How can CCAM use EU CCMS authentication for Over-The-Air updates
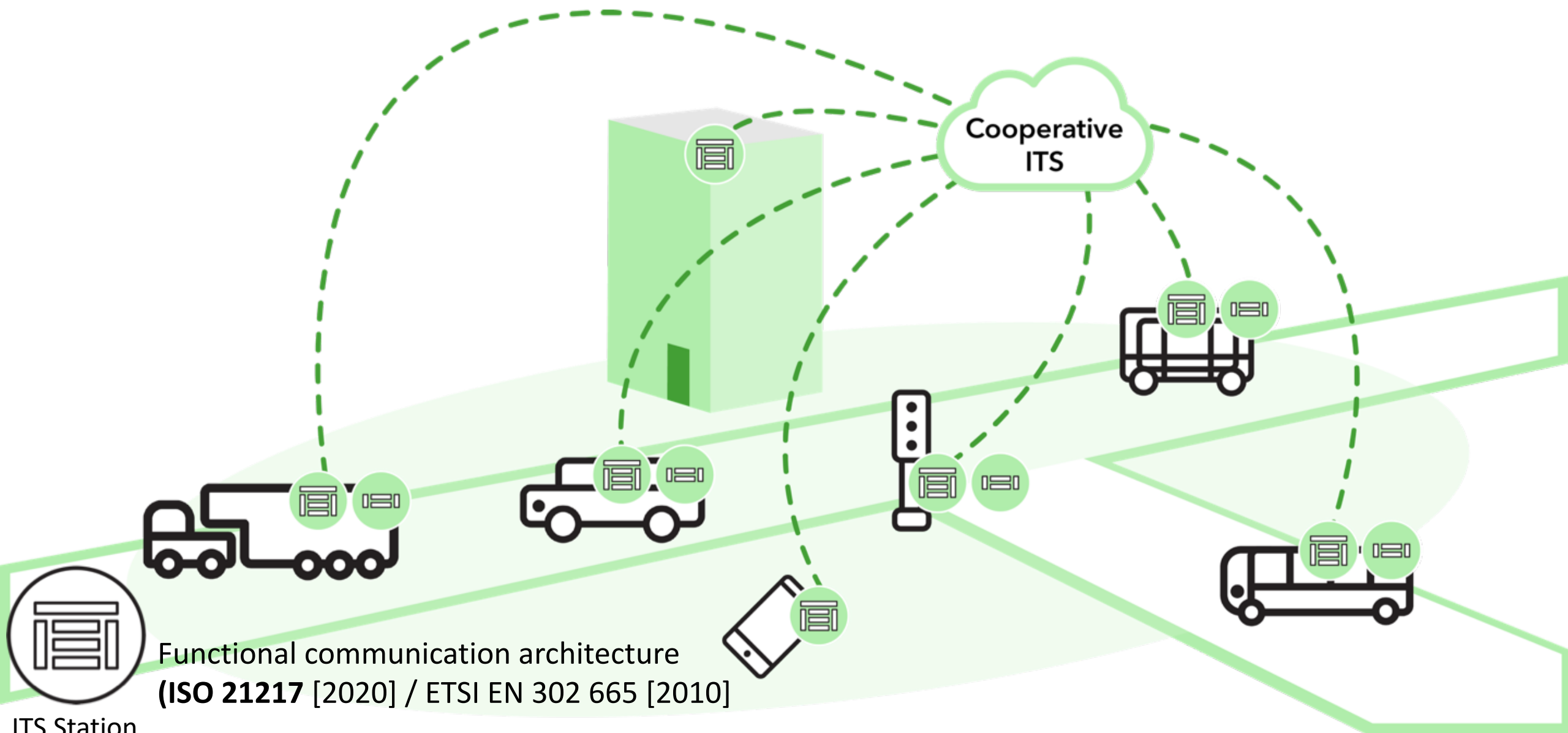
thierry.ernst@yogoko.fr
www.yogoko.com

Thierry Ernst – CEN PT1605 for ITS Norway – April 2021

Functional communication architecture
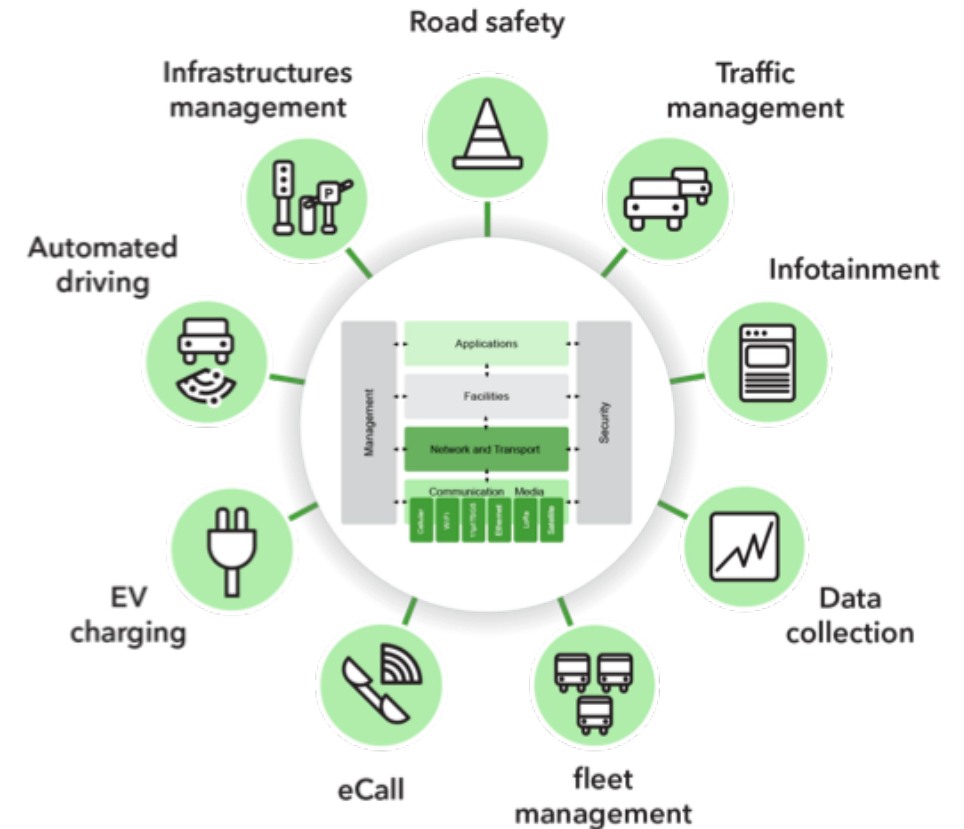**(ISO 21217** [2020] / ETSI EN 302 665 [2010]

ITS Station

ITS Station

Functional communication architecture
(ISO 21217 [2020] / ETSI EN 302 665 [2010]

Initially developed by ISO TC204 WG16
- Since 2002
- Proof of concept by CVIS (2006-2010)

C-ITS standards apply to all situations where harmonized, standardized and secure exchange of data is needed

- From any device (embedded, surrounding, remote)
- For a diversity of use cases (road safety, traffic efficiency, value-added services
- Independently of the underlying access technology
- Interoperable between implementation environment (vehicles, roadside, personal)
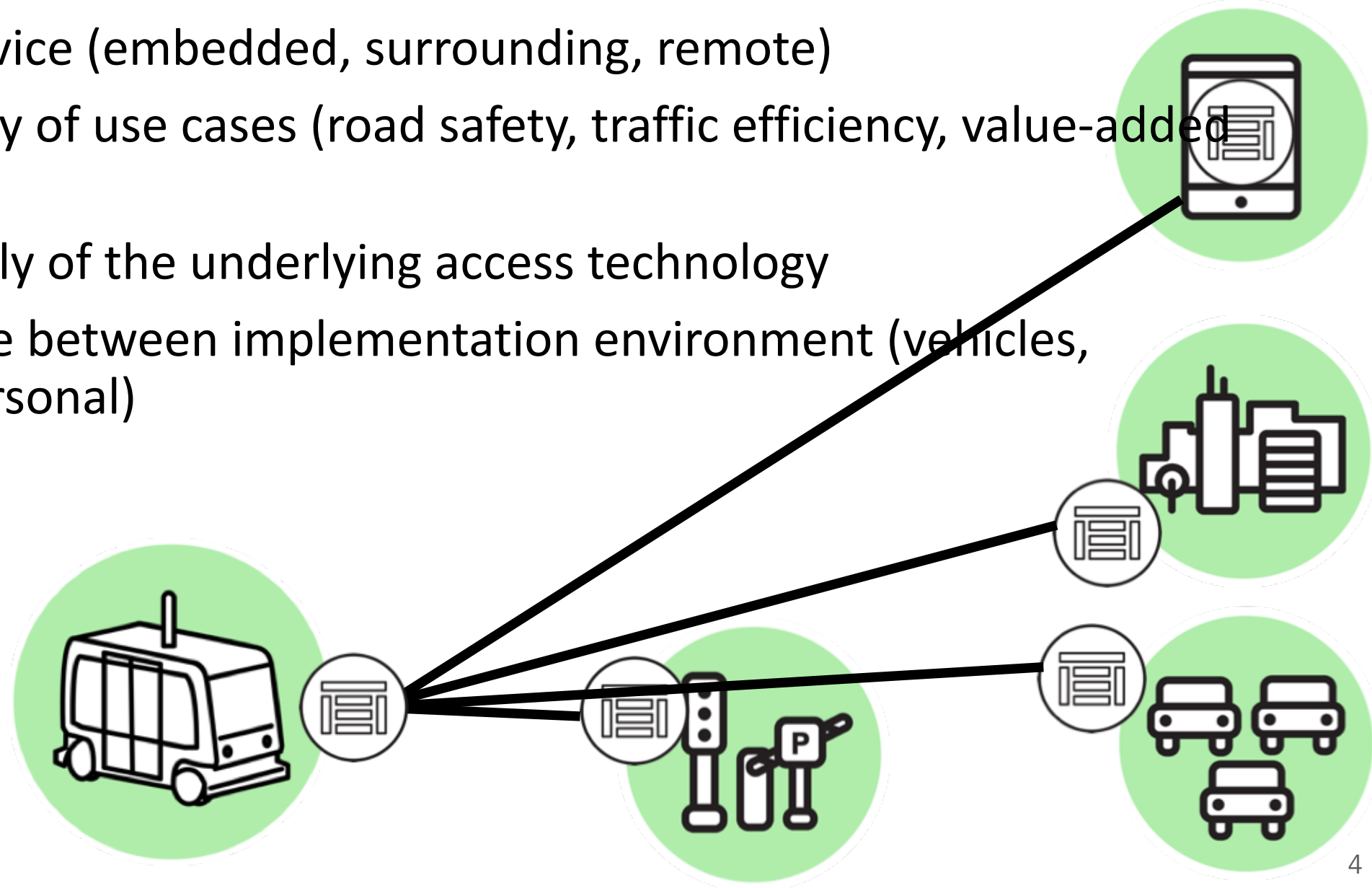
Localized communications
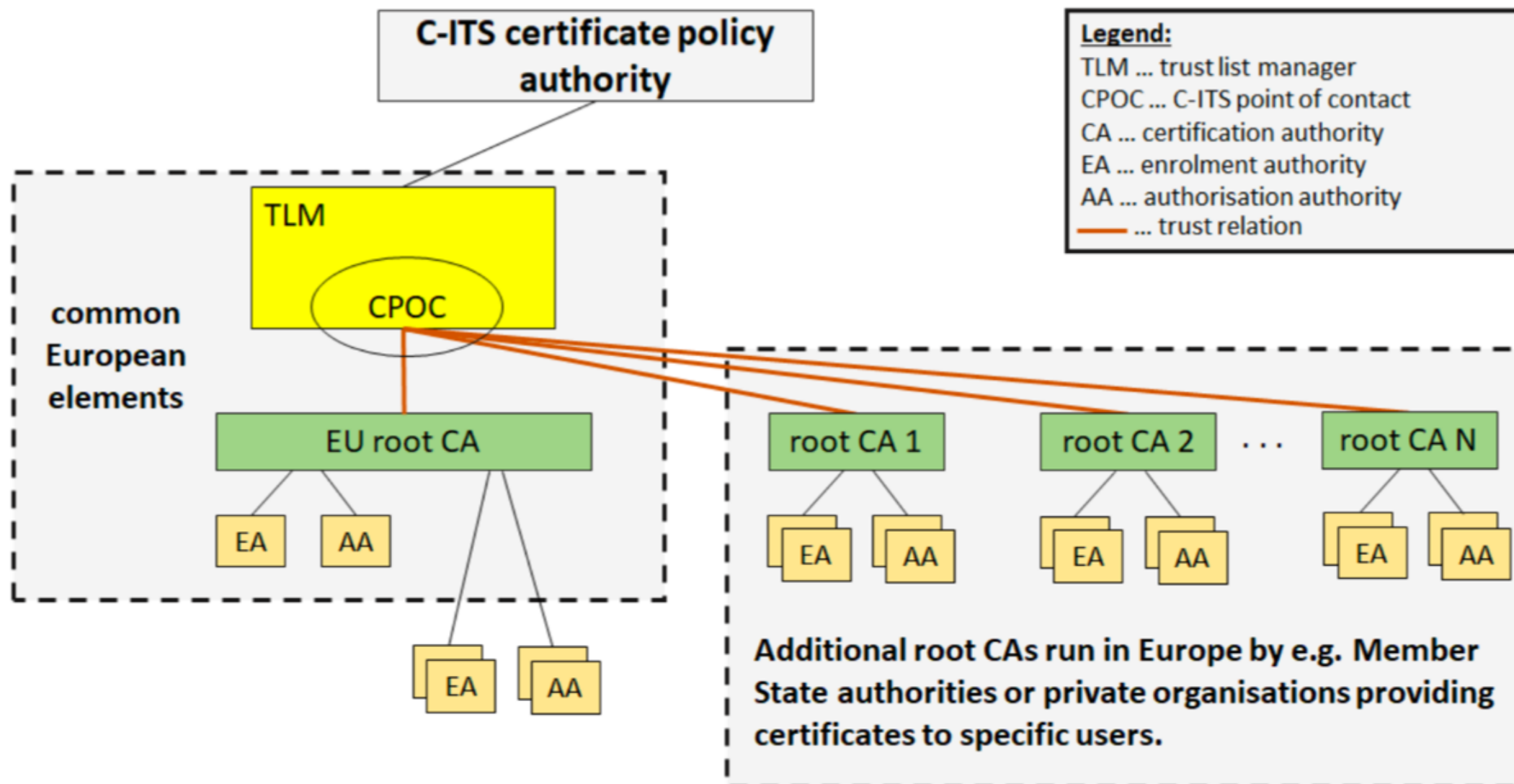= communications without telecom infrastructure

V2X = localized communication
between vehicles and roadside infrastructure

Broadcast communications are secured using P1609.2 certificates (authentication of sender and non-repudiation)

C-ITS certificate policy authority

Legend:
TLM ... trust list manager
CPOC ... C-ITS point of contact
CA ... certification authority
EA ... enrolment authority
AA ... authorisation authority
—— ... trust relation

common European elements

TLM

CPOC

EU root CA

EA   AA

EA   AA

root CA 1

root CA 2 . . . root CA N

EA   AA

EA   AA

EA   AA

Additional root CAs run in Europe by e.g. Member State authorities or private organisations providing certificates to specific users.

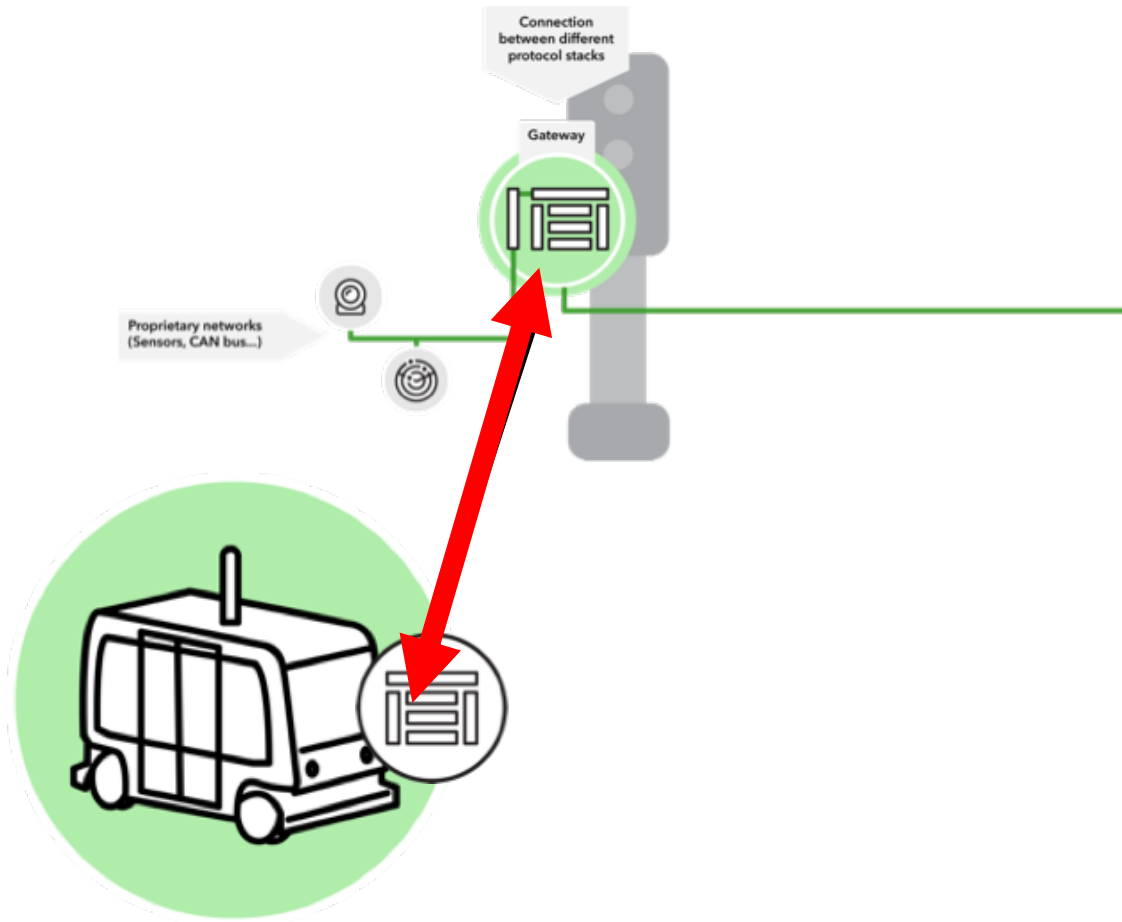https://ec.europa.eu/transport/themes/its/c-its_en

- The security management system is generically applicable
  - Localized communications (broadcast)
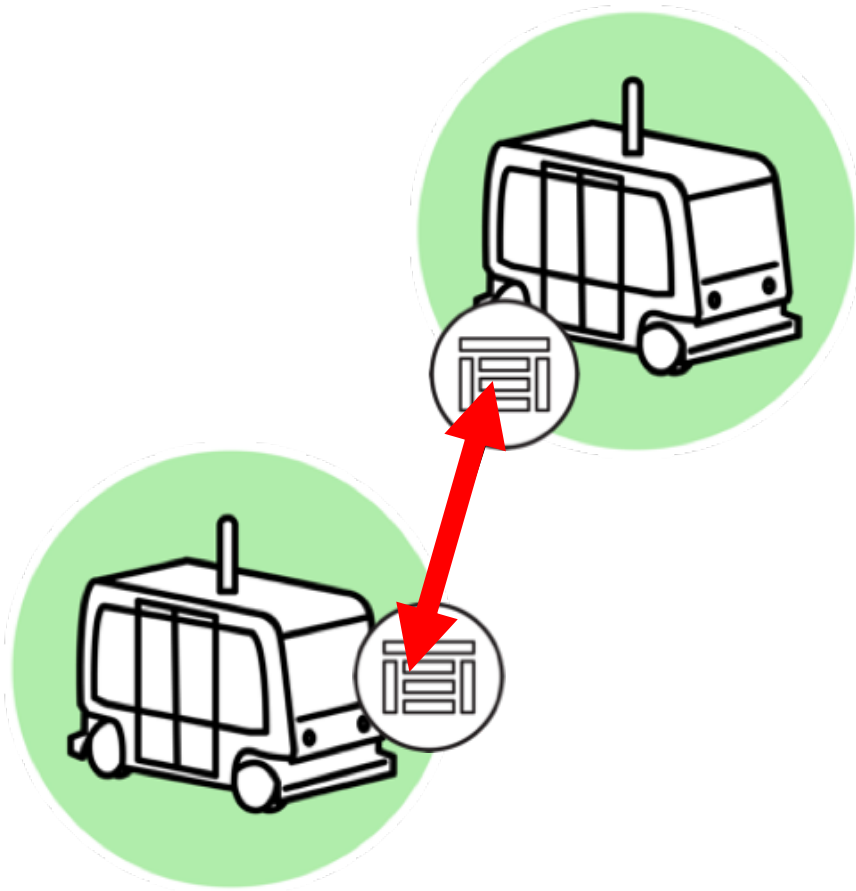
- The security management system is generically applicable
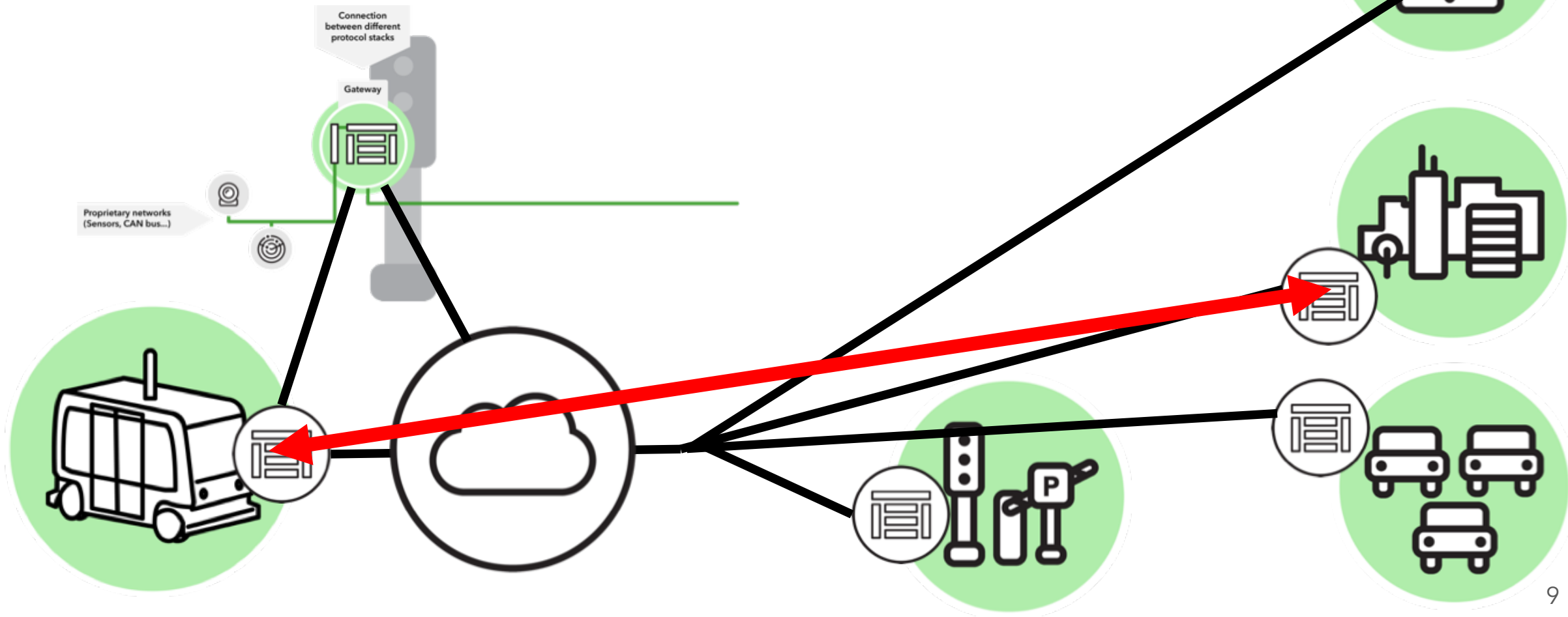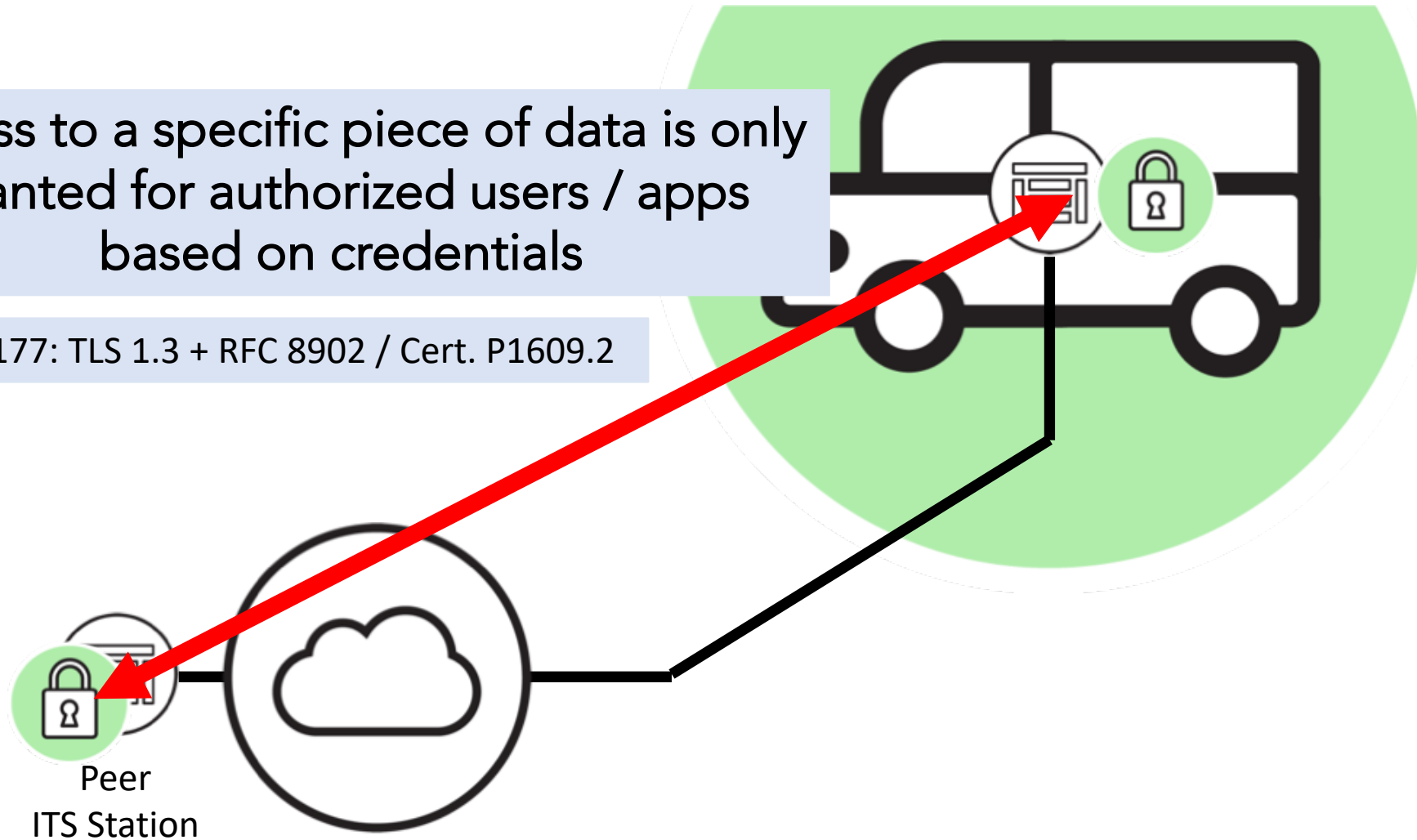   - Localized communications (broadcast)

- The security management system is generically applicable
  - Localized communications (broadcast)
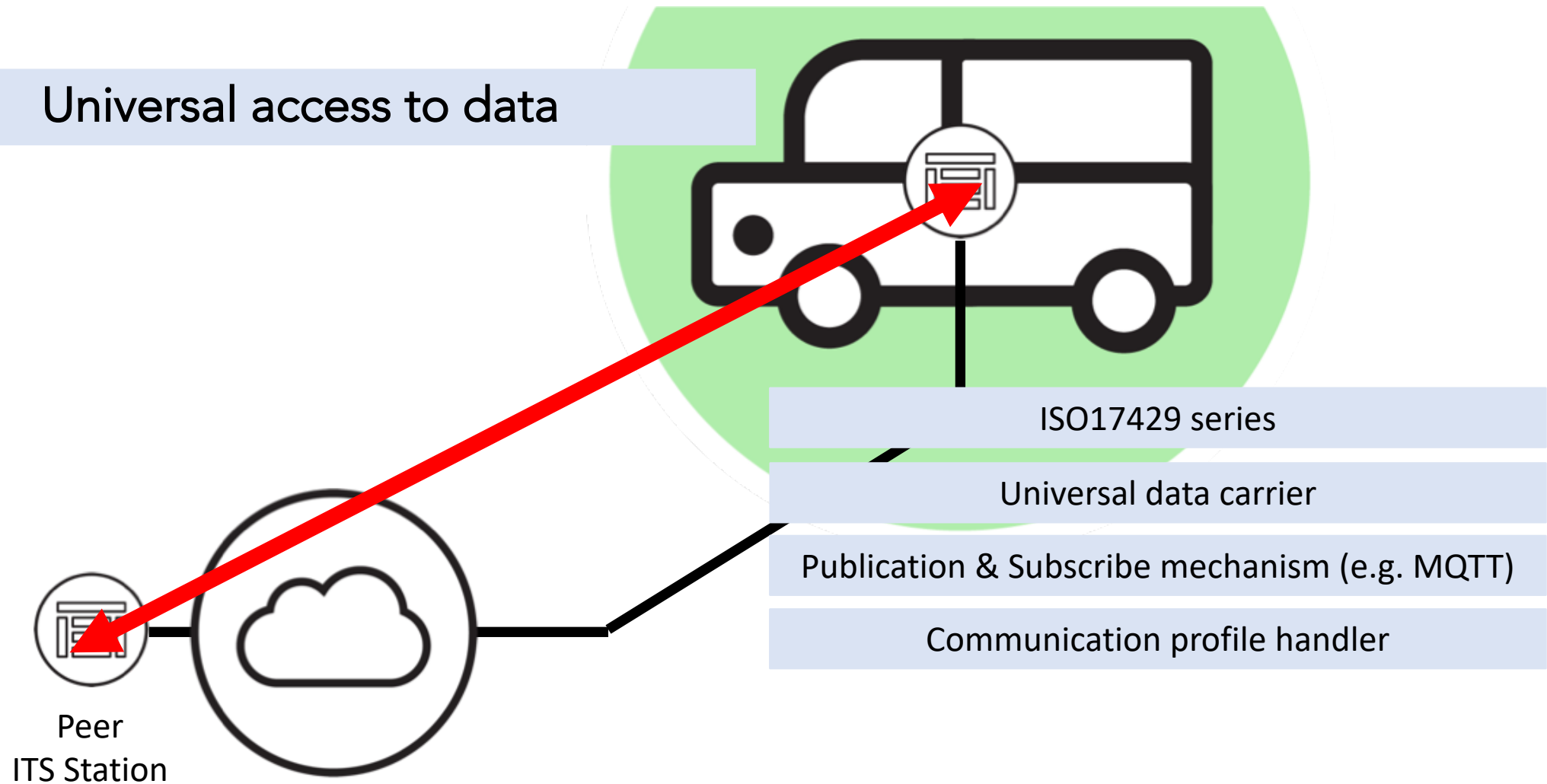 - Point-to-Point communications (sessions)

Access to a specific piece of data is only granted for authorized users / apps based on credentials

ISO 21177: TLS 1.3 + RFC 8902 / Cert. P1609.2

Peer
ITS Station

Universal access to data

ISO17429 series

Universal data carrier

Publication & Subscribe mechanism (e.g. MQTT)

Communication profile handler

Peer
ITS Station

Unified communication architecture

Cooperative ITS standards

- CCMS: https://ec.europa.eu/transport/themes/its/c-its_en
- ISO 21186-x (2020) – Guidelines
- ISO 21217 (2020) – ITS station architecture
- ISO 21177 – Secure sessions between trusted devices
- ISO 17429-x – Protocols for the transfer of data between ITS station

Origins of Cooperative ITS standards

- Proof of concept: European collaborative projects (2006 – 2012): CVIS
- Standardisation mandate M/453 (2006 – 2013) => Cooperative ITS Release 1 (CEN/ISO): http://release1.its-standards.eu
- C-ITS standards in Europe: https://www.itsstandards.eu/highlighted-projects/c-its-secure-communications/
- PT1605: http://its-standards.eu/PTs/PT1605/index.html
- Terminology: Other terms can be found online: https://www.iso.org/obp/ui/#iso:std:iso:21217:ed-2:v1:en
- Freely available guidelines: https://www.itsstandards.eu/app/uploads/sites/14/2020/10/C-ITS-Brochure-2020-FINAL.pdf
- SECREDAS (H2020 ECSEL) https://secredas-project.eu
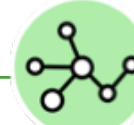
For more information

Y-SMART, A SOFTWARE PLATFORM

For secure data collection & transmission using a combination of access technologies & protocols

OFFERS

Software licenses, Turn-key solutions, Engineering & Support

15 YEARS R&D BACKGROUND

Telecoms, Connectivity, Robotics, Vehicular Communications (V2X), Cooperative ITS

ONE TECHNOLOGY, MULTIPLE USAGES

Road safety, traffic efficiency, fleets management, remote driving, data collection, …

ORIGINS

Founded in 2014 Located in France

DEPLOYMENTS

Cooperative ITS pilots, V2X, Autonomous vehicle programs Smart Infrastructure

Since 2015

Y-SMART for Vehicle Cooperative Services
Y-SMART embedded in 200 road maintenance vehicles to deliver C-ITS road safety services
(hybrid system combining V2X & cloud connectivity)

French pilot deployment of C-ITS services

Since 2019

Y-SMART for Cloud Cooperative Services
Y-SMART integrated in traffic control center to deliver C-ITS road safety services over cellular to vehicles in designated area

Scandinavian pilot deployment of C-ITS services

Since 2015

Y-SMART for Connected & Cooperative Autonomous Vehicle (CCAV)
Y-SMART integrated with autonomous driving technologies to exchange data locally with traffic lights and remotely with remote driving control center
(hybrid system combining V2X & cloud connectivity)

Since 2018   Since 2020

Y-SMART for Autonomous Shuttles
Y-SMART integrated with autonomous driving technologies to exchange data locally with traffic lights and remotely with remote driving control center
(hybrid system combining V2X & cloud connectivity)