Roadmap for DATEX II deployment in Greece

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Outline

- DATEXII enabled exchange between TMCs in the Attica region
- DATEXII within the National Access Point
- Envisaged future scenarios for DATEXII in Greece

DATEXII enabled exchange between TMCs in Attica
Background info

- Attiki Odos Tollway (AO) (www.aodos.gr) is the peripheral highway of Athens connecting the airport to downtown and bypassing the Athens metro area as well. Total length is 70 km with an average daily number of toll transactions at 210.000 (2017) and is fully operational since 2004. As part of the AO ITS infrastructure, about 600 inductive loops have been installed in order to continuously monitor and track the traffic counts and lanes occupancy.

- Athens-TMC (ATMC) is the central TMC of the Athens prefecture operating since 2003.

- ATMC has also deployed a network of inductive loops in the main road network of Athens metro area and is collecting traffic counts. These are used in order to display travel times in the deployed VMS along the road network and to provide traffic info to other service providers.

DATEXII enabled exchange between TMCs in Attica
The project

- In late 2009 AO and ATMC agreed to jointly work on establishing a real time 24x7 data flow (coded 'VDS flow") in order for AO traffic data to be passed to ATMC.

- DatexII was selected as the format to be used in the course of the implementation.

- The AO-ATMC flow went into production in early 2010. No major technical or semantical issues have been encountered since.

DATEXII enabled exchange between TMCs in Attica
The VDS flow

- From the whole set of 600 AO inductive loops a subset of about 150 loops were carefully selected in order to be included in the VDS flow. This in order to minimize the exchange of data without compromising the coverage or quality. The 150 loops were jointly selected based on the geometrical characteristics of AO and the road sections of interest.

- The VDS files are produced every 60 secs and are transmitted from AO to ATMC using secure FTP.

- Each VDS file contains one record per loop (averaged 1-min values) and each record contains:
  - The loop id and status (whether good or in error)
  - The occupancy in %
  - The traffic flow in vehicles / hour
  - The speed in km / h
  - The timestamp

```xml
<?xml version="1.0"?>
<oneMinuteData>
<vdsData status="1" occupancy="3" trafficFlow="360" speed="0" timestamp="2018-03-08T15:41:00" unitID="3135"/>
<vdsData status="1" occupancy="3" trafficFlow="1440" speed="98" timestamp="2018-03-08T15:41:00" unitID="3134"/>
<vdsData status="1" occupancy="4" trafficFlow="1440" speed="94" timestamp="2018-03-08T15:41:00" unitID="3133"/>
</oneMinuteData>
```

DATEXII enabled exchange between TMCs in Attica
The AO Traffic prediction case

- The same DATEXII flow has been subsequently used by AO in order to provide same info to ITS consulting and systems firm Iteris (www.iteris.com)

- AO and Iteris have an agreement through which Iteris is providing traffic analytics and traffic prediction services to AO through a dedicated intranet portal. Iteris is using the VDS flow as input.
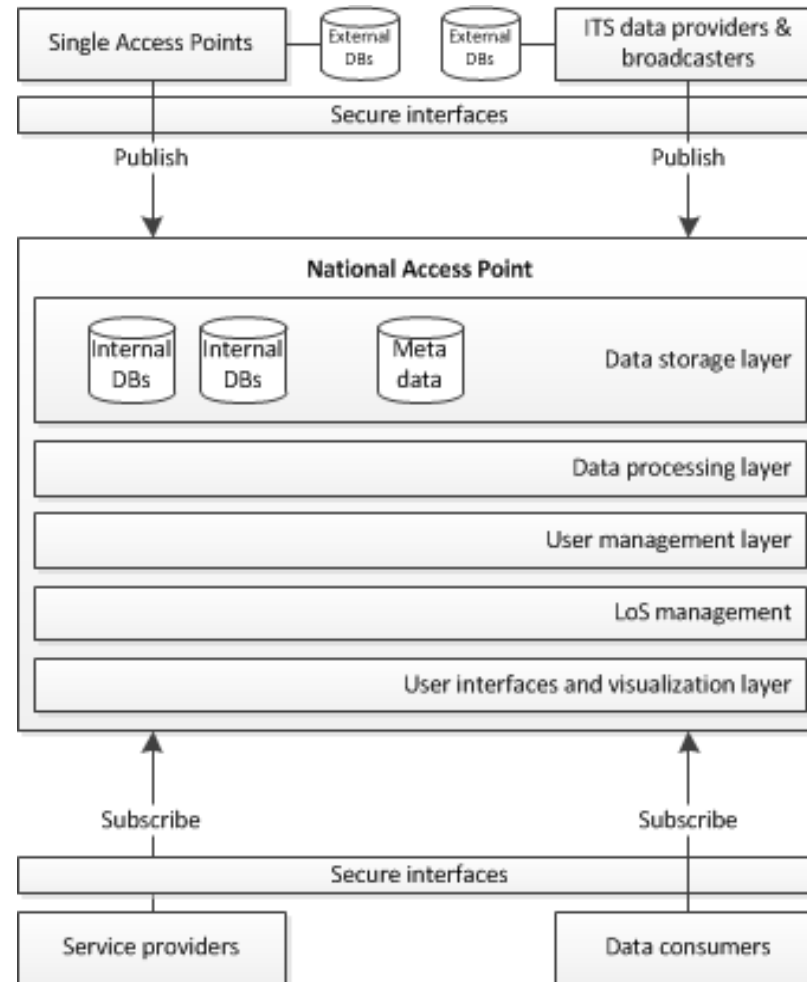
DATEXII within the National Access Point
NAP Functional characteristics

- NAP status: Under development by CERTH-HIT within the framework of the CEF co-funded project Crocodile 2. Operational phase from September 2018.
- Hybrid NAP type: Decentralized data access as well as centralized database system.
- Multimodal information included.
- Quality assessment of data will be performed.
- Interfaces to other NAPs and data providers from Crocodile 2 partner countries.
- **Data exchange via DATEX-II (NAP will be a DATEXII node).**
- Metadata and data discovery services (compliant with the Coordinated Metadata Catalogue)
- Available in Greek and English.
- Formats used to provide data: DatexII, XML, JSON, CSV, KML, MAP

DATEXII within the National Access Point
NAP Architecture

Envisaged future scenarios for DATEX2 in Greece

- Expansion of the data exchange between various TMCs (similar to the AO – Attica TMC existing paradigm).

- Enhancement of data exchange between Urban & Highway areas

- Exchange of information between TMCs and content service providers (TM2.0 scenario)

- Inclusion of additional use cases, including C-ITS (and links to related projects, e.g. C-Mobile)

Envisaged future scenarios for DATEXII in Greece
Urban-Highway interaction

- Large highways are in operation throughout Greece, passing by all major Urban Agglomerations.
- Often, the interurban roads are ring roads to these cities, carrying a big portion of the commuting, or through traffic.
- Greece has also a big number of mainland Ports, which act as gateways of freight and tourism related road traffic towards the highways
- Traffic data is useful for integrated traffic management schemes between Highways, Urban TMCs and Port community systems
- Relevant examples could be:
  - Egnatia odos and the City of Thessaloniki; for a big part of the City, Egnatia Odos is a ring road transferring a big amount of peri-urban traffic
  - Egnatia Odos and the City and Port of Igoumenitsa; the Port of Igoumenitsa is the main maritime gateway to Italy and has direct connection with Egnatia Odos

Envisaged future scenarios for DATEXII in Greece
Data exchange between TMCs and content/service providers (TM2.0 scenario)

- The combination of traffic data exchanged between TMCs and navigation service provider (FCD) can generate post processed traffic data, such as: forecast travel time estimation, forecast level of services, current level of services, current travel time, traffic light forecasts as well as Traffic Management measures to optimize the traffic low network, such as: alternative route guidance, open/close preferred lanes, road speed limits.

- Data elaborated are available for mobility service provision to travelers. The same data that could be available through VMS of the TMCs are also available for any content and service provider in the infomobility industry.

- The end user gets homogenized information from all possible service channels, for example, VMS, PNDs and mobile applications on nomad devices.

Envisaged future scenarios for DATEXII in Greece
Data exchange between TMCs and C-ITS services

- The scenario is similar to the one described in the previous slide but slightly enhanced to incorporate C-ITS use cases; there is the involvement of TMCs and actors who are responsible for supplying C-ITS services to the drivers and VRUs.

- The TMCs can provide a series of traffic data including many that are relevant to V2X use cases, for example GLOSA based on traffic light forecast data.

- Data elaborated are available for mobility service provision to travelers through V2X channels, for example through Automotive OEM backend or 3rd party C-ITS service providers.

- Again the end user gets homogenized information from all possible service channels, including in vehicle and nomad devices.

Envisaged future scenarios for DATEXII in Greece
Holistic & multi modal transport management

- The TMCs could indicate a capacity drop within their network (for example because of an accident) which they cannot solve with only Traffic Management measures.

- One possibility is to aim to switch travel demand onto a different travel mode or modes provided by various mobility service providers (for example parking, public transport and car sharing operators), in order to avoid the capacity drop. The switch can be achieved through information push, and/or incentives (eg discounts) in combination. One example is park and ride information and discount offer.

- The holistic approach requires traffic data exchange with the mobility service providers included in this scheme

- In this way, TMCs can become parts of Mobility as a Service (MaaS) eco-systems

Thank you for your attention!

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