# TAP Phase One

# Retail Architecture Economic Evaluation

| | |
|---|---|
| Release: | 1.0 – To DG MOVE, ERA, TAP Steering Committee |
| Date: | 13 May 2012 |
| Author: | Dominique Margottin (Work Stream Leader) |
| Owner: | TAP Phase One Project Team |
| Client: | DG MOVE, ERA |
| Doc Ref: | TAP Retail Architecture Economic Evaluation |
| Version: | 1.0 |

# 1. Document history

## 1.1    Document location

1.1.1    This document will be uploaded to the "TAP TSI / TAP Retail Architecture/ Deliverables" folder of the project extranet (members' area).

## 1.2    Revision history

1.2.1    This document was revised as follows:

| Revision date | Previous revision date | Summary of changes | Changes marked |
|---|---|---|---|
| 04 May 2012 | n/a | Contents enhancements | |
| 11 May 2012 | 04 May 2012 | Contents enhancements, editorial changes | |
| 12 May 2012 | 11 May 2012 | Final editorial changes | |

## 1.3    Approvals

1.3.1    This document requires the following approvals:

| Name | Title | Approval | Issue date | Version |
|---|---|---|---|---|
| Project Team | Project Manager, Work Stream Leaders, Project Assistant | Done | 12 May 2012 | |
| TAP Steering Committee | Chairs, members and alternates | 15 May 2012 | 13 May 2012 | Release 1.0 |

## 1.4    Distribution

1.4.1    This document is distributed to:

| Name | Remark | Issue date | Version |
|---|---|---|---|
| DG MOVE, ERA | Official recipients of the TAP Phase One deliverables | 13 May 2012 | Release 1.0 |
| TAP Steering Committee | Chairs, members and alternates | 13 May 2012 | Release 1.0 |
| Project Team; UIC and Ticket Vendor project coordinators | All members of the Project Team and the coordinators involved in the Grant Agreement between DG MOVE and UIC | 13 May 2012 | Release 1.0 |
| Interested public | On http:\\tap-tsi.uic.org following TAP Steering Committee approval | tbd | |

## 1.5    Document maintenance

This document is maintained by the Governance Entity.

Any stakeholder detecting errors or needing clarifications can contact the Governance Entity (e-mail address to be defined).

Until the Governance Entity is operational, stakeholders are invited to contact the following e-mail address: tap-tsi@uic.org.

Proposals for additions or updates can be sent to the same mail addresses, and will undergo the Change Control Management process described in the TAP Implementation Guides Overview.

# 2. Table of contents

# 3. Context

In order to comply with Commission Regulation (EU) No 454/2011 (TAP TSI), an architecture solution has been designed to exchange data between actors of the TAP TSI ecosystem.

All data exchanged within this TAP TSI environment are called Resources.

Resources are timetables, tariffs/fares, reservation, print@home public keys for e-fulfillment, retail reference data, quality reports, other Information shared between actors.

The actors of the TAP TSI environment using those Resources are called Resource Producers and Resource Consumers.

Producers are actors making available their Resources and are subject to obligations. They are mainly RUs.

Consumers are actors that use Resources of the Producers and exercise their rights to access the Resources. They are RUs, third parties and Public Authorities.

Common components of the Architecture are:
-   A Registry
-   A Retail Reference Data (RRD)
-   A Data Quality Management (DQM)

There is a direct relationship between Resource Producers and Resource Consumers based on commercial agreements for the following Resources: timetables, tariffs/fares, reservation and e-fulfillment.

All actors need to subscribe to the Registry to be a member and benefit from the Governance services. The Governance Entity procures the Registry.
The Registry is indispensable for Resource Producers and Resource Consumers for accessing at least the Retail Reference Data. Resource Producers will have to register their Resources in the Registry (locations and access methods). Resource Consumers may use other services other than the RRD such as such as the address where Resources from the various Resource Producers are located, and also notification for changes in resources.

The Data Quality Management (DQM) tool procured by the Governance Entity is offered to Resource Producers and Resource Consumers to check the quality of Resources (Timetables, Tariffs/Fares). The Register provides to the actors the address of this DQM tool.

The Retail Reference Data (RRD) is procured by the Governance Entity that will maintain and update the reference data once the TAP CCM process has

validated corresponding Change Requests (Code list, locations, company codes and retail specific data). The DQM is therefore always up to date regarding quality controls taking into account new baselines for Technical Documents. Resource Producers and Resource Consumers will be notified of any changes on Reference Data if they have subscribed to the notification process, and will therefore be able to get the new version.

This architecture generates costs:
- For creating the common components
- On the Resource Producer side, to fulfill its obligations
- On the Resource Consumer side, to exercise their rights

The cost evaluation of impacts on the Resource Consumer is not treated here as those actors have no obligations to use TAP TSI Architecture. Their interest in using it is business driven. However, the benefits for Resource Consumers to use the TAP TSI Architecture will be assessed.

# 4.     Costs

## 4.1     Common Components

The Registry is an "address book" where actors have to subscribe a membership in order to get benefits from the services that it offers.

Resource Producers informs the Registry where to find their resources and what access method to use to get them.

Resource Consumers retrieve information from the Registry regarding Resource Producers and their Resources and subscribe to a notification process for any changes that can happen on selected Resources.

The Retail Reference Data (RRD) is a place where Resource Producers and Resource Consumers can find locations, code lists, retail specific reference data and company codes

The Data Quality Management is a tool to check quality of resources of Producers before they make them available on a data server. Both Resource Producers and Resource Consumers can use it. It provides a specific Resource called quality reports for the Resource (Timetables and Tariffs/Fares) that has been submitted to it. The use of DQM is not mandatory but is recommended to ensure the proper quality is reached.

Among those 3 common components,

- the Registry is fundamentally new and has to be developed from scratch.
- the reference data sources already exist but the interface to access them has to be built. The Governance Entity will ensure those sources can be used by contracting with the owners (TAF CCG for the Locations and Company codes of the Common Repository Domain, Merits members for the specific retail reference data of Ascagne). Code lists are publicly available on ERA website in a pdf format but can be found in a machine readable format in the RRD.
- the Data Quality Management tools already exist for UIC member RUs. Adaptations will be needed to make them available to third parties. Should there be new ones to build from scratch this would have costs that are detailed in the excel sheet.

The Excel Sheet detailing to costs should be read as follows:

- a tab for the summary of costs regarding the common components
- a tab for the detailed costs to build the Common components.

All costs are showing CAPEX (investment) and OPEX (operational costs in thousand EUR per year).

In the detailed costs, a general impact description is given alongside impact indicators that may play a role in the costs and some assumptions are described to better understand the estimations. Some comments are added to clarify some difficult parts.

Costs summary below allows high level understanding of them:

| Functionality | Impacted Component | General impact description | Capex in kEUR | Opex / year in kEUR |
|---|---|---|---|---|
| **Facilitate Producers and Consumers to comply with the Regulation** | REGISTRY | Build the registry basic services<br>Create a website for users (RUs, TVs, PAs)<br>Create a website for the governance entity<br>Create user logins into the central system | 195 | 17 |
| **Make reference data available and publish them** | RRD | Set up a FTP server to host the reference data : passenger code lists, country codes, company codes, locations<br>Build the required tools to maintain the reference data and ensure its quality | 100 | 17 |
| **Check data quality** | DQM | Build the required tools to allow RUs to check the quality of their Timetables and Fares<br>Maintainance / Evolution of the tool according to CRs approved by TAP CCM | 90 | 17 |
| | | **TOTAL** | 385 | 51 |

The overall costs of implementing (CAPEX) and running (OPEX p.a.) the TAP Retail Architecture central components is therefore estimated to be in the area of 385 kEUR and 51 kEUR, respectively.

## 4.2    Producers' costs

Resource Producers have to make available their resources on a Data Server to Resource Consumers.

Resource Producers have to inform the Registry of where and how their Resources can be retrieved and need to inform the Registry of any changes of those Resources.

Costs could be far different if Resource Producers are already UIC members and using existing tools or if they are newcomers.

We can differentiate 4 types of Resource Producers:
1. UIC existing RUs that offer IRTs and NRTs (called "Existing UIC Producers" in the excel file)
2. UIC RUs that only offer NRT (no system connection with any other RU system) (called "NRT only UIC Producers")
3. Newcomers that will offer IRT fares only (example of NTV), and also NRT fares (called "New Producers")
4. Newcomers that will offer NRT fares only (example of Westbahn) (called "NRT only new Producers")

Resource Producers types 1 and 2 are already making available their timetables and tariffs/ fares on FTP servers that are shared with other UIC RUs. They also already use tools to check the quality of their Resources prior to making them

available (except for the tariffs/ fares defined in B.3). But they do not inform any Registry, so this is to be created specifically for the purpose of the TAP TSI Regulation.

Resource Producers types 3 and 4 need to create everything from scratch. The costs are therefore covering creation of the system that allows the exchange of data with Consumers. However some of these costs would have been existing without the Regulation. So the focus on costs should only be based on specific needs due to the architecture solution in place to fulfill the requirements of the Regulation.

Those specific needs are:
- the Data Quality Management tool,
- and the notification process to inform the Registry of any changes of resources.

The Excel Sheet detailing to costs for Producers should be read as follows:
- a tab for the summary of costs for all types of Producers, allowing comparison
- a tab for each type of Producers to represent with detail their costs
- and finally a graph representation of costs

All costs are showing CAPEX (investment) and OPEX (operational costs per year).

In the detailed costs, a general impact description is given alongside impact indicators that may play a role in the costs and some assumptions are described to better understand the estimations. Some comments are added to clarify some difficult parts.

All necessary functions are described on lines and a high view on the costs is drawn below, highlighting in yellow the ones that are strictly due to impacts of the Regulation:

| Project team and experts estimates In kEUR | IRT UIC Producers | | NRT UIC Producers | | IRT New Producers | | NRT new Producers | |
|---|---|---|---|---|---|---|---|---|
| Functionality | Capex | Opex / year | Capex | Opex / year | Capex | Opex / year | Capex | Opex / year |
| make data available | 0 | 7 | 0 | 5 | 25 | 7 | 22 | 5 |
| notify Registry of data update | 13 | 2 | 16 | 2 | 200 | 2 | 200 | 2 |
| publish timetable data | 0 | 10 | 0 | 10 | 150 | 30 | 150 | 30 |
| publish fares data | 0 | 10 | 0 | 7 | 155 | 20 | 77 | 5 |
| publish fulfilment data | 0 | 5 | 0 | 0 | 50 | 5 | 0 | 0 |
| booking/Reservation Availability/cancellation | 110 | 12 | 0 | 0 | 110 | 12 | 0 | 0 |
| Data Quality Management process | 0 | 1 | 0 | 1 | 0 | 25 | 0 | 1 |
| TOTAL | 123 | 47 | 16 | 24 | 690 | 101 | 449 | 42 |
| Total costs due to TAP | 13 | 3 | 16 | 3 | 200 | 27 | 200 | 3 |

## 5. Benefits

Ticket Vendors will benefit from reduced costs of complexity since the architecture provides a first instance of standardised data access in a common data format as input for, e.g., co- and intermodal journey planning.

In addition, the architecture can help to reduce some of the costs which TVs would incur when maintaining dedicated interfaces with individual RUs.

TAP TSI Phase One is the very first step allowing Ticket Vendors and others to use Resources, and further work between RUs and TVs will allow them to sell.

RUs will benefit from Ticket Vendors worldwide distribution capabilities if solutions are cost effective with regards to wider selling possibilities

Further benefits will be identified and assessed together with prospective Resource Consumers (notably ECTAA and ETSSA members) after submission of the TAP TSI deliverables, bearing in mind that a benefits assessment was not part of the deliverables as required by the Regulation.

# 6. Incremental architecture

The architecture solution as described above fully complies with the requirements of the TAP TSI Regulation and its Technical Documents.

A more ambitious solution was presented to the Steering Committee, dealing with a fully interactive price message between systems, allowing:

- train linked ticket fares to be known and sold by the other systems

- market prices availability

- standard fares to be better controlled by Producers and allowing them to change whenever Producers decide (instead of once a year).

This ambitious solution can only be in place when:

- detailed specifications for this interactive way of requesting fares and tariffs are written and commonly validated by RUs and TVs; the UIC is planning to re-launch its Online Sales Interface project (formerly known as "New Price Message" project) shortly after the end of TAP Phase One, inviting Ticket Vendors to participate

- Technical Documents B.2 and B.3 are removed from the Regulation and replaced by the above interactive message description (extension of the Technical Document B5), or allowing this extension to be implemented as an alternative to the above-mentioned Technical Documents

- Technical Document B.1 is not anymore mandatory for all RUs, but only for those having no connection with other systems.

The architecture description for Phase One fully supports this incremental possibility with very limited costs on the TAP Retail Architecture central components.

Producers and Consumers will have much heavier costs for implementing this new way of exchanging fares but as it better satisfies their commercial needs, they have already stated it is worthwhile moving in this direction.

# 7. ANNEX: Detailed cost calculation

Separate file "Annex_TAP Architecture economic evaluation final.xls".