

GOVERNANCE OF THE INTEROPERABILITY FRAMEWORK FOR RAIL AND INTERMODAL MOBILITY

D6.6 Advisory Group input and advice (final)

Due date of deliverable: 31/10/2018

Actual submission date: 07/12/2018

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Reviewed: Y

Document status		
Revision	Date	Description
1	31/10/2018	First issue
1.1	30/11/2018	Final version
2	07/12/2018	Final version after TMC approval and quality check

Project funded from the European Union's Horizon 2020 research and innovation programme		
Dissemination Level		
PU	Public	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	

Start date of project: 01/11/2016

Duration: 24 months

EXECUTIVE SUMMARY

This document presents the inputs and advice from the GoF4R Advisory Group as results of the last two workshops conducted during the second half of the project life as well as the general conclusion containing inputs from all four meetings held.

Advisory Group (AG) was established in order to inform the relevant categories of stakeholders concerned, and to ensure their advice and support throughout the lifetime of the project. This Document is a final report presenting the minutes of the meetings together with major recommendations for a large implementation of the IF.

The members of the AG were:

- Urban Mobility Experts - Experts from the urban mobility sectors – operators and organising authorities, as well as other organisations (e.g. new mobility actors) and representatives from initiatives within the urban mobility environment;
- Long-distance mobility Experts – Experts from long-distance mobility sectors - operators and organising authorities, as well as other organisations (e.g. IATA);
- National Mobility Experts - Experts from the national mobility sector – operators, organising authorities, as well as other organizations (e.g. industrial partners) and initiatives involved in the national mobility environment);
- Academia – Experts from research organisations;
- Cybersecurity experts;
- Other stakeholders.

In general, there were organised 4 AG meetings during the whole project development. The outputs of the AG targeted the consortium of Go4FR, and, more specifically, WP2-WP6 leaders. They also influences management bodies: the Strategic Management Committee (SMC) and the Technical Management Committee (TMC). Indirect target audience is S2R JU than have opportunity to get a vision from non-JU members.

ABBREVIATIONS AND ACRONYMS

Abbreviation	Description
AG	Advisory group
EC	European Commission
FMS	Fleet Management System
GDPR	General Data Protection Regulation
GoF4R	Governance of the Interoperability Framework for Rail and Intermodal Mobility
H2020	Horizon 2020 framework programme
IF	Interoperability Framework
IP4	Innovation programme 4
ITxPT	Information Technology for Public Transport
IT2Rail	Information Technologies for Shift2Rail
MaaS	Mobility as a Service
NAP	National Access Point
NIS	Network and Information Systems
OWL	Web Ontology Language
PTA	Public Transport Authority
PTO	Public Transport Operator
STA	Smart Ticketing Alliance
WG	Working group

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1. INTRODUCTION

The **Governance of the IF for Rail and Intermodal Mobility (GoF4R)** project aimed to define sustainable governance for the **Interoperability Framework (IF)** that would create the right conditions to introduce seamless mobility services and foster the development of multi-modal travel services.

In order to provide an external view and fulfil the gaps of expertise that the GoF4R consortium may have, an Advisory Group (AG) has been established.

The AG aims to provide the most of their added-value in the project in accordance with the project’s needs and their specific field of expertise. Independent from the project, experts of the AG can offer their in-depth knowledge regarding specific project’s topics and facilitate the inputs with the project partners from the Strategic Management Committee (SMC) and the Technical Management Committee (TMC).

The composition of the GoF4R AG, its mandate and its working procedures are defined and reported in the deliverable **D6.3 Establishment and Management of the Advisory Group**. The first interim report was provided in the deliverable **D6.4 Advisory Group input and advice (interim)**.

This document reports on the outcomes of the last two AG meeting during the second half of the project’s life as well as a conclusion made after four meetings.

2. ADVISORY GROUP INPUTS AND RECOMMENDATIONS

The third AG meeting was held on the 15th of May 2018 and was devoted to the analysis of existing European initiatives on interoperability and standardisation with the purpose to understand how these initiatives may contribute to the deployment of the IF. The recommendations to the approach to the IF Governance were provided.

The forth AG meeting, held on the 1st of October 2018, was focused on the establishment of the IF governance and identification of processes with a focus on the synchronisation with other initiatives.

List of participants and minutes of the meetings are enclosed in the Annex.

The following table reports the recommendations and inputs given by the AG members during the meetings.

Recommendation	Description
Publication process	The process of assets’ publications is the one that should be governed.
Control on Publication	The asset publisher should have complete control over its publication
Ontology modification	The role of the ontology engineer who updates the ontology is essential. In addition, the possibility to notify about update the whole IF community should be considered
User-friendly editor	The editor that creates annotations should be user-friendly and easily understandable

Verification of the annotations	As the tool for verification of annotations doesn't exist, automation of annotations and their verifications may be the topics for the next research calls.
Governance of ontology	Ontology is an important element that has to be governed. The first step should be choosing/development of the reference ontology. Or there could be several ontologies or reference ontologies per scope. Everyone has a different meaning for an item (airport, station, etc.): A reference ontology for a scope guarantees that there are no different meanings for an item dedicated to this particular scope.
Distribution of the asset manager	The IF Asset manager is an important element of the IF. At some point, for the market uptake, it should be distributed among potential members of the IF ecosystem.
IF Governance in GOF4R	<p>The model of subscription and community is one of the models that may be applied to the GOF4R. The Governance of GOF4R should be self-funded or has support from the EC. Role of PTAs and PTOs are key in the governance. The structure can be similar to the structure of ITxPT.</p> <p>Good to start the governance from joining forces: IP4, ITxPT and Masai. Two phases may be proposed: 1) start-up phase that includes the development of the governance with a horizon 2-3 years and testing the applicability of this governance. The final point of this step should be building a roadmap for the nominal governance. 2) Nominal phase</p>
Stakeholders' involvement	All parties involved in the If ecosystem have their voices that should be taken into account. Changes proposed by members of the community are welcome. Collaboration is an important principle. The changes may be proposed externally or by internal technical or not-technical working groups.
Bridges between initiatives	A lot of work done that may become an input in the IF deployment, that is why it is important to synchronise with existing initiatives. Competition in governance should be avoided. One of the initiatives can also be a host of the initial part.
Message to the operators	<p>The message that may be given to the PTOs about the IF that PTO may be empowered to be more visible with the power to decide if it shares something and with whom.</p> <p>Thus, the benefits should be visible for the end-users. That is why it is important to show the technology to users.</p>
Communication	IF should be communicated as well as blockchain is. The awareness campaign is an important step in the IF deployment.
Approach	One of the approaches in IF deployment may be a "building blocks" approach and involvement of interested companies step by step on the voluntary basis. It is not necessary to start from a big community. An informal organisation of companies interested in the IF is enough for the beginning. We need to ensure that it is a spirit of openness. Put together all the existing initiatives: ITxPT, STA, Calypso, Masai, etc.

	The good point is also to federate directly the stakeholders/users/PTO and not only associations.
Overlaps between standards (ontology)	Identify the overlaps between standards (ontology) that are misleading
The life cycle of the asset	Identification of the life cycle of the assets is a starting point for the governance.
Breakdown of roles in the IF governance	Breakdown of roles should be done in accordance with the business priorities, not a technicality. Business interest is a priority for air, the Public Transport sector priority may not be this but rather "open data", "interoperability", "benefit for end-users". The logic should be: why a sector should enter into this. Governance should not put constraints on market purposes.
Market observation and analysis	Take into account the developments of "big giants" such as Google. Reaction to their changes should be quick; sometimes we need to adapt.
Ethical governance	Ethical governance should be established within a market-driven approach.
The mechanism for the return of experience	Identify a mechanism for the return of experience and collect use cases
Standardisation aspect	The importance of the standard should be evaluated.
Training	The training on the tool using should be available for newcomers.
NAP	To consider the link with NAPs and standards used for publication using the NAPs. Purpose some solutions for NAPs.

Figure 1: Recommendations of the Advisory group

3. GENERAL CONCLUSIONS

Based on the outcomes of four AG's meetings, the following conclusions can be made:

1. The IF deployment should take into account the possibility of going beyond the EU borders, including in terms of quality and privacy (GDPR and NIS directives).
2. The market-driven approach is very important in the IF deployment.
3. The issue of inconsistency in requested data in different EU member states may be a barrier in the IF deployment. Thus, the governance of IF has to consider the support of the business rules for the data asked by different states.
4. IF may contribute to the development of the ticketless system for multimodal door-to-door journeys.
5. The benefits of Blockchain technology should be evaluated. Blockchain can bring decentralised information to guarantee the expected quality level.
6. Ontology is an important element that has to be governed; the specific processes should be provided.

7. A lot of work done that may become an input in the IF deployment, that is why it is important to synchronise with existing initiatives. Competition in governance should be avoided. One of the initiative can also be a host of the initial part.
8. Opportunities for using the IF by NAPs should be considered.
9. The importance of the standard for the elements of the IF should be evaluated.

4. ANNEXES

4.1 ADVISORY GROUP MEETINGS CALENDAR

Updated calendar of conducted meetings of the AG is presented in Table 1.

Table 1: Calendar of conducted and future meetings of the AG

Date	Venue	Objectives
16th June 2017	Brussels	Introduction and first advises
11th December 2017	Brussels	First recommendations, approving a structure for the governance of the Interoperability Framework
15th May 2018	Milan	Analysis of existing European initiatives on interoperability and standardisation with the purpose to understand how these initiatives may contribute to the deployment of the IF
1st October 2018	Rome	Establishment of the IF governance and identification of processes with a focus on the synchronisation with other initiatives

4.2 3RD ADVISORY GROUP WORKSHOP

4.2.1 Agenda

AGENDA
ADVISORY GROUP MEETING #3

15th May 2018 – 10:00-16:30

VENUE: Politecnico di Milano
Via Golgi 40 – Sala Beta, Building 24, ground floor
MILANO, Italy

Meeting organiser	Guido Di Pasquale (UITP)
Phone number	XXXXXXXXXX
Document Code	IFG-WP6-B-UIP-024-01
Status	Final

Agenda

Time	Topic	Responsible
09:30-10:00	Welcome Coffee	
10:00-10:30	Objective and current status of GoF4R	Guido Di Pasquale (UITP)
10:30-11:30	Shift2Rail IP4 Interoperability Framework Q/A	Riccardo Santoro (Trenitalia)
11:30-13:00	European initiatives on interoperability and standardization: <ul style="list-style-type: none"> • ITxPT (Emmanuel de Verdalle) • MASAI (Jorge Vieira da Silva) Q/A	AG
13:00-14:00	Lunch	
14:00-15:30	European initiatives on interoperability and standardization: <ul style="list-style-type: none"> • KBIC (XXXXXXXX) • Taxistop (XXXXXXXX) • Q/A 	AG
15:30-15:40	Coffee break	
15:40-16:30	Recommendation to the approach to the IF Governance	ALL

16:30	End of meeting	
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HOW TO REACH THE VENUE

The meeting will be held in "Sala Beta", the ground floor of Building 24, in via Golgi 40. Here is a description of how to reach the Department:

<http://www.deib.polimi.it/eng/how-to-reach-us>

Please note that our Department is spread across several buildings (as the "how to reach us" page mentions at the end of the page). They are (mostly) close to one another, so the "how to reach us" instructions are accurate enough. However they refer to the main building (so-called building 20).

The building for our meeting is building 24, which is just down the road from building 20, and whose address is: Via Golgi 40 (it's part of the so-called "campus città studi" of Milan):

<https://www.google.it/maps/place/Via+Camillo+Golgi,+40,+20133+Milano+MI/@45.4775608,9.2323055,17z/data=!3m1!4b1!4m5!3m4!1s0x4786c6f5f85111b5:0xaa14c61079519319!8m2!3d45.4775608!4d9.2344942>

4.2.2 Minutes

MINUTES OF MEETING
ADVISORY GROUP MEETING #3

15th May 2018 – 10:00-16:30

VENUE: Politecnico di Milano
Via Golgi 40 – Sala Beta, Building 24, ground floor
MILANO, Italy

Meeting organiser	Guido Di Pasquale (UITP)
Phone number	XXXXXXXXXXXXXX
Document Code	IFG-WP6-B-UIP-025-01
Status	Final
Attachments	Presentations:

List of Participants

List of the participants can't be provided according to GDPR.

Conclusions
<ul style="list-style-type: none"> • The publication process is needed as an element of IF governance • Automating the transformation of the formats is the next step in the IF development. • The broker is similar to a router; anyone can provide it. • The operator has the complete control of its publication. • The IF Asset manager is a software, a tool, web-based tool. • Someone (role) is updating the ontology (ontology engineer). Notification about the update is needed. • Using a user-friendly editor that creates an annotation. For now, it is Trenitalia which annotating for others (Busitalia). The main task is annotating. • Verification of the annotation: right now we don't have any tool for verification — automation of annotation+verification for next calls. • The problem is to align the different platforms that need to be consistent. • Masai: WG on a long-distance bus, commonality with FMS. • SDK is similar to the broker. • Asset manager should be distributed among other interested in the tool entities

- MaaS4EU has the same approach as MASAI.
- Question: How do you maintain the model?
- We could use the model of subscription and community as a model for the governance of GoF4R. Masai is willing to merge, an associate to join initiatives.
- Governance of Masai: the community that regulates itself. Check this example and how to integrate it with IF governance. It is an aggregation of different environments.
- Model: a community that can self-fund or with EC funding. It is a start-up approach.

Governance:

- RSSB:
 - Ensure that all parties involved have their voice
 - IF should be visible to end users.
 - Compare between top-down and bottom-up approach and non-centralized approach.
 - Think about when and where this approach is useful for governance.
- ITxPT:
 - Link and bridges between the initiatives
 - Role of PTA and PTO is key in the governance: it can be similar to ITxPT with the different committees, where PTA and PTO are driving the strategy.
 - There is complementarity between IF and ITxPT, let's think about synergies.
- DB:
 - The great benefit and advantage of IF is that PTO is empowered to be more visible, maintaining the power to decide if share and to whom to share.
 - Big challenge: convince the co-founder like EC that this project is superior to other funded initiatives and projects.
 - It is regulation. I hope we spread the word.
- Trenitalia:
 - Masai has a good approach.
 - Appreciated the interest to have a partnership
- Entur
 - The similarity that complements each other
- Masai:
 - The best model is WWW
 - However, there is still development to be done. Technology is not completely mature.
 - Avoid competition in governance. We should consolidate the governance of interoperability merging all the different initiatives having the same objectives.
 - Governance that includes at least IP4, ITxPT and Masai. Masai would support that.
 - I see 2 phases:
 - start-up phase: we are now ready to develop governance with a horizon of 2-3 years, then test the applicability of this governance and based on the result build a roadmap for the nominal governance.
 - Nominal phase
 - We should sell better the IF/Interoperability at the same level as it is done now for Blockchain. To scale up.
- TaxiStop:

- Interesting to keep IF entirely open.
- We need tools to attract users, like the user-friendly tool for annotation.
- But on the other hand, standards are always needed.
- Find people and educate them.
- It seems the opposite of MaaS that tends to centralise everything in one platform. In reality, IF can enable MaaS.
- **TRANSMODEL:**
 - Can I have access to IT2Rail ontology?
 - Need to clarify the regulation
 - When you have small groups with a similar goal it is easy, but more difficult when you have to build a community with diverse interests.
 - Our approach is through building blocks.
 - The semantic web is OK, but we need to identify in which cases it is useful and applicable. We need to understand if the semantic web is an entirely automatic process or the human will always be needed (there are many dialects of standards).
 - Identify the overlaps between standards (ontology) that are misleading.
- **CEFRIEL:**
 - A starting point for the governance is to understand the life cycle of each Asset.
- **Trenitalia:**
 - Composition of services
 - We have to distinguish governance with regulation.
 - Self-governance is good; regulation is still needed.
 - My ontology is an extension of the Transmodel.
- **Oltis:**
 - Add the Operational Governance
 - Add security by design (technical security)

4.3 4TH ADVISORY GROUP WORKSHOP

4.3.1 Agenda

AGENDA
WP5– Stakeholders’ Workshop

1/10/2018– 9.00 – 16.30

**VENUE: Ferrovie dello Stato Italiane S.p.A., Piazza della Croce Rossa, 1
- Room 10A, Pav. VI, 1st Floor, 00198 Rome, Italy**

Meeting organiser	Guido Di Pasquale & Daria Kuzmina, UITP
Phone number	XXXXXXXXXXXXXX
Document Code	IFG-WP6-B-UIP-031-01
Status	Draft 2v

Objectives

The goal of this workshop is to discuss and propose ideas regarding the IF governance structure:

- to discuss the first outcomes made by GOF4R consortium;
- to discuss proposed IF roles;
- to discuss the minimum set of governance actions;
- to discuss the structure of IF governance body;
- to analyse the synchronisation with other IF initiatives and standards;
- to identify milestones and steps in IF deployment.

Agenda

Time	Topic	Responsible
09.00 – 9.15	Registration	
9.15 – 9.30	Welcome coffee	
9.30 – 10.30	GOF4R findings for IF governance structure. General overview Q/A	Guido Di Pasquale (UITP)
10.30 – 11.00	Topic 1 – Proposed IF roles and the link with IF actors (Moderator Daria Kuzmina, UITP) Open Discussion	All

11.00 – 11.15	Coffee break	
11.15 – 12.40	Topic 2 – Minimum set of governance actions (Moderator: Matteo Rossi, POLIMI) Open Discussion	All
12.40 – 13.40	Lunch	
13.40 – 15.00	Topic 3 – Structure of IF governance body (Moderator: Guido Di Pasquale, UITP) Open discussion	All
15.00 – 15.10	Coffee break	
15.10 – 16.10	Topic 4 – Synchronisation with other IF initiatives and standards & steps of deploying the IF (Alessandra Berto, Trenitalia; Guido di Pasquale, UITP) Open discussion	All
16.10-16.20	Works done in WP4: Extended analysis of state of the art in semantic interoperability	Daria Kuzmina (UITP)
16.20-16.30	Debriefing and conclusion (Guido di Pasquale, UITP)	

Meeting documents

Meeting documents and presentations will be available for download from the internal website:

<https://www.cooperationtool.eu/projects/>

4.3.2 Minutes

MINUTES OF MEETING
Advisory Group Meeting #4 – WP6

1st October 2018 – 9:30-16:30

VENUE: UNIFE, Ferrovie dello Stato Italiane S.p.A., Piazza della Croce Rossa, 1 - Room 10A, Pav. VI, 1st Floor, 00198 Rome, Italy

Meeting organiser	Guido Di Pasquale & Daria Kuzmina, UITP; Alessandra Berto, Trenitalia
Phone number	XXXXXXXXXXXXXX
Document Code	
Status	Final
Attachments	

List of Participants

List of the participants can't be provided according to GDPR.

Conclusions
<p>What IF Governance body should include?</p> <ul style="list-style-type: none"> • Governance <ul style="list-style-type: none"> ○ Strategic: <ul style="list-style-type: none"> ▪ Development of Use cases; ▪ Confirmation of the Requirements; ▪ Actions: it must be decided on the definition and general organisation of actions deriving from use cases and corresponding requirements analysis (technical, promotional, advocating, etc.). Those then implemented by the executive and technical boards. ○ Executive: awareness, explanation, communication, advocating. ○ Technical: modelling, a framework to develop and maintain, etc.
<ul style="list-style-type: none"> • Tasks for the IF governance: <ol style="list-style-type: none"> 1. Create awareness and interest to the IF: marketing and promotion. The operators should know what they get back; 2. Engage the community and increase the number of participants. Federate directly the stakeholders/users/PTO (not only association);

3. Provide a process for the Ontology changing;
4. Choose/develop the reference ontology. There could be several ontologies or reference ontologies per scope. Everyone has a different meaning for an item (airport, station, etc.): A reference ontology for a scope guarantees that there are no different meanings for an item dedicated to this particular scope;
 5. Design the criteria for evaluation: strategic and technical;
 6. Decide whether the design of the organisation is needed (legal entity);
 7. Take into account that description of the deviations from the reference is needed;
 8. Identify different types of stakeholders and ways to work with them. Different companies even in the same industry may work differently. One single scheme for everyone will not work;
 9. Maintain the utilities to support the users/members of the community;
 10. Identify a mechanism for the return of experience (model of ITxPT);
 11. Organise ethical governance.
 12. Various levels of adoption for deployment beyond the project should be developed. Create a consensus process for all stakeholders.
 13. Evaluate the importance of the standard.
 14. Provide the training on the tool use for newcomers.
 15. Consider the link with NAPs and standards used for publication using the NAPs.

- **Principles of the IF governance establishment:**

1. Breakdown of the roles should be done in accordance with the business priorities, not a technicality. Business interest is a priority for air, the Public Transport sector priority may not be this but rather "open data", "interoperability", "benefit for end-users". The logic should be: why a sector should enter into this. Governance should not put constraints on market purposes;
2. It is not necessary to start from a big community. An informal organisation of companies interested in the IF is enough for the beginning. We need to ensure that it has a spirit of openness. Put together all the existing initiatives: ITxPT, STA, Calypso, Masai, etc.;
3. Changes proposed by members of the community are welcome. Collaboration is an important principle. The changes may be proposed externally or by internal technical or not-technical working groups;
4. Take into account the developments of "big giants" such as Google. Reaction to their changes should be quick; sometimes we need to adapt.
5. To take a decision, for data models/ontology it is important to look at the scope.
6. Accept the experience of different entities in terms of assets developments (e.g. Transmodel ontology and semantics).
7. It has to be market driven, but the Strategic group has to have a charter/ethical governance

- **About IF itself**

1. IF is not about data-sharing, it is about data-linking. A company doesn't provide a file with data, but it makes the access to data available. Other machines can find the data.
2. Formats are not important.
3. IF not yet another legal enforcement.
4. Technology is independent but machine-readable: OWL is a metalanguage
5. IF is not a tool, but a framework that provides fundamental technology to build the tool. Do not force the use of a specific tool.

6. IF helps to reduce the cost of data integration with other companies.

- **Ontology**

1. The process of ontology changing is not quick, so it should be taken into account;
2. The big question: open sources approach for ontology or top down.

- **How to start**

1. Find interested companies that are ready to participate in following up but with limited travel on a voluntary basis.
2. Use one of the initiatives (ITxPT, MASAI, etc.) to host the initial part.
3. Technology should be shown to users
4. A good use case to consider is car-sharing as a part of use cases work