed to use the gotomeeting software for the conf-cal. The EPS experts agreed on that.

Time	Topic	Responsible
16.00	AOB and next steps	THALES and UITP
<p>Last, a discussion started about the convenience of involving the 2 EPS experts that did not attend the meeting, as the content of the activities and the scope could be easily drafted and achieve thanks to the 3 EPS experts that attended the meeting. It was agreed that these 2 EPS experts (Franck DURMORTIER and David ROBERT) could easily review the last draft of the White Paper (according to the previous schedule, to be sent to the experts the 24/10/2017).</p> <p>ACTION: CH to check the availability of the 2 EPS experts (Franck DURMORTIER and David ROBERT) to review the last White Paper draft.</p>		

Action List

N°	Description	Responsible	Deadline
1	To send the travel claims and invoices for the working days to UITP	EPS experts	ASAP
2	To send the Data Management Plan to the EPS experts	Thales (Portugal)	Done (29/10/2017)
3	To check the availability of the 2 EPS experts (Franck DURMORTIER and David ROBERT) to review the last White Paper draft.	UITP	Done (completed the 11/10/2017)

3. CONCLUSIONS

3.1 END USERS GROUP

The EUG was established within IT2Rail, involving relevant potential users of the IF and of the other S2R IP4 technologies. The remit of the EUG is to provide technical and operational guidance and support for the project, to ensure that the results are in line with the operators' and passengers' needs and therefore facilitating the expected high European added-value of the project outcomes. This EUG was formed by main European rail operators, public transport operators, customers' representatives (e.g. European Passengers' Federation) and IT suppliers.

During the workshops, the End User Group discussed about the new mobility service scenarios and data sharing. One of the most important aspects of digitalization of Travel and Transportation is not merely technological, but a radical change in how Customers use mobility in their daily life especially in relationship with the appearance of new business models, particularly business platforms such as FlixBus, BlaBlaCar, Uber and others which can use digitalization to leverage opportunities afforded by multisided markets through acting as trading platforms between consumers and services.

The Interoperability Framework is an interoperability solution explicitly designed to equip the incumbent and new Travel Service Providers with the tools needed to face the challenge of the new services. There is a need to understand the new wave and the new business models, otherwise at the end of the project the technology developed will not be easily understood and therefore used. With regard to commercial services (no public service obligations), the more data and services are opened, the greater is the benefit to the community. The question is who opens first? We should understand that the cost of not attracting a customer to Shift2Rail and public transport could cost more than the cost of opening data (without prejudice to commercial agreements).

In addition, other ideas were commonly agreed:

- Customers first choose the new mobility providers for the convenient price. Furthermore, they continue using it because of the positive experience they had;
- Today user experience, rated by social networks, is essential to attracting customers;
- Complementary services on buses generate new data which could be fed to the service providers thanks to the business analytics module of IT2Rail. The more data you have, the more customized the customer's trip may be;
- IoT may accelerate the growth of the data pool that can be exploited by TC;
- Autonomous vehicles are expected to become increasingly common. Such vehicles could be integrated as part of the Travel Companion²⁵.

²⁵Analysis of the market actors interests in Shift2Rail and Interoperability Framework solutions – Paper presented to the TRA2018.



- It should be clear for the user that only basic functionality is provided without data consent. All others shall depend upon acceptance by the customer which should always be asked for;
- It should be always added in the specifications that the information is erasable if someone wants to opt out of his consent - any personal information, in the whole system;
- Lawyers may be involved in ticketing projects to avoid further (and later) problems.

3.2 ETHICAL, PRIVACY AND SECURITY GROUP

The remit of the EPSG is to fill in a knowledge gap that the consortium members cannot properly fulfil without external input. These experts help ensure compliance with the EU privacy and personal data protection legislation, ethical and societal acceptance, as well as security aspects, taking into account various situations across Europe.

During the discussions of this group, significant importance was given to two particular topics: the use of data and the impact of the new systems on passengers.

- Within the first topic experts and project partners discussed the data usage – e.g. data consolidation and quality, data exchange and data sharing between stakeholders, guarantees on the right usage of data, how to qualify the data, what is the relationship with ‘open data’, etc.
- The second topic addressed the potential impact of these new services on passengers, what are the passengers’ expectations and acceptance levels, etc. Whenever necessary, these discussions will include the expertise of the “EPS” group. The precise content of each topic shall be agreed between experts and partners at the beginning of the project.

The main recommendations from the EPSG experts were:

- Compliance with General Data Protection Regulation²⁶ (GDPR);
- Develop a Data Management Plan;
- Develop a Consent Form, to be delivered to EC;
- Analyse the security aspects, in particular in sense of terrorist attack;
- Add in the specifications, the fact that the information should be erasable if someone wants to opt out of his consent - any personal information, in the whole system;
- "Privacy by Attributes" could be useful;
- Consider Cryptoidentity as a possible solution for the User Identity management in IT2Rail;
- Always consider legal aspects from the beginning: respect principles on data flow also in research projects. Involve lawyers in ticketing projects;

²⁶[Regulation \(EU\) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC \(General Data Protection Regulation\).](#)



- It should be clear for the user that only basic functionality is provided without data consent. All others shall depend upon acceptance by the customer;
- The IT2R architecture should be open to many possibilities in terms of User ID management.