



Examples of usage of the MMTIS data available in the NAP

Turin, 7 November 2024

Agenda

Turin 7, November 2024

- Synergies between NAP MMTIS and MaaS: The Italian scenario
(Fabrizio Arneodo)
- Utilizing traffic data to achieve national travels
(Johan Hammar)
- Mobility in Île-de-France during the Olympic and Paralympic Games:
An Example of MMTIS Standards Usage
(Jorge González Suitt)
- What we are doing with NAP data
(Matthias Günter & Anne Wegmann)
- Q&A and discussion

Examples of usage of the MMTIS data available in the NAP



Fabrizio Arneodo
5T



Johan Hammar
Samtrafiken



Jorge González Suitt
Ministère des transports



Anne-Marie Wegmann
SBB



Mobility Data Days 2024



Synergies between NAP MMTIS and MaaS

The Italian scenario.

Fabrizio Arneodo

5T srl CTO/CIO and Innovation Manager

CEN SGIO/OpRa Chairman

MaaS4Italy: Mobility as a Service National Project

NEW APPROACH

New Service that integrates all the different Transport modes in a unique one.

Usage of **National MaaS architecture**.



HOW?

Let's think of a “**Super App**” that provides access to different transport options based on the user's needs through a single account to **plan, book, pay and take a trip**



CURRENT SITUATION

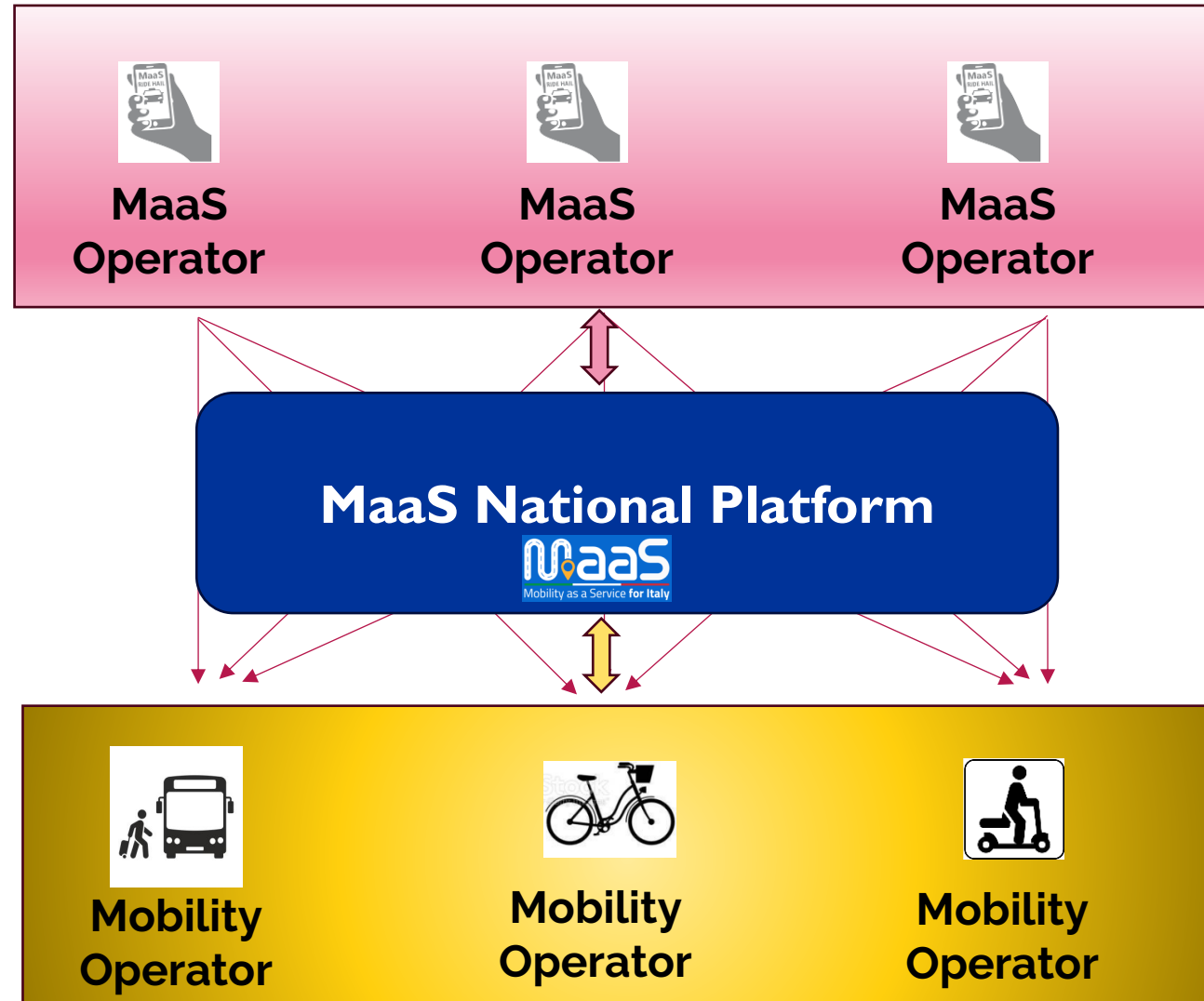


MaaS MODEL



MaaS4Italy: Mobility as a Service National Project

Functional National Architecture



MaaS4Italy: Mobility as a Service National Project

Advantages of National MaaS Platform

MaaS National Platform



**Provide
common
Analytics**



**Manage
Commercial
Agreements**



**Validates
multi-modal
Travels**



**Unique Transport
Offer data
(from NAP
MMTIS)**

MaaS4Italy: Mobility as a Service National Project

Involved stakeholders



Level in:
s (first wave)

i (second

10% Pilots

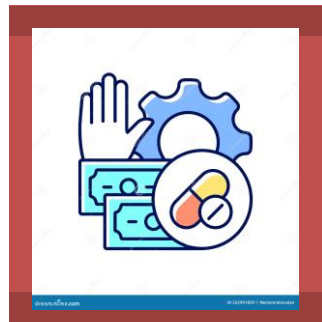
90% Pilots

rov, Emilia-
Veneto,
ird wave)



MaaS4Italy: Mobility as a Service National Project

Main dimensions



13

MaaS Pilots



20

**MaaS
Operator**



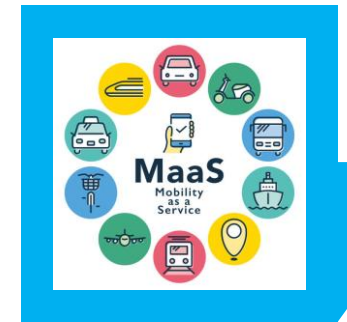
90

**Mobility
Operators**



5,000+

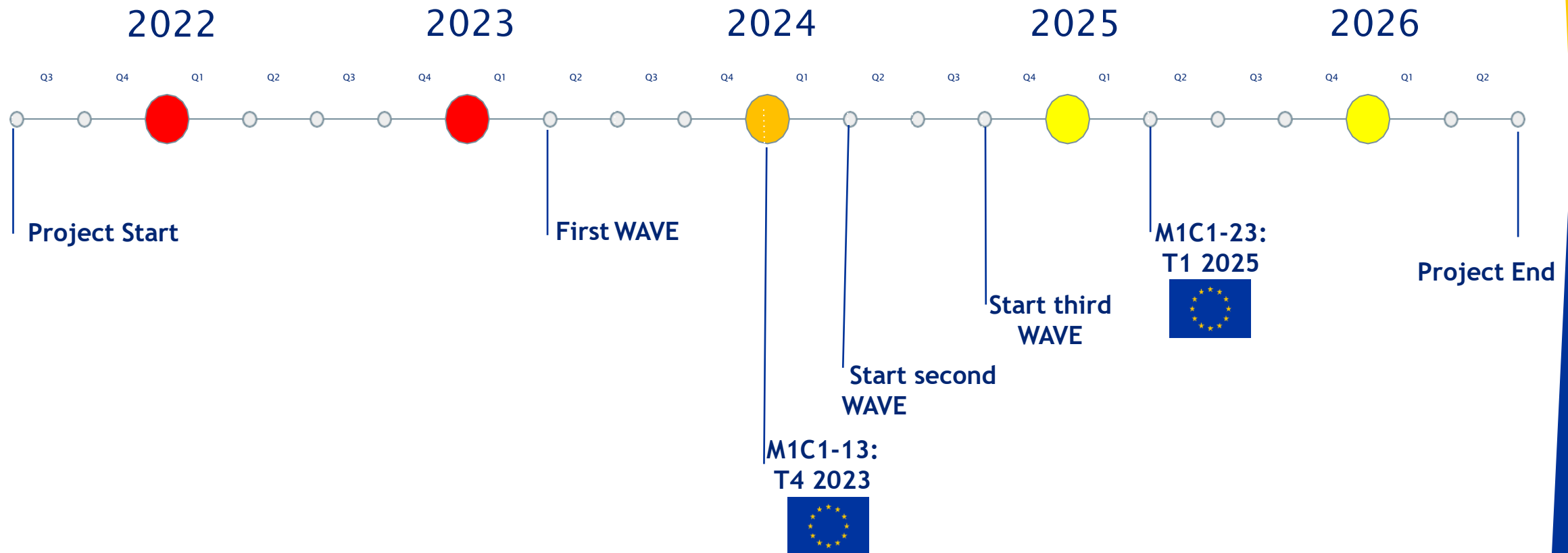
Final users



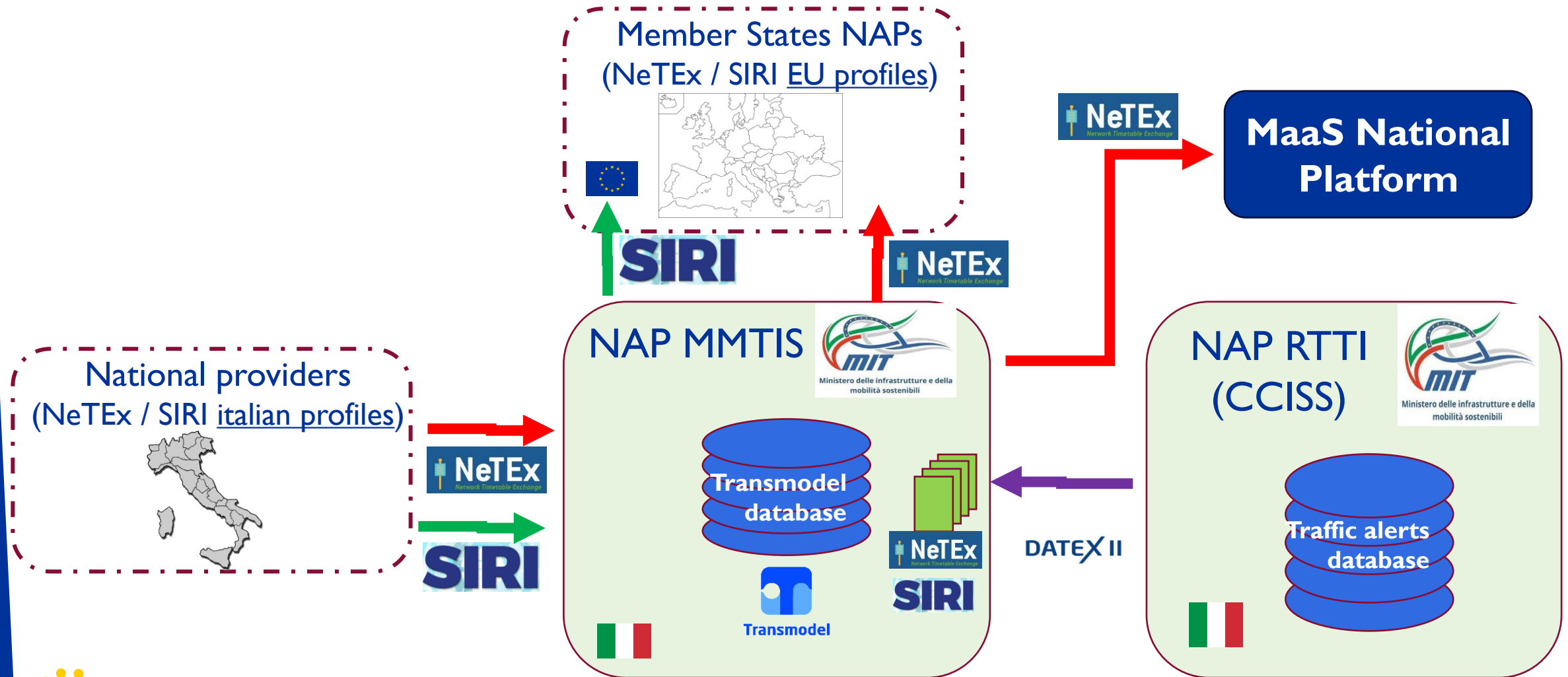
50,000+

**Multi-modal
Travels**

MaaS4Italy: Mobility as a Service National Project Timeline



Italian NAP MMTIS interactions



Italian NAP MMTIS data gathering

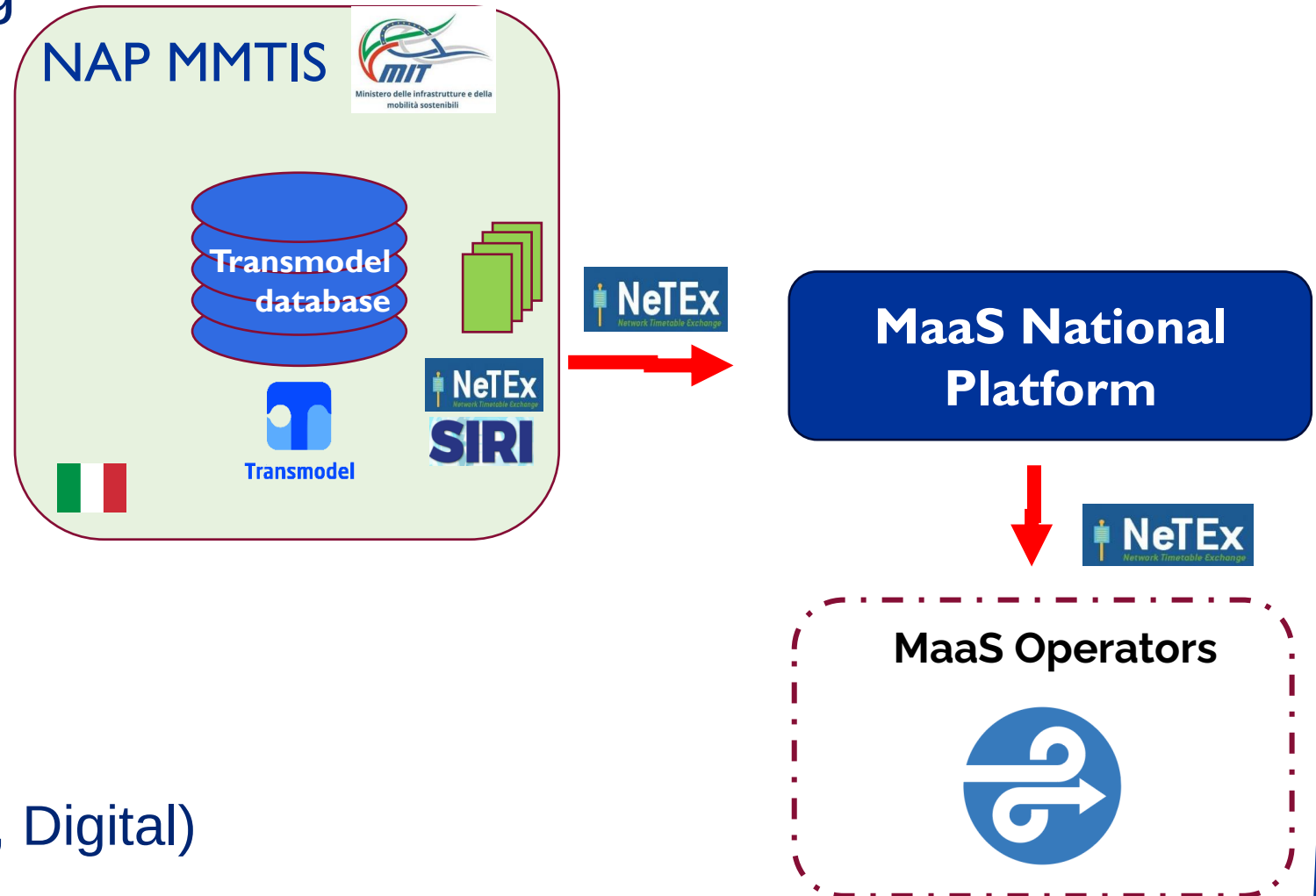
1. Data Aggregators at Regional Level called “**Regional Access Points (RAPs)**”
2. Data gathered in several ways using GTFS, GBFS, MDS, BIPEX, etc. then “converted” in NeTEx Italian profile towards NAP MMTIS



MaaS National Platform data gathering

Multimodal data enabling
MaaS:

1. Network topology
2. Timetables
3. Calendars
4. PT Lines
5. Mobility Operators
6. Point of Sales
7. Fare information
8. Sharing stations
9. Multimodal Fares data
10. Sales Products (Physical, Digital)
11. Etc.





TECNOLOGIE
TELEMATICHE
TRASPORTI
TRAFFICO
TORINO



THANK YOU

See You Next Time

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WEB

https://data4pt.org/wiki/Main_Page



Dr. Fabrizio Arneodo has Computer Science degree at Sciences at the University of Turin, with 20+ years of experience in the management of complex software development projects; he currently holds the role of CTO of the 5T company, where he oversees all the technological aspects in the application domain of intelligent transport systems.

For 10+ years he has been working as an expert recognized by UNI in the field of standardization of technologies applied to Public Transport and represents Italy in the steering committee of CEN TC278 / WG3 "ITS for Public Transport", with the role of Chairman of the Standardization Group. European OpRa (Operating Raw Data and statistics exchange).

He has more than 20 publications in national and international scientific journals in the field of vehicular traffic, public transport, infomobility, ticketing and intelligent transport systems solutions.

Utilizing traffic data to achieve national travels

Johan Hammar, Samtrafiken

Carriers in Sweden – deregulated public transport

16

PTAs

Länstrafiken

LT Länstrafiken

Värmlandstrafik



Blekingetrafiken

Skånetrafiken



ÖstgötaTrafiken

Region
Gotland

DALATRAFIK

Länstrafiken
Kronoberg

LÄNSTRAFIKEN
NORRBOTTEN

Länstrafiken
VÄSTERBOTTEN

SÖRMLANDS
TRAFIKEN
En del av Region Sörmland

västtrafik

Hallandstrafiken

Xtrafik

DIN TUR



Kalmar länstrafik
REGION KALMAR LÄN

Regional train systems



ÖRESUNDSTÅG

Mälardalstrafik

Xtrafik

KRÖSATÅGEN

västtrafik

ÖstgötaTrafiken

NORRTÅG

Skånetrafiken



Commercial Train



Snälltåget

ArlandaExpress

Commercial Bus

BT/BUSS
bergslagstaget.se

Ybuss



FLIXBUS

Samtrafiken

NAP with public transport data

- Samtrafiken has a commission from the Swedish Transport Authority to deliver public transport data in the NAP.
- The Swedish NAP links to Trafiklab where Samtrafiken publish **100%** of all Swedish timetables, stop data etc.
- The data is published in NeTEx and GTFS.
- From many operators we also publish real-time data in SIRI and GTFS-RT

National combined journeys in Sweden

- There is no government involvement to enable combined journeys nationally.
- The Swedish public transport sector has a voluntary cooperation called ResPlus financed by the operators since over 30 years*.
- Through ResPlus operators and resellers can offer the traveller a one-stop-shop for the entire combined journey with several operators.

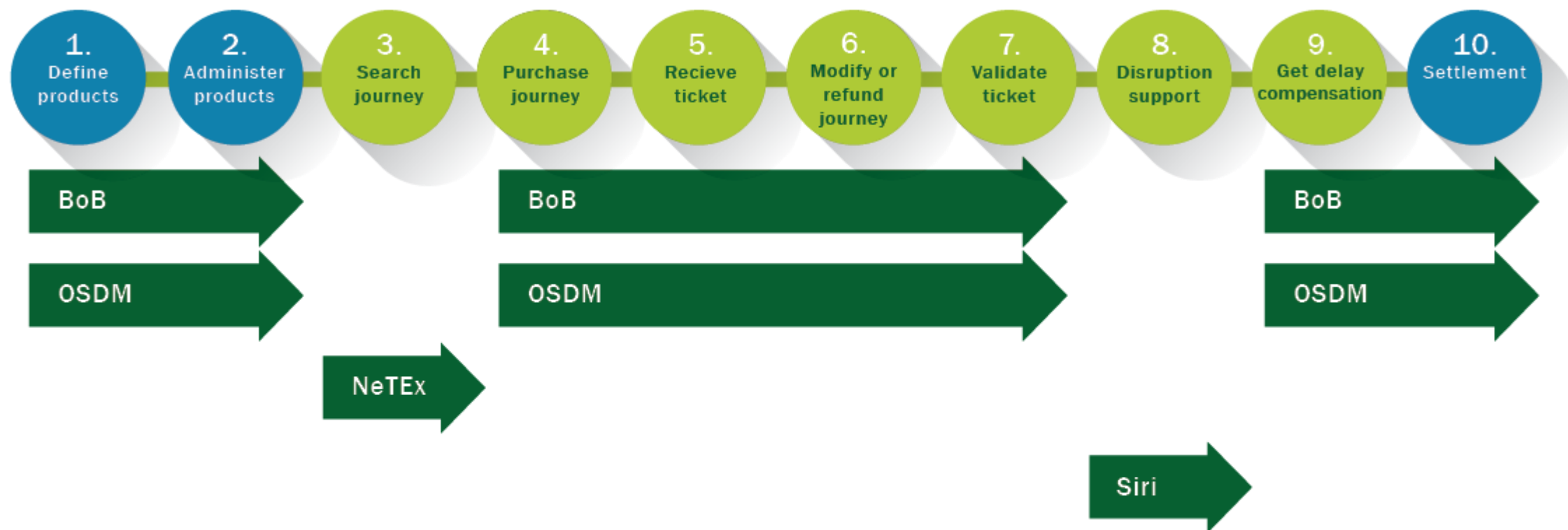
*) The only operator currently not participating is Flixbus



System change was needed

- To enable future improvements for the travellers' experience by utilizing new possibilities through open standards.

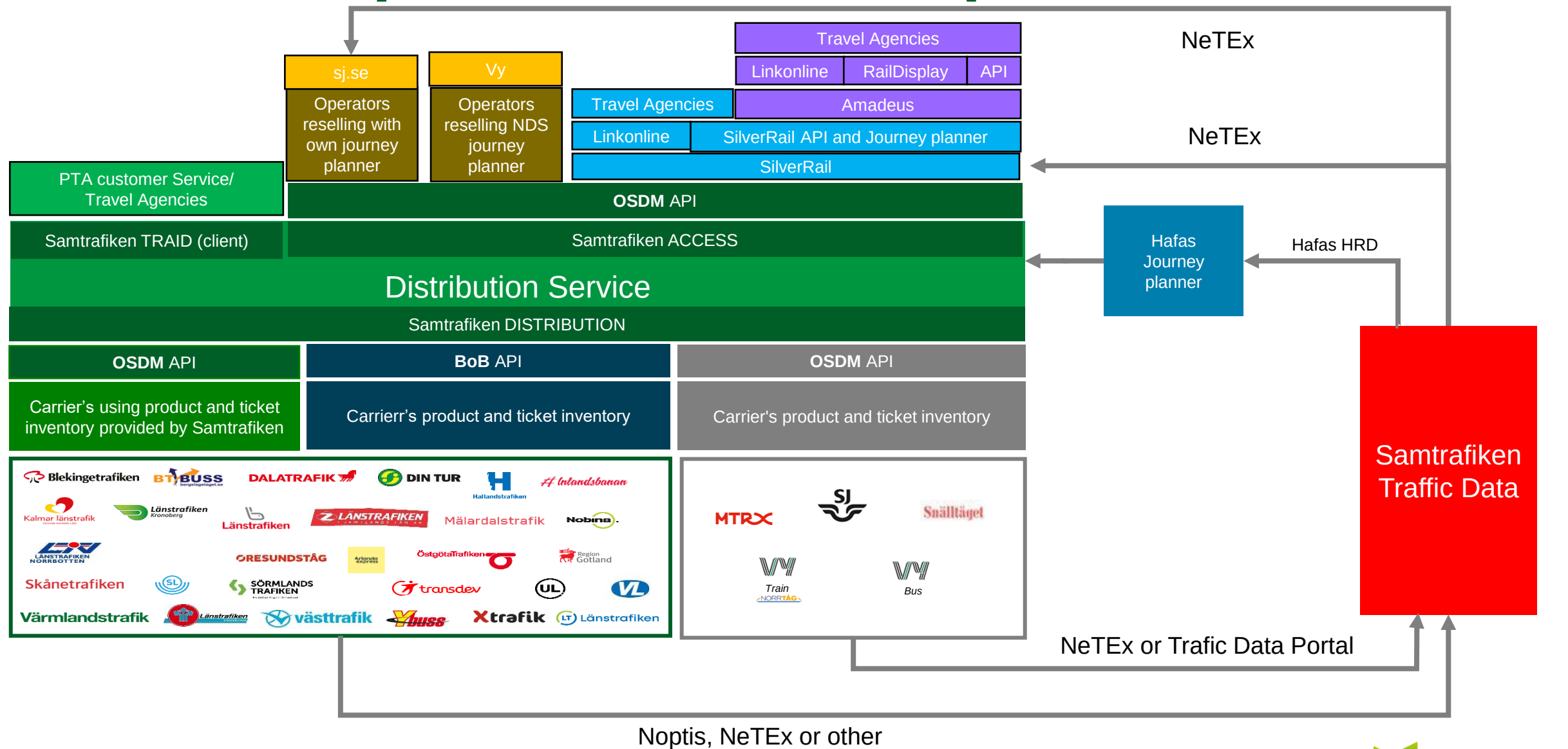
Using standards to achieve national journeys



A distributed system

- The new solution which enables combined journeys is no longer a central, national, system.
- We connect the operators' own booking and ticketing systems to a National Distribution Service.
- We then we offer reselling parties to connect to one point to access all content.

Open standards = open access



ResPlus limitations

- The NeTEx data provided for ResPlus differs from NeTEx data published in the NAP.
- Journeys are sold with a "get there" guarantee
 - At a disturbance with a broken connection the causing operator has an obligation to provide alternatives for you to arrive at your destination.
 - Samtrafiken qualifies all connections and hide those that are unreasonable in the data provided.
- Limited number of stops
 - For historical and technical reasons we limit the shown stops and stations to those most used (excluding school bus stops etc.)



ResPlus and neutrality

The National Distribution Service is operator neutral. All participants are presented equally in provided data.

The reselling parties, however, operates on a deregulated market and are free to decide what content to sell.

Samtrafiken has no commission to offer a operator neutral sales channel.



Thank you

johan.hammar@samtrafiken.se

Mobility in Île-de-France during the Olympic and Paralympic Games: An Example of MMTIS Standards Usage



Jorge Gonzalez
French Ministry of Ecological Transition
Napcore Mobility Data Days 2024



What we are doing with NAP data

Session: Examples of usage of the MMTIS
data available in the NAP
Matthias Günter & Anne Wegmann
SKI+ Systemaufgaben Kundeninformation
Torino, 06.11.2024



What we are doing with NAP data (providing / consuming / playing around)

More flexible. More convenient. More frequent.

Your speakers today

Anne Wegmann



Product Owner
opentransportdata.swiss

Matthias Günter



Businessanalyst

Contact and feedback: opendata@sbb.ch

Switzerland and why NAP data is of interest

Problem to solve: Easy data consumption from NAP



Source: [Wikimedia commons](#)

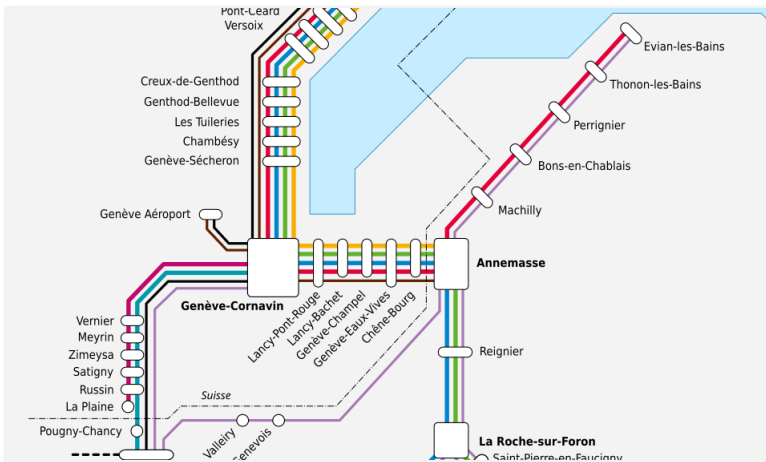
Mobility Data

- Complete
- Reliable
- High-quality
- Easily consumable
- All relevant modes

Trip Planning

- Fast
- Reliable
- Detailed
- With real-time data
- Trip updates

Other things are also important, but addressed elsewhere: Tickets, validation of tickets, reservations



Source: [Wikimedia commons](#)

Some problems and how they relate to the general problem



Standardisation

Profiles

Guidance documents



Data differences

Data conversions



Trip planning in Europe

OJP 2.0 protocol

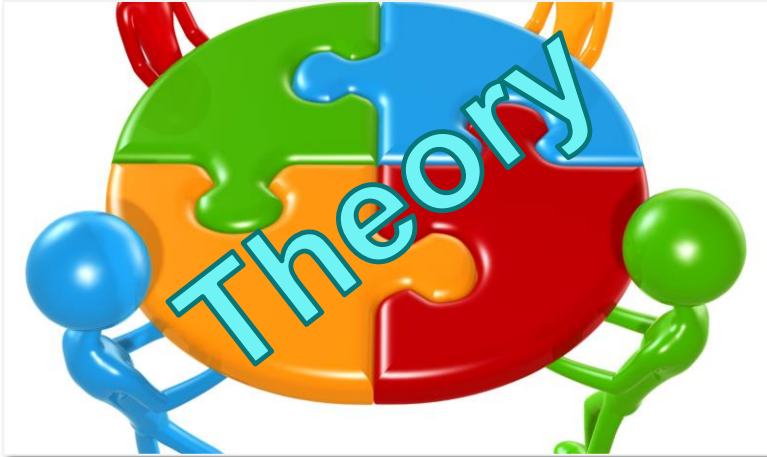
OJP 2.0 service



The End

Standardisation

Easy data consumption: The issue with the current standards in MMTIS



Source: [Pieter Bruegel / Wikimedia commons](#)

The current standards have issues:

- Not precise enough
- Ambiguous
- Not accepted by data consumers
- EPIP in addition is too weak for many use cases

Example NeTEx:

- 3 major ways to do timetables (Calls, PassingTime, VDV462)
 - 4 ways to do id (id attribute, PublicCode, PrivateCode, keyLists)
 - Multiple ways for collating files (All, Network, Line, Frame, combinations)
 - Coordinates (None, ScheduledStopPoint, StopPlace/Key, WGS84 or not)
 - Frametypes (EPIP, Standard, General)
 - OperatorHandling (OperatorRef, responsibilitySets)
 - Date handling (Calendar, Bitfields,...)
- ⇒ Already at least 2304 possible valid implementations



Source: [Wikimedia commons](#)

2024

Solutions we work on:

Profile – PROFILE – P R O F I L E



Source: [FedoraDesign](#)

- Very precise profile(s)
- Provide standardised simple data from NAP (e.g. GTFS, GBFS), with quality assurance
- Things need to click => master data management for StopPlace/Quay, Line, Operator/Authority, ServiceJourney at least
- Referencing not mapping
- Semantic and syntactic



Source: [creativecommons.org](#)

The correct size of acceptable deviations in the interface



Source: [Wikimedia commons](#)

NAP guidance document (and other things like training)

Easy data consumption: Guidance document

Content	
1 → Executive Summary	49
2 → What to expect from this paper	99
2.1 → To whom it addresses	99
2.2 → Objectives and expected outcome	99
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5.8 → Guidance for geo-referencing	239

Title: How to make datasets for multimodal mobility systems interoperable across EU – Guidance Paper

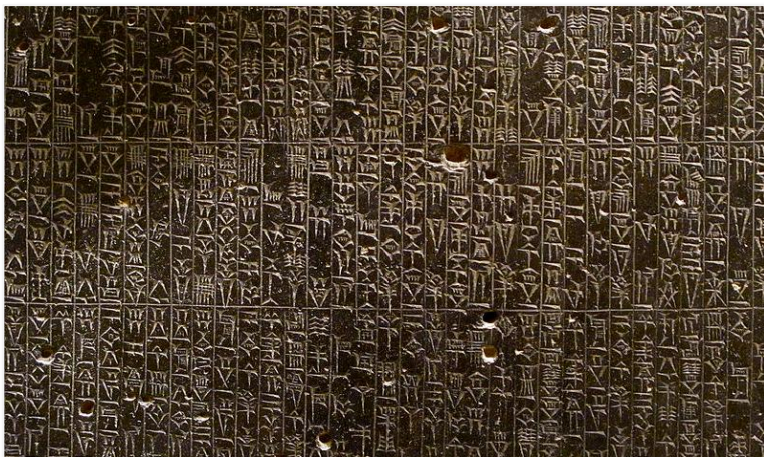
Goals of the document:

- Improving operations of NAPs, support stakeholders
- Examples to others
- Mainly relevant outwards facing and not necessarily replacing national profiles
- Improving easy data consumption from multiple NAPs
- Avoid doing mistakes already made by others
- DATA4PT frame (for the document)

Focus on outcomes:

- What does the consumer have to “pay” to get something up and running using multiple NAP
- Current situation for timetables → not feasible at all
- Goal → 50K for the whole of Europe for a data consumer

Current draft: Meeting to finalise a first version in week 47 2024



Some problems and how they relate to the general problem



Standardisation

Profiles

Guidance documents



Data differences

Data conversions



Trip planning in Europe

OJP 2.0 protocol

OJP 2.0 service



The End

Data conversions and visualisations

Easy data consumption: Convert to other profiles/standards and provide tools

V.1.0, 2024-12-01

#	Description	Priority
1	Can transform a Swiss NeTEx file into an EPIP in 12 hours	1
2	Can transform a full Swiss NeTEx file into a GTFS in 12 hours	1
3	Can transform Flixbus GTFS to EPIP in 3 hours	1
4	Can transform a Blablacar GTFS to EPIP in 2 hours	1
23	Can covert Dutch Profile into EPIP	1
24	Can convert EPIP into Dutch Profile	1
25	Can derive geographical "Rote" into "ServiceLink" (EPIP)	1
5	Has a description on how to install and run the software	1
6	Has notes and diagrams about the architecture and database usage	1
7	Is reliable in its usage.	1
8	Is hosted on its own github repo and cleared from clutter	1
9	Does run through script_regression.txt without error (will check all main transforms except performance)	1

Source: <https://github.com/skinkie/reference/wiki/Roadmap>

- Python based conversion NeTEx <-> NeTEx and NeTEx <-> GTFS Prototype
- Also used to validate what we do in NeTEx
- Provide EPIP from (some) national profiles
- Provide GTFS from EPIP and vice versa
- Validate what is provided in NAP
- Some more tools in the repository (validator) and perhaps soon done by students: direct map visualisation from NeTEx (currently we do → GTFS → View)

Links:

- [Issues · MMTIS/QA](#)
- [Roadmap · skinkie/reference Wiki](#)

Some problems and how they relate to the general problem



Standardisation

Profiles

Guidance documents



Data differences

Data conversions



Trip planning in Europe

OJP 2.0 protocol

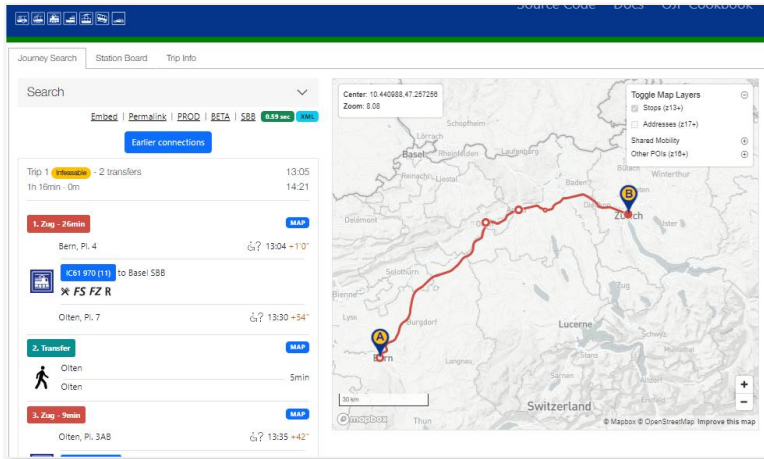
OJP 2.0 service



The End

OJP 2.0

Easy data consumption: OJP 2.0 service for trip planning in Switzerland (and in the future vicinity of Switzerland)



- **CEN standard** is finalized and voted on, waiting for publication

https://standards.cenelec.eu/dyn/www/f?p=205:105:0:::

Suggested Sites: Web Slice Gallery, OJP2, Days Inn by Wyndh..., SKI+, OJP, Liip, bls, sdk

About CEN | About CENELEC | Contact Us

Search Standards MY EXPERT AREA

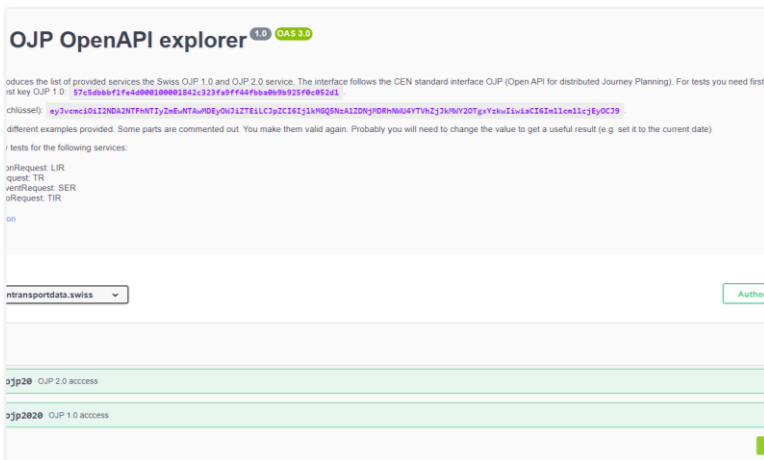
CEN/TC 278	CEN/TS 17118:2017 (WI=00278420) Intelligent transport systems - Public transport - Open API for distributed journey planning	Published	
CEN/TC 278	CEN/TS 17118:2024 (WI=00278610) Intelligent transport systems - Public transport - Open API for distributed journey planning	Approved	
CEN/TC 278	CEN/TS 17148:2018 (WI=00278400) Intelligent Transport Systems - eSafety - ProForma eCall Agreement between TPSP and PARES	Published	
CEN/TC 278	CEN/TS 17154-1:2019 (WI=00278421) Electronic fee collection - Evaluation of implementation for conformity to CEN/TS 16986 - Part 1: Test	Published	

→ Synchronised with MMTIS data: all elements collected/published in the MMTIS standards should be expressible/searchable in the OJP 2.0 standard

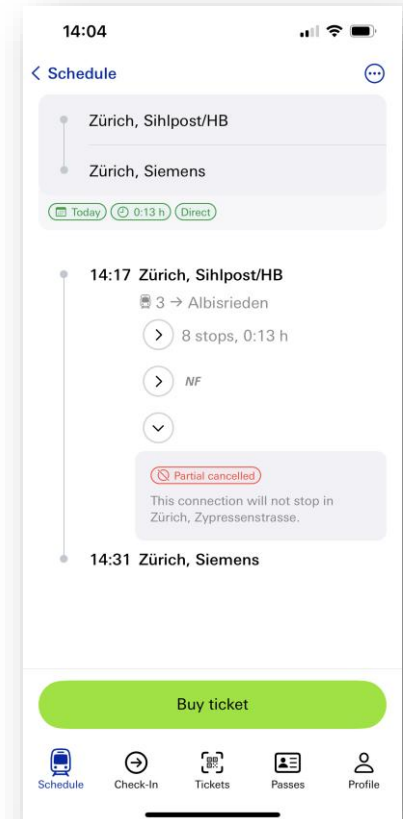
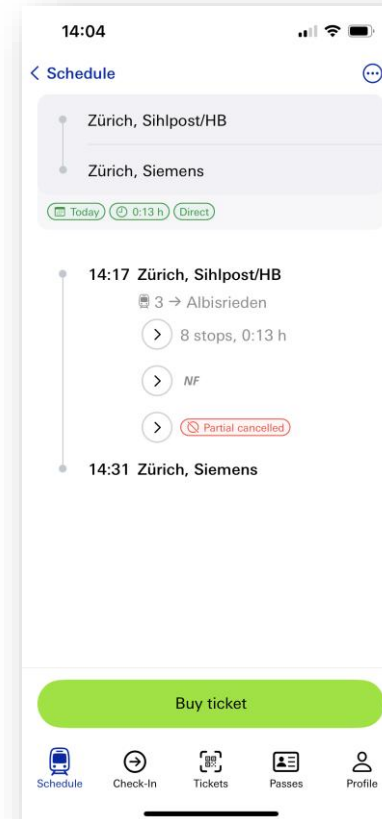
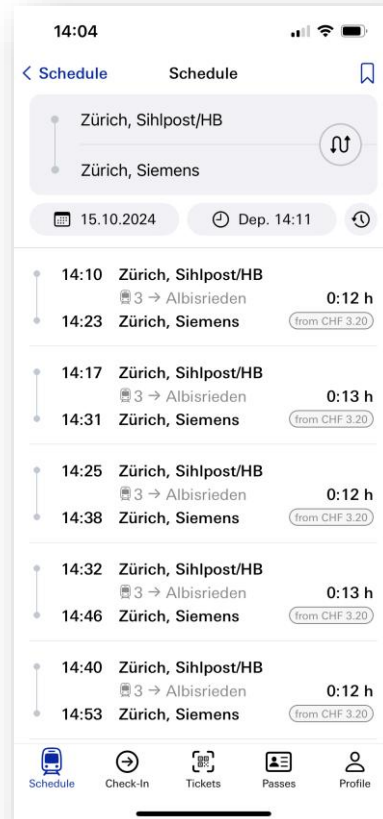
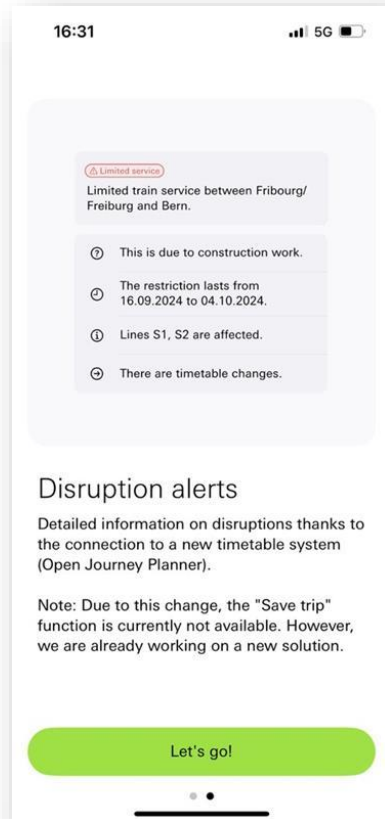
- **OJP 2.0 service:** In production for Switzerland (basic parts)

Links

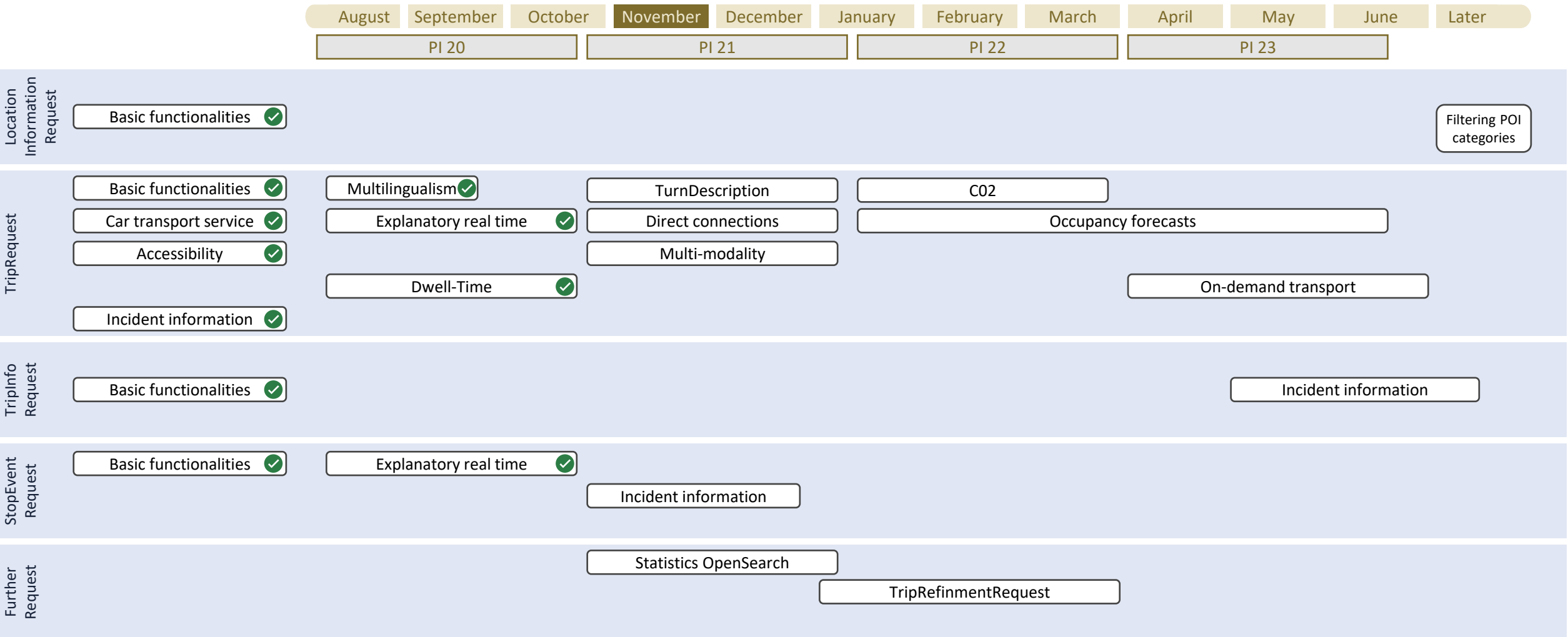
- [Open Journey Planner \(OJP\) | Open Data Platform Mobility Switzerland](#)
- [Swagger UI](#)
- [OJP Demo](#)
- [VDVde/OJP: Open API for distributed journey planning. CEN/TS 17118:2017.](#)



OJP 2.0 service in production by major transport operator in Switzerland



Roadmap OJP 2.0 service implementation for Switzerland





Thank you.



www.opentransportdata.swiss

opendata@sbb.ch



Examples of usage of the MMTIS data available in the NAP

- Q&A and discussion



Fabrizio Arneodo
5T



Johan Hammar
Samtrafiken



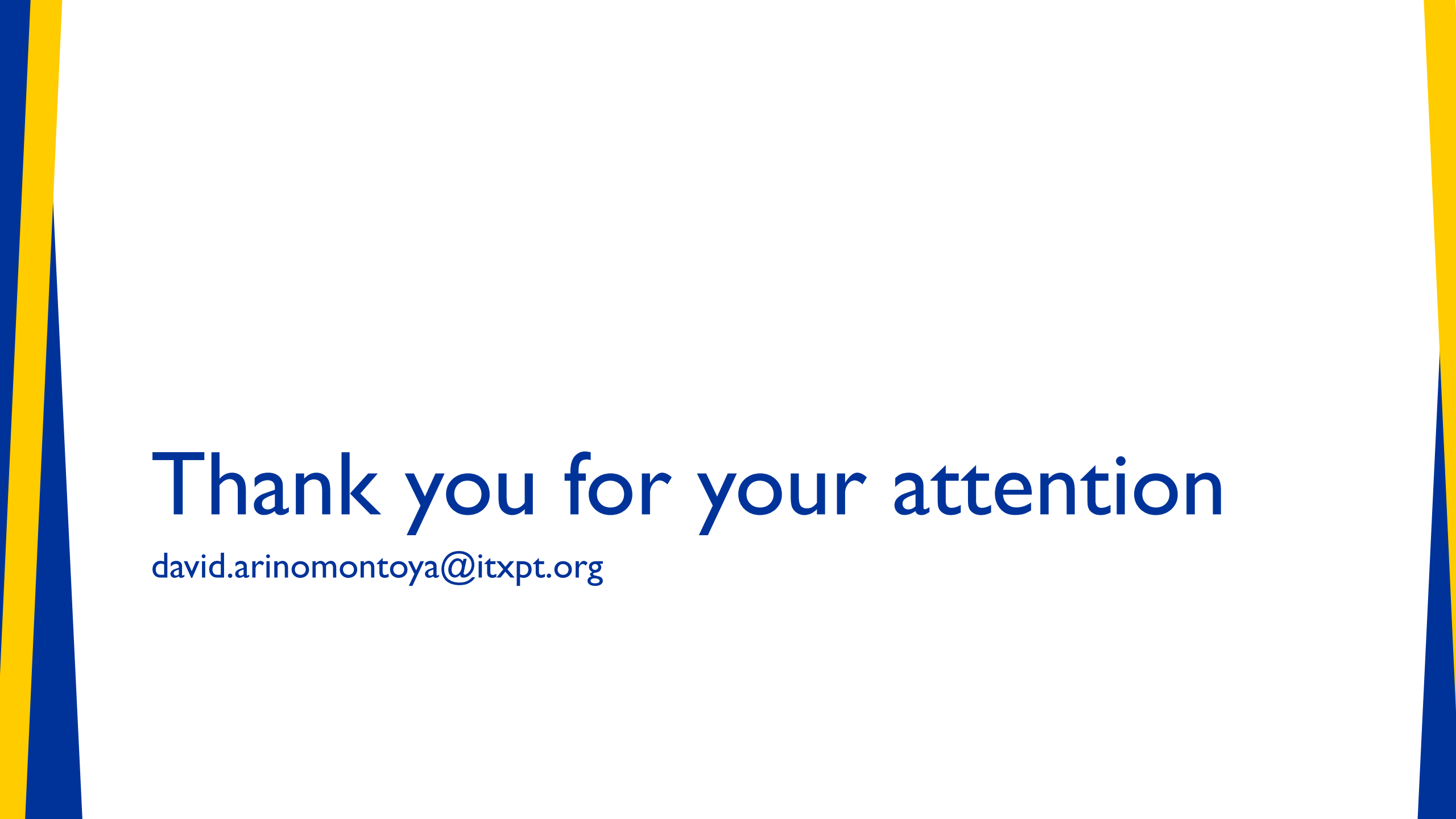
Jorge González Suitt
Ministère des transports



Anne-Marie Wegmann



Matthias Günter
SBB



Thank you for your attention

david.arinomontoya@itxpt.org

Mobility in Île-de-France during the Olympic and Paralympic Games: An Example of MMTIS Standards Usage



Jorge Gonzalez
French Ministry of Ecological Transition
Napcore Mobility Data Days 2024

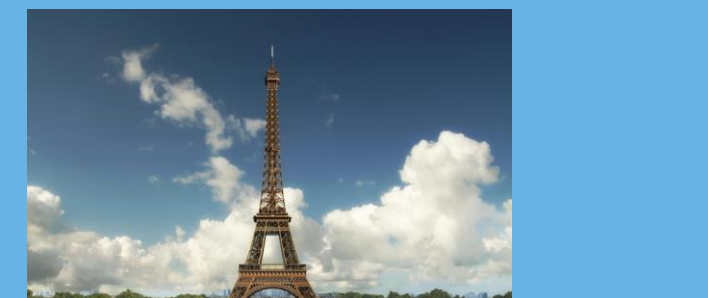
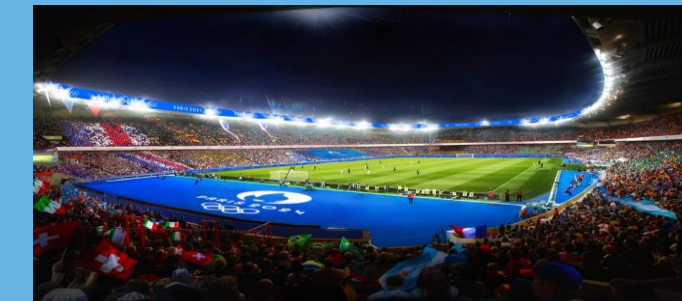
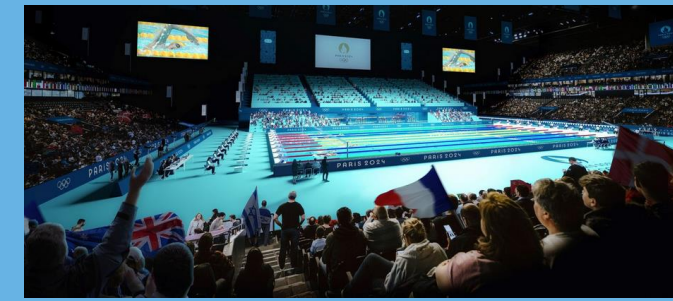


Summary

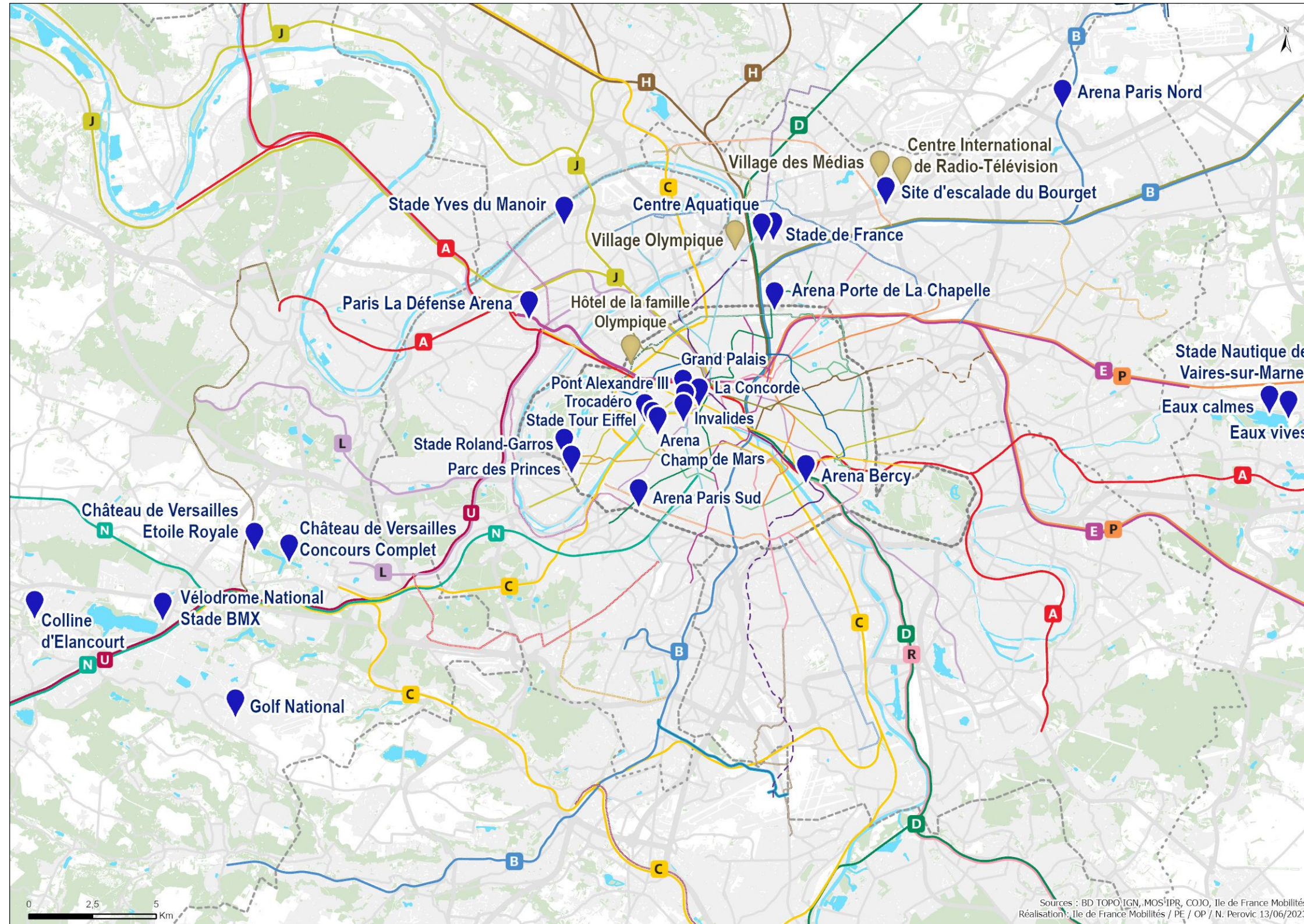
1. Public Transport during the Paris 2024 Olympic & Paralympic Games
2. MMTIS Standards Implementation in Paris region
3. Passenger information during the Olympic and Paralympic Games

1.
—

Public Transport during Paris 2024 Olympic & Paralympic Games



10 million tickets sold for venues in Ile-de-France, a popular success



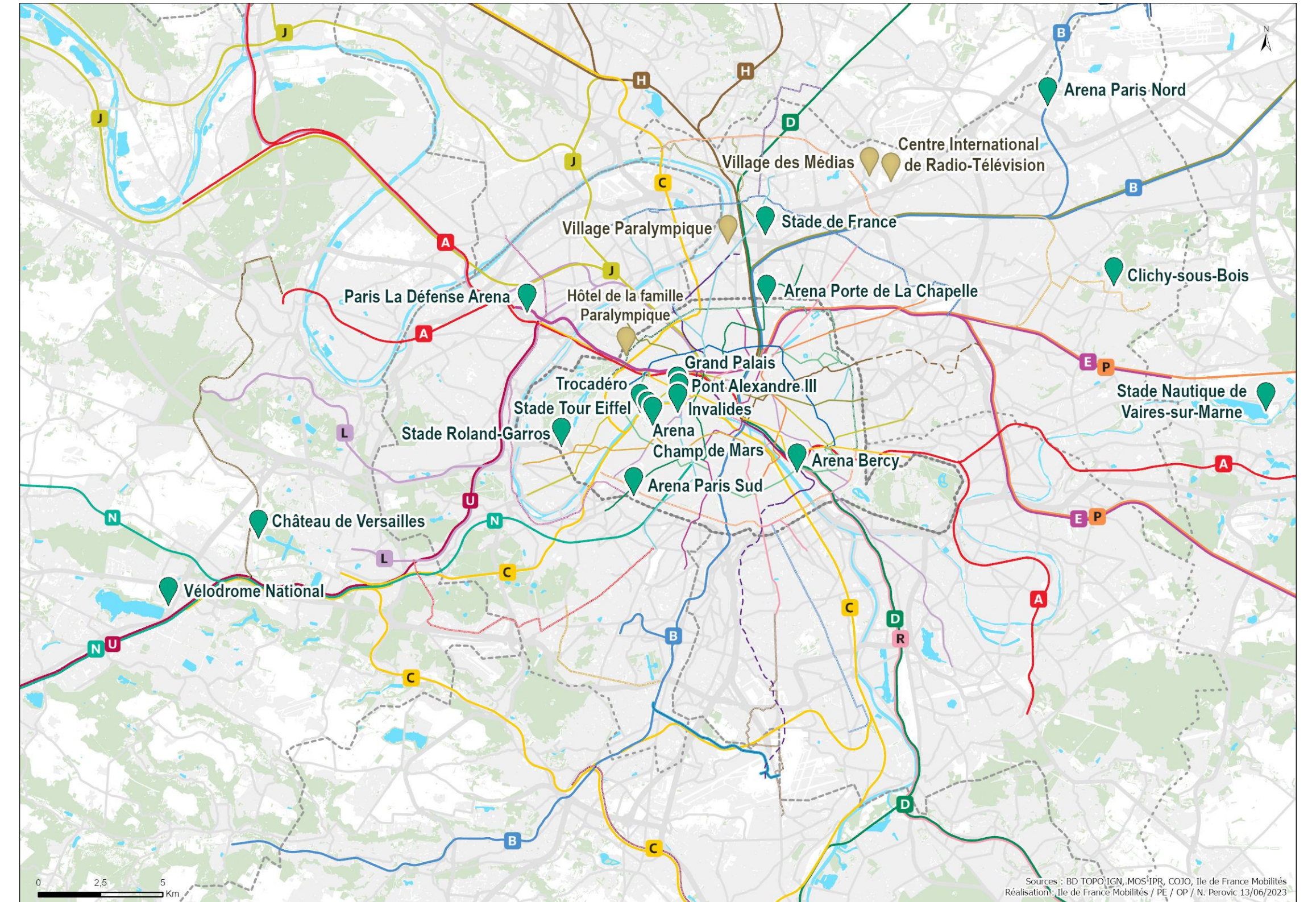
Olympics: Friday 26 July – Sunday 11 August

25 competition venues

(13 in Paris, 12 in the suburbs)

> 750 sessions

7,5 million tickets



Paralympics: Wednesday 28 August – Sunday 8 September

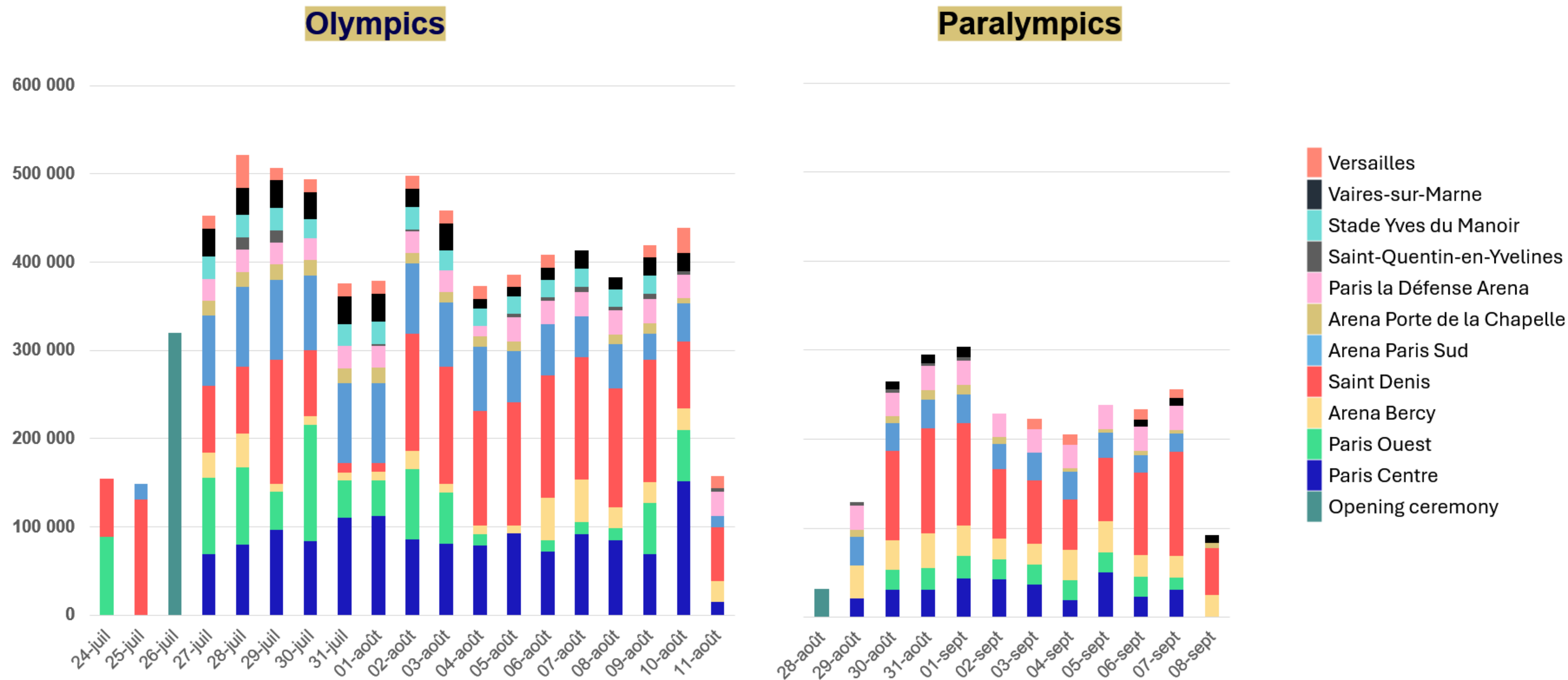
17 competition venues

(10 in Paris, 7 in the suburbs)

> 250 sessions

2,5 million tickets

Up to 520 000 seats available per day during the Olympics, more than 300 000 during the Paralympics (ticketed sessions)



Road events: almost every day !

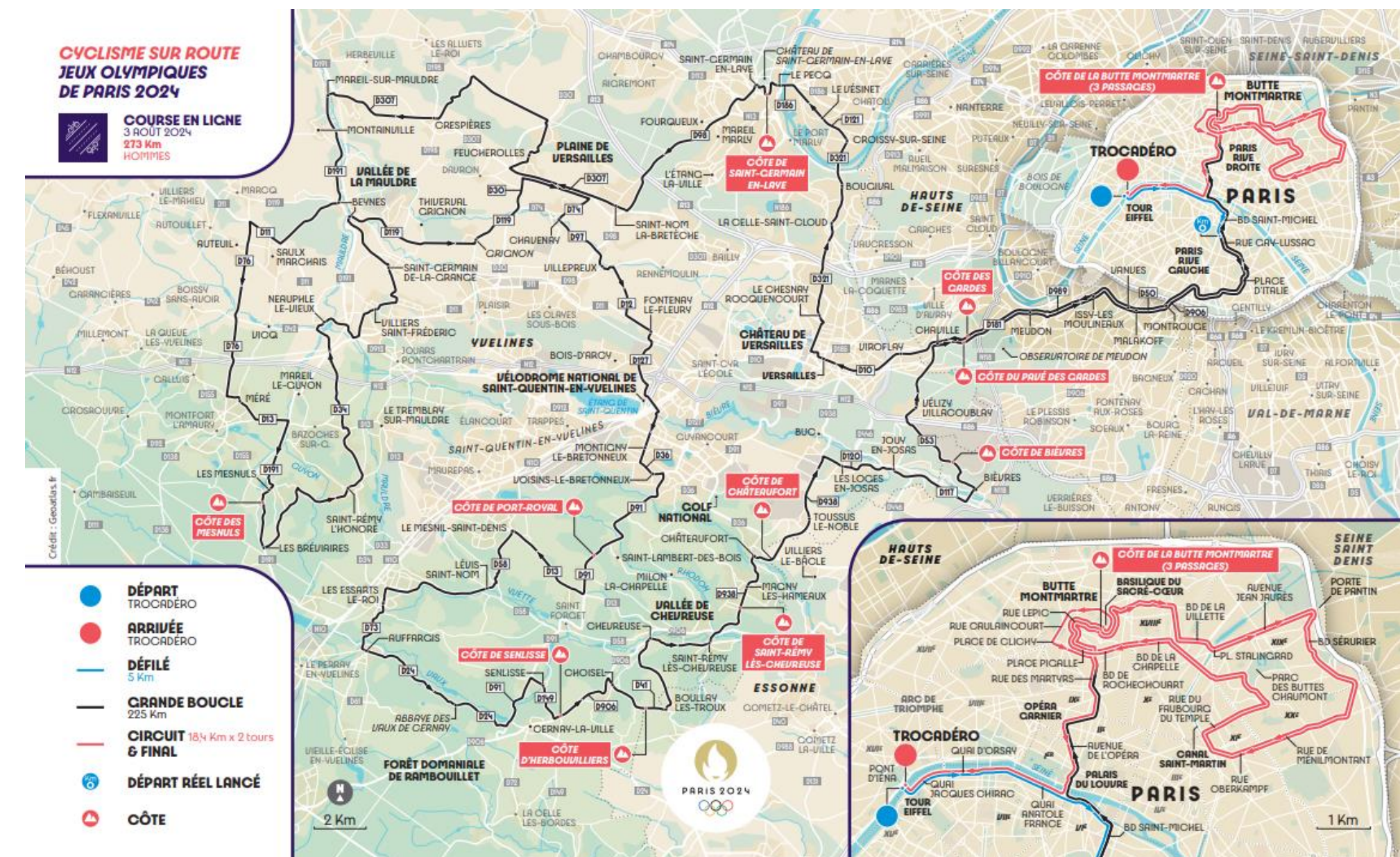
Olympics: 11 road events

- ✓ 10 competitions: road cycling, triathlon, race walking, marathon, marathon swimming
- ✓ Marathon for all

Paralympics: 3 road events

- ✓ Para triathlon, Para cycling, Para marathon

1 million spectators for the road cycling races !



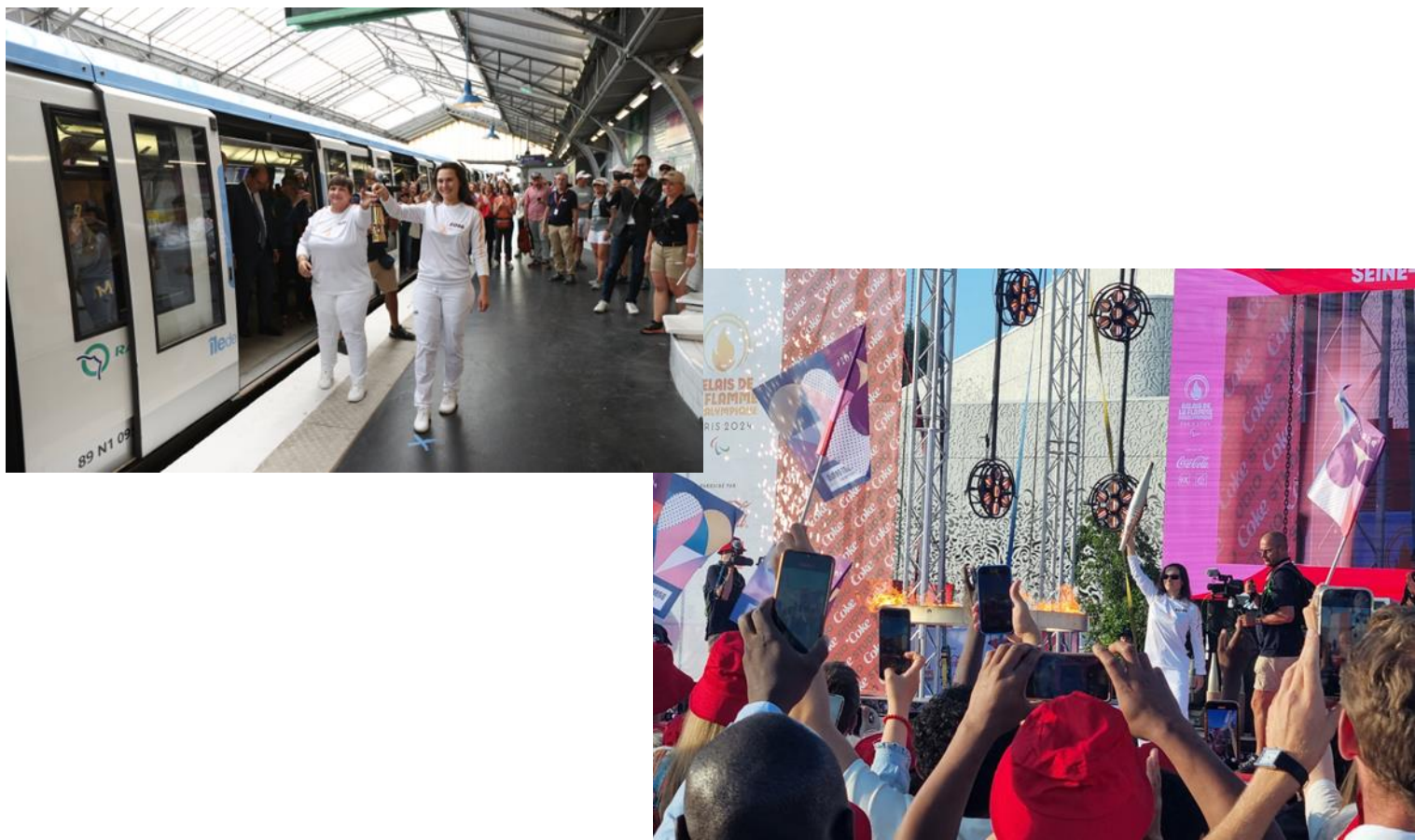
Much more than competitions in sports venues

Opening Ceremony Olympics

- ✓ Along the Seine River
- ✓ 300 000 spectators

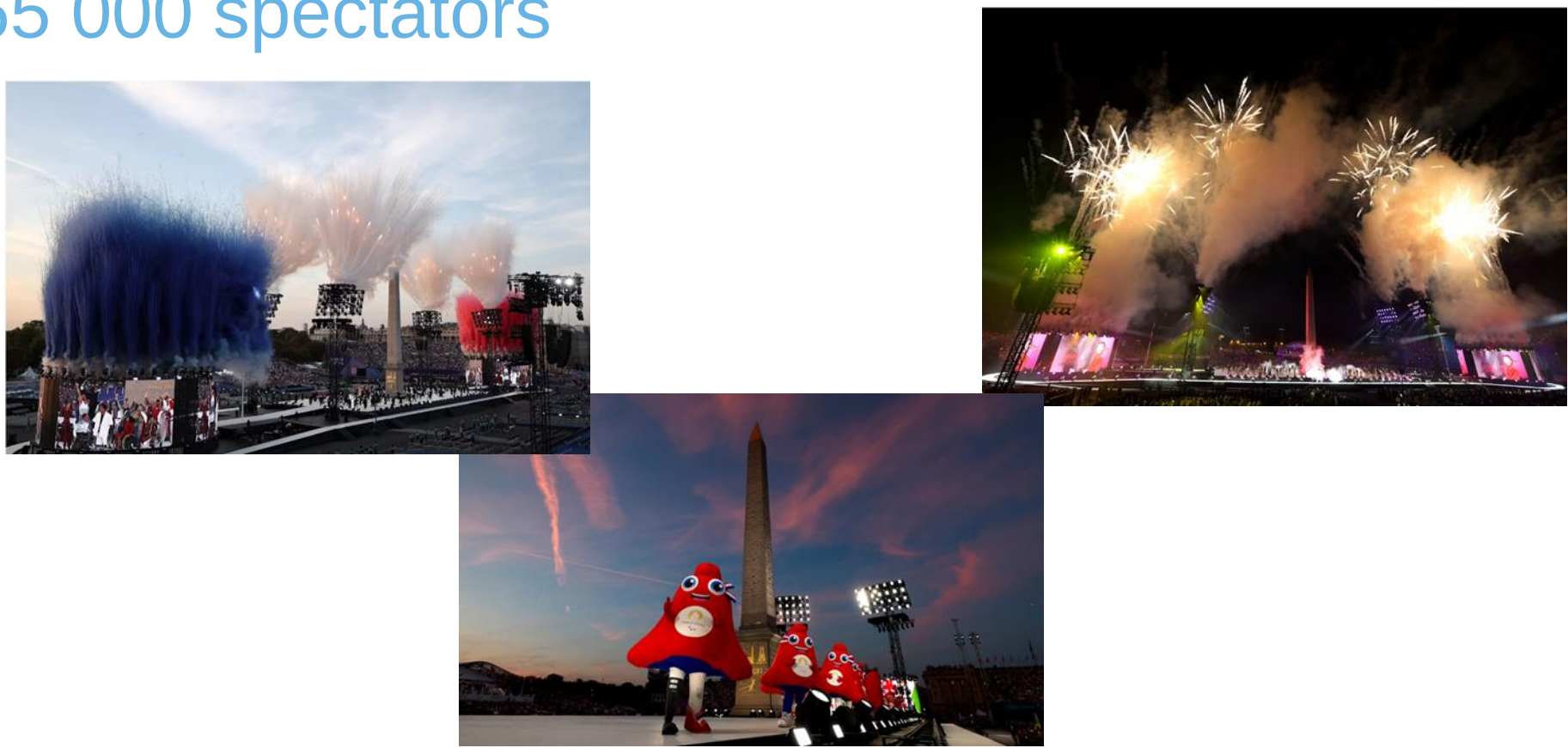


Olympic and Paralympic Torch relays



Opening Ceremony Paralympics

- ✓ On the Concorde Square
- ✓ 65 000 spectators



Lives sites

Champions Park, Club France, Parc Georges Valbon, Clubs 2024



Transport were part of the success of Paris 2024 Games !

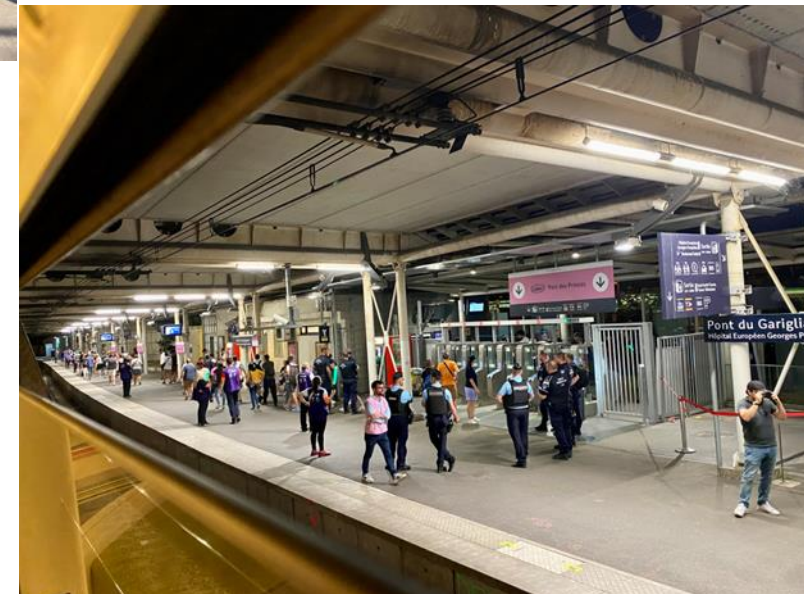
- ✓ Almost all spectators reached the venues by public transport or active modes
+30 % passengers on metro, train and RER during the Olympics
- ✓ All athletes on time for their competitions

Before

Paris 2024 : les transports, l'angoisse des Franciliens qui veulent fuir la capitale pendant les Jeux olympiques

JO : le préfet annonce l'enfer dans les transports

JO-2024: "on ne va pas être prêt" sur les transports, estime Hidalgo



.... After !

Dans les transports,
«c'est pas le Paris
de d'habitude»

Alors que les usagers
du métro s'étaient préparés
au pire, le réseau est fluide,
ponctuel et agréable.
Un succès dû au large
dispositif d'organisation
qui a conquis les touristes.

Pendant les Jeux, Parisiens et touristes
expérimentent le métro dont ils rêvent
(ou presque)

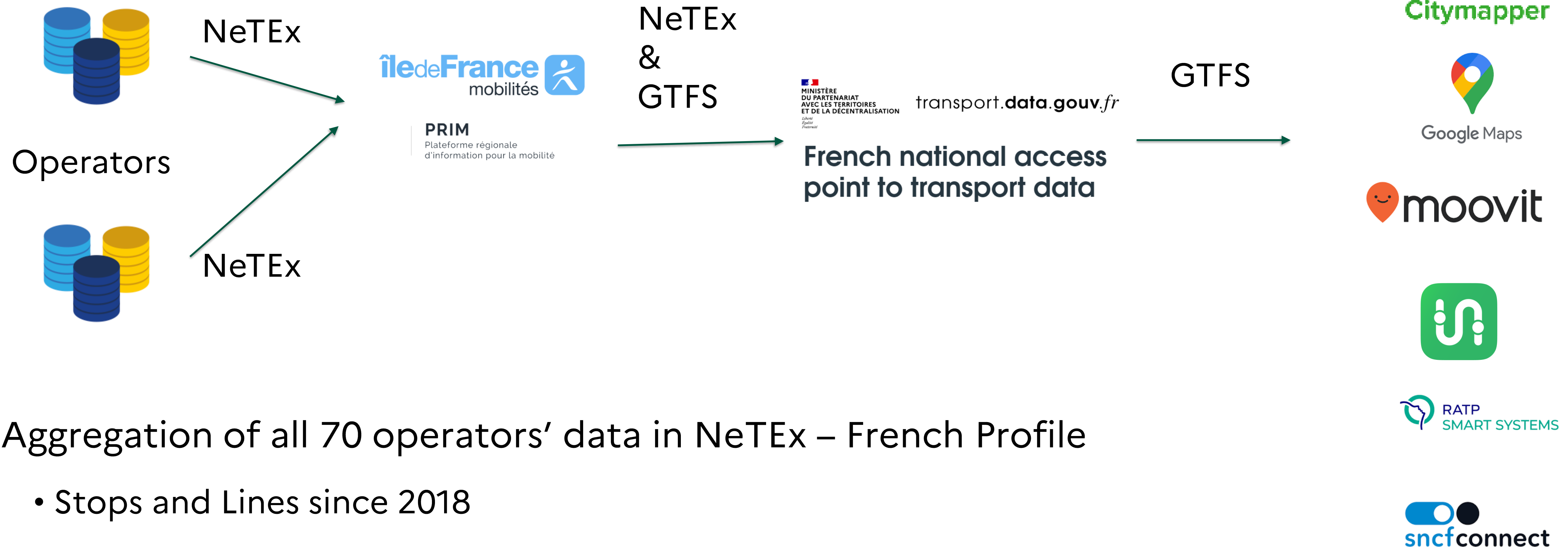


2.

—

MMTIS Standards Implementation in Paris region

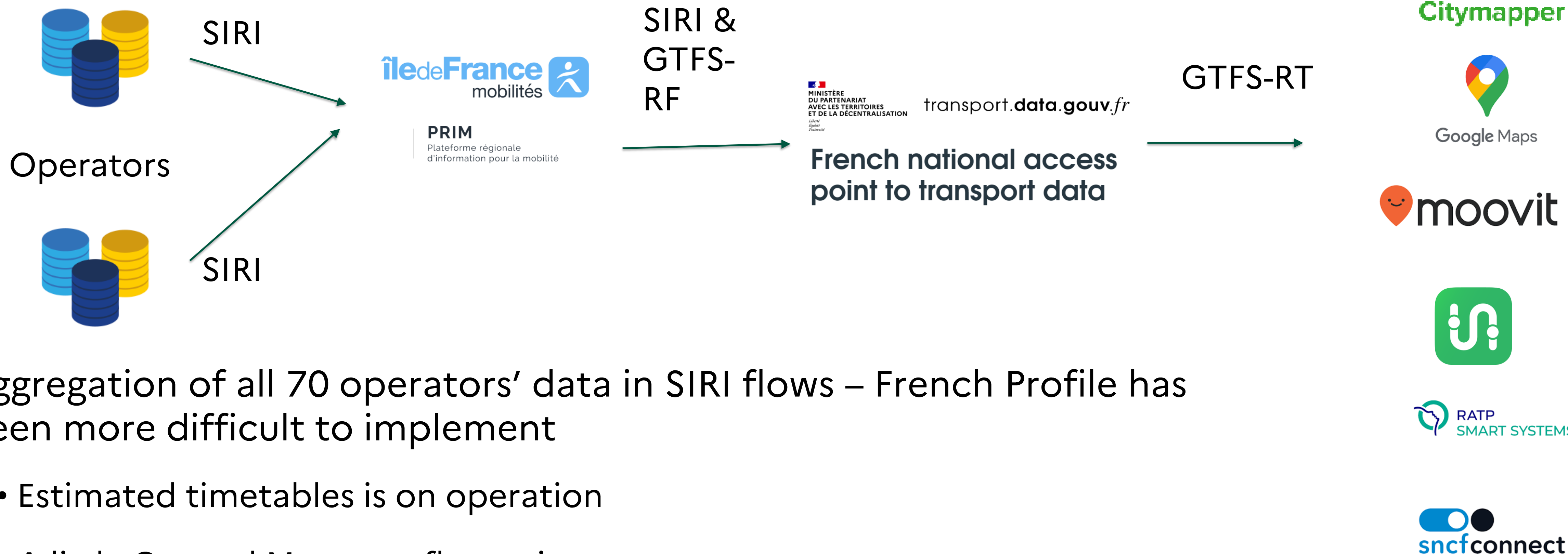
Netex Implementation



Aggregation of all 70 operators' data in NeTEx – French Profile

- Stops and Lines since 2018
- Schedules since 2020

SIRI Implementation



Aggregation of all 70 operators' data in SIRI flows – French Profile has been more difficult to implement

- Estimated timetables is on operation
- A little General Messages flow exists
- Proprietary formats are also used

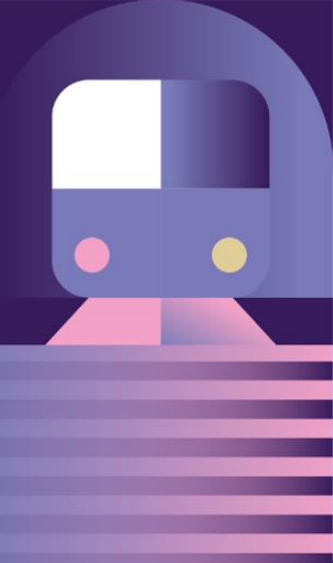
3.

—

Passenger information during the Olympic and Paralympic Games

Île-de-France Mobilités' strategic ambitions for the Olympic and Paralympic Games

Paris 2024 Public Transport app: the countdown



- 1 Download the official Paris 2024 Public Transport app**
For all your journeys
 Available on Google Play
 Available on Apple Store
- 2 You can already**
 -  Save Paris 2024 venues to your favourites for tailored traffic information
 -  Plan your journeys during the Paris 2024 Games in advance
 -  Check the local maps for the Paris 2024 venues
 -  Buy the Paris 2024 Pass for unlimited travel across the entire network
- 3 From July 26, the games are on!**
 -  Every day, check your journey using the real time route planner
 -  On the network, follow the pink signs

  OFFICIAL PARTNER 

- ✓ Ensure **reliable passenger information** during the Olympic period **reaches the largest number of spectators**
- ✓ Ensure the **safety of passenger flows** by implementing a reactive and adaptive system
- ✓ **Share passenger information** and flow management objectives with all partners (multimodal digital services, local authorities, etc.)
- ✓ Offering **a fully paperless customer experience on tickets**

An app dedicated to the Olympic and Paralympic Games



In connection with the Paris 2024 application



With a **user journey** focused on a specific Olympic and Paralympic Games experience and **in line with the signage in stations**



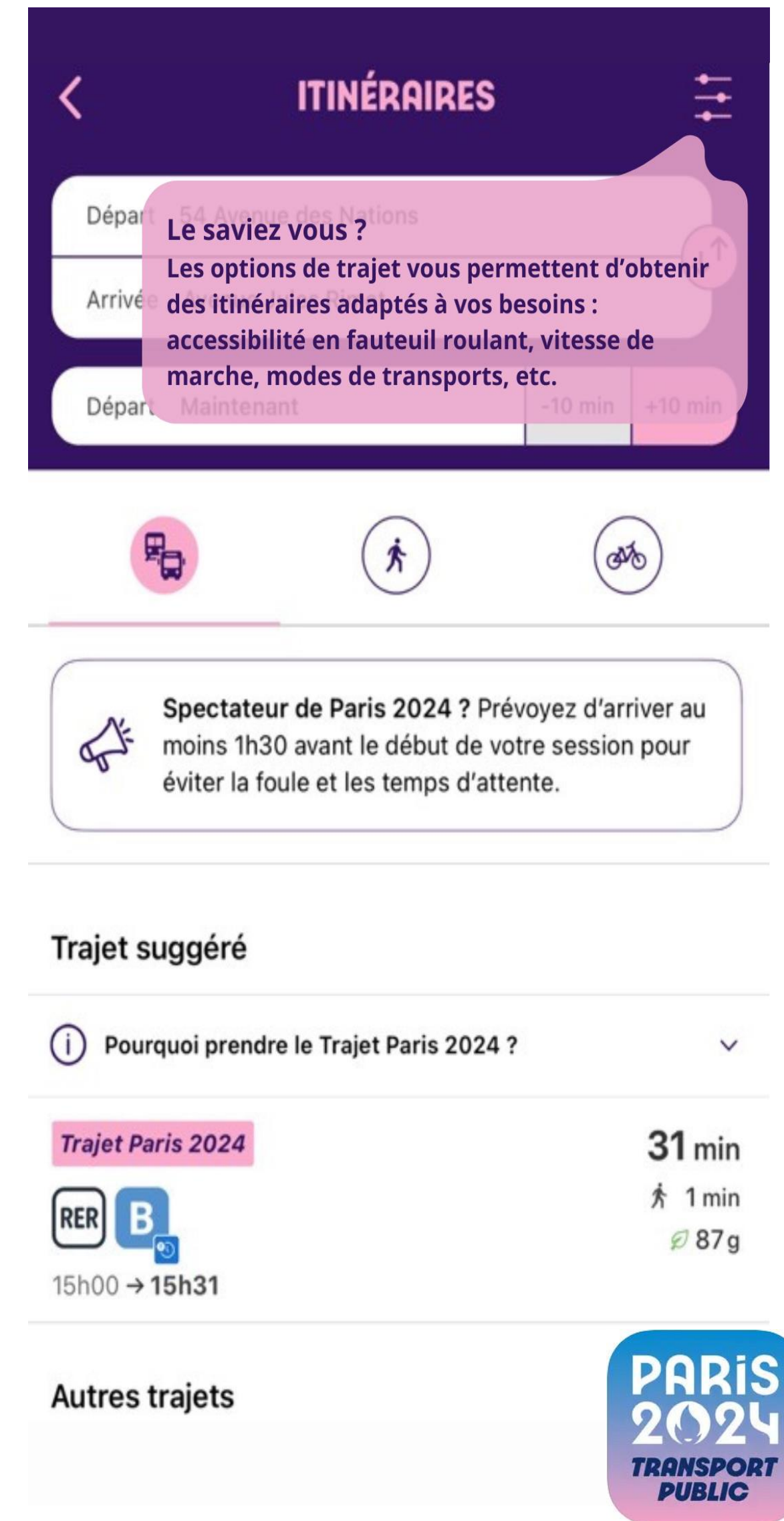
Proposing an **integration of maps of** the Olympic and Paralympic Games **venues** at the destination **to detail access from public transport stations**



With an integration of dematerialized and simplified ticketing functionalities



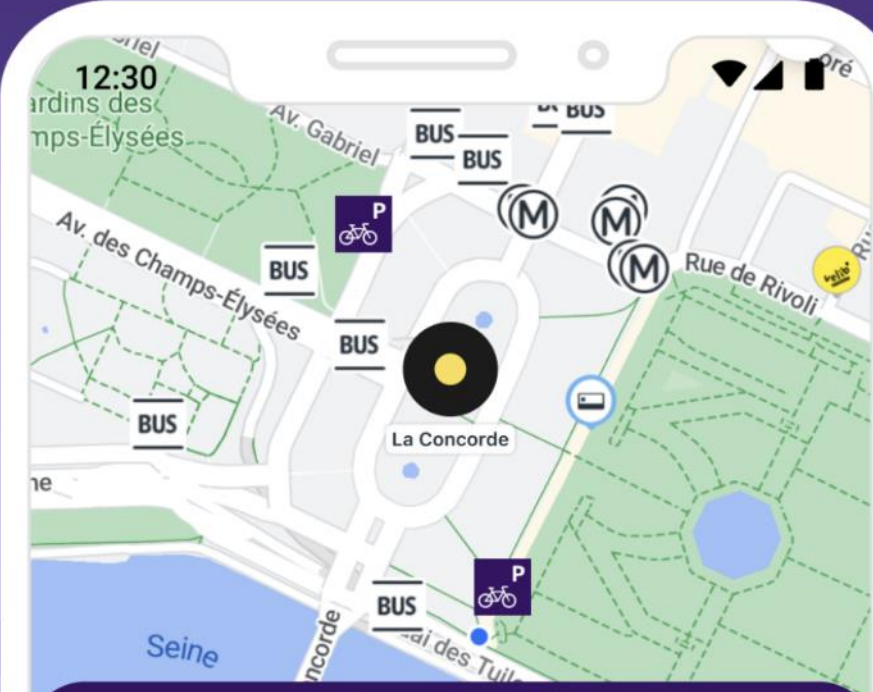
Ensuring visual accessibility



20:46

◀ TestFlight

12:30



Search for an itinerary

PARIS 2024

WHERE ARE WE GOING?

Hébergement

WELCOME TO THE TRANSPORT PUBLIC PARIS 2024 APPLICATION

Here you'll find everything you need to get around the Île-de-France region during the Paris 2024 Games.

◉ ● ● ●

NEXT

20:47

◀ TestFlight

RER

12:49 - Porte de Saint-Cloud, Paris 16e Arrondissement

9

Porte de Saint-Cloud Metro

To Mairie de Montreuil (Montreuil)

Departures : 2 min 4 min 6 min

13 stops | 17 min

13:06 - Miromesnil, Paris 8e Arrondissement

101 m | 1 min

M

13:12 - Miromesnil, Paris 8e Arrondissement

13

Miromesnil Métro

FIND THE MOST SUITABLE ITINERARY

Calculated in real time, for more efficient travel throughout the Île-de-France region.

● ◉ ● ●

PREVIOUSNEXT

20:47

◀ TestFlight

←

PURCHASE

ticket

Paris 2024 Pass 1 day

Select

ticket

Ticket(s) T+

Quantity : 1 2 +

Select

BUY YOUR TICKETS WITH EASE

Your Paris 2024 pass, Navigo Easy pass, tickets t+... all in one place!

● ● ◉ ●

PREVIOUSNEXT

20:47

◀ TestFlight

Select your favorite Paris 2024 venues

Search for a competition venue

PARIS 2024

Select the sites of your events to be notified of the latest news and make it easier to get there.

Arena Bercy

☆

Arena Champ de Mars

☆

Arena Porte de la Chapelle

☆

Arena Paris Nord

☆

SELECT YOUR FAVORITE PARIS 2024 VENUES

By selecting them, you'll be kept up to date with the latest news and will be able to visit them more easily. The selection tool will launch after this screen.

● ● ● ◉

PREVIOUSSTART

Public Transport App Usage



1.2 million of downloads

- iOS: 791,000
- Android: 426,000



Olympic Games

- 929,000 users
- 4.8 millions itineraries
- Mean of 20,000 visits per hour

Paralympic Games

- 212,000 users
- 567,000 itineraries
- Mean of 5,000 visits per hour

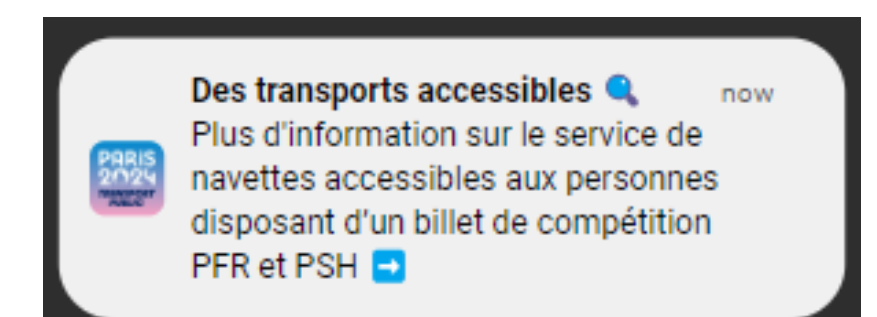
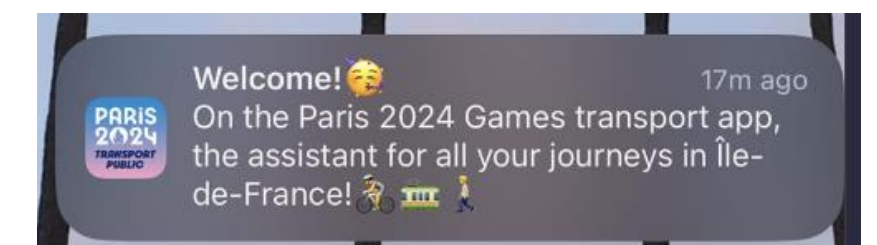
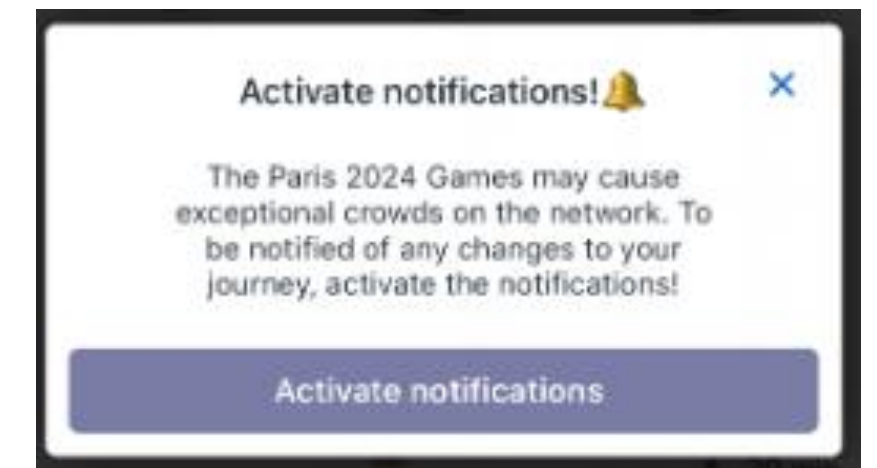
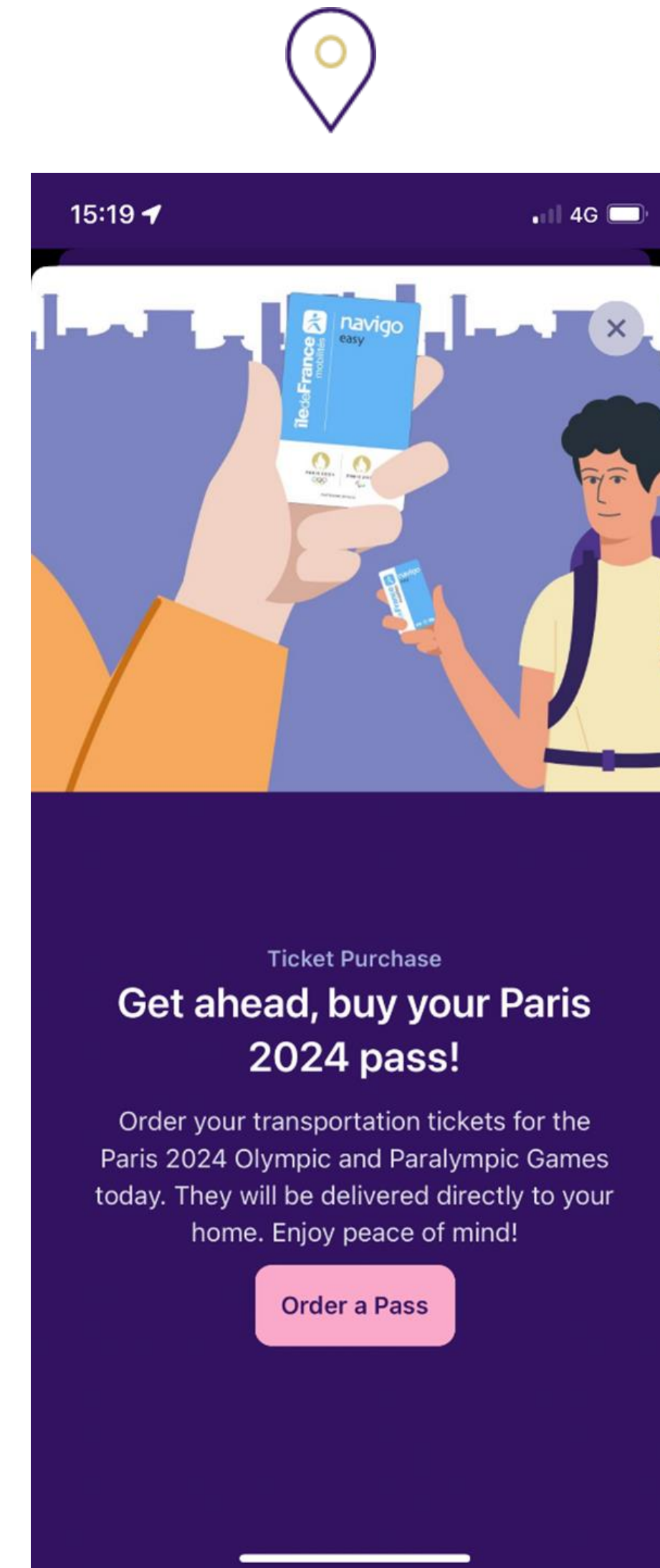


5.1 million push notifications



Paris 2024 Unlimited Travel Passes:

- 2 Million sold across all sales channels



A route planner adapted for the period of the Olympic and Paralympic Games



Offering specific routes for journeys to Olympic and Paralympic venues



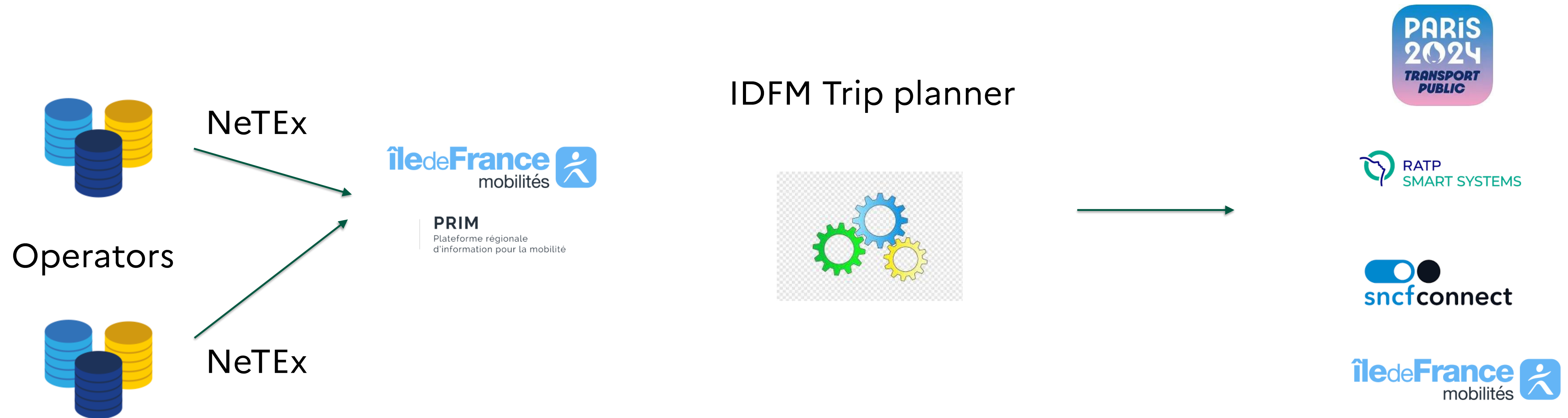
Ensuring real-time management of flows and disrupted situations



Integrating specific transport offers (Olympic and Paralympic Games shuttles)



Trip planning to Olympic sites



Île-de-France Mobilités' own trip planner can be called by other apps :

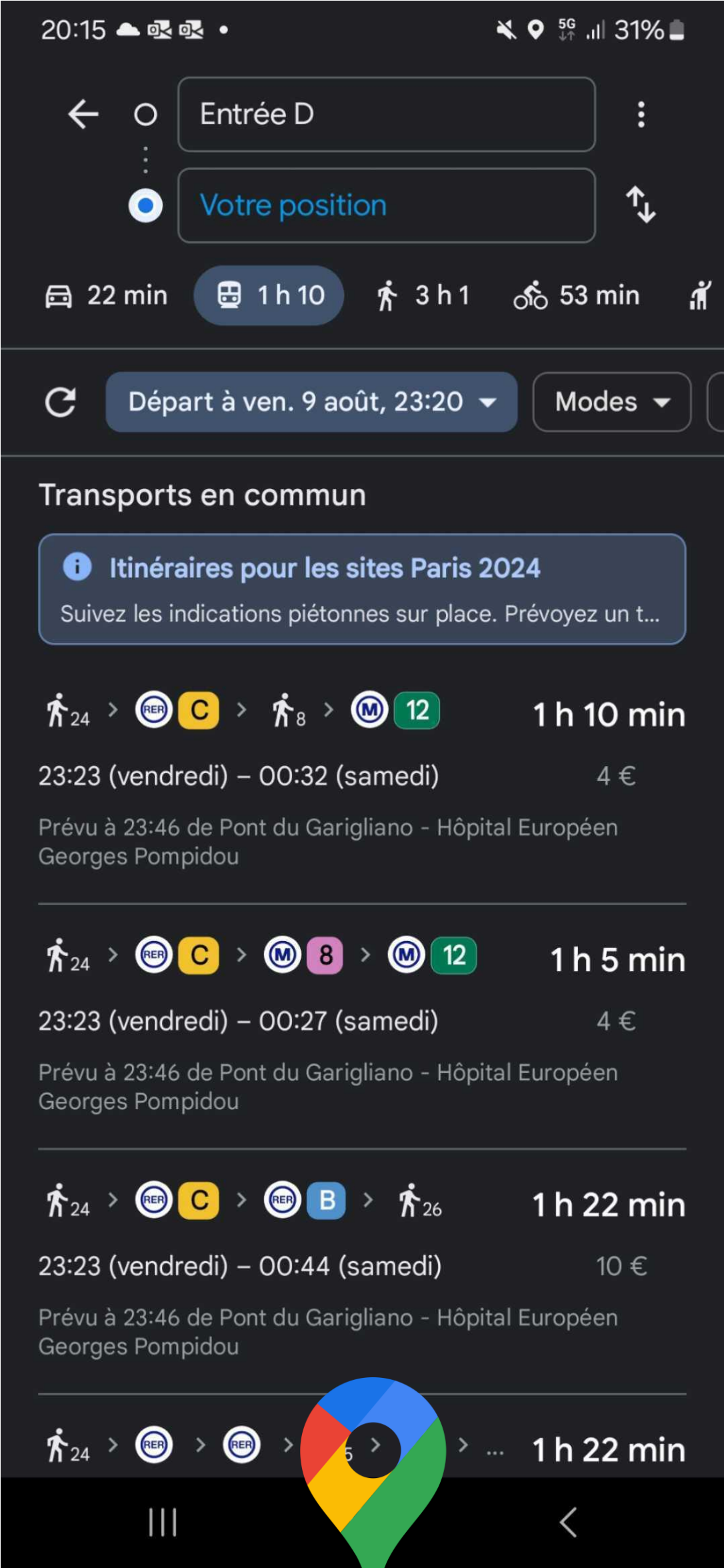
- Île-de-France Mobilités' own app and Paris 2024 app are completely fed by this engine
- RATP and SNCF apps query this engine for all trips including an Olympic site



Citymapper



Bonjour
RATP



Google Maps

Conclusions

- Passenger information was a **key element in passenger flow management** that contributed to the success of the games.
- Usage of NeTEx in data exchanges between PTOs and with IDFM allow **efficient cooperation and coordination before and during the games**.
- IDFM had to deal with providers of multimodal digital services in order to successfully give passenger information. **Positive results may make it last**.



**MINISTÈRE
DE LA TRANSITION
ÉCOLOGIQUE
ET DE LA COHÉSION
DES TERRITOIRES**

*Liberté
Égalité
Fraternité*

Thank you

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