

Belgium-UNECE Workshop on Intelligent Transport Systems

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- **Standardisation status**
- Key C2C activities
- Spectrum challenges
- Challenges to security concept
- What next

ETSI TC ITS ongoing/completed standards for C-ITS

- Minimum set of standards for interoperability M/453
- Release 1 – TR 101 067 with around 60 standards
- Test and validation of standards
- 3 major interoperability tests (ETSI CTI) with 18 global suppliers
- Coordination and international harmonization of standards with IEEE 802.11 and IEEE 1609 as well as SAE
- Liaison with CEN TC278 / ISO TC204 as a follow-on of M/453 under the harmonization guidelines discussed by ESO ITSCG
- Supporting coexistence analysis between ITS system and other relevant systems performed by CEPT and developing mitigation techniques in support of such coexistence.

ETSI TC ITS upcoming activity

- Maintenance of Release 1
 - Identification of mechanisms and commitment for Rel.1 standard maintenance
 - Investigation of possible roadmaps for harmonization/ integration with CEN TC 278 Release 1

Principles for Maintenance

- Only essential corrections - No addition of new functionality
 - Change Control Regime to be deployed
- Release 2 development
 - Support of additional ITS Use Cases, such as Vulnerable Road Users, Cooperative-ACC and Platooning
 - Draft Mandate on Urban ITS
 - Direct involvement of additional stakeholders in the process
 - Identification of functionalities/features to be supported
 - Definition of the timeframe and workplan

CEN activities on infrastructure services

Message standards

- Spat, MAP, SRM and SSM
- Probe vehicle data PVD and PDM
- In vehicle information IVI

Other standards

- Application requirements
- Classification and management of ITS applications
- Local Dynamic Maps
- Roles and responsibilities

Roadmap for deployment

- C2C and Road Authorities/operators
- Roadmap for 4 major applications
- White papers and functional requirements developed

CEN standardisation

- Strong support to standardisation activities from Road Authorities and Road operators
- Participation from infrastructure and infrastructure suppliers

Release 1 Standardisation

- February joint press release from ETSI, CEN and EU that the first release of C-ITS standards had been completed. But the released work is only a baseline
 - ETSI standards completed, but need error correction etc.
 - CEN standards far from complete and in some cases appear not to be aligned with the ETSI specifications
- In addition several SDOs (ETSI, CEN/ISO, IEEE, SAE) are developing ITS-related documents
 - Various stakeholders active in each SDO
 - Different timelines, unsynchronized release processes

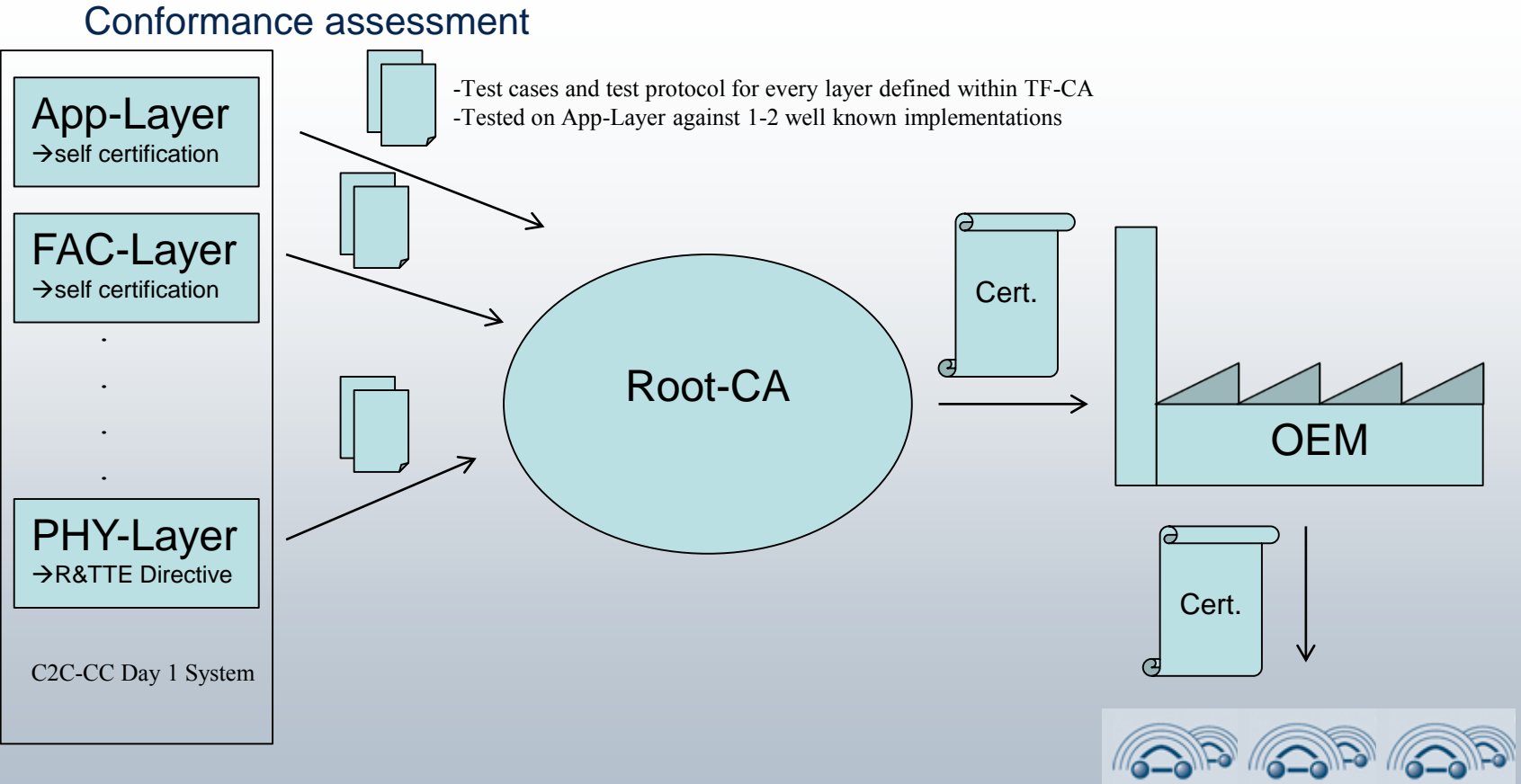
Therefore strong need for coordination between the actors to ensure interoperability

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C2C-CC Activities

- Basic System Profile Document been completed
- Triggering document been completed
- WG Conformance Assessment have had significant progress
- Progress on preparation of deployment of PKI and Root CA
- Dialogue with BSI (Germany) on security concept
- Simulations for algorithm optimisation and parameterisation of DCC completed
- Several White Papers written together with the Amsterdam Group partners are within different working stages (RWW, IVI, SPAT/MAP)
- Work on Roadmaps beyond day 1 has started

Working assumption for Certification Process



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Spectrum Challenges

- Spectrum has been one of the key work areas for C2C-CC in 2014 and will continue to be in the upcoming year the work can be split in
 - Sharing
 - WiFi and LTE in Unlicensed Spectrum (License Exempt)
 - Co-Existence
 - Toll Road systems
 - The spectrum mask ensuring protection of tolling systems is currently under revision, to allow a reasonable G5 implementation.
 - WiFi and LTE in Unlicensed Spectrum (License Exempt)

Spectrum Sharing

- Considerations for sharing with WiFi/LTE license Exempt
 - Rearranging spectrum as proposed by some parties in the US is NOT feasible in Europe due to the other spectrum allocations
 - A global harmonised spectrum sharing solution for WiFi/LTE license exempt is required as it is difficult to control movements of equipment across regions
 - ITS G5 is a fast moving radio under the influence of fading and multipath propagation and as such any detection mechanism as part of a mitigation technique needs to be based on same multipath radio propagation conditions as used to evaluate the ITS G5 technology itself.
 - Symmetric uplink down link influence can not be assumed due to the power control functions in ITS G5, that can be used to reduce output power of the ITS G5 device but does not reduce the receiver sensitivity, adjacent channel and blocking characteristics, i.e. a transmitting device can cause interference without being able to receive signals from the interfered device !

Spectrum Co-existence

- Toll road systems
 - Due to the existing investment in tolling infrastructure the need for protection of this equipment is undisputed and needs to be based on the performance of the actual deployed equipment.
 - Several mitigation techniques have been identified and are currently further investigated
 - In addition to the protection of the tolling systems the mitigation techniques also needs to be investigated for potential spoofing of tolling zones (false disabling of V2X communication)
 - Open question is how a potential sharing of the spectrum use for tolling with WiFi/LTE license exempt will impact different types of mitigation techniques between ITS G5 and WiFi/LTE license exempt

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Discussions on Security in Germany

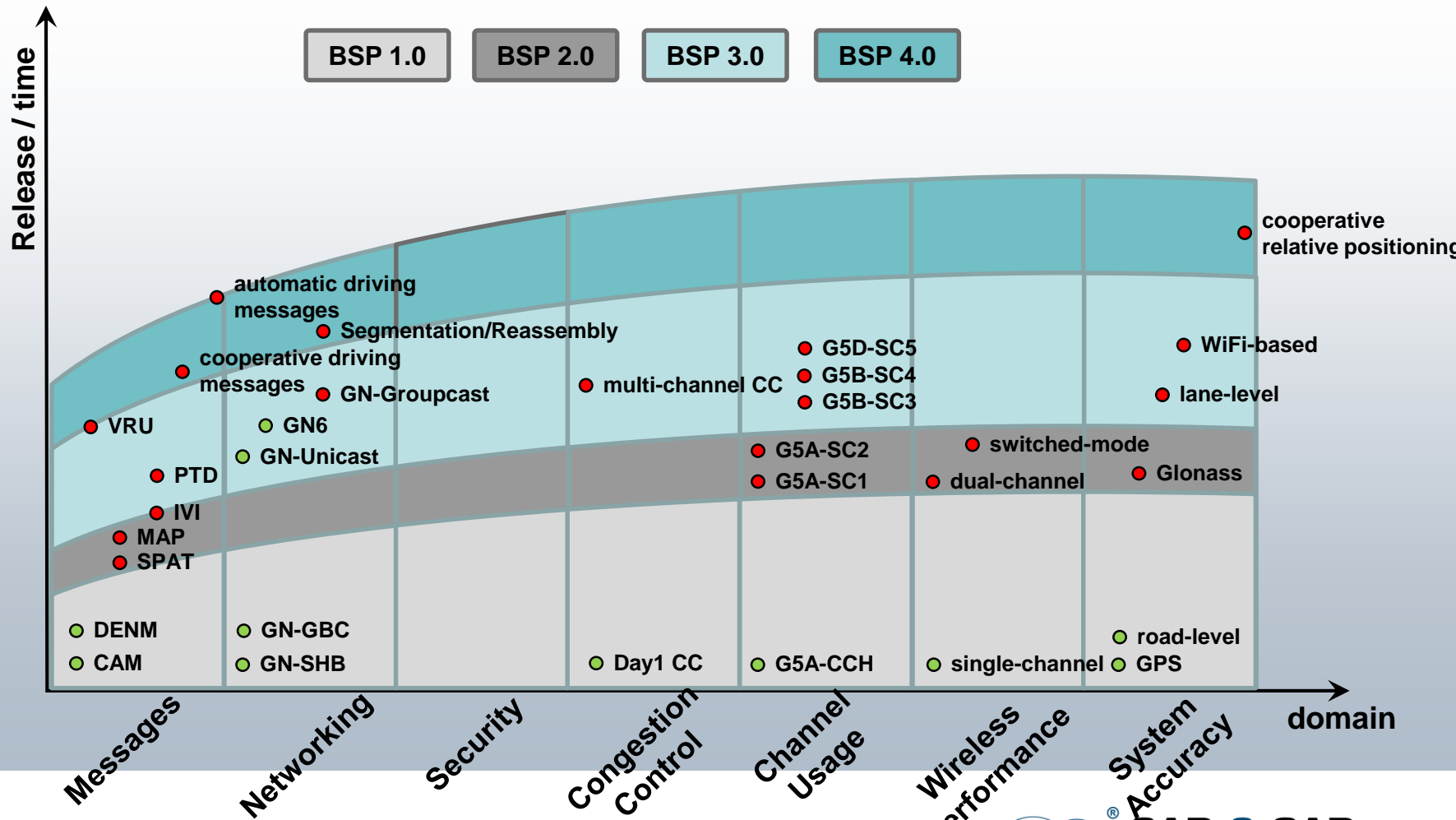
- Context: car2car corridor project
- BASt is responsible for the German infrastructure topics
- BASt is not an expert in security
- BASt asked the BSI for help with the security topics

Discussion Points

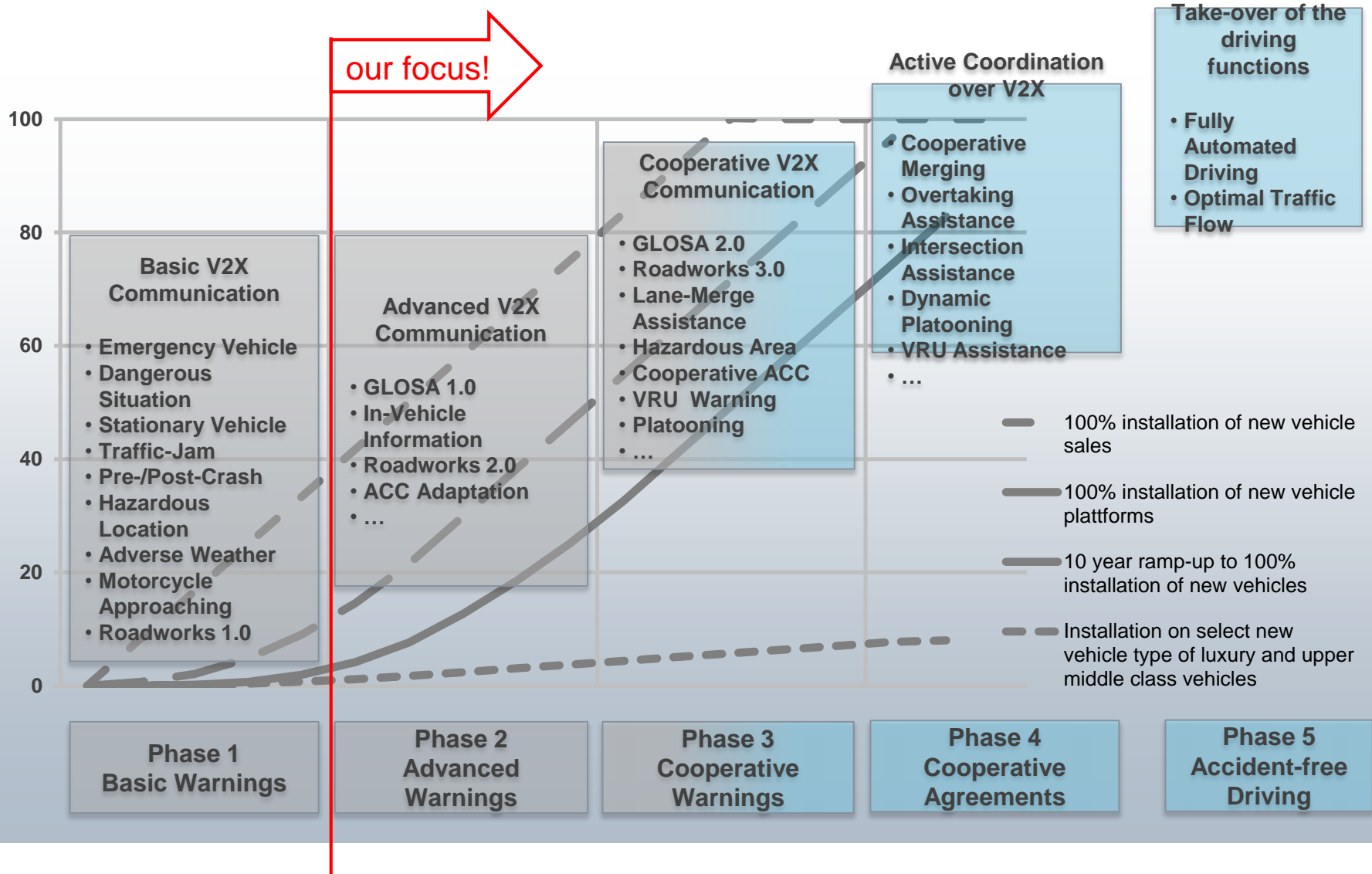
- PKI concept
 - The BSI demands an own Root CA for the infrastructure components in Germany
 - Car2Car CC stays with one common Root CA for vehicles
- Cryptographic curves
 - The BSI wanted brainpool curves (instead of the actual preferred NIST curves) for the certificates for the infrastructure components
- Certificate format
 - BSI has some critics on the certificate format
- “Sustainability”
 - Update concept if a CA is compromised is missing

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V2X Technology Roadmap



V2X Applications Roadmap



Questions ?