DATEX II User Forum
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Cooperative systems: Can DATEX II pave their way?

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- **Definition of cooperative systems**

- **Review of C-ITS applications**

- **Two candidate applications**

- **The main characteristics of DATEX II**

- **Possible improvements**

- **Conclusions**

- **Right title: Cooperative ITS**
- **According to ETSI EN 302 665:**

  "subset of the overall ITS that communicates and shares information between ITS stations to give advice or facilitate actions with the objective improving safety, efficiency and comfort beyond the scope of stand-alone systems"

- **Concept designed in different FP6 R&D projects:**
  - CVIS
  - SAFESPOT
  - COOPERS
- **Ongoing field operational tests (FOT) in different countries: DRIVE C2X and national sites (SCORE@F...)**

Cooperative ITS: What are they?

Targeted scope for DATEX II
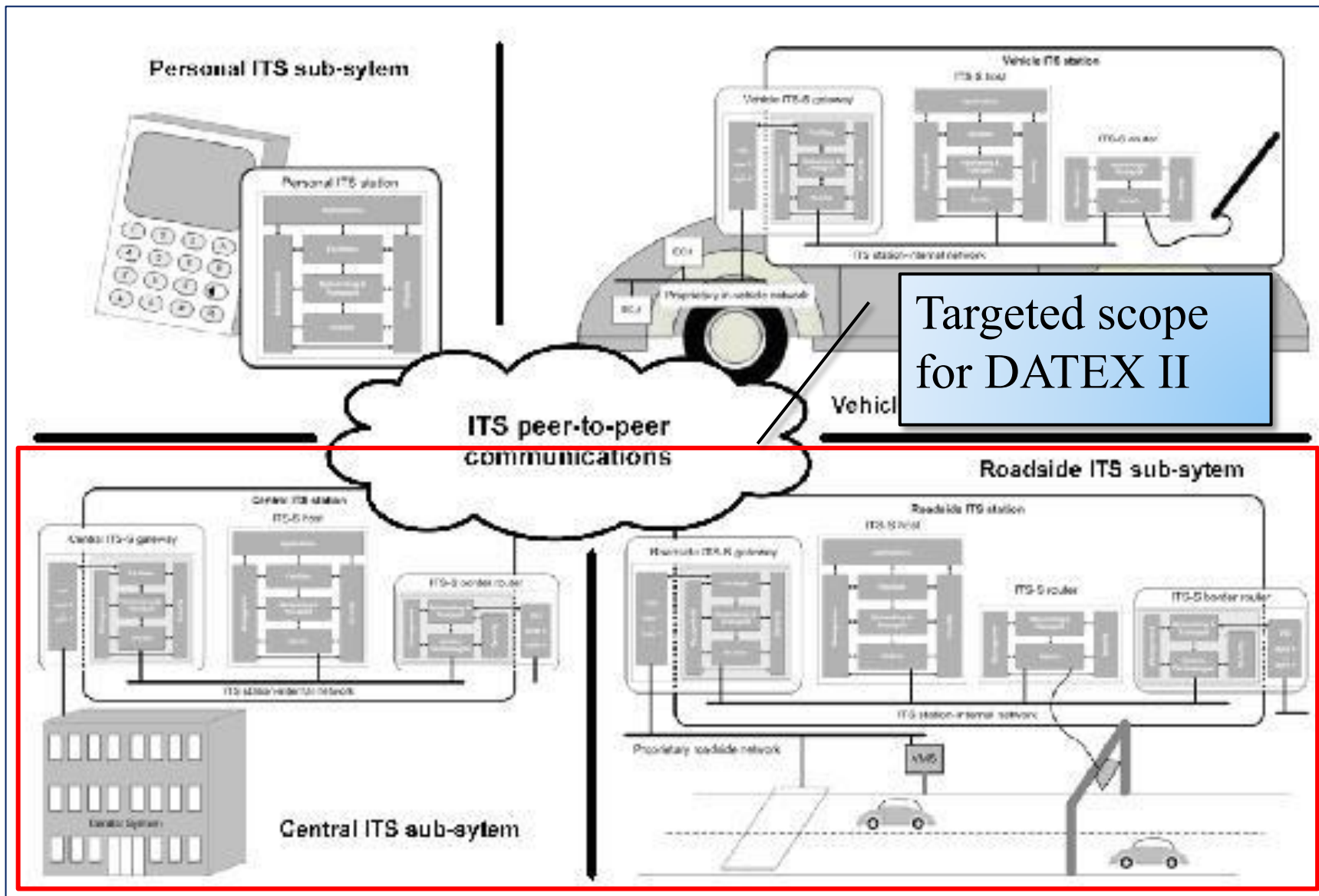
- **Three main categories (for 63 applications identified):**
  - ▪ **Safety-related applications (reduce number & severity of accidents)**
    - – Emergency vehicle warning, intersection collision warning, signal/sign warning, wrong way driving warning, cooperative forward collision warning…
  - ▪ **Traffic efficient applications**
    - – Green light optimal speed advisory, enhanced route, limited access warning, adaptive power train management, cooperative adaptive cruise control, traffic light optimisation…
  - ▪ **Value-added services**
    - – Point of interest notification, electronic toll collect, stolen vehicle alert, fleet management, vehicle relationship management, Insurrance and financial services…

- **Within the work carried out by ESG6**

- **Deliverable: Proposal for first priority EasyWay cooperative services**

- **Set of seven applications**

  - Hazardous location notification

  - Traffic jam ahead warning

  - Road works warning

  - Decentralised floating car data

  - Traffic information and recommended itinerary

  - In-vehicle signage

  - Automatic access control / parking management including ITP

- **Within the framework of mandate M/453 issued by the European Commission on 6th October 2009**

- **CEN TC278 (and ISO TC204) focus on the application layer & common elements**

- **The first work items adopted by CEN:**

  - **NWIxxxxx: Definition and harmonised terminology**

  - **NWIxxxxx: Common data dictionary**

  - **NWI17429: Profiles for processing and transfer of information between ITS stations for applications related to transport infrastructure management, control and guidance**

  - **PNWI17425: Specification for in-vehicle presentation road and traffic related data**

  - **PNWI17426: Contextual speeds**

- **In-vehicle signage:**

  - Consists in providing drivers with information on current road signs

  - Includes speed limits and advice

Source Opel / EW ESG6

- **Centres provision with vehicle-originated information**

  - Consists in providing traffic operators (TCCs or TICS) with data produced by vehicles

- **The other priority applications are also to deal with**

Main characteristics of DATEX II

- ## A modern framework:
  - Separation between content (payload) and exchange mechanism
  - Huge data model currently based on 5 main publications
  - Focused on traffic and travel data

- ## Extensibility:
  - Important feature to allow for specific needs
  - Full compatibility between the basic model (level A) and level B extensions

- ## Exchange layer:
  - Based on widely used Internet standards (XML, http, webservices)
  - Suitable for centre to centre exchanges but need some refinements

- **Origin of information:**
  - road authorities and operators

- **Exchange type:**
  - Case of static/temporary road signs: the transmitted information originates from the vicinity of the sign-posted element
  - Case of dynamic signs (VMS): the information comes from a TCC (directly or indirectly)
  - Two transmission segments: I2V and I2I

- **Managed data:**
  - No model for static signs
  - Models for temporary signs (linked with a an operator action
  - Comprehensive model for VMS (specific publication or included in a operator action)

- **Additional work to carry out:**
  - Very detailed existing model for VMS to be lightened to produce a suitable profile (in-car presentation)
  - Specific issue of textual message translation into foreign languages
  - Need to define the corresponding message structures
    - ☞ question about using XML for the I2I segment

- **Origin of information:**
  - Vehicle (data coming from CAM and DENM messages)

- **Exchange type:**
  - Two subsequent transmission segments: V2I and I2I
    - V2I: elementary data (CAM and DENM) only towards roadside unit (RSU)
    - I2I: elementary data (individual) or aggregated data (processed in RSU)

- **Managed data:**
  - No model for carrying CAMs and DENMs
  - Model for managing data:
    - Measured traffic data (speed, trajectories, …)
    - Traffic element (events like slippery road, weather events, driver-notified events, …)

- **Additional work to carry out:**
  - ▪ Matching data between CAM / DENM content and class / attributes of DATEX II model – Eventually extend it
  - ▪ In case of aggregated data the suitable profile(s) should be defined
  - ▪ In case of individual data the corresponding publications should be defined
  - ▪ Need to specify the corresponding requirements and rules for aggregating data into a roadside unit

- **In work plan 2012 creation of a new work item**

- **Objectives:**

  - To acquire a better knowledge of the domain and more specially of the data exchange needs

  - To define use cases for the priority applications defined by EW

  - To assess the needs of the ongoing CEN work items DATEX II can appropriately answer

  - To assess strengths and weaknesses of the current DATEX II specifications (incl. communications)

  - To define work areas for solving the detected lacks and weaknesses

  - To bring answers to the priority CEN work items for helping editors

The ESG5 initiative (2/2)

- **Approach:**
  - Organise participation of ESG5 members and beyond (incl. ESG6)
  - Collect information and expectations about the current situation (FOTs, mandate M/453, CEN WIs)
  - Identify the exchange situations and the data conveyed DATEX II can support as well as the possible lacks
  - Define the possible solutions (immediate or differed)

- **Timescale:**
  - Stage 1: Inception of the work item and call for participation (03/12)
  - Stage 2: Report on the state-of-the-art and needs (08/12)
  - Stage 3: Definition of a road map for 2013 and EasyWay III (11/12)
  - Stage 4: Contribution to the ongoing priority CEN work items for helping editors (12/12)

- **Need for a close cooperation with ESG6 CoSy TF**

Conclusions

- **DATEX II can contribute to develop and standardise the technical corpus of cooperative ITS:**
  - Well documented and already (partly) standardised data dictionary
- **Need to develop extensions (new publications) and profiles (to optimise exchanges)**
- **Think about alternative exchange specifications fitting the I2I segment better**
- **In ESG5 work plan for 2012 a new work item is proposed to identify and solve the issues raised for using DATEX II with cooperative systems**
  - ☞ **Call for participation in this task to be launched**

Any question?