"European data availability & NAP added value scenarios"

NAPCORE Mobility Data Days
08th November 2023

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Session structure

1. **European NAP monitoring, European NAP monitoring tool, NAP added value scenarios -** Maria Stavara, Chrysostomos Mylonas, Evangelos Mitsakis (CERTH-HIT, Greece)
2. **How Entur navigated the Open-source journey to add maximum value to NAP** - Brede Dammen (Entur, Norway)
3. **Discussion and feedback**

Presentation structure

1. **NAPs data availability monitoring**
   i. Introduction
   ii. Scope
   iii. Key findings
2. **NAP data availability survey & monitoring tools**
   i. Motivation
   ii. High-level architecture
   iii. Demonstration
   iv. Interactive Session
3. **NAP added value scenarios**
   i. Motivation
   ii. Data access
   iii. Pan-European NAP data visualization tool
   iv. National Virtual Traffic Management Center
   v. Other scenarios
   vi. Interactive Session

European NAP monitoring

How did this work start?

- The idea came from **EU EIP project** aiming at <u>monitoring</u> and <u>harmonizing</u> National Access Points (NAPs) in Europe.
- It was kicked off in **2016** via the "**annual NAP reports**":
  - **Overview of the current status of NAP implementation in Europe** (incl. validation of common features and LoS, collection of feedback for metadata harmonization, & identification of needs and experiences with respect to using DATEX II for data exchange).
  - <u>Methodological approach</u>: annual surveys completed by responsible ministries, NAP operators, and National Bodies.
  - Later versions: 2017, 2018, 2019, 2020, 2021
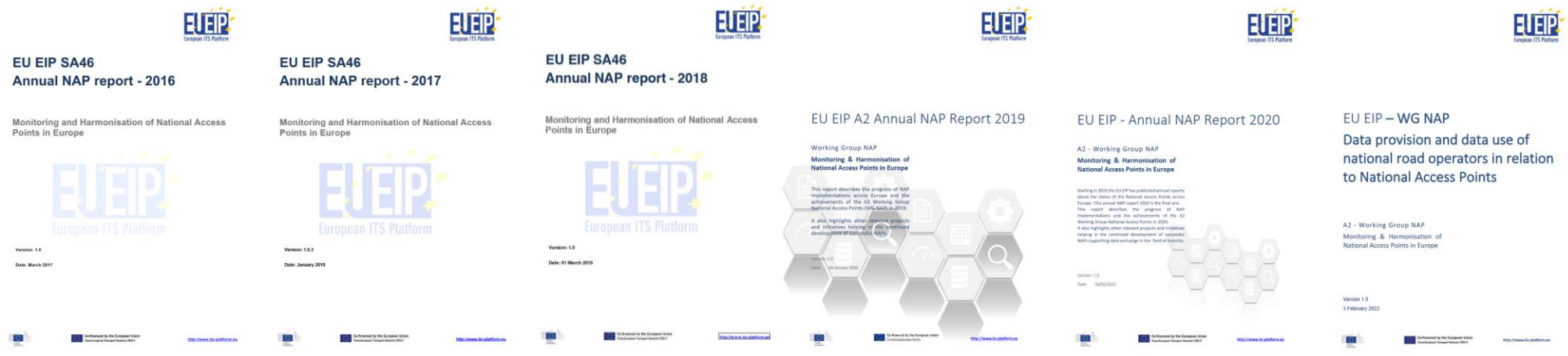
European NAP monitoring

Other related activities/artifacts:

- ITS national reports (submitted by Member States to the European Commission):
  - Initial reports (2011): national activities and projects regarding the various priority areas referred to in the ITS Directive
  - Five-year plans (2012): national ITS actions envisaged over the following five-year period
  - Progress reports 2014 – 2017 – 2020 – … (every three years): progress made since the initial report
  - Report to the EC concerning the implementation of the Delegated Regulation (EU) 2017/1926 (2019)
- List of NAPs maintained by the EC:
  - Regularly updated (last update September 2023)

National Access Points
A mechanism for accessing, exchanging and reusing transport related data

under Delegated Acts of the ITS Directive (2010/40/EU)

updated 19 September 2023

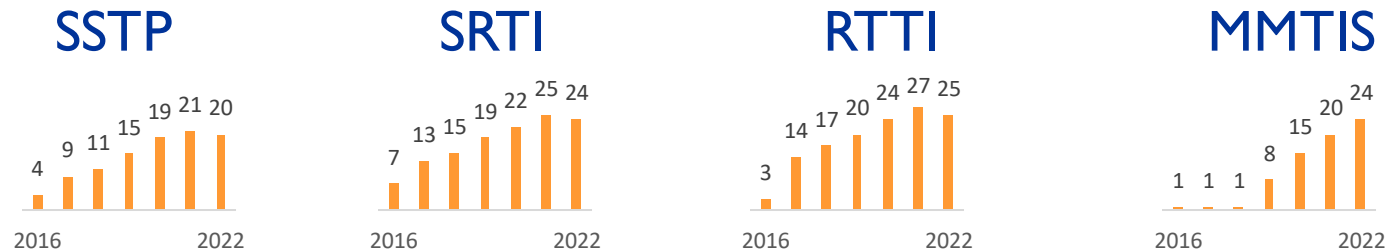| Country name	MMTIS National Access Point Delegated Regulation 1926/2017 (action 'a')	RTTI National Access Point Delegated Regulation 962/2015 (action 'b')	SRTI National Access Point Delegated Regulation 886/2013 (action 'c')	SSTP National Access Point Delegated Regulation 885/2013 (action 'e')	SSTP EU Access Point Delegated Regulation 885/2013 (static data - action 'e')
Austria	http://www.mobilityda ta.gv.at/	http://www.mobilitaet sdaten.gv.at/ http://www.mobilityda ta.gv.at/	http://www.mobilitaet sdaten.gv.at/ http://www.mobilityda ta.gv.at/	http://www.mobilitaet sdaten.gv.at/ http://www.mobilityda ta.gv.at/	https://data.europa.eu /data/datasets/etpa
Belgium	https://www.transport data.be/en/	https://www.transport data.be/en/	https://www.transport data.be/en/	https://www.transport data.be/en/	https://data.europa.eu /data/datasets/etpa
Bulgaria	https://www.mtitc.gov ernment.bg/en/catego ry/294/national- access-points- transport-related-data	https://lima.api.bg https://datasheet.api.b g/	https://lima.api.bg https://datasheet.api.b g/	https://lima.api.bg https://datasheet.api.b g/	See National Access Point
Croatia	https://www.promet- info.hr/	https://www.promet- info.hr/	https://www.promet- info.hr/	Not applicable	Not applicable
Cyprus	www.traffic4cyprus.or g.cy	www.traffic4cyprus.or g.cy	www.traffic4cyprus.or g.cy	Not applicable	Not applicable
Czech Republic	http://registr.dopravnii nfo.cz/en/	http://registr.dopravnii nfo.cz/en/	http://registr.dopravnii nfo.cz/en/	http://registr.dopravnii nfo.cz/en/	https://data.europa.eu /data/datasets/etpa
Denmark	https://nap.vd.dk/	https://nap.vd.dk/	https://nap.vd.dk/	Dynamic data https://nap.vd.dk/	https://data.europa.eu /data/datasets/etpa
Estonia	www.peatus.ee	https://tarktee.mnt.ee /it/en	https://tarktee.mnt.ee /it/en	https://tarktee.mnt.ee /it/en	See National Access Point

napcore

European NAP monitoring

NAPCORE took over (from EU-EIP) the continuation of the NAP monitoring activity since 2021

- <u>Objectives/purpose</u> of the relevant **reports**:
    - Monitor the development and data availability of NAPs across Europe
    - Identify commonalities and substantial differences amongst the NAPs
    - Enable knowledge exchange between various MSs in the field of NAPs
- <u>Methodological approach</u>: 6-month survey completed by NAP operators, responsible ministries, or representatives of nominated NBs (& validation through desk research - where needed)
- <u>Main outputs</u>:
    - NAP status (e.g., under development, fully operational)
    - Data and metadata availability
    - Geographical, network, and transport mode coverage
    - Implemented data standards (per DR per data category)
    - Implemented NAP architectures (web-link repositories, database, both types)
    - Utilized licensing models
    - Usage of NAPs (number of data providers and data consumers)
    - Compliance assessment (level of implementation)

European NAP monitoring – Highlights

Highlights of the NAP monitoring reports
- Number of operational NAPs:

SSTP	SRTI	RTTI	MMTIS

SSTP: 4, 9, 11, 15, 19, 21, 20 (2016–2022)

SRTI: 7, 13, 15, 19, 22, 25, 24 (2016–2022)

RTTI: 3, 14, 17, 20, 24, 27, 25 (2016–2022)

MMTIS: 1, 1, 1, 8, 15, 20, 24 (2016–2022)

- Provision of metadata per operational NAP per Delegated Act
  - SSTP: 75%, SRTI: 83%, RTTI: 88%, MMTIS: 82%
- NAP architecture:
  - 1/3 of NAPs for SSTP are purely web-link type while another 1/3 are only database type
  - 13 NAPs for SRTI are purely web-link type, 1/3 are purely database type, and only six are mixed type.
  - NAPs for RTTI have an almost equal distribution between the three types of NAP architectures.
  - 15 NAPs for MMTIS are purely web-link type while only three are purely database type.

European NAP monitoring

- Data availability (SSTP)
  - Static SSTP-related data are made available by the NAP of 16 to 21 countries.
  - Only 6 countries appear to make available through their NAP dynamic SSTP-related data.
- Data availability (SRTI)
  - Dynamic data about road safety-related events/conditions are made available by the NAP of 23 countries.
- Data availability (RTTI)
  - Static & dynamic data are made available by the NAP of up to 25 countries
  - Less available data category: static information about the usage of the road network (associated with traffic regulations, traffic circulation plans, and freight delivery regulations).

Country	Static information about safe & secure parking areas	Static information about the safety & equipment of safe & secure parking areas	Dynamic information about the availability of safe & secure parking areas	Dynamic information about road safety-related events/conditions	Static information about the road network	Static information about the usage of the road network	Static information about roadway and roadside infrastructure	Dynamic road status information	Dynamic traffic information
Austria	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Belgium	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Bulgaria	Yes	Yes	No	Yes	No	No	Yes	Yes	No
Croatia	Yes	Yes	No	Yes	No	No	No	Yes	No
Cyprus	No	No	No	No	No	No	No	No	No
Czech Republic	Yes	Yes	No	Yes	No	No	No	Yes	Yes
Denmark	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No
Estonia	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Finland	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
France	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes
Germany	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Greece	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Hungary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Ireland	No	No	No	Yes	Yes	No	Yes	Yes	Yes
Italy	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Latvia	No	No	No	No	No	No	No	No	No
Lithuania	No	No	No	Yes	Yes	No	Yes	Yes	Yes
Luxembourg	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Malta	No	No	No	No	No	No	No	No	No
Netherlands	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Norway	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Poland	Yes	Yes	No	Yes	No	No	Yes	Yes	No
Portugal	No	No	No	Yes	No	No	Yes	Yes	Yes
Romania	Yes	No	No	No	Yes	No	No	No	No
Slovakia	Yes	Yes	No	No	Yes	No	No	Yes	No
Slovenia	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Spain	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Switzerland	No	No	No	No	No	No	No	No	Yes
United Kingdom	No	No	No	No	No	No	No	No	No

European NAP monitoring

- Static data availability (MMTIS):
  - Big diversity on the availability of static MMTIS-related data
  - Most available data categories: static information for location search, static trip plan information, static information for trip plan computation

Country	Static information for location search (address identifiers)	Static information for location search – scheduled modes (identified access nodes)	Static information for location search – DRT services (location of stops/stations)	Static trip plan information – scheduled modes (operational calendar)	Static trip plan information – scheduled modes (fare network data)	Static auxiliary information – scheduled modes (vehicle facilities)	Static trip plan information – cycling	Static information for trip plan computation – scheduled modes (connection links between interchanges)	Static information for trip plan computation – personal modes (e.g., network topology and attributes)	Static information for trip plan computation – multimodal (estimated travel times by day type and time band by transport mode/combination of transport modes)	Static information for detailed common standard and special fare queries – scheduled modes (passenger classes)	Static information for the provision of traveler services – scheduled modes (where and how to buy tickets)	Static information for the provision of traveler services – DRT modes (where and how to book)	Static information for the provision of traveler services – other mobility services and infrastructure	Static environmental information (parameters needed to calculate an environmental factor)
Austria	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes
Belgium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bulgaria	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No
Croatia	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No
Cyprus	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No
Czech Republic	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No
Denmark	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No
Estonia	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No	Yes	No	No	No
Finland	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No
France	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
Germany	No	Yes	Yes	Yes	No	No	No	No	Yes	No	No	No	Yes	No	No
Greece	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	No
Hungary	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Ireland	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No
Italy	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
Latvia	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Lithuania	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	No	No	No
Luxembourg	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Malta	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Netherlands	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes
Norway	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Poland	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Portugal	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	No	No	No	No	No	No
Romania	Yes	Yes	No	No	No	No	No	No	Yes	No	No	Yes	Yes	No	No
Slovakia	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Slovenia	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Spain	No	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No
Sweden	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Switzerland	Yes	Yes	No	Yes	No	No	No	Yes	No	No	No	No	No	No	No
United Kingdom	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

European NAP monitoring

- Dynamic data availability (MMTIS):
  - Limited availability compared to static data
  - Most available data categories: dynamic passing time, trip plan and operational information; current road link travel times; and availability of mobility services and relevant infrastructure (made available by the NAP of up to 11 countries)
  - Less available data categories: Dynamic information about future predicted road link travel times; and dynamic information about cycling network status (made available by the NAP of 2 countries)

Country	Dynamic passing time, trip plan, and operational information – scheduled modes (disruptions)	Dynamic passing time, trip plan, and operational information – DRT modes (disruptions)	Dynamic information about current road link travel times	Dynamic information about future predicted road link travel times	Dynamic information about cycling network status (closures)	Dynamic information about the availability of mobility services and relevant infrastructure
Austria	No	No	Yes	Yes	No	No
Belgium	Yes	Yes	Yes	No	No	Yes
Bulgaria	No	No	No	No	No	No
Croatia	No	No	No	No	No	No
Cyprus	Yes	No	No	No	No	Yes
Czech Republic	No	No	No	No	No	No
Denmark	No	No	No	No	No	No
Estonia	No	No	No	No	No	No
Finland	Yes	No	No	No	No	Yes
France	Yes	Yes	No	No	No	Yes
Germany	No	No	No	No	No	Yes
Greece	No	No	Yes	No	No	No
Hungary	No	No	No	No	No	No
Ireland	Yes	No	Yes	No	No	No
Italy	No	No	No	No	No	No
Latvia	No	No	No	No	No	No
Lithuania	Yes	No	Yes	No	No	No
Luxembourg	Yes	Yes	Yes	No	Yes	Yes
Malta	No	No	No	No	No	No
Netherlands	Yes	No	Yes	No	Yes	Yes
Norway	Yes	Yes	Yes	No	No	Yes
Poland	No	No	No	No	No	No
Portugal	No	No	No	No	No	Yes
Romania	No	No	No	No	No	No
Slovakia	No	No	No	No	No	No
Slovenia	No	No	Yes	Yes	No	Yes
Spain	No	No	No	No	No	No
Sweden	Yes	Yes	Yes	No	No	Yes
Switzerland	Yes	No	No	No	No	No
United Kingdom	No	No	No	No	No	No

European NAP monitoring

Geographical coverage in Europe (SSTP)

- Static data about truck parking areas appear to have the widest geographical coverage while dynamic data the narrowest
- Within-country coverage of static data is non uniform in only 3 countries
- Within-country coverage of dynamic data is scattered
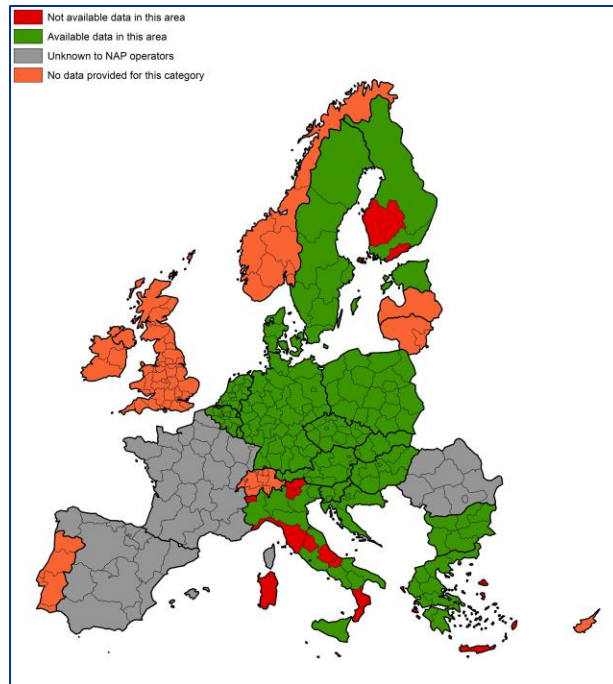
Static information about safe & secure truck parking areas (e.g., truck parking place location, parking capacity, access road identifiers)
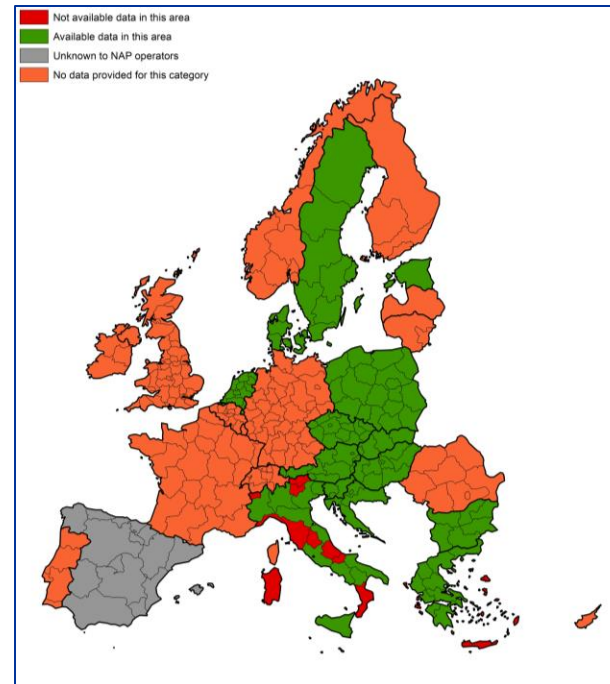
Static information about the safety conditions and equipment of safe & secure truck parking areas (e.g., description of security or service equipment)
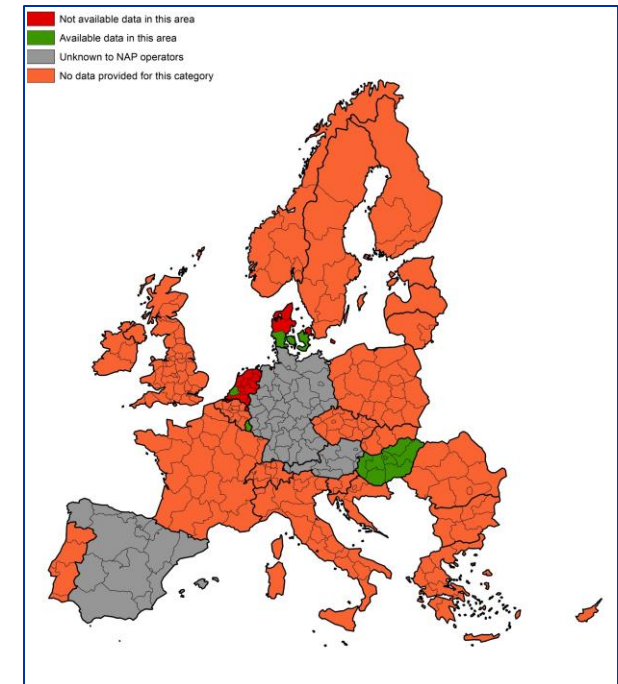
Dynamic information about the availability of safe and secure truck parking areas

European NAP monitoring

Geographical coverage in Europe (SRTI)

- SRTI-related data are published in almost all countries and almost across all territorial units
- Only 2 countries do not exhibit within-country coverage uniformity
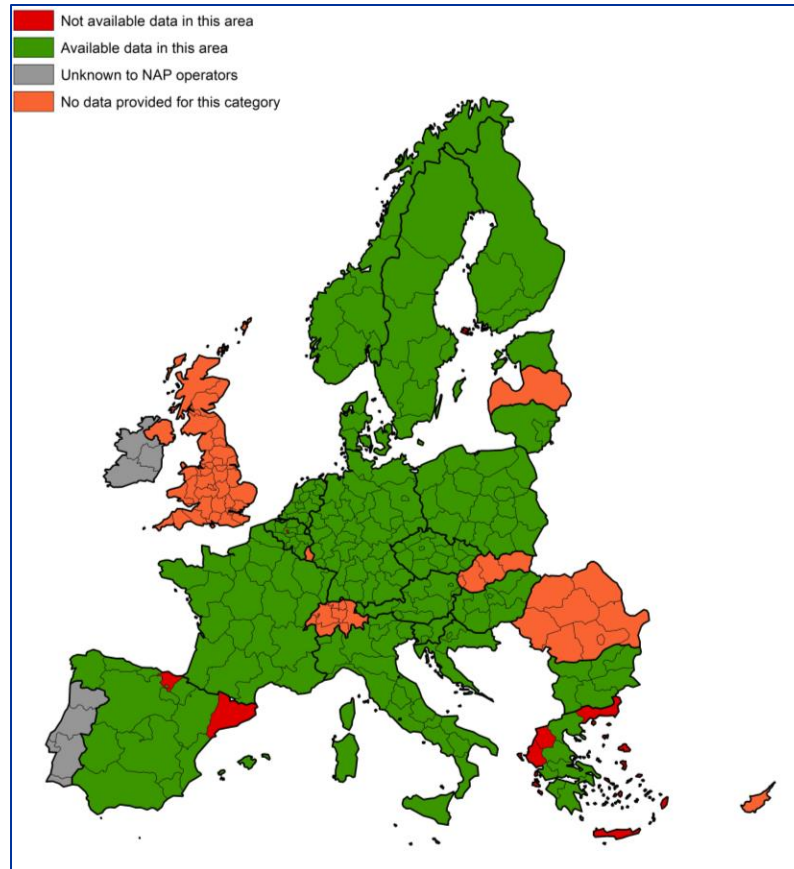
Dynamic information about road safety-related events/conditions
(e.g., location of event, category of event, provided driving
behavior advice)

European NAP monitoring

Geographical coverage in Europe (RTTI)

- Static data about the road network and dynamic road status information represent the widest geographical coverage while static data about the usage of the road network represents the narrowest
- 4 countries do not exhibit within-country coverage uniformity but only for certain data categories (i.e., 1 country for static data about the road network and its usage & 3 countries for the dynamic data categories)
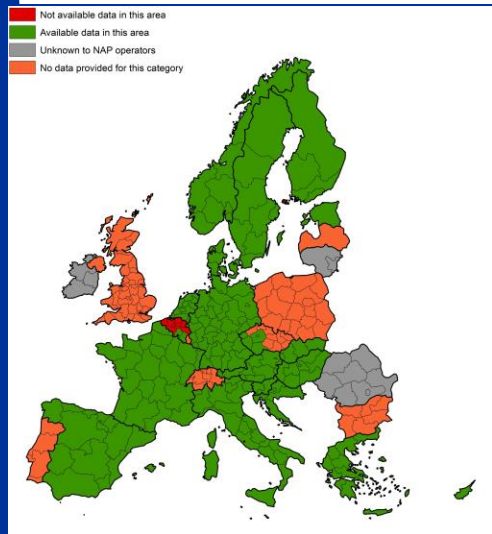
Static information about the road network (e.g., road network links and their physical attributes, road classification, speed limits)
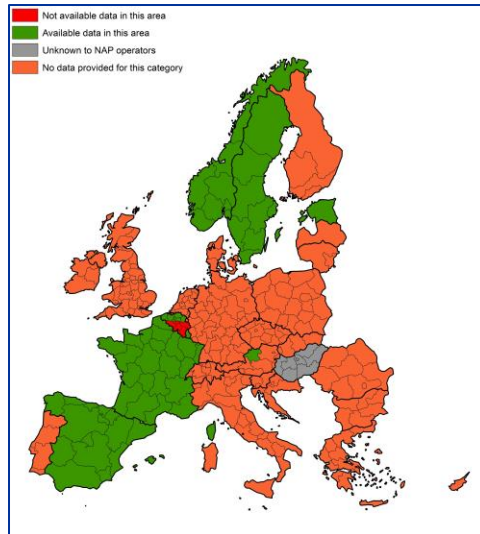
Static information about the usage of the road network (e.g., traffic circulation plans, freight delivery regulations)
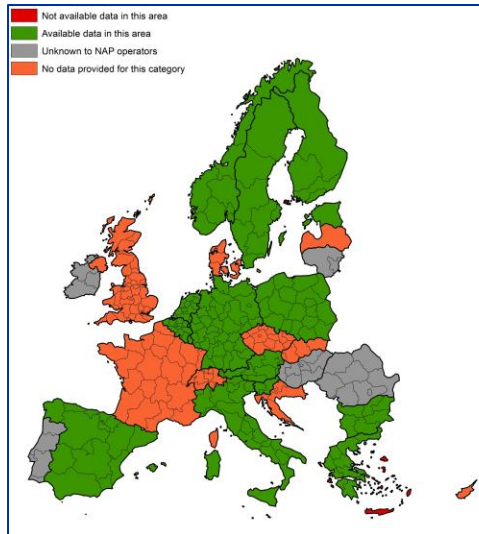
Static information about roadway and roadside infrastructure (e.g., location of tolling stations, location of parking places and service areas, location of public transport stops and interchange points)
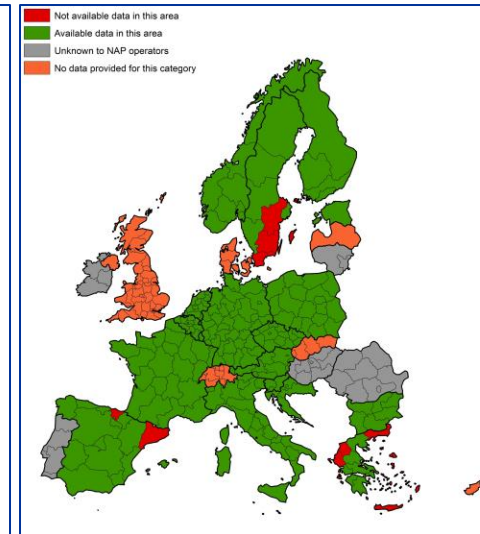
Dynamic road status information (e.g., road closures, lane closures, roadworks)

High correlation with **SRTI**
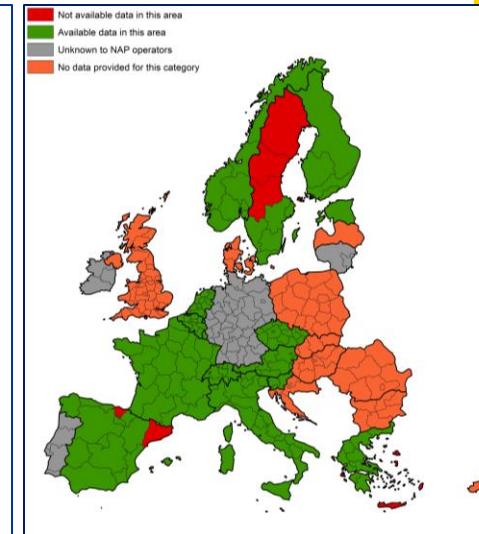
Dynamic traffic information (e.g., traffic volume, travel times, location, and length of traffic queues)

European NAP monitoring

Geographical coverage in Europe (static MMTIS)

- The geographical availability of MMTIS has been addressed per <u>data category</u> and <u>relevant transport mode/infrastructure</u>
- Almost half of the countries (13 in total) provide through their NAP static data for location search (e.g., address identifiers, topographic places, points of interest). All countries that provide static data for location search exhibit within-country coverage uniformity
- Scheduled transport modes (especially rail, long-distance coach, metro, tram, bus/trolley) seem to exhibit the widest geographical coverage.
- Very few countries provide static traveler information for other mobility services and infrastructure. Public charging and refueling are the most prominently covered types of mobility infrastructure.
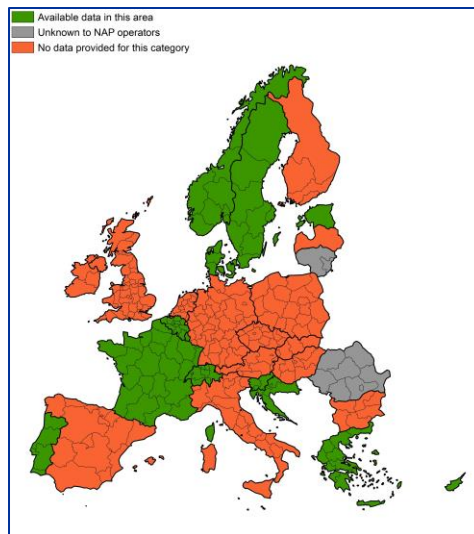
Static information for location search (e.g., address identifiers, topographic places, points of interest)
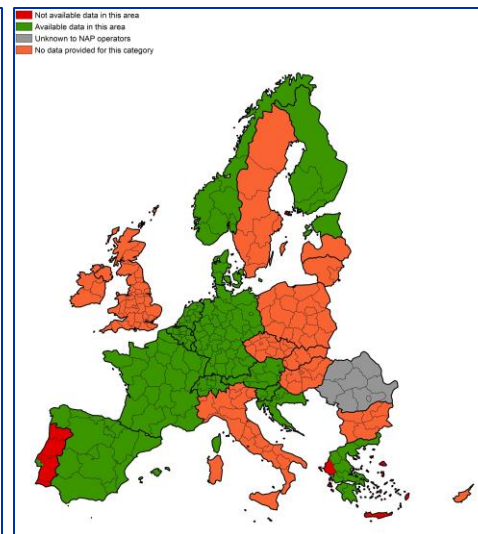
Static information for location search – **rail transport** (e.g., identified access nodes, geometry/map layout structure of access nodes)
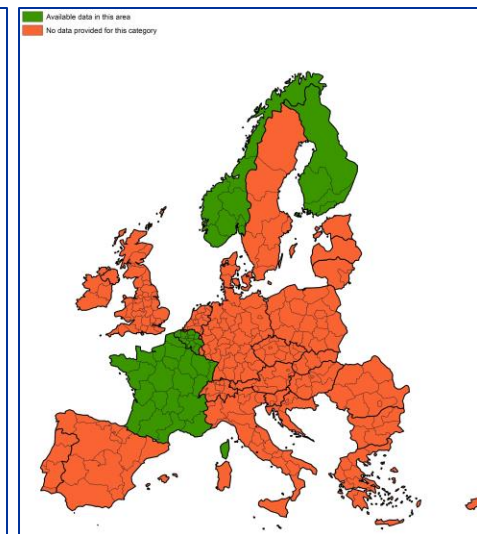
Static information for traveler services – **public charging** (e.g., where and how to pay, including retail channels, fulfilment methods, payment methods)
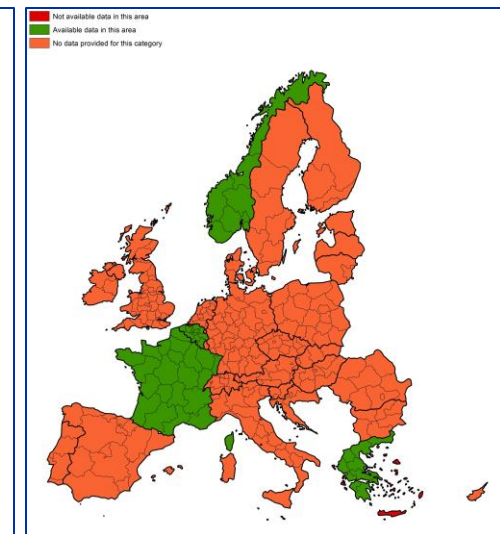
Static information for traveler services – **refueling** (e.g., where and how to pay, including retail channels, fulfilment methods, payment methods)

European NAP monitoring

Geographical coverage in Europe (dynamic MMTIS)

- Rail transport, tram and bus/trolley are the scheduled modes with the widest geographical coverage pertaining to dynamic passing time, trip plan, and operational information category.
- As regards DRT modes, it appears that only few countries provide relevant publications in their NAPs. Bike-sharing seems to exhibit the widest geographical coverage. On the other hand, none of the countries provide data for taxi services.
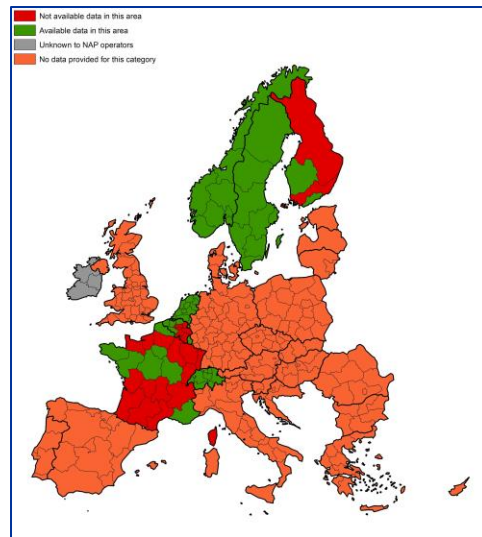
Dynamic passing time, trip plan, and operational information – **tram** (e.g., disruptions, real-time status, status of access nodes features, estimated departure and arrival times)
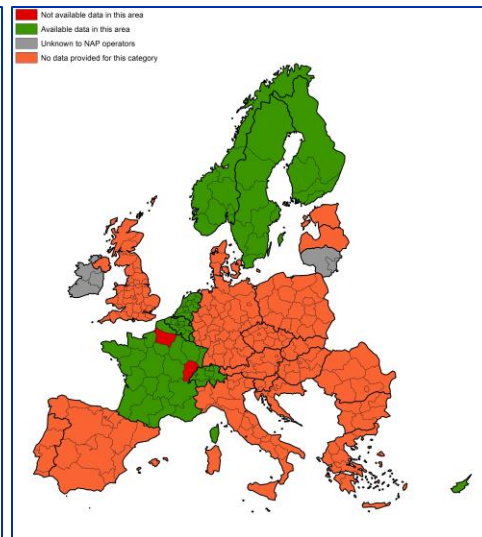
Dynamic passing time, trip plan, and operational information – **bus/trolley** (e.g., disruptions, real-time status, status of access nodes features, estimated departure and arrival times)
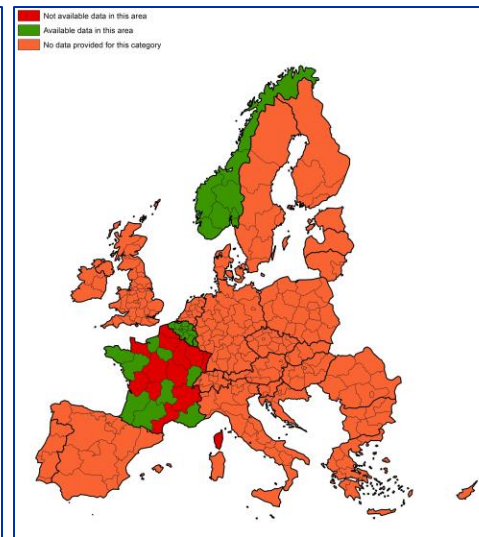
Dynamic passing time, trip plan, and operational information – **bike sharing** (e.g., disruptions, real-time status)
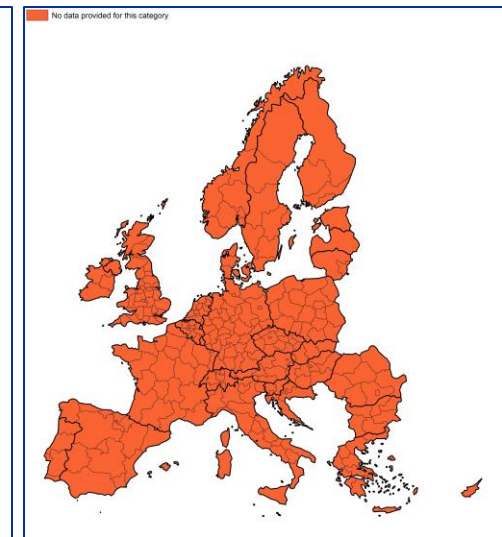
Dynamic passing time, trip plan, and operational information – **taxi** (e.g., disruptions, real-time status)

European NAP monitoring

Implemented data standards in Europe (SSTP-SRTI)

- DATEX II constitutes the most frequently used data standard with around <u>90% compliance in SSTP</u> datasets. Additionally, 15 to 21 countries use DATEX II for providing SRTI-related information.

Static information about safe & secure truck parking places

Dynamic information about road safety-related events/conditions
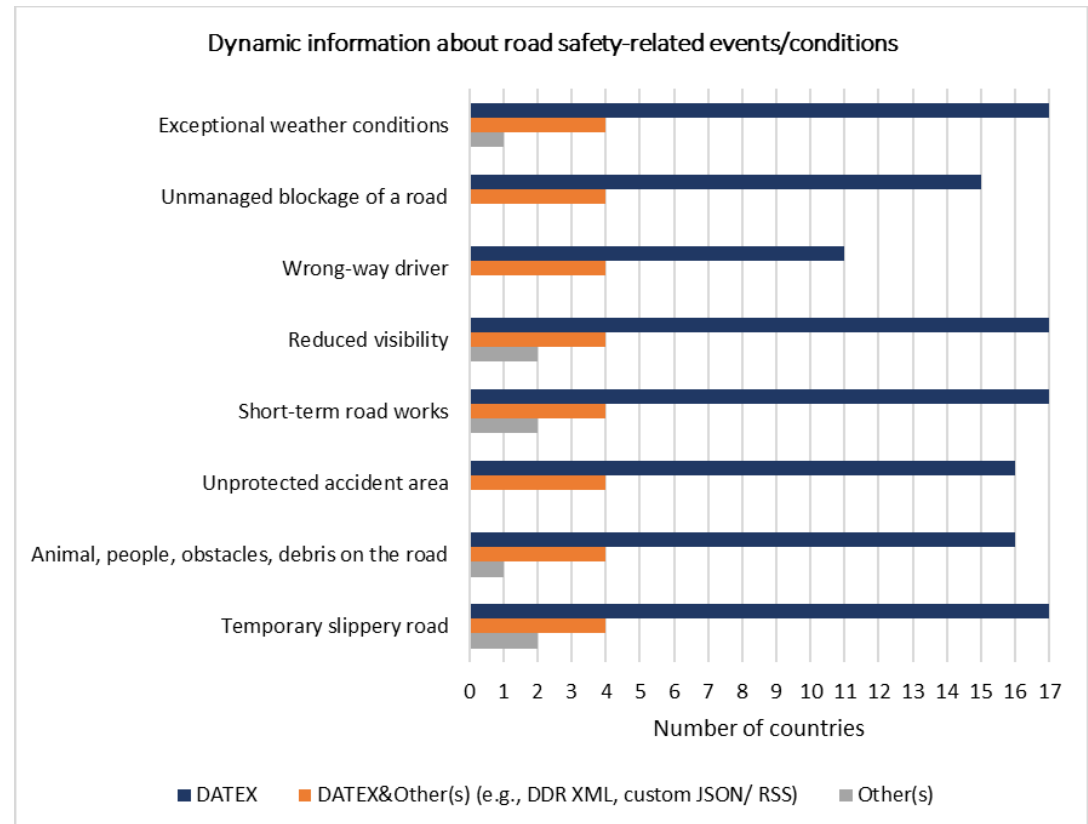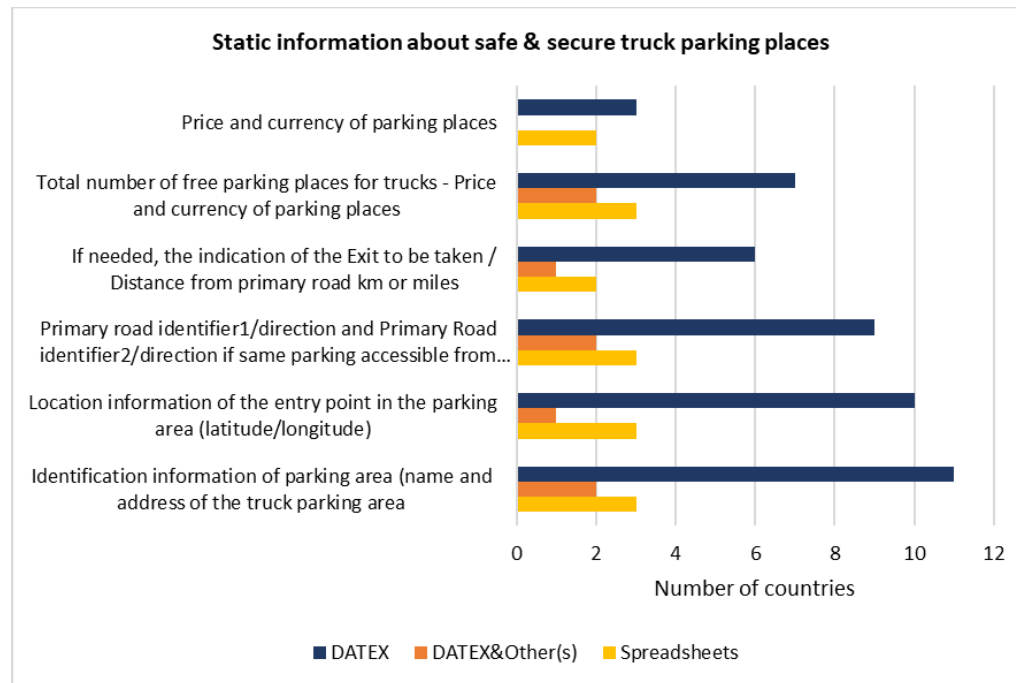
European NAP monitoring

Implemented data standards in Europe (RTTI):

- DATEX II constitutes the prominently used data standard for the provision of dynamic road status & dynamic traffic information.
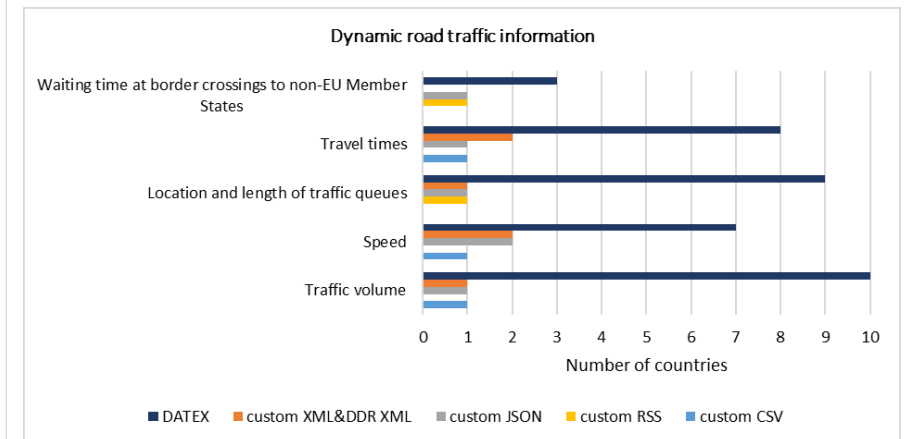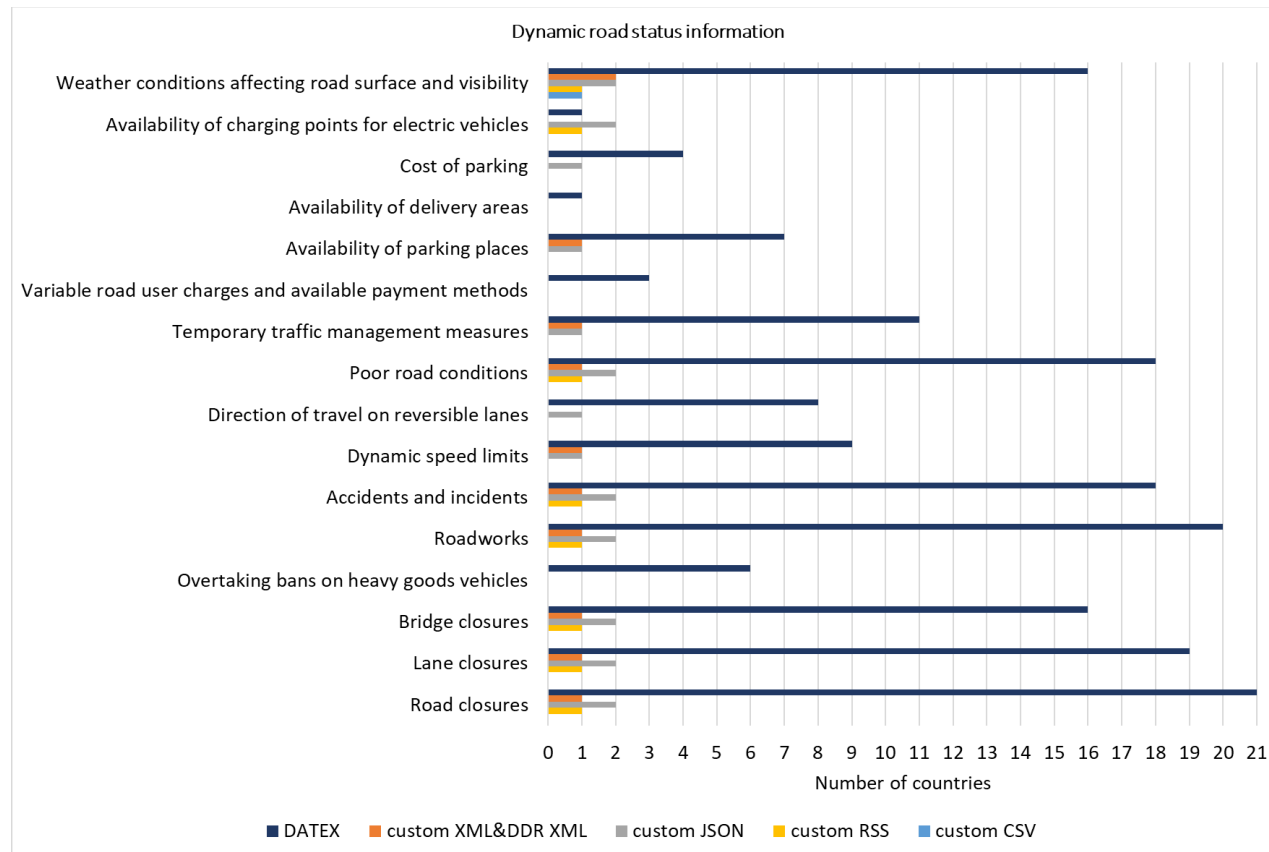
European NAP monitoring

Implemented data standards in Europe (RTTI):
- Various standards and formats are utilized for the provision of static RTTI-related information (including TN-ITS and WMS/WFS especially with respect to network- and traffic regulations-related information).

Static information about the road network, its usage, and roadway/roadside infrastructure
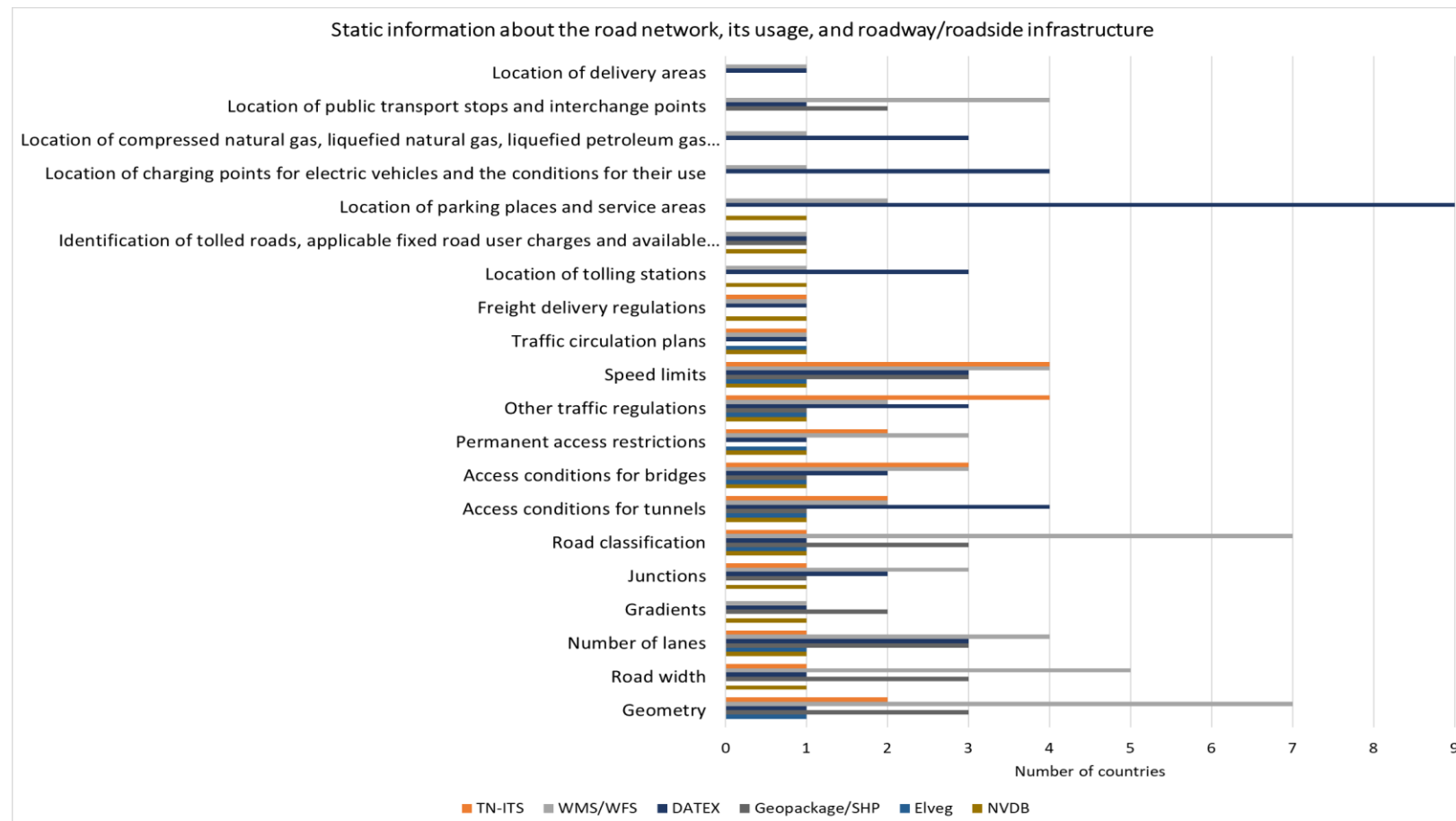
European NAP monitoring

Implemented data standards in Europe (MMTIS)

- Big diversity on the utilized standards/formats.
- Exchange of static information supporting location search services: 5 countries mention the use of **NeTEx** and **INSPIRE.**
- Exchange of static trip plan-related information: utilized formats/standards include NeTEx, GTFS, SHP/CSV, Open API, OSM, INSPIRE, WMS/WFS, NRP, NVDB, etc.
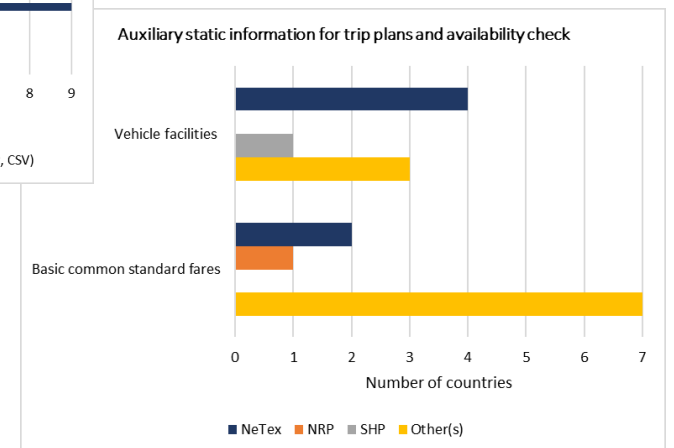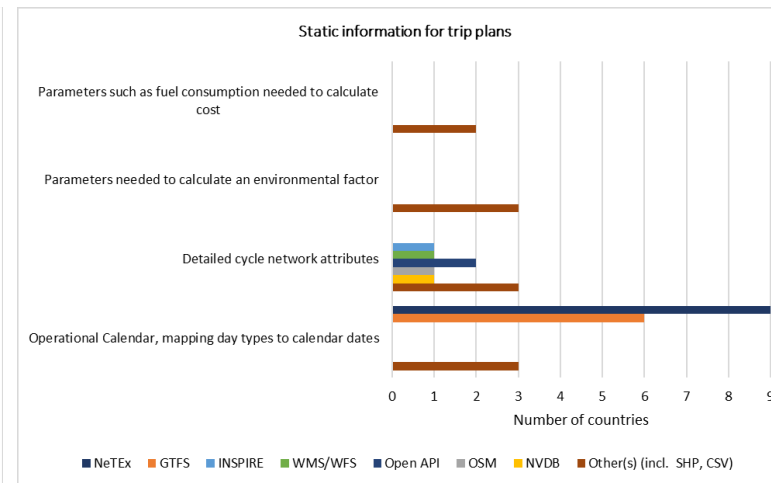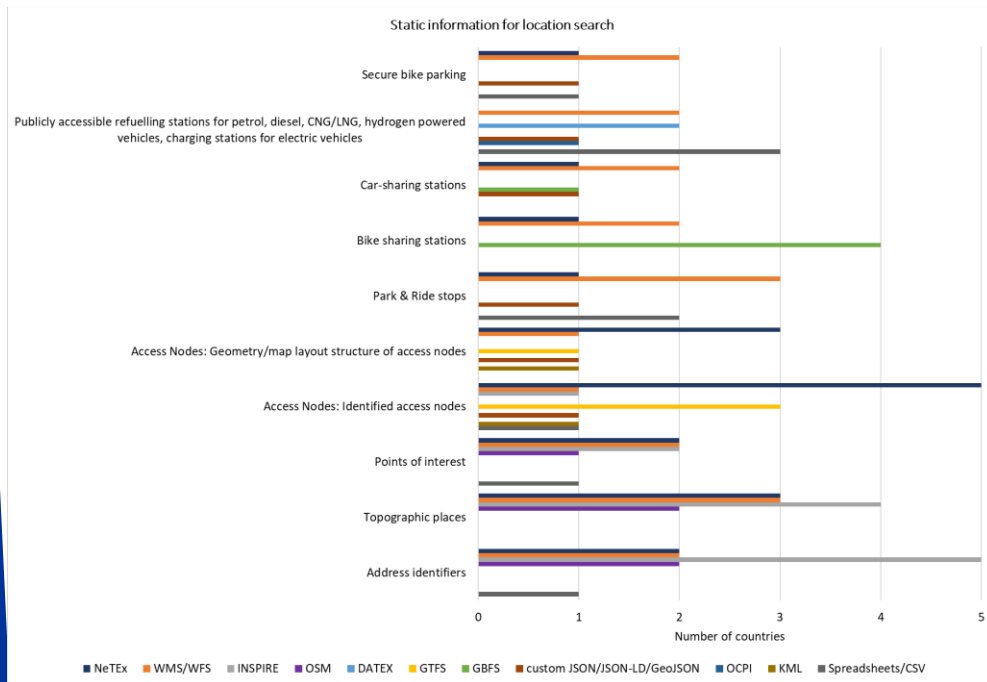
European NAP monitoring

Implemented data standards in Europe (MMTIS)

- Exchange of static information for trip plan computation (**scheduled modes**): most prominently utilized standards/formats are **NeTEx** and **GTFS**.
- Exchange of static information for trip plan computation (**personal modes**): most prominently used standards/formats are INSPIRE, OSM, SHP/GeoJSON.

Static information for trip plan computation
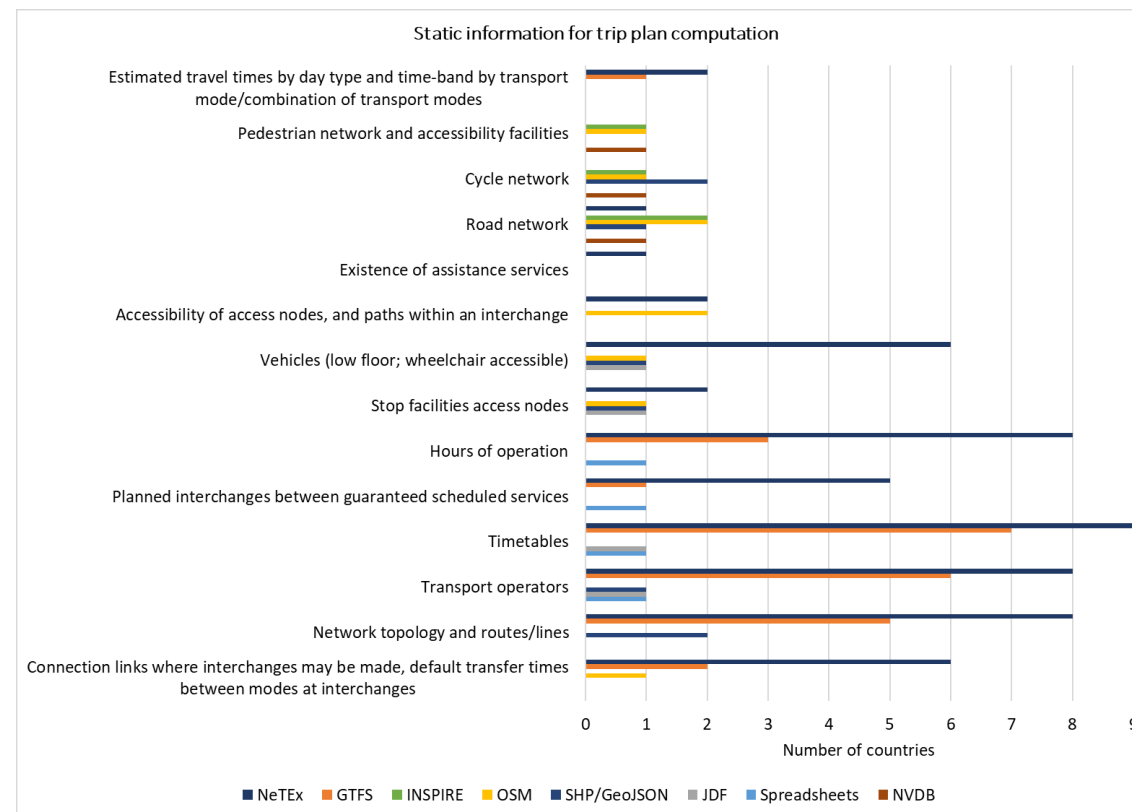
European NAP monitoring

Implemented data standards in Europe (MMTIS)
- Exchange of **dynamic** information: utilized standards/formats include DATEX II, SIRI, GTFS-RT, GBFS, JSON, custom API, BISON, and NVDB.
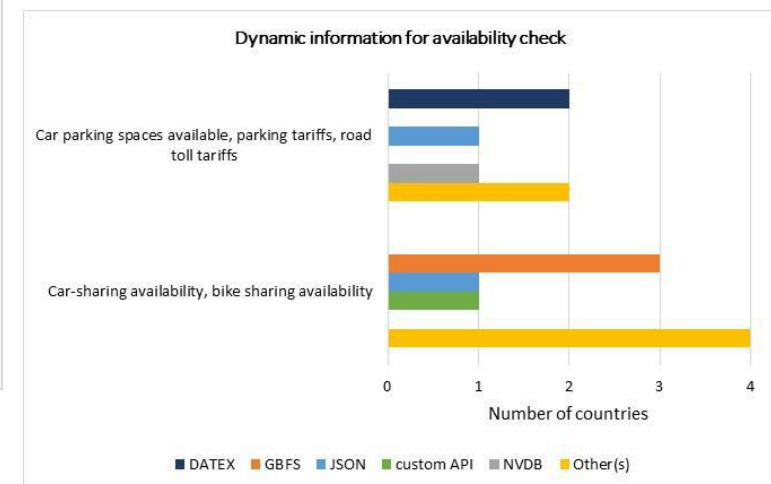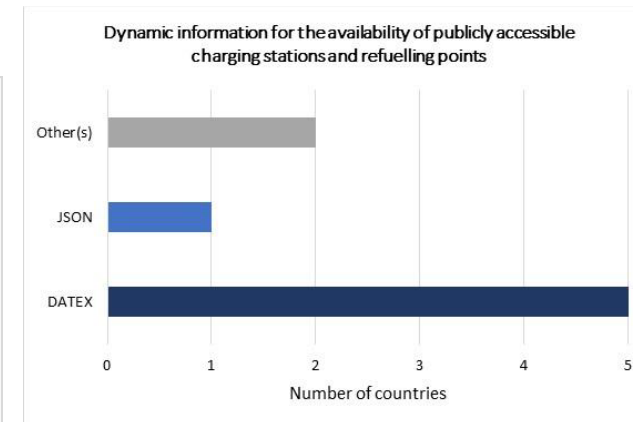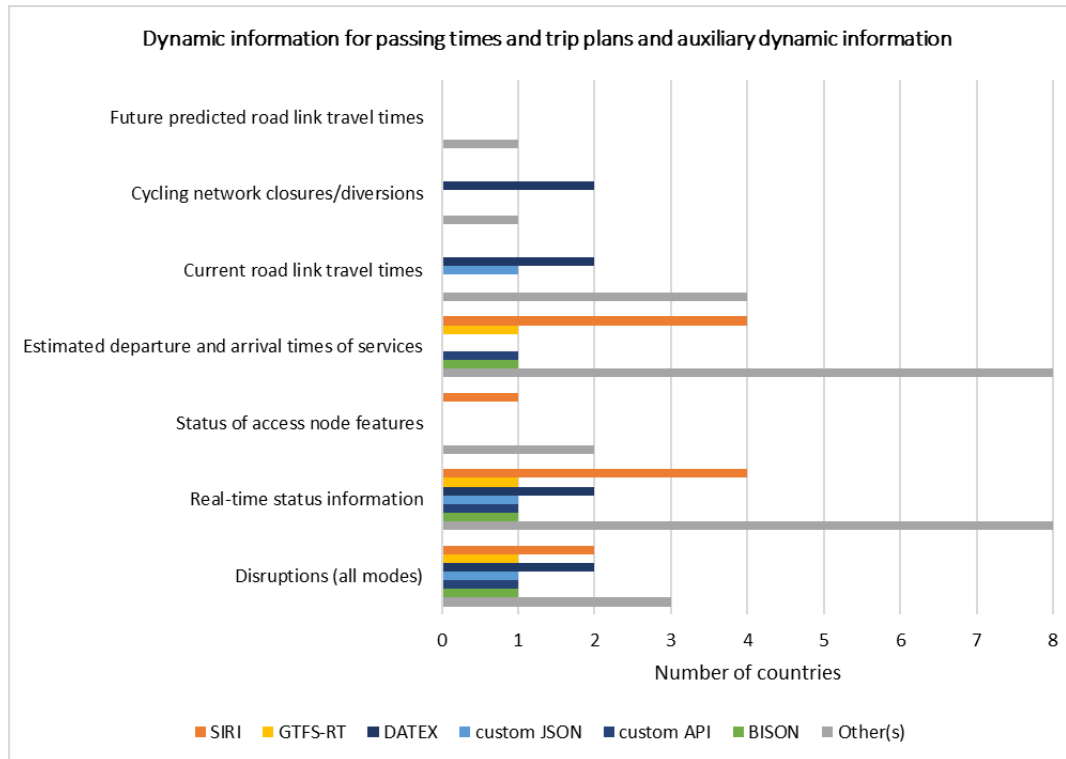
European NAP monitoring

Location referencing (SSTP-SRTI-RTTI-MMTIS)
- Point locations: mostly based on **Coordinates** & **Alert-C point**
- Linear locations: mostly based on **Linear along linear element**, **Alert-C linear**, & **Open LR linear**
- Area locations: mostly based on **Alert-C area** & **Open LR area**
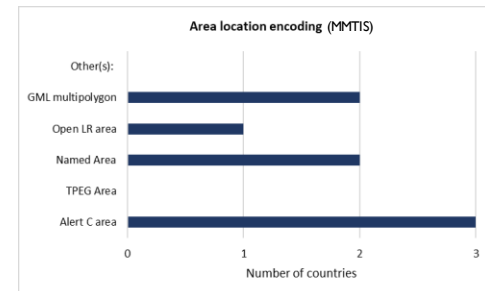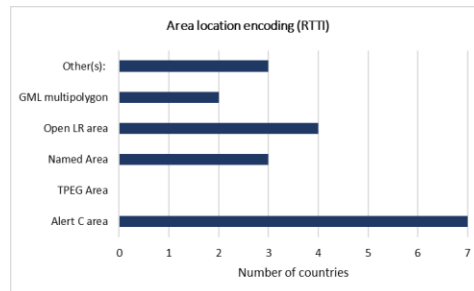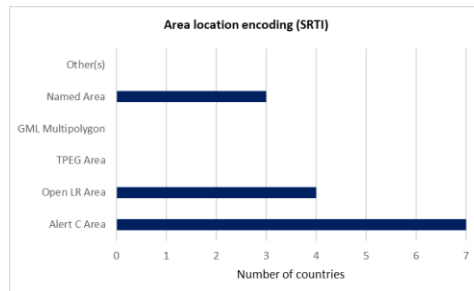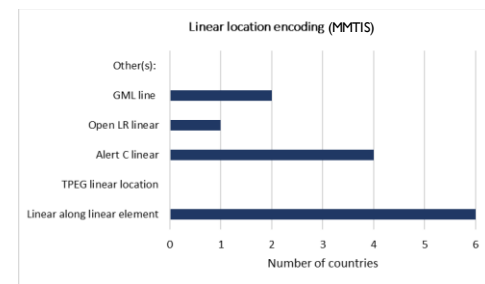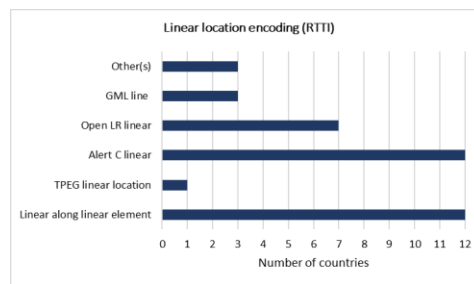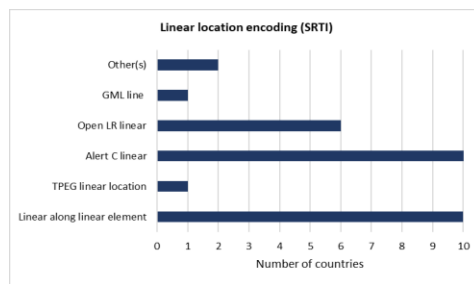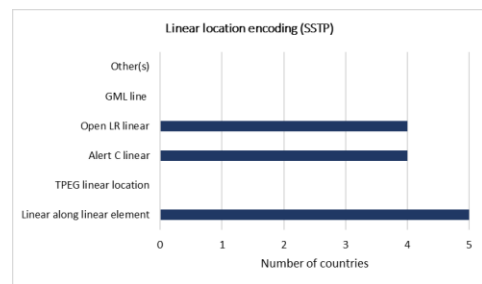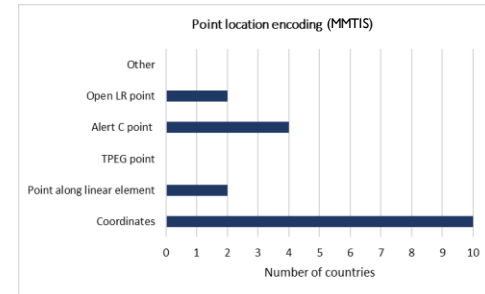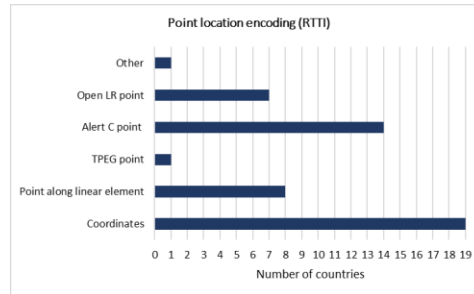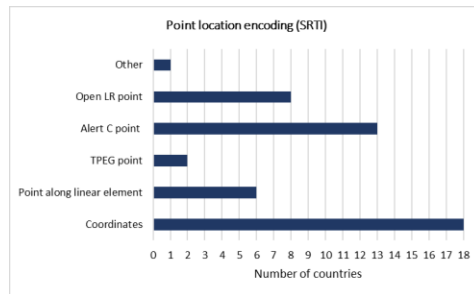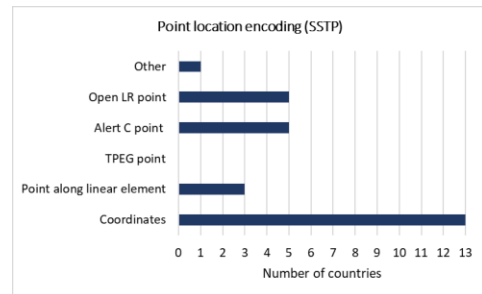
European NAP monitoring

Open data & data licensing:
- 20 countries estimate that more than **86%** of their datasets are openly available to NAP users
- CC0, CC BY-SA, and CC BY are the most frequently utilized (standardized) licensing frameworks.
- Several national licensing frameworks/variants are also utilized.

Estimated open license datasets per country

Legend:
- 0-30%
- 31-45%
- 66-85%
- 86-100%
- Unknown
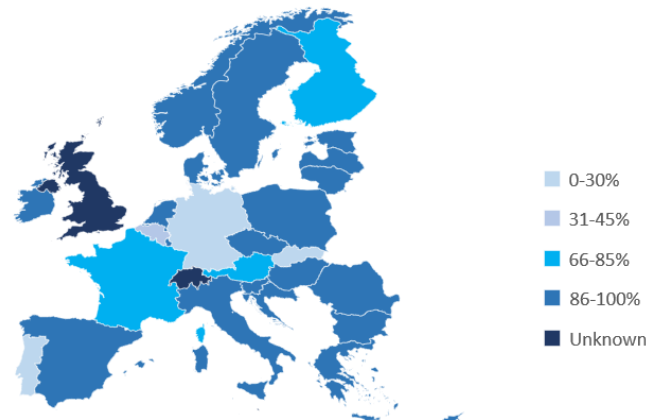
Powered by Bing
© GeoNames, Microsoft, OpenStreetMap, TomTom

Country	Utilized license types			
	SSTPA (DR885/2013)	SRTI (DR886/2013)	RTTI (DR2015/962)	MMTIS (DR2017/1926)
Austria	There is no clear indication of the licence type at the NAP	There is no clear indication of the licence type at the NAP	There is no clear indication of the licence type at the NAP	There is no clear indication of the licence type at the NAP
Belgium	License not specified	License not specified	License not specified	Based on the Harmonized metadata catalogue: License not specified (71), Creative Commons CCZero (33), Other(open) (16), UK open government license (OGL) (5), Other non-commercial (3), Creative Commons Non-commercial (2), Open Data Commons Attribution License (2), Other (not open), Creative Commons Attribution Share-Alike (1)
Bulgaria	-	-	-	
Croatia	Open data policy	Open data policy	Open data policy	Open data policy
Cyprus	-	-		Creative Commons Attribution 4.0
Czech Republic	custom, similar to cc by 4.0	custom, similar to cc by 4.0	custom, similar to cc by 4.0	-
Denmark	Creative Commons Universal License	Creative Commons Attribution 4.0 International License	Creative Commons Universal License	Creative Commons Universal License
Estonia	Free for registered users	Free for registered users	Free for registered users	Free
Finland	CC BY 4.0, contract	CC BY 4.0, contract	CC BY 4.0, contract	CC BY 4.0, multiple custom licenses/contracts
France	-	-	-	https://www.etalab.gouv.fr/wp-content/uploads/2017/04/ETALAB-Licence-Ouverte-v2.0.pdf ; https://spdx.org/licenses/ODbL-1.0.html#licenseText ; https://download.data.grandlyon.com/licences/Licence_mobilit%C3%A9s_V_02_2021.pdf
Germany	Individually set by data provider, mostly used: "Datenlizenz Deutschland"	Individually set by data provider, mostly used: "Datenlizenz Deutschland"	Individually set by data provider, mostly used: "Datenlizenz Deutschland"	Individually set by data provider, mostly used: "Datenlizenz Deutschland"
Greece	Creative Commons Attribution 4.0, Open Data Commons Open Database License 1.0	Creative Commons Attribution 4.0, Open Data Commons Open Database License 1.0	Creative Commons Attribution 4.0, Open Data Commons Open Database License 1.0	Creative Commons Attribution 4.0, Open Data Commons Open Database License 1.0
Hungary	CC BY-ND 4.0	CC BY-ND 4.0	CC BY-ND 4.0	-
Ireland	-	CC BY 4.0	CC BY 4.0	-
Lithuania	-	Creative Commons Attribution 4.0	Creative Commons Attribution 4.0	Creative Commons Attribution 4.0
Luxembourg	CC0	CC0	CC0	CC0
Netherlands	Open access licensing	Open access licensing	Open access licensing, restricted licensing	Open access licensing, restricted licensing
Norway	-	Open access licensing	NLOD, CC BY 3.0, CC BY 4.0.	NLOD, CC BY 3.0, CC BY 4.0.
Portugal	-	Public and free of cost; formal terms and conditions for data use are as of yet not defined	Public and free of cost; formal terms and conditions for data use are as of yet not defined	MMTIS data are linked to in the NAP; the associated licences are controlled by the data providers and provided according to the coordinated metadata catalogue
Slovenia	no special licences except required registration on NAP	no special licences except required registration on NAP	no special licences except required registration on NAP	no special licences except required registration on NAP
Spain	-	Licence and Free of charge/Licence and Fee	Licence and Free of charge/Licence and Fee	-
Sweden	CC0	CC0	CC0	CC0

NAP data availability survey & monitoring tools

What makes the NAP monitoring tool essential?

1. Manual data collection & processing from/for all countries was proven extremely **time-consuming!**

2. The tool can store historical data, making it easier to track changes.

3. The tool allows for updates to be made **only** to questions for which information has changed, eliminating the need for NAP operators to re-answer all questions from scratch.

4. The tool can provide real-time tracking and monitoring of collected information about NAP status, data availability, etc.

5. Automates the reporting process by generating statistics/ charts/diagrams/maps from the received answers.

NAP monitoring tool

napcore

NAP data availability survey & monitoring tools

High-level architecture
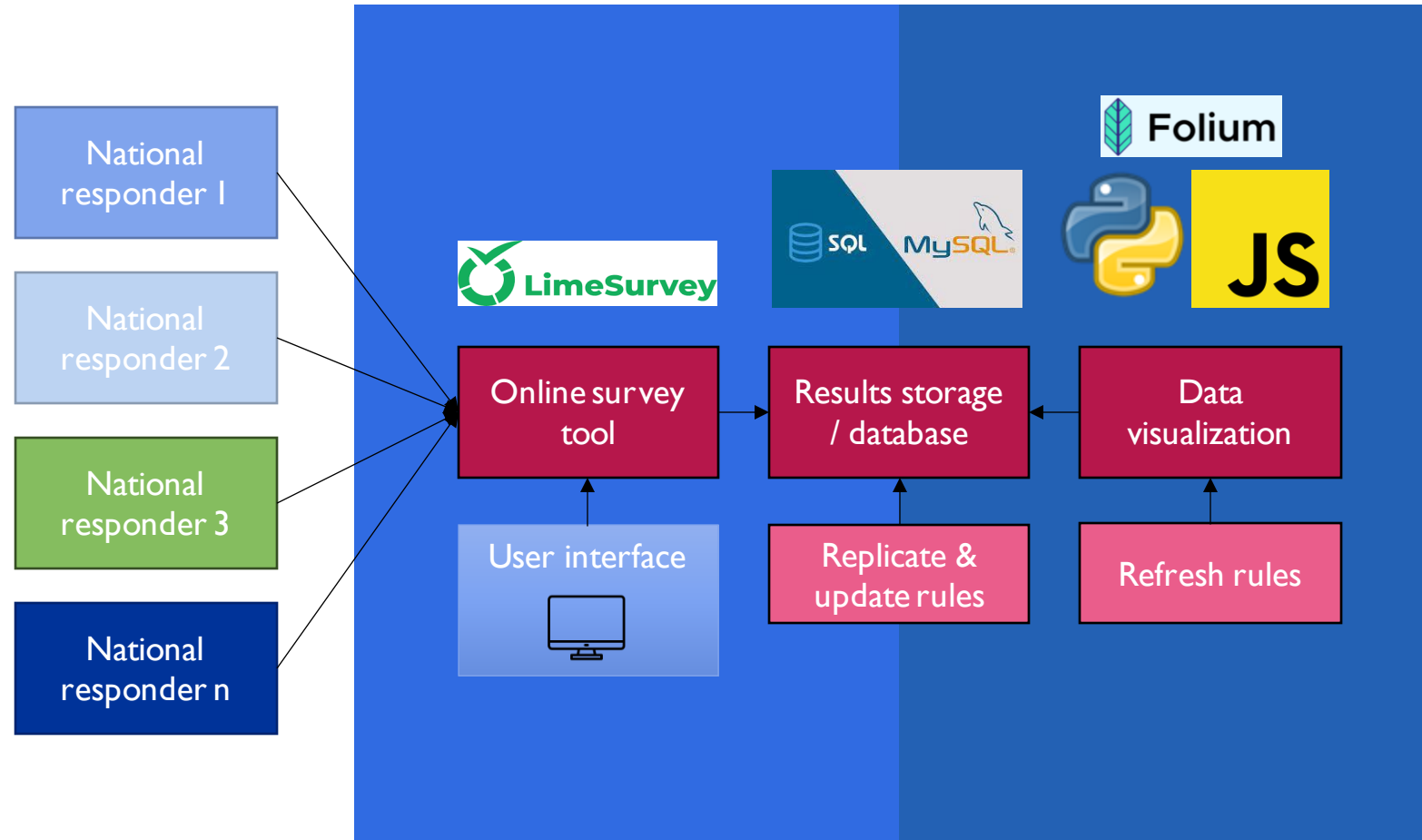
NAP data availability survey tool

Functional structure

- Lime survey handles the back-end of the NAP monitoring tool
- Questions are provided and answered via Lime survey's UI
- Countries have a specific token to log in and submit their responses
- Lime survey stores the collected information in its own dedicated DB (my SQL)
- DB records are updated & replicated with specific temporal conditions to support the gathering of historical information.

NAP data availability survey tool

https://napsurvey.napcore.imet.gr/index.php/335747?lang=en

NAP data availability monitoring tool

- The user is initially directed to a landing page, wherein he/she can navigate through the various views.
- Implemented views include (currently): the list of active NAP URLs (per DR); the list of nominated National Bodies (per DR); data availability (per DR and data category); geographical & transport mode coverage (per DR and data category); and implemented standards (per DR, data category, and information element).
- More views will be added in the months to come.

NAP data availability monitoring tool
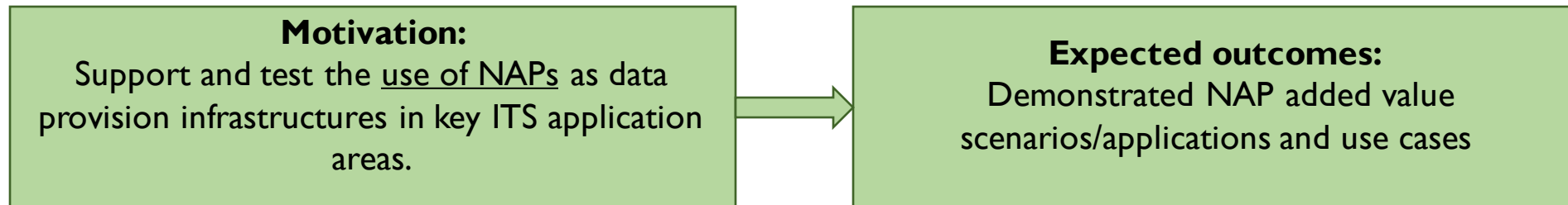
- Hands-on demo

NAP data availability monitoring tool

- Interactive session - Mentimeter
- Questions: 1-5

napcore

NAP added value scenarios

✅   The EU has supported multiple initiatives and standardization mechanisms to strengthen the NAP platforms

❌   NAPs might not have been fully leveraged, as their data appears to not be fully connected to ITS services and applications

Motivation:
Support and test the use of NAPs as data provision infrastructures in key ITS application areas.

→

Expected outcomes:
Demonstrated NAP added value scenarios/applications and use cases

Key application areas:
- **Traffic management and operations**
- MaaS & urban mobility
- Transport planning support
- Logistics & supply chain

Precondition: Required data is available, discoverable, and accessible.

| |
|---|
| European NAP data visualization |
| European C-ITS service provision |
| Virtual TMCs |
| Resilience observatories |
| Data-driven assessments & traffic simulation |
| Digitization of TMPs and TM coordination |

napcore

NAP added value scenarios

- Interactive session - Mentimeter
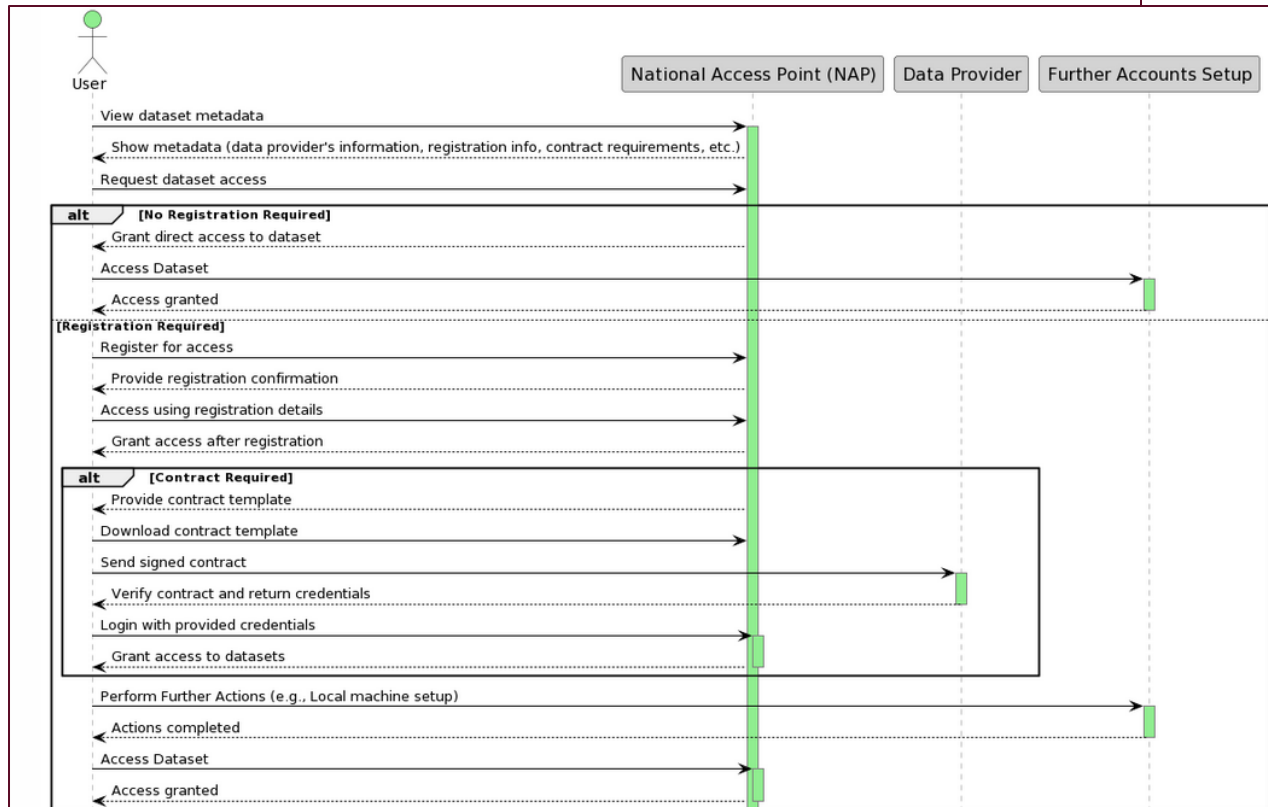- Questions: 6-7

NAP added value scenarios

Data access

- The development of any application required <u>data access</u>
- <u>Not an automatic process</u>
- In some cases, a <u>lot of time</u> was required to access the datasets
- There are <u>different approaches to access datasets</u>, some of them quite challenging
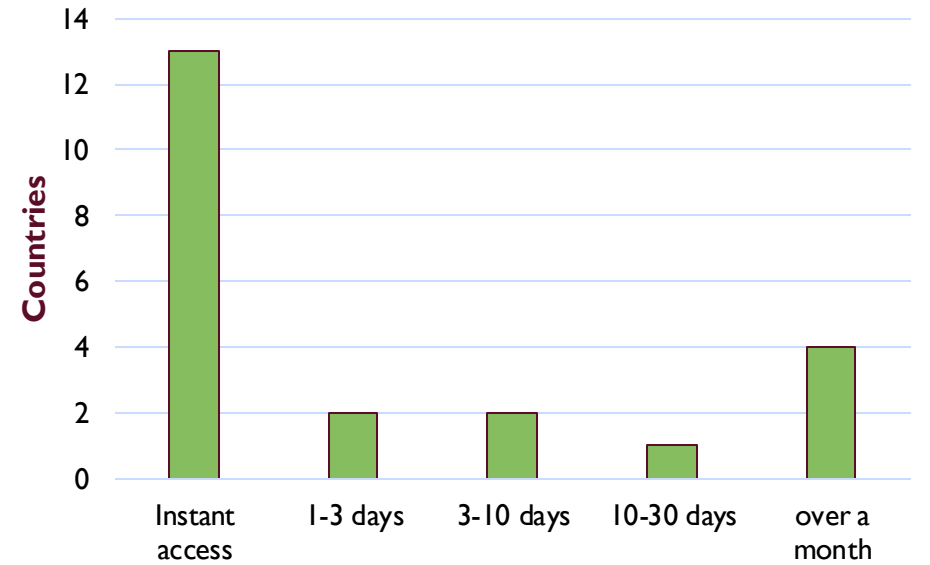
Time needed to access datasets

NAP added value scenarios

European NAP data visualization tool

Scope
- An interactive, web-based tool for visualizing common NAP datasets across Europe (i.e., roadworks, incidents, VMS)

What has been achieved so far?

Preparatory steps
- European NAP data search and discovery (events, roadworks, VMS broadcasts).
- Acquisition of access to the identified data resources (incl. communication with data holders, contract resolution).

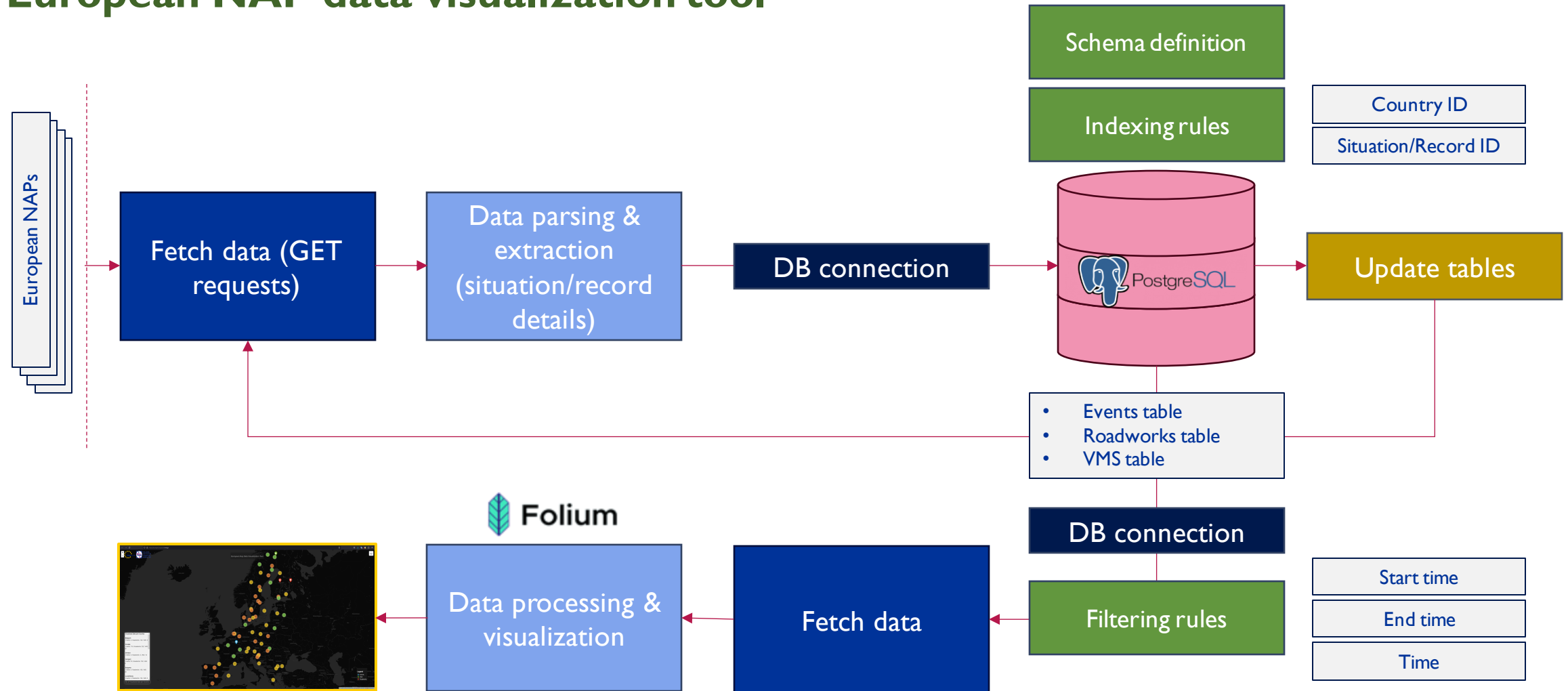Development of data acquisition interfaces and DBs
- Interface with NAPs/data holders for data consumption.
- Data aggregation (SQL database).

Development of visualization interface
- Development of dataset visualization scripts.
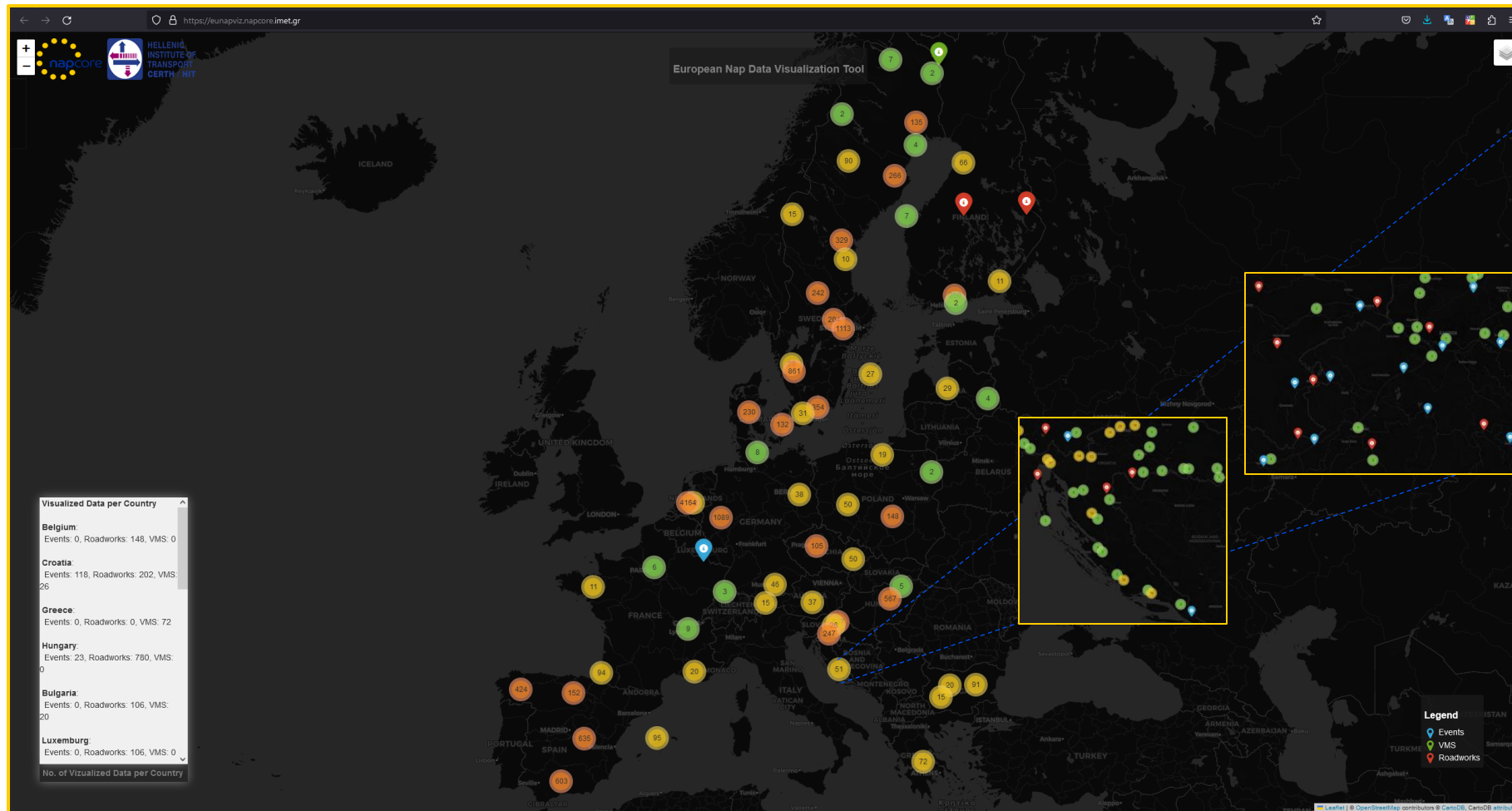- Integration into an interactive map.

NAP added value scenarios

European NAP data visualization tool

European NAPs

Fetch data (GET requests) → **Data parsing & extraction (situation/record details)** → **DB connection** → PostgreSQL → **Update tables**

Schema definition

Indexing rules

Country ID

Situation/Record ID

- Events table
- Roadworks table
- VMS table

Folium

Data processing & visualization ← **Fetch data** ← **Filtering rules** ← **DB connection**

Start time

End time

Time

napcore

NAP added value scenarios

European NAP data visualization tool

NAP added value scenarios

Pan-European NAP data visualization tool

- Hands-on demo

https://eunapviz.napcore.imet.gr/

napcore

NAP added value scenarios

National Virtual Traffic Management Center

Scope
- Interactive platform (dashboard) supporting the operational monitoring and management of traffic conditions along the Greek national motorway networks by using NAP data.
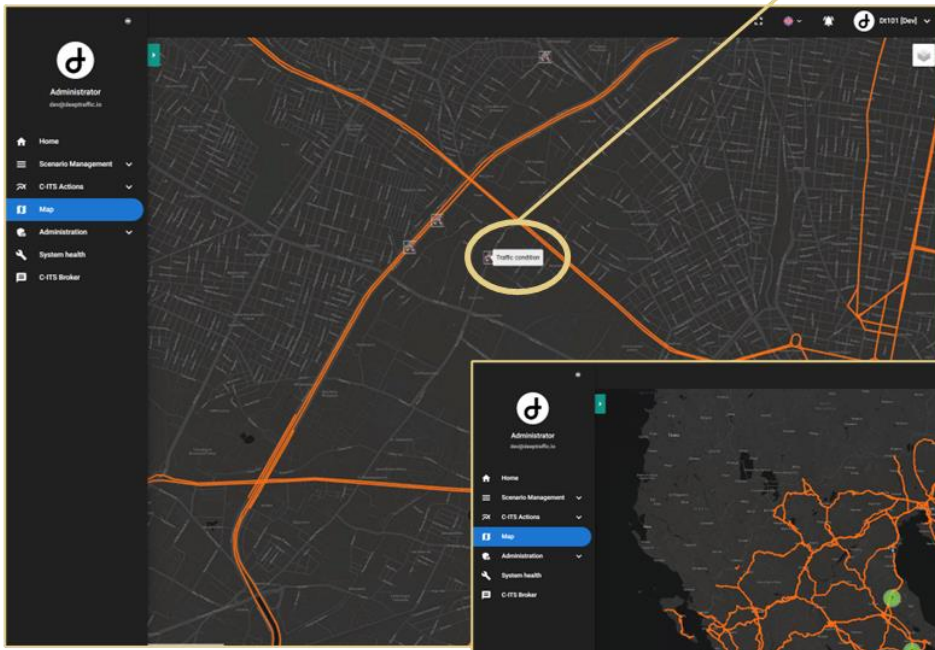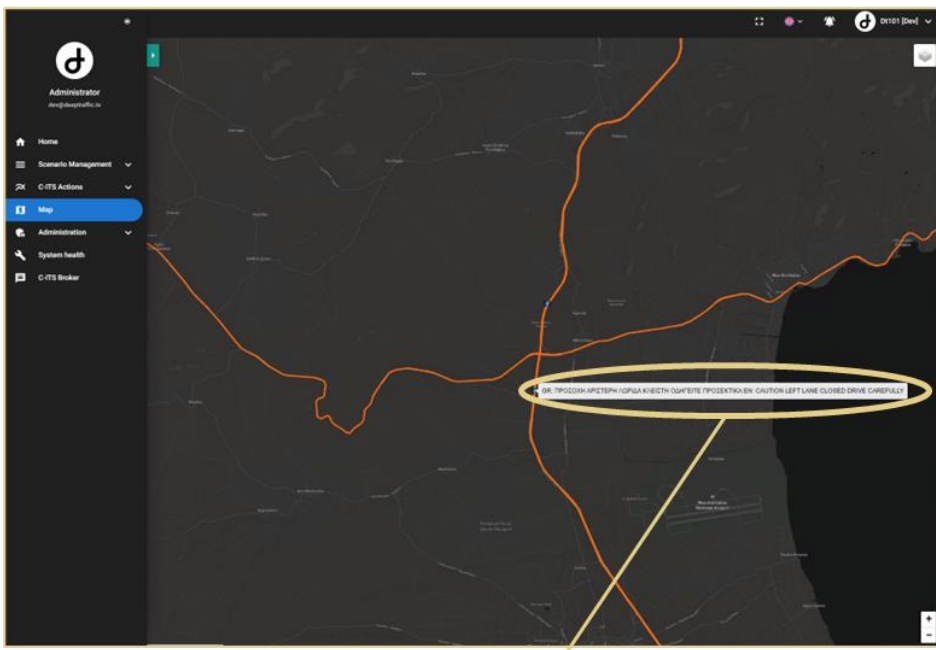
What are the main operations?
- Visualization of road network status
- *Visualization of prevailing traffic conditions*
- *Provision of traffic-related KPIs*
- *Others (for example supporting the management of patrol vehicle fleets)*

NAP added value scenarios

National Virtual Traffic Management Center

Congestion warning

VMS broadcast

NAP added value scenarios

National Virtual Traffic Management Center

- Hands-on demo

https://greece.deeptraffic.io/

NAP added value scenarios

NAP resilience observatory

Scope
- Recording of the impacts of extreme weather (or other) events on traffic operations at urban road and highway network level.

What are the main operations?
- Correlation of traffic flow and weather conditions utilizing NAP data and/or data from open weather APIs
- Provision of historical evidence and visualized KPIs.

NAP added value scenarios

NAP enabled resilience observatory

- An extreme flood event has occurred within the central Greece during September 2023.
- The flood event has caused the closure of specific segments of the national motorway network (connecting Athens and Thessaloniki).
- Climatic hazards are occurring with an increasing frequency rate/severity highlighting the importance of that tool (and a new application area for NAPs as well).
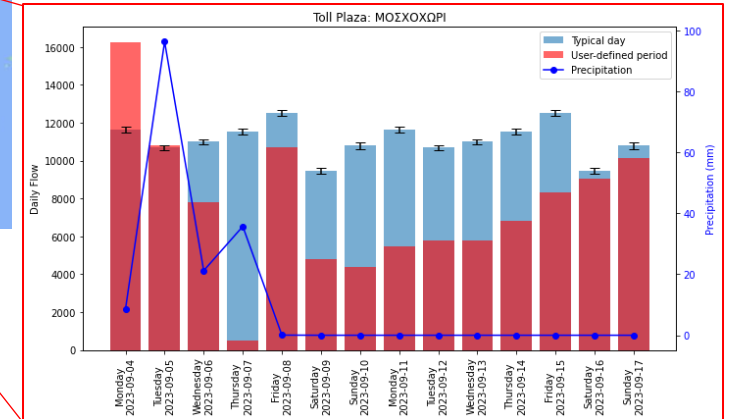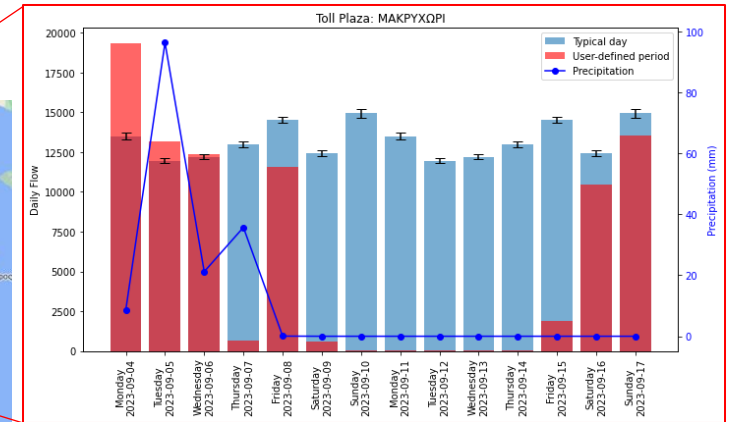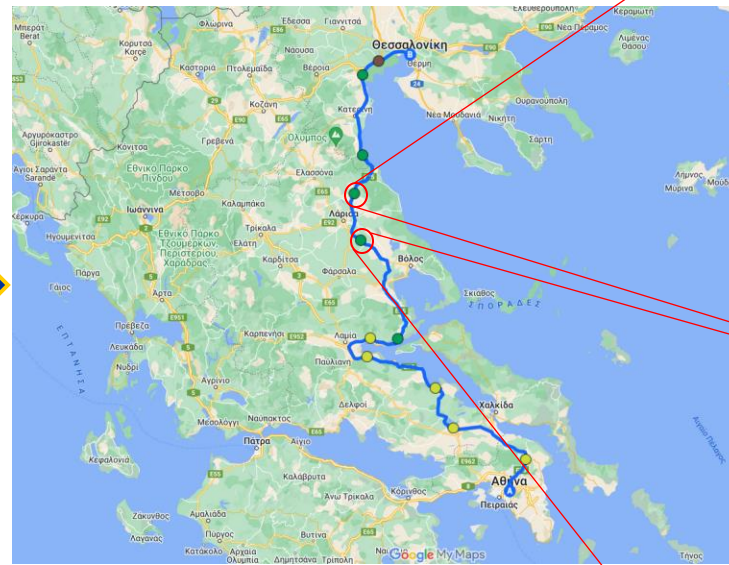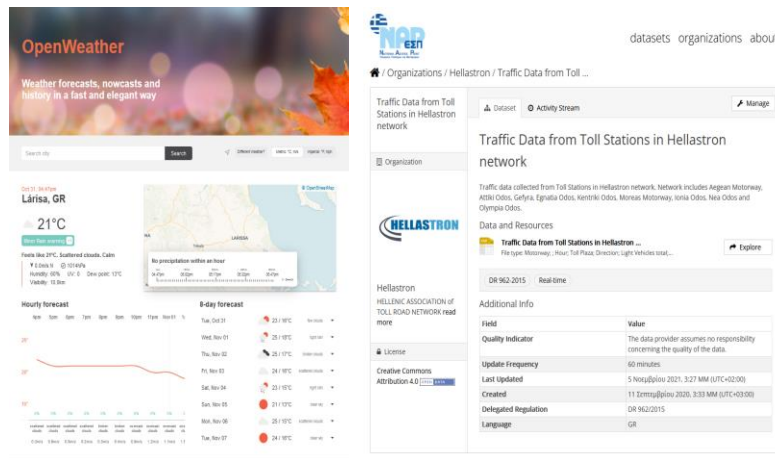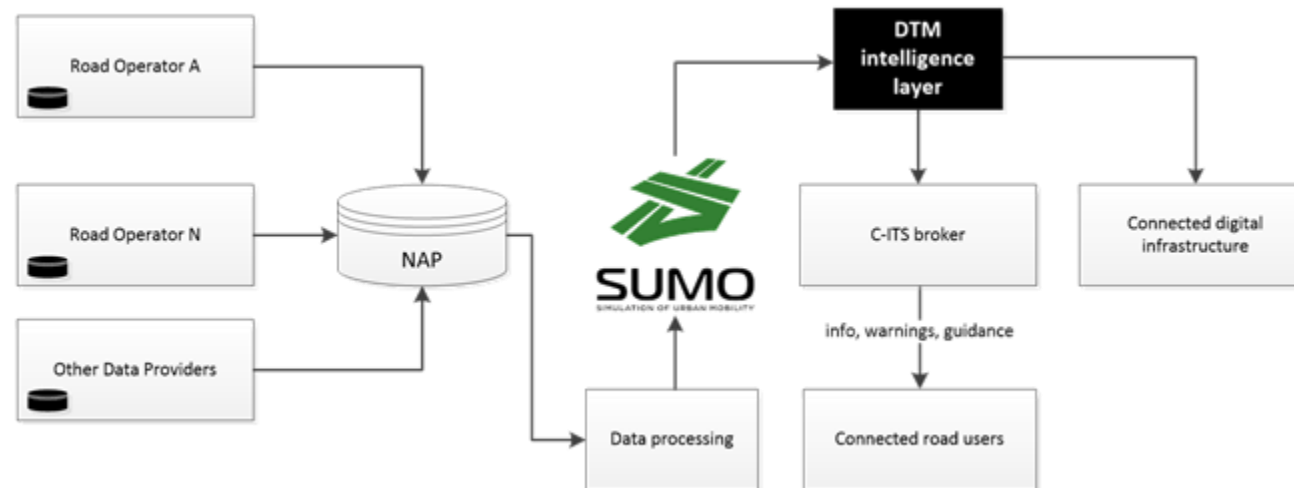
NAP added value scenarios

Other potential scenarios

Simulation of multimodal traffic management strategies

Scope: Enhancement of microscopic traffic simulation tools with NAP data. The available NAP data should be properly formatted in order to be fed into traffic simulators.

What are the main operations?

- Automatic generation of demand (network loading) files by using NAP data to introduce prevailing traffic conditions into simulation experiments.
- Real-time assessment of alternative traffic management strategies and measures.
- Provision of coordinated dynamic traffic management services to road users through C-ITS messages or evidence-based modifications of traffic signal control programs.
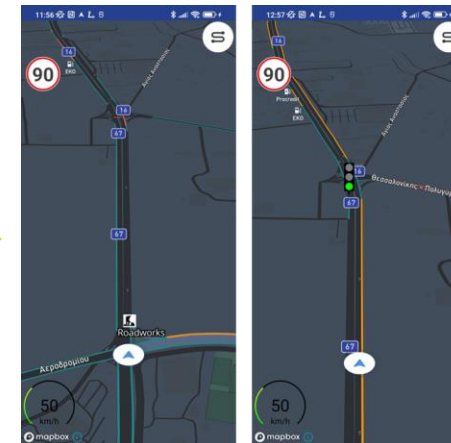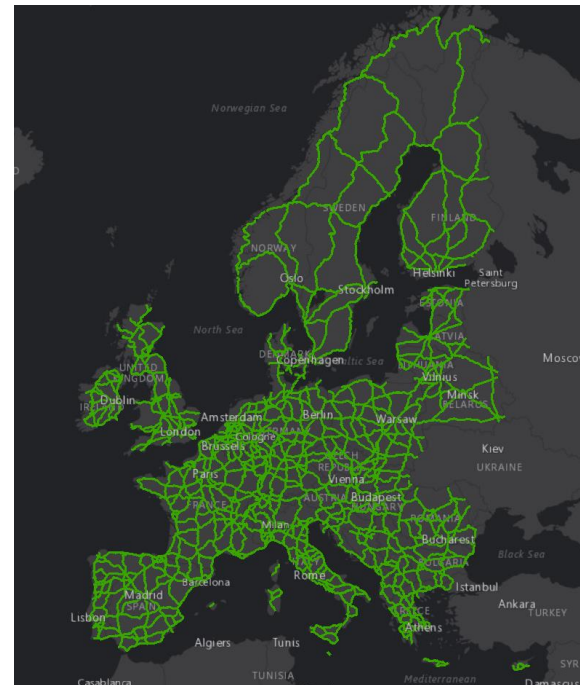
NAP added value scenarios

Other potential scenarios

EU wide C-ITS services provision

Scope: Extension of the Pan-European data visualization tool

What are the main operations?

- Provision of C-ITS messages (e.g., IVI, DENM) to connected road users/vehicles by using NAP data as information source (e.g., events, roadworks, VMS broadcasts)
- Implementation level: TEN-T & primary European corridors

NAP added value scenarios

Other potential scenarios

Exchange of Traffic Management Plans (TMPs)

Scope: Exchange of digitized TMPs at urban level and urban-highway interfaces

Envisaged process

- Definition of main use cases (e.g., TMP(s)-to-TMP(s), TMP(s)-to-Service provider(s))
- Creation/use of a DATEX II compliant protocol
- Pilot TMP publications on NAP(s)

What is a TMP?

Allocation of traffic control and information measures in response to predefined recurring/non-recurring problematic traffic situations, such as:

- Planned events (e.g., construction sites)
- Unplanned events (e.g., accidents, incidents, overload, congestion)

TMP levels

- Urban
- Highway
- Urban-highway interfaces
- Cross-border

NAP added value scenarios

- Interactive session - Mentimeter
- Questions: 8-15

Thanks for your attention!

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