



Milestone 2.10 - Interoperability demonstrators with real-world use of data and different Levels of Service - 2nd round

Annex D - Scoping of Demonstrators Expectations

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☐	For review/ approval by the Core Alignment Team and Peer Reviewers
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Abstract

This internal document compiles information related to the scoping of the four interoperability demonstrators that are part of NAPCORE WG2 (Task 2.4). It aims to define the overall scope of each demonstrator, outline their expected outcomes, and specify how the documentation should be structured. The document sets goals and objectives for the demonstrators, along with their prerequisites and anticipated challenges. It is intended to be used throughout the development and evaluation of the demonstrators.

Abbreviations

Abbreviation	Meaning
EC	European Commission
EU	European Union
MS	Member States
NAP	National Access Point
NRA	National Road Authority
NAPCORE	National Access Point Coordination Organisation for Europe



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1. Introduction

“The purpose of Task 2.4 (demonstrators) is not about deployment or piloting, rather to understand how to better enable cross border interoperability and how to ensure continuity of ITS Services. Looking into different options, while fostering Member States cooperation around topics of common interest, Task 2.4 is designed to support those concepts to come to life, by developing the demonstrators.” From the workplan of the project NAPCORE.

The intention of this document is to harmonize outcomes of the demonstrators in terms of structure of the demonstrators reports and in terms of alignment of expectations what the demonstrators shall deliver and deliberating on the possible problems that might be encountered during the demonstrator implementation.



The document defines framework and objectives for various demonstrators aimed at enhancing cross-border interoperability and continuity of ITS services. By defining clear goals, prerequisites, and challenges for each demonstrator, the document provides a structured approach to leverage demonstrators outcomes when deploying harmonized and interoperable National Access Points (NAPs) across Europe.

The demonstrators, including the Interoperable NAP Metadata Concentrator, NAP and Dataspace Coexistence, Cross Border NAP Marketplace, and NAP Interchange, each address specific aspects of data sharing, metadata harmonization, and cross-border cooperation.

1.1. What is a Demonstrator?

Demonstrator is an **implementation** of an IT system, a case-study on some of the NAP interoperability functionalities. At this stage, NAPs have different architectures, and the demonstrators **shall** test and experiment common features for interoperability. The demonstrators **are not** the implementation of the European access point. The outcomes of the NAPCORE demonstrators should give feedback to the NAP reference architecture, and that is the first step on harmonization of European NAPs. The purpose of the demonstrator **is to showcase an idea**/functionality occurring in similar NAP implementations.

Demonstrator (report) shall include:

- Definition of a purpose / goals to be reached. (mission)
- Short documentation of implementation
- Relation to other projects / contribution to the NAPCORE cause
- Short technology analysis
- Requirements / user needs / Use cases
- Detailed architecture framework concerning:
 - Physical and software stack architecture
 - Functional architecture
- Showcase of actual implementation (functional sample)
- Implementation guideline (with shared and documented code, if agreed by the partners)
- Documentation of important architectural decisions, lessons learned and best practices.
- Future work suggestions

1.2. Demonstrator goal definition (in this document)

The Idea is to keep it short, only key statements, that could be elaborated in other documents, here for the purpose to “**check**” if it was completed or to modify if objectives change.

- **Primary objective:** the most important objectives (1-3), the **idea, mission and targeted functionalities that explained** why the demonstrator was proposed in the first place, it **MUST** be clear how this objective is to be completed
- **Secondary objectives:** smaller outcomes, but possibly important for NAP environment, may not be reached, it **MUST** be clear how this objective is to be completed

Objectives SHALL be checked during and after the demonstrator development = evidence-based summary of how the objectives has been reached.

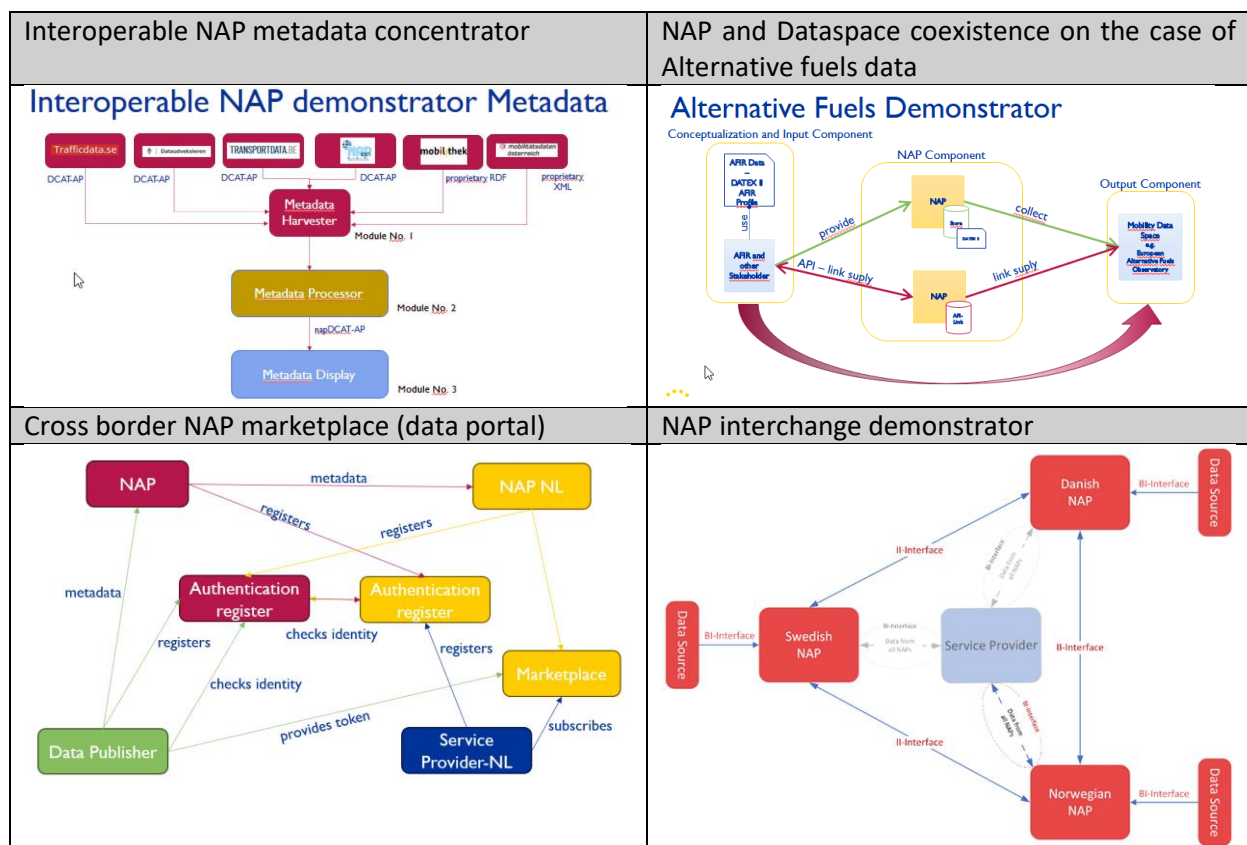
- **Prerequisite:** something that must be fulfilled before the demonstrators could start or early in development could hinder or lead to halt of the demonstrator implementation.

- **Challenges:** something that is known to be a problem (or not known solution) and MUST be solved during implementation of the demonstrator. Edited during and after the implementation of the demonstrator
- **Key takeaways:** what could be directly used by NAP operators, providers, subscribers.

Challenges and key take aways SHALL be addressed in the demonstrator report.

2. Demonstrators' goals and challenges definition

2.1. Demonstrator types



See: [NAPCORE - Architecture Landscape – Concept board](#)

2.2. Interoperable NAP metadata concentrator

Primary objective:

- To expose metadata from several NAPs in the ONE metadata portal.
- To show a proof-of-concept for the new metadata specification mobilityDCAT-AP, as a backbone of the metadata demonstrator.

Secondary objectives:

- To showcase what metadata and in which form, what keywords shall be used what data naming conventions, language choices and descriptions shall be used to help understanding and findability of the services.
- To showcase data/metadata visualisation, search and all the processes around harvesting metadata and computing and displaying quality. (Similar to the <https://data.europa.eu/en>)
- To showcase technical and lingual problems of harmonising metadata



Prerequisites:

- All portals must support an RDF-compliant metadata structure that can be mapped to mobilityDCAT-AP
- All portals must have metadata exposed either as a link or as API (static metadata download or SPARQL query)
- An IT solution must be built that enables reading, storing, harmonising metadata from different NAPs, and exposing such harmonised metadata in one common GUI

Challenges:

- Metadata structure, naming of the datasets and set of keywords variations among different portals
- Mapping metadata structure according to mobilityDCAT-AP
- Security (registration of the individual NAPs in the in a common metadata system, to be considered as future work beyond the demonstrator.
- Processes of harvesting and quality checking and conflict resolution (e.g., same metadata shared by multiple NAPs)

2.3. NAP and Dataspace coexistence on the case of Alternative fuels data**Primary objective:**

- To demonstrate how the metadata directory NAP can be utilized in the dataspace framework.
- To demonstrate harmonised sample of AF data shared across platforms.

Secondary objectives:

- To showcase different NAPs communicating AF data and metadata to the data space.
- To establish best practices for data sharing across these instances to simplify data search.
- To find out how the data space present the data and how to prepare them at the NAP.
- To showcase what metadata and in which form, what keywords shall be used what data naming conventions, language choices and descriptions shall be used to help understanding and findability of the services.

Prerequisites:

- All portals must have AF data sets
- All portals must support same metadata structure and same naming of the datasets and same set of keywords.
- All portals must have a API for communication with the dataspace
- The dataspace must be built and accessible.

Challenges:

- Security (registration of the data in the dataspace)
- Processes of harvesting and quality checking and conflict resolution with the same data shared by multiple NAPs and directly by provider to the dataspace.

2.4. Cross border NAP marketplace (data portal)

Primary objective:

- To demonstrate how a dataset could be centrally managed by an entity and shared across different platforms.
- To demonstrate a harmonised way of data sharing by parties through an intermediary.

Secondary objectives:

- To showcase different data providers sharing data to the platform and different service providers / data consumers receiving the data. (EU wide)
- To establish best practices for data sharing across these instances.
- To establish what to monitor when sharing data cross-border.
- To determine best practices when monitoring data sharing.
- To determine cross-border issues with data sharing to address.
- To determine best practices how to record data sharing agreements between providers and consumers.
- To provide input to the reference architecture of NAPs and the KPI framework.

Prerequisites:

- The marketplace must be built and accessible.
- The Data provider must have access to an API to share the data, the API must have token functionality.
- Planned roadworks are available as a DATEX stream in another country and may be shared.

Challenges:

- Security (registration of the data providers and consumers, as well as NAPs).
- Specifically, security cross-border and interchange of authentication between instances
- Possible restrictions regarding sharing of data to service providers that exist in one country, but not in another.
- Processes of data consumption and authentication.
- Dealing with cross-border agreements regarding signing authorities for NAPs or other registries.

2.5. NAP interchange demonstrator

Primary objective:

- To demonstrate a dynamic distributed European traffic-related metadata register (a distributed NAP register) using real time traffic information data as an example.
- To demonstrate a single sign-on solution to traffic-related data from all data sources in the above meta-data register (independent of producer/country).

Secondary objectives:

- To show that the BI and II Interchange could be a way of advancing the NAPs level of service.
- To showcase subscription based on area selection.
- To showcase a possible best practice for data sharing from multiple data providers.
- To demonstrate how to create an own data filter with a subscription of real-time event-driven changes from combined (cross boarder) data sources.

Prerequisites:

- The interchange must be up and running and findable from you NAP or you (a data provider) need an agreement to get access to an existing one.
- Data sharing agreement with the data owners, so that you are allowed to share data via the interchange node.
- Data is expected to be shared freely – under Creative Commons 4.0 or 1.0.

Challenges:

- How can NAPs and Interchanges complement each other.
- Security (registration of the data / users)
- Consuming merged data .Processes of data consumption.

3. Conclusion

The document clearly defines what a demonstrator is and outlines what should be documented when delivering the demonstrator reports to NAPCORE. It also sets up goals to be reached and evaluated in the reports, as well as challenges to be overcome.

Each demonstrator addresses specific aspects of data sharing, metadata harmonization, and cross-border cooperation. These initiatives are crucial for developing a unified European ITS infrastructure, facilitating seamless data exchange, and improving service delivery.

By involving demonstrator leaders in the definition of the demonstrator, in the creation of the report structure by identifying key elements, and in discussions during the goal-setting process, we intended to create an internal feedback loop for each demonstrator. This approach ensures that they deliver the expected results and support the development of NAPs. Consequently, the key takeaways from the demonstrators will inform best practices, guide future developments, and contribute to the NAPCORE reference architecture. By addressing the outlined challenges and leveraging the lessons learned, the demonstrators will play a pivotal role in advancing the interoperability and efficiency of European NAPs.