



Support to ELISE

European

Location

Interoperability

Solutions for

E-Government

Project INSPIRE-MMTIS

INSPIRE Conference

Antwerpen, 20 September 2018

Spatial Data and National Access Points



Kasia Bourée
Project leader



Policy background

ITS Directive Regulation for the *provision of EU-wide Multimodal Travel Information Services* (MMTIS) 2017/1926

Establishes the specifications necessary for publication (through NATIONAL ACCESS POINTS-NAP), exchange and update of standardised travel and traffic data to ensure distributed journey planning for the provision of MMTIS in the EU.

INSPIRE and Multimodal Travel Information Services



A range of **technical specifications** are recommended for data publication through the NAP

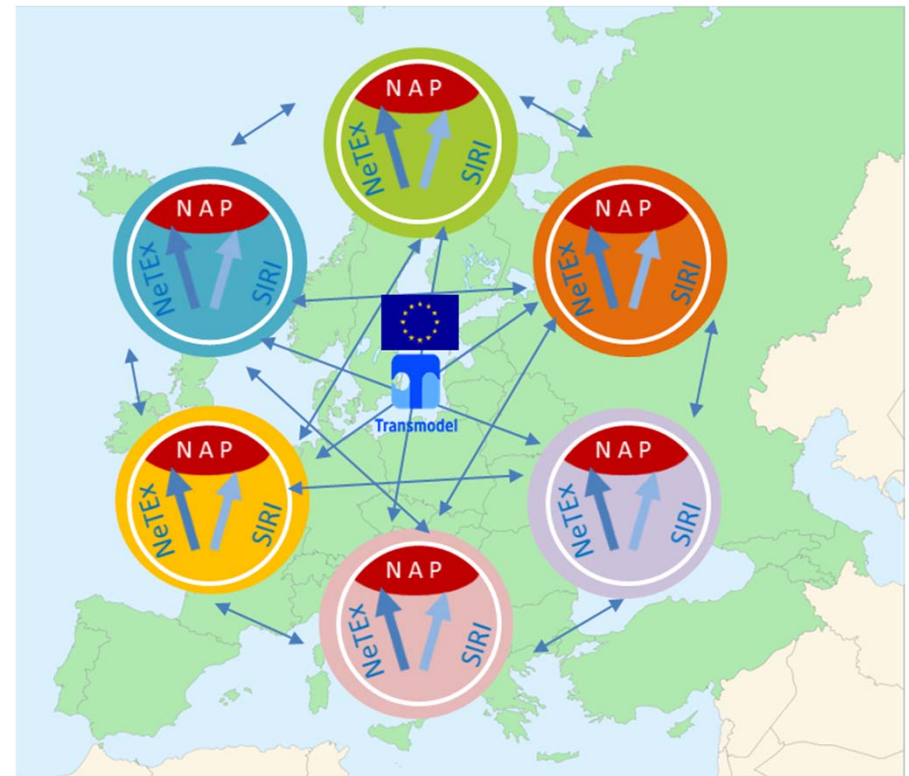
- (a) for the road transport: **priority action B** (recommending DATEX II)
- (b) for other transport modes, one of the following standards and technical specifications: **NeTEx** CEN/TS 16614, technical documents defined in Regulation (EU) No 454/2011 (**TAP-TSI**), technical documents elaborated by **IATA** or any machine-readable format fully compatible and interoperable with those standards and technical specifications;
- (c) for the spatial network the requirements defined in Article 7 of Directive 2007/2/EC (**INSPIRE**)

Exchange of Public Transport data through the NAPs



For what concerns the exchange of static scheduled data (such as public transport, long distance coach and maritime including ferry), the relevant data in the national access point should use the CEN data exchange standard **NeTeX CEN/TS 16614 based on the underlying conceptual data reference model Transmodel EN 12896: 2006** and subsequent upgraded versions or any machine-readable format fully compatible by the agreed timeline.

For what concerns the exchange of dynamic public transport data, if Member States choose to include dynamic data in the national access point the relevant parts of the CEN public transport data exchange standard SIRI CEN/TS 15531 and subsequent upgraded versions or any machine-readable format fully compatible should be used.



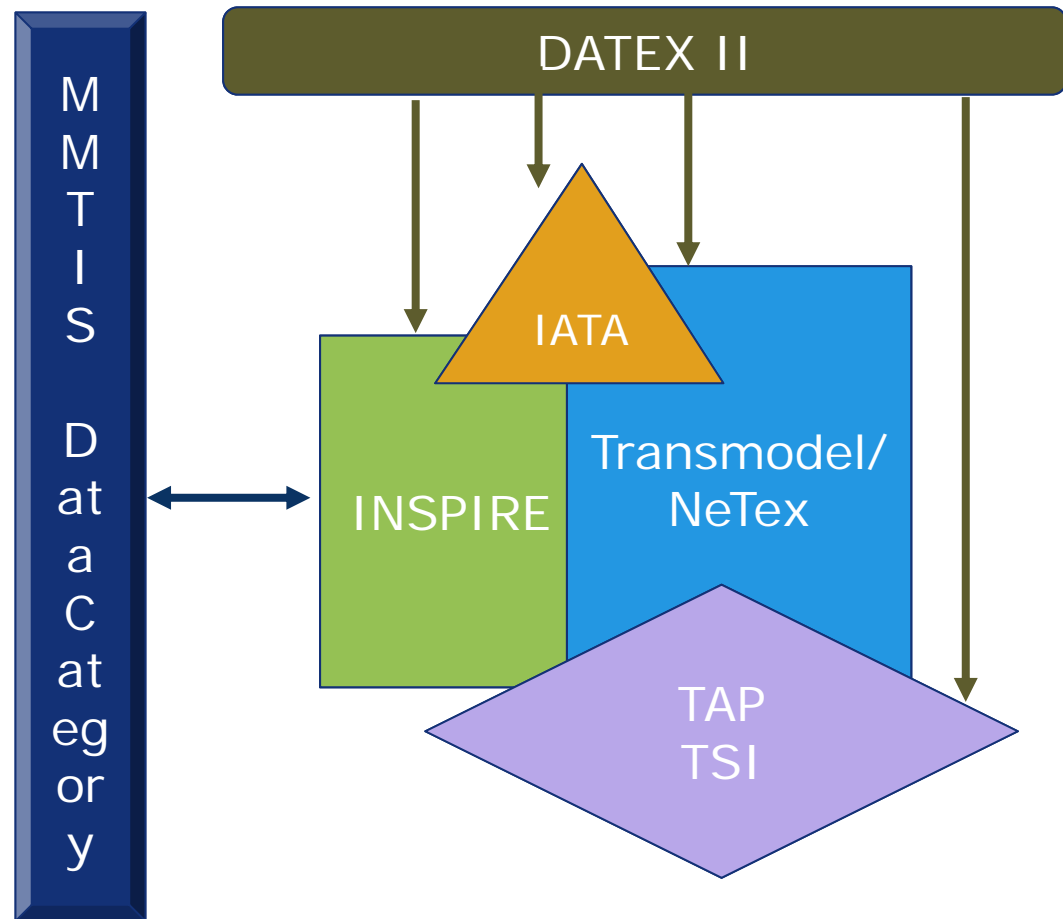
INSPIRE and Multimodal Travel Information Services



Problem statement

With INSPIRE, other ITS standards should be considered: what are the overlaps and the links?

What are the options for MS when addressing the requirements of the two Directives?



A project team INSPIRE-MMTIS



Actors

DG MOVE – JRC collaboration

6 experts for 6 specifications

Data models Data Exchange specifications:

INSPIRE, Transmodel, NeTEx, TAP-TSI, IATA, DATEX II.

Timeline

Jan 2018-March 2019

Methodology

- Identify differences of scope the INSPIRE/MMTIS data categories
- Describe the method for handling of overlaps and linking
- Consult with ITS and INSPIRE stakeholders
- Illustrate the method by selected Use Cases
- Provide recommendations to the MS to support implementation of the ITS regulation, taking into account INSPIRE requirements



Approach



1. Data Categories: **definitions**

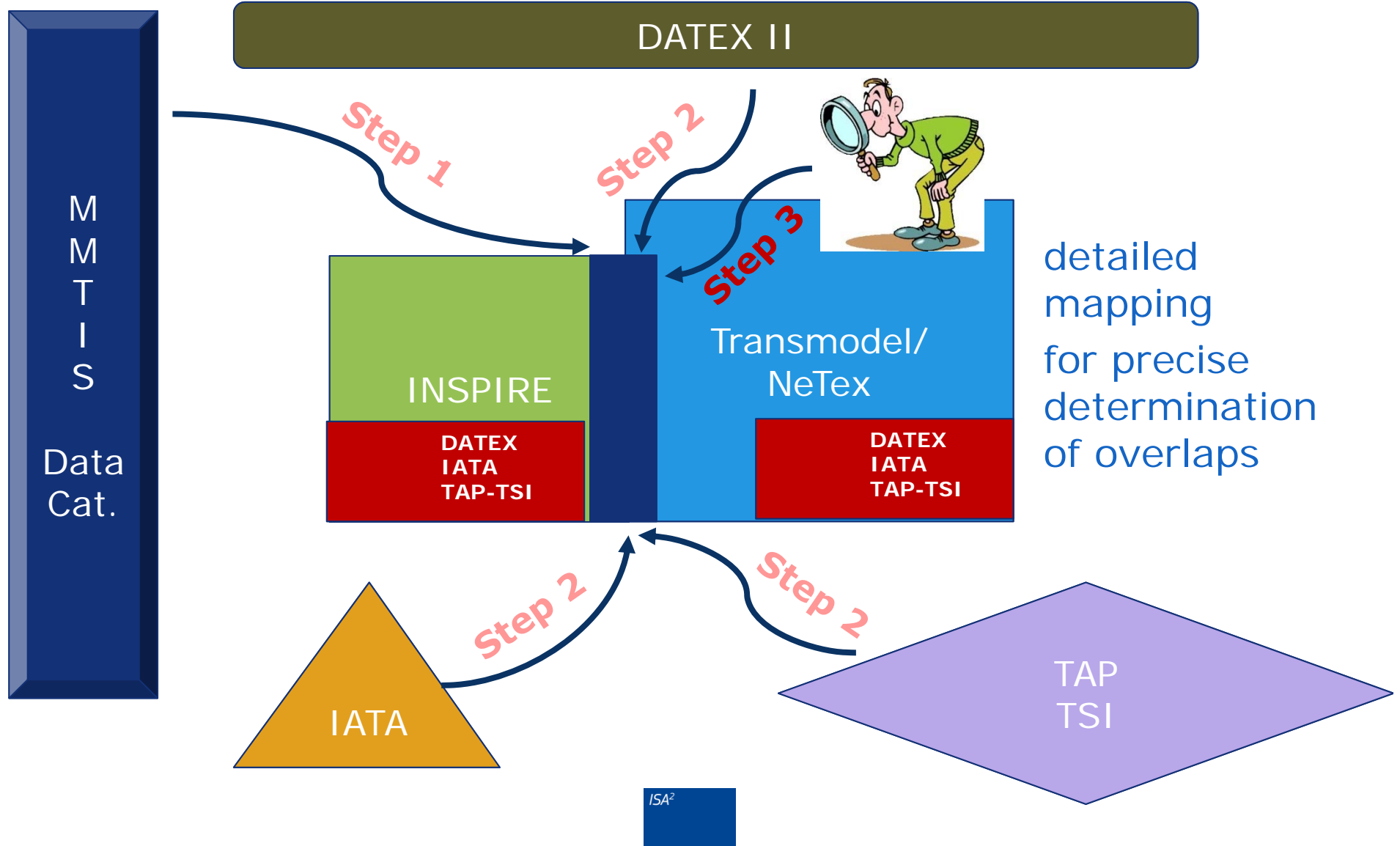
Examples : Access Nodes, Routes/Lines Topology, Address Identifiers

2. Study of data models underpinning the Data Categories:
method for **determining overlaps** of data models (general and detailed study)

3. Method for the **handling of overlaps** : what exactly to recommend? To users? To data providers?

5. **Recommendations**: full set of recommendations how to handle overlaps

Illustration of the process of overlap analysis



Overlap analysis: first draft



Data Cat Level 1		TRM/NTX	INSPIRE	TAP TSI	IATA	DATEX
Address identifiers	1	X	X	X		X
Topographic Place	2	X	X			
Points of Interest	3	X	X			
Identified access nodes	4	X	X	X	X	
Parking (incl facilities)		X				X
Geometry/map layout-structure of access nodes	5	X				
....						
Netw. Topology & Routes/Lines (topology)	7	X	(X)		X	
Stop facilities access nodes	8	X		(X)		

How to qualify/handle the overlapping data sets?



Concept of a Reference/Contributing Standard/Specification

- A *Reference Standard* **(R)** is a specification of which the scope covers a particular data category in a most comprehensive way.
- Other standards are *Contributing Standards* **(C)** of a data category.
- The scope of a *Reference Standard* is such, that the standard is specifically designed to publish data for a particular data category D
- The scope of a *Contributing Standard* is such that this standard only refers to (uses) the data category D to better describe other concepts.
- Example:
 - NeTEx is a Reference Standard for Access Nodes (public transport Stop Places) and a Contributing Standard for Addresses
 - INSPIRE is the Reference Standard for (postal) Addresses

Overlap analysis : further results



Data Cat Level 1		TRM/NTX	INSPIRE	TAP TSI	IATA	DATEX
Address identifiers	1	C	R	C		C
Topographic Place	2	C	R			
Points of Interest	3	C	R			
Identified access nodes	4	R	C (for air)	C	C	
Parking (incl facilities)		C				C
Geometry/map layout- structure of access nodes	5	R				
....						
Netw. Topology & Routes/Lines (topology)	7	R			C	
Stop facilities access nodes	8	R				

Routes/Lines (topology): defined as public transport service topology

NeTEx: dedicated to the provision of service topology → R

INSPIRE is providing infrastructure topology → has a different scope

What next?



- ❖ Finalise an agreement as regards the qualification of the specifications for all 20 data categories (Reference/Contributing specification)

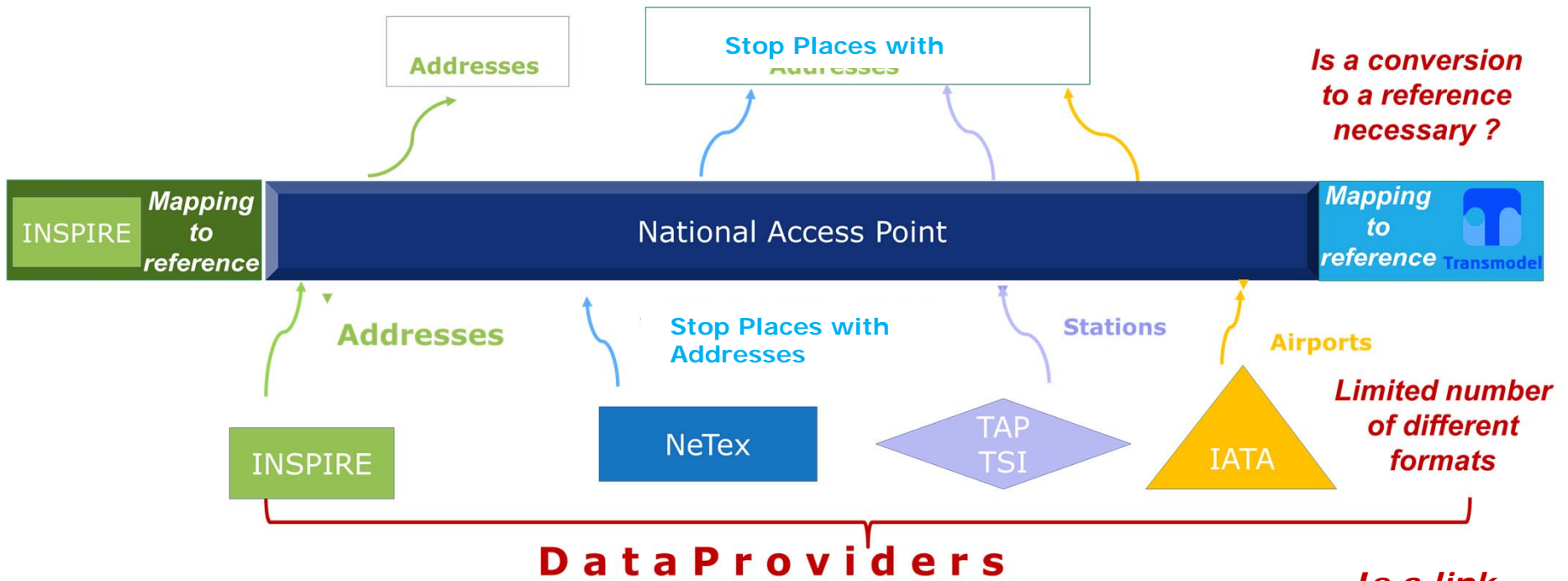
According to the EU regulations, data providers are allowed to provide data sets so that overlaps appear...

- ❖ Consider what type of recommendations is most useful:
 - recommend to publish data sets according to the Reference Specification and recommend to other data providers (which need this information) to link their data to the Reference?
 - let overlaps be and provide guidance to data set users? Provide mapping tables?

What recommendations for data providers/users regarding the data sets made available through the NAP? Example of questions



Data Users: application system providers



To conclude...



- The project is challenging: the specifications are complex and a result of many years of investigations
- The main objective is help in understanding:
 - What is the the scope of the different specifications?
 - What data categories are going to be published by which specification?
 - Where are the overlaps?
 - What is the preferred/recommended process to handle the overlaps...
 - How to take advantage of the INSPIRE data set publication in the context of the MMTIS Directive

Next stakeholder consultation/information meeting planned:
20 November 2018 in Brussels.



ISA² programme

You click, we link.

kbouree@wanadoo.fr / +33610610620

<http://kasia.bouree.fr>

ec.europa.eu/isa2

ec.europa.eu/isa2/actions/improving-cross-border-exchange-location-information_en



@EU_isa2
@EULocation



isa@ec.europa.eu
EU-LOCATION@ec.europa.eu

Run by the ISA Unit at DIGIT (European Commission) with 131€M budget, the [ISA² programme](#) provides public administrations, businesses and citizens with specifications and standards, software and services to reduce administrative burdens.



Spatial data categories for the NAP



Level of Service 1

Publication deadline	Spatial data categories
1st December 2019	<ul style="list-style-type: none"> — Location search (origin/destination): <ul style="list-style-type: none"> — Address identifiers (building number, street name, postcode) — Topographic places (city, town, village, suburb, administrative unit) — Points of interest (related to transport information) to which people may wish to travel
	<ul style="list-style-type: none"> — Location search (access nodes): <ul style="list-style-type: none"> — Identified access nodes (all scheduled modes) — Geometry/map layout structure of access nodes (all scheduled modes)
	<ul style="list-style-type: none"> — Trip plan computation — scheduled modes transport: <ul style="list-style-type: none"> — Connection links where interchanges may be made — Network topology and routes/lines (topology) — Stop facilities access nodes (including platform information, help desks/information points, ticket booths, lifts/stairs, entrances and exit locations)
	<ul style="list-style-type: none"> — Trip plan computation — road transport (for personal modes): <ul style="list-style-type: none"> — Road network — Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians) — Pedestrian network and accessibility facilities

Spatial data categories for the NAP



Level of Service 2

1st December 2020	<ul style="list-style-type: none">— Location search (demand-responsive modes):<ul style="list-style-type: none">— Park & Ride stops— Bike-sharing stations— Car-sharing stations— Publicly accessible refuelling stations for petrol, diesel, compressed natural gas / liquid natural gas, and hydrogen powered vehicles, and charging stations for electric vehicles— Secure bike parking (such as locked bike garages)
	<ul style="list-style-type: none">— Information service: where to buy tickets for scheduled modes, demand responsive modes and car parking (all scheduled modes and demand-responsive)
	<ul style="list-style-type: none">— Trip plans, auxiliary information, availability check: Fare network data (fare zones/stops and fare stages)

Spatial data categories for the NAP



Level of Service 3

<p>1st December 2021</p>	<ul style="list-style-type: none">— Information service (all modes):<ul style="list-style-type: none">— Where to pay for car parking, public charging stations for electric vehicles and refuelling points for compressed natural gas / liquid natural gas, hydrogen, petrol and diesel-powered vehicles— Trip plans:<ul style="list-style-type: none">— Detailed cycle network attributes (surface quality, side-by-side cycling, shared surface, on/off road, scenic route, 'walk only', turn or access restrictions (e.g. against flow of traffic))
----------------------------------	---

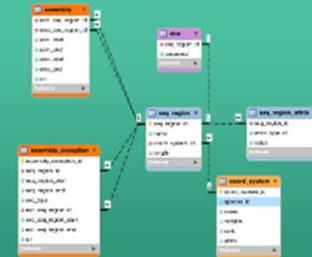
Structure of public transport standards



Transmodel Ecosystem

TRANSMODEL

Model for the overall Public Transport domain




NeTEx 

Exchange format for scheduled information


SIRI 

Exchange format for real time information

OpRa 


Exchange format for operational raw data



OJP 

Open Journey Planning API (possibly distributed)

Transmodel based data exchange format for **public transport scheduled information**

- Part 1: Common concepts and **Network** description
- Part 2: **Timing** information (timetable, etc.)
- Part 3: **Fare** descriptions
- **XML** Based 



NeTEx Profiles are defining subsets of NeTEx for dedicated use cases: a **European Profile for passenger information** is under development. It is now **mandatory for the National Access points required by the Priority action A.**

In scope of NeTEx



Not in scope

- Network description
 - Lines
 - Journey Patterns
 - Stop Places
- Timetable descriptions
 - Passing times
 - Calendars
 - Run-times
 - Etc.
- Connections and access
- Places (*POIs, etc.*)
- Fare offer description
- Accessibility information
- Planned availability
- Operational data
 - Vehicle's services
 - Timing points
 - Etc.

- Infrastructure
 - Road network
 - Rail network
 - Cycling network
- Ticketing
 - control and validation
- Events and real-time information
- Provision of maps
- Driver related information

Passenger Standards Governance

From Nov 1 2018



Single combined Passenger Services and Tariffs Conference

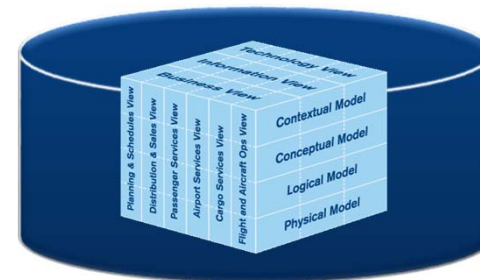
Steering Group



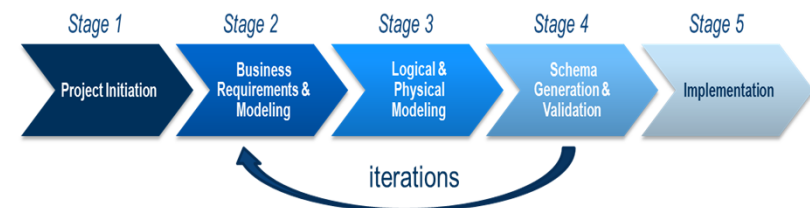
Vehicle Enabling Standards Development

- Integrated living model with defined structure and behavior
 - Business processes
 - Information models
 - Message models
- Consistent methodology for all new standards development projects
- Automated model driven generation of message specifications
- Used by all passengers standards development projects to develop new or align existing standards

Integrated model



Methodology



Accessing AIDM



- Available on the IATA Developer Portal (AIR Tech Zone)

- HTML to view
- XMI for download

<https://airtechzone.iata.org/industry-programs/aidm/>

- Modelers developing standards access directly using Sparx Enterprise Architect

- Questions on the model content can be directed to

padis.secretariat@iata.org



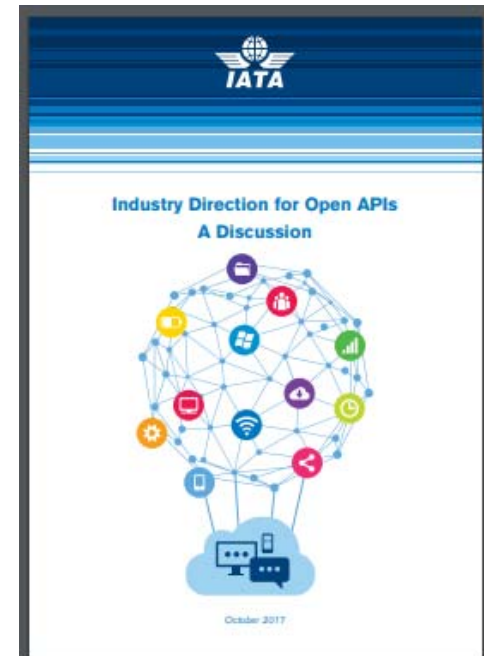
View The Model

	Business Pillar	Information Pillar	Technology Pillar
Contextual Layer	B1 Value Chain, Business Objects, Actor & Location & Organization Catalogs	I1 Information Domains, Taxonomy of Terms, Business Glossary	
Conceptual Layer	B2 2nd level Business Process, 3rd + level Business Process, Business Messages	I2 Conceptual Information Models	
Logical Layer	B3 Use Cases, Use Case Scenarios	I3 Logical Information Models (Data Entities & all Attributes)	T3 Sequence Diagrams, State Machine Diagrams, Logical Message Models

Open APIs and Airline Industry

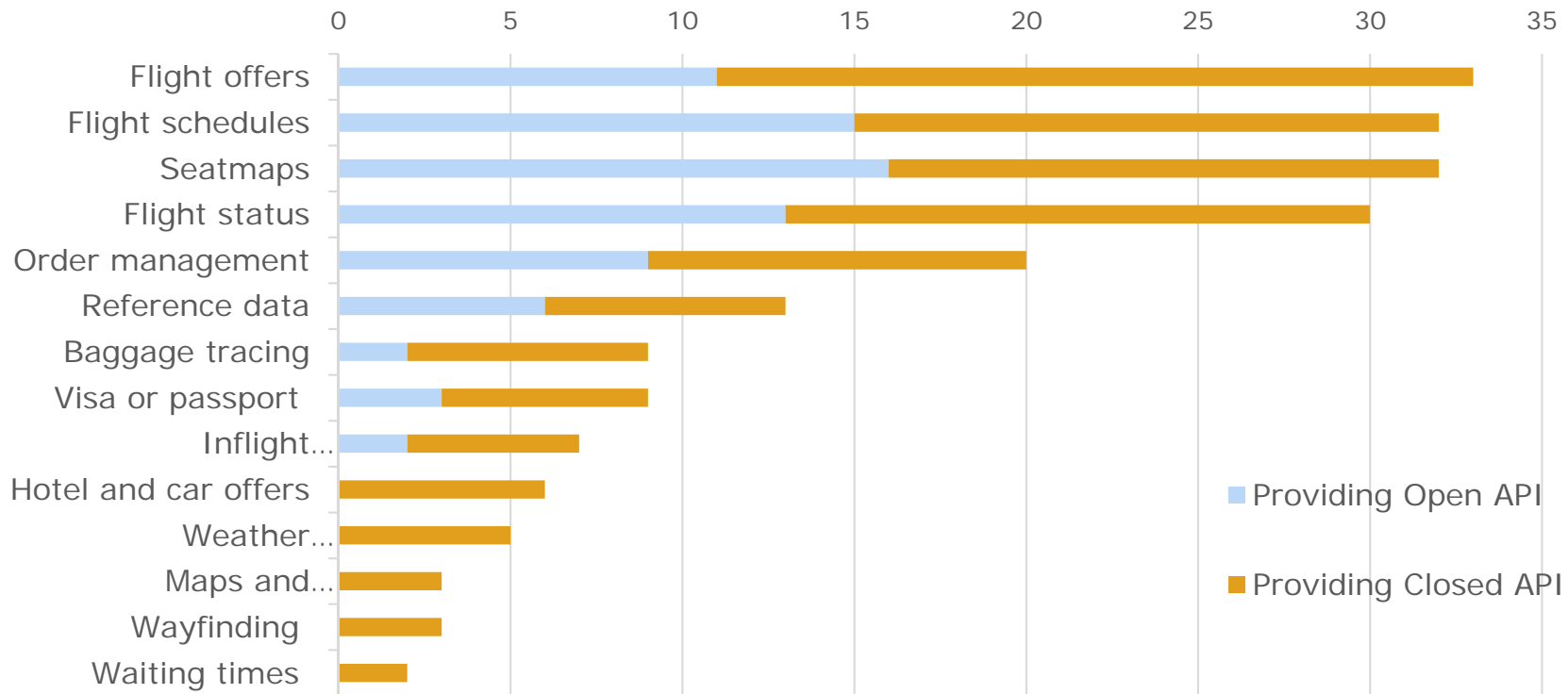


- APIs are a new way of sharing data, which are cost effective and promote an open eco system. IATA has been tasked with promoting this concept to become a normal way of sharing data across the industry.
- In 2017 IATA Members gave the direction to prepare the industry for a better and faster way to deploy APIs in the industry.
- IATA started a project to develop industry standards and best practices
- All industry standard APIs will leverage the Airline Industry Data Model



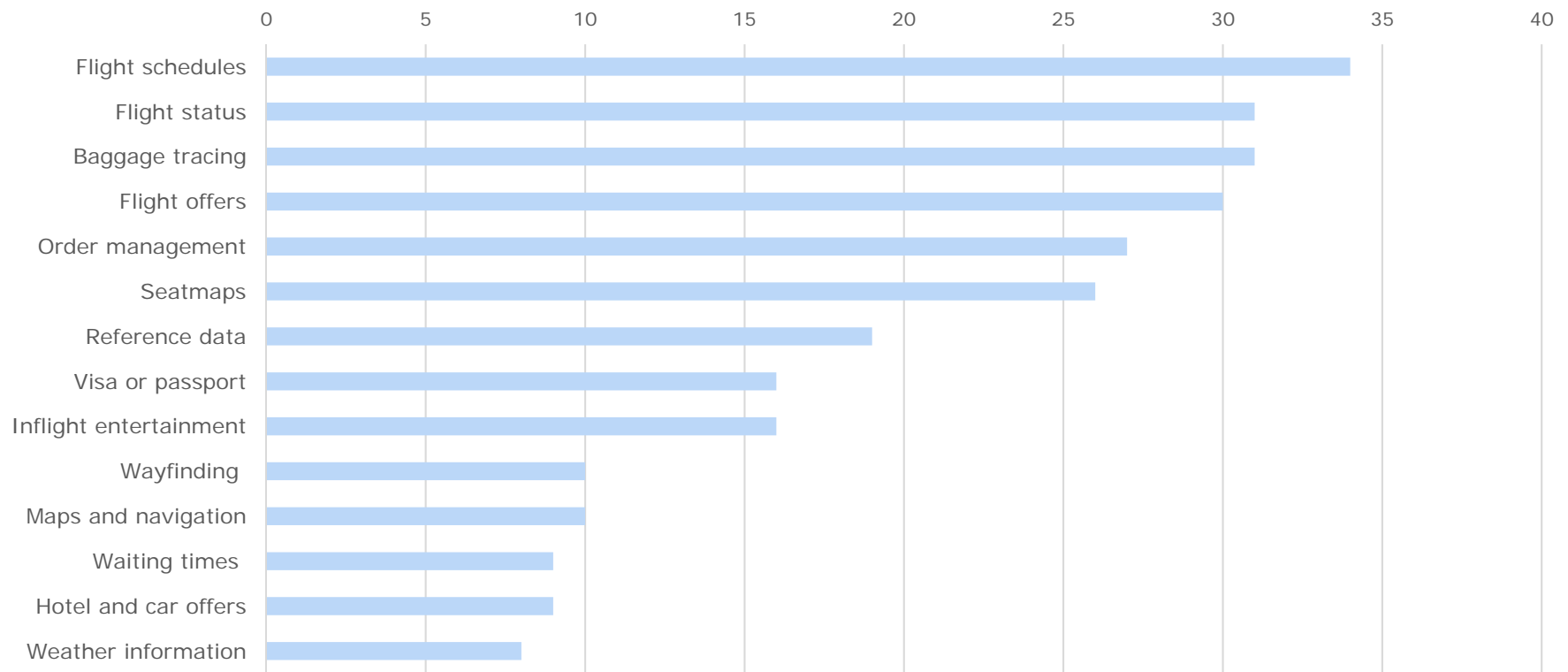
Link: <https://www.iata.org/whatwedo/stb/Documents/OpenAPI.pdf>

APIs Provided by Airlines Today



Source: IATA Survey, Summer 2017, responses from 54 airlines

Open APIs Planned by Airlines by 2020



Source: IATA Survey, Summer 2017, responses from 54 airlines

Open API and Travel Communication Project



Data providers (airlines, airports, customs authorities, ...)

Variety of APIs exposed by individual data providers

Travel Communications APIs with data relevant to traveling public

Incl. Flight Schedule, Flight Status ... Flight Info

Open API projects focuses on aspects that are common to all use cases

Variety of end user applications mixing & matching the data
Data consumers (traveling public, business partners...)

Conclusion



- Airlines live in a competitive environment
- Legacy standards and bespoke messaging options in place
- New business drivers leveraging AIDM to generate standards based messaging specifications.
- Open API the delivery method
- IATA domain delivers part of the Inspire-MMTIS requirement
- Mapping between in scope data models and mapping overlaps all important to feed into Use Cases and Recommendations