



OVERVIEW OF C-ROADS / NAPCORE ON STANDARDS

Willi Becker – Sylvain Belloche

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Agenda

- ③ Overview of digital communication and approach
- ③ NAPCORE related standards overview
- ③ C-Roads related standards overview
- ③ Follow-up

Overview of digital communication

- higher latency
- global view

- Low latency
- limited to location of receiver



e.g. DATEX II,
TN-ITS, Transmodel

Standards mentioned
in the ITS Directive DRs
for NAPs



No format prescribed

e.g. DATEX II,
TN-ITS,
Transmodel



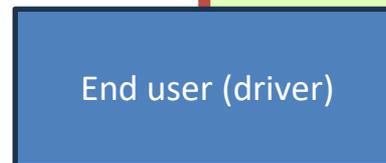
Proprietary
format

Mapping useful

C-ITS messages
e.g. DENM, IVIM



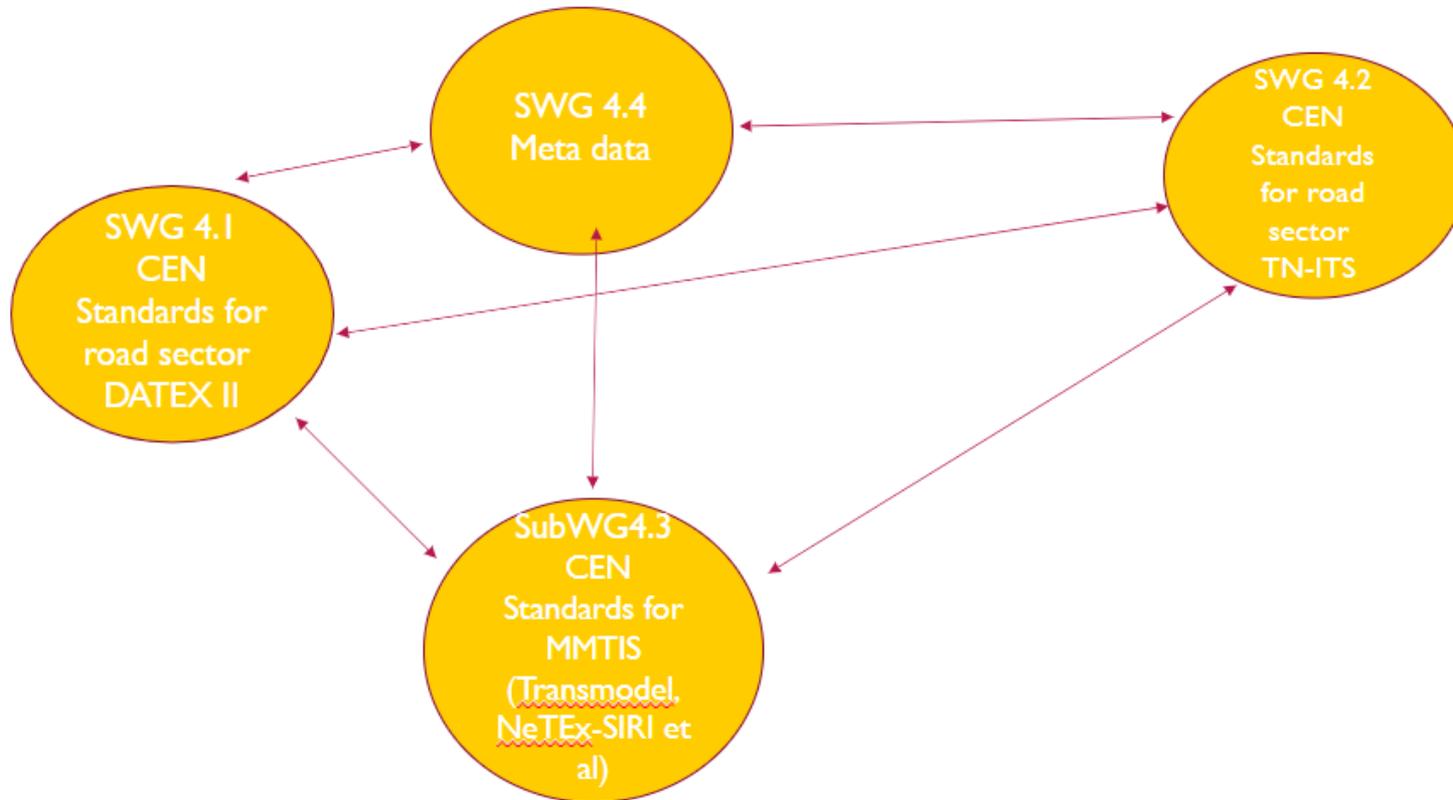
C-ITS Trust Domain &
C-ITS station architecture
(ETSI EN 302 665)



Approach

- Ⓒ Same information source!
- Ⓒ What kind of information shall be conveyed?
 - Ⓒ C-ITS: road related only!
 - Ⓒ ITS: broader scope
- Ⓒ What is the intention?
 - Ⓒ Quickly provide information for a specific location? → C-ITS
 - Ⓒ Giving the global picture? → „classical ITS“
 - Ⓒ Both?
 - make sure that the end user can determine, that he receives the same information via both channels **by providing a mapping**

NAPCORE-related standards



NAPCORE related data exchange standards

- DATEX II: road traffic information, including safety-related one, traffic management / CEN TC278-WG8
- TN-ITS: road data, with the main goal of maintain digital maps / CEN TC278-WG7
- Multimodal standards / CEN TC278-WG3:
 - Transmodel
 - SIRI-Service interface for Real-time Information
 - NeTEx-Network, Timetables and Fare Exchange
- MobilityDCAT-AP: metadata (almost operational)

Merging of DATEX II and TN-ITS in progress

- Ⓒ Mapping of safety related messages DENM, DATEXII, TMC, TPEG2-TEC was conducted by TISA in cooperation with C-Roads (Safety related message sets – Selection of DATEX II Situations, DENM and TPEG2-TEC Causes and TMC Events for EC high level Categories)

- Ⓒ Standards used in C-ITS for messages:
 - Ⓒ IVIM (ISO/TS 19091-2019): traffic signs, topology for road segments, automated vehicle guidance
 - Ⓒ DENM (ETSI TS 103 831 V2.1.1): warning messages
 - Ⓒ CAM (ETSI EN 302 637-2 V1.4.1): announcement of position, velocity, direction, ...
 - Ⓒ SPATEM (ISO/TS 19091-2019): signal phase and timing information
 - Ⓒ MAPEM (ISO/TS 19091-2019): topology information
 - Ⓒ SREM (ISO/TS 19091-2019): prioritization requests
 - Ⓒ SSEM (ISO/TS 19091-2019): prioritization status
 - Ⓒ CPM (ETSI TS 103 324 V2.1.1): collective perception of objects

- Ⓒ Other standards are used by aforementioned standards (e.g. Common data dictionary, graphic data dictionary, ...)

- Ⓒ Identify, which standards are useful for which application/purpose
- Ⓒ If ITS and C-ITS standards are useful, create a mapping
 - Ⓒ Mapping for other messages than warnings
 - Ⓒ Signage
 - Ⓒ Topology information
 - Ⓒ Traffic signals
 - Ⓒ ...



THANK YOU!

