DATEX II supporting the extended ITS Services domain
from CCAM ITS Value Chain to logistic, inter-modality, urban, interurban support!

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Autostrade per l’Italia
ITS standards and regulation

DATEX PSA organisation
Overview

- **autostrade // per l’Italia** in Data Exchange & DATEX
- **DATEX** Project Organisation
- **DATEX II characteristics and evolutions:**
  - Support to **Road Network Management**
    - Ongoing **Standardisation**
  - Support to **ITS Services** implementations:
    - **ITS Value chain:** the **evolving role** of Road Operators
    - **Extending domains:**
      - DATEX II in Urban ITS, Traffic Regulations, CCAM, ADAS
Autostrade // per l’Italia @ DATEX II

Autostrade group
- 2,964 km
- 13 TCCs
- 1 TIC
- 2.9 million vehicle per day

Italy Concessions
- 6000 km
- + 17 Concessions operating TCC
- 1 National TIC CCISS

Distributed Road Network Management

DATA EXCHANGE

DATEX II

seamless ITS Services pan-european

- motorways network
- State road
- Regional Roads
- Municipalities
Some activities of the DATEX II organization are funded through EU CEF Programme Support Action (PSA) Agreement MOVE/C3/SUB/2015_547/CEF/PSA/SI2.733309 RWS

End of 2020 this program ends
New governance model is required respecting the interests from operators and road authorities
What is DATEX?

**DATEX II**

- Standardised e-language for road traffic and travel data exchange between:
  - traffic control centres,
  - traffic information centres,
  - service providers.

Field of Application / ITS Services:
- Traffic Information
- Traffic Management
- Freight & Logistics

Upcoming ITS Services:
- Urban ITS
- Traffic Regulations
- ADAS Support (C ITS, CCAM)
DATEX II characteristics

• DATEX II is an extensive information model for traffic and travel information, which separates the content and the exchange of information.
  – makes use of mainstream IT technologies, e.g. XML, webservices.
  – can be customized with profiles and extensions and adapted to your own needs.

• language independent and can therefore be used by all road operators in Europe.
• mainly a method and therefore sustainable in time and an organization, which safeguards the standardization work.
• covers the entire information chain.
DATA Exchange in a Road Operator Vision

Goal: Information Delivery and Traffic Management

Centre to Centre Communication by DATEX

Monitoring
Decision
Operation

Monitoring
Decision
Operation

TCC 1 System

TCC 2 System
Road Operator Activities enabled by DATEX

Traffic Information & Traffic Management Operations

• Managing Road Network
• in Collaborative way
  – Traffic Management Plans
  – Alternative Paths
  – VMS Setting
  – Lane Control Systems
NEW* VMS activation demonstrator

**VMS Activation**
1. → VMS Message proposal
2. ← Agreement on proposal
3. ← VMS Message activation
4. ← → VMS Status ongoing Check
5. → VMS Message end
6. ← Feedback End of Message

**Collaborative ITS Services**
C ITS / CCAM ➔ ITS Value Chain

www.youtube.com/watch?v=wC9gqXGmZE8
ITS Overall Architectures and Communications

Roadside to Vehicle Communication by C ITS / DSRC

Centre to Roadside Communication by:
- Legacy / Standardised
- Centre to Centre Communication by DATEX II

Road Operator
- TLC Infrastructure

Authorities
- Rescue Services

Road Operators
- Traffic Inf. Center
- Tr.Inf / Tr.Mngmnt

Service Providers
- Freight & Logistics
- MaaS Providers

Road Users
- Customers

Centre to Road Users Communication by:
- TPEG, RDS-TMC, mobile C ITS

Standards Harmonisation & Interoperability issues

Service Providers
- Freight & Logistics
- MaaS Providers

Customers
- Road Users

Rescue Services
- Authorities

Traffic Inf. Center
- Road Operators

TLC Infrastructure
- Road Operator

Infrastructure Management
- Infrastructure Management

Tr.Inf / Tr.Mngmnt
- Road Operators

DATEX II
- Centre to Centre Communication by

Harmonisation & Interoperability issues
0. Original interface
1. DATEX XML full model
2. DATEX Light
3. Message protocol
4. Message protocol
5. DATEX Light
Road Operator Oriented ITS Services

TM1.0 vision

Road Operators

ITS Services

Traffic Information

Traffic Management

Freight & Logistics

ITS Actors

Logistics Operators

Port / Interport Operators

Public Transport Operators

Traffic Information Providers

Service Providers

Traffic Management Service Providers

MaaS Providers
Collaborative ITS Services Distributed Vision

Traffic Management SP
Road Operators
Logistics Operators
Port / Interport Operators
Traffic Information SP
Service Providers
Public Transport Operators
MaaS Providers

ITS Services
Customer

TM2.0 vision

www.tm20.org
Individual vs Global goals
Sustainability & Performance

LOGISTIC Chain project AEOLIX
- Complex Business case Systems
- Potential Synergy among
  - Authorities / Road Operators
  - Port Authorities / Operators
  - Service Providers
  - Freight & Logistics
- Challenge to achieve Improvement in all Business
  - MANY COMMON GOALS
  - GLOBAL vs INDIVIDUAL KPI optimisation

http://aeolix.eu/  www.tm20.org
New task METR: Restrictions & Signs

Management of Electronic Traffic Regulations

- **Goals**
  - encode traffic regulations electronically to be machine read, processed and correctly interpreted
  - Centralised National Databases
  - Information to service providers for In Vehicle Guidance
  - securely exchanged data in a traceable manner

- **e.g.**
  - Restrictions
  - Speed Limits
  - Lane Usage

- **Common Modeling activities**
  - Location Referencing information improvement
    - Urban Traffic
    - Lanes description / management
DATEX II Components

ITS directive 2010/40 and delegated Acts / DG MOVE driven
Conclusions

- **DATEX II** is a powerful tool to enable ITS Services provision
  - Stable, Extensible, Flexible, Technology ready, Reliable
- **Evolving ITS market and technologies** lead to perspective changes
  - Manage Risk from challenges to opportunities
    - new business models, TM2.0 leading
- **Requirements ITS directive EU 2010/40**
  - Seamless Interoperable ITS Services in EU:
    - Standardisation
    - Harmonisation / Profiling
    - Legal Framework
- **Shared Business goals / Coopetition**
  ➔ Take Advantages ➔ Data Exchange ➔ DATEX II
and there is DATEX

website
www.datex2.eu

Training and docs
https://docs.datex2.eu