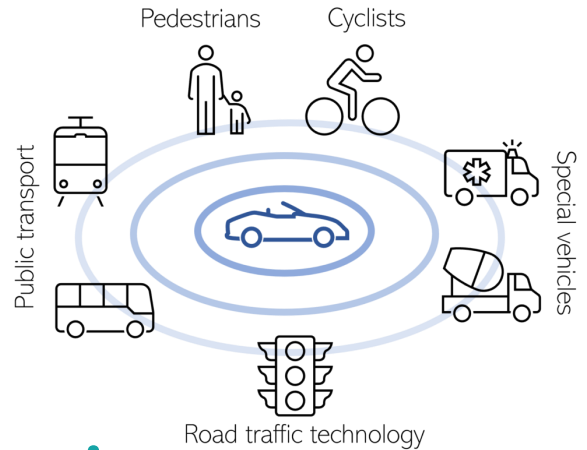# C-ITS systems

Making transport efficient and safe by communication

HERMAN

What are C-ITS systems?

C-ITS means **Cooperative Intelligent transportation systems**. This means systems in transport that cooperate — they share information by communication.

Communication

The typical communication used in C-ITS systems is V2X = Vehicle-to-everything. It is a short-range communication between vehicles and traffic infrastructure. V2X is also known as C2X or Car2X. You might know it as this is the communication technology used in several cars, already present on the roads.

However, C-ITS is more than just V2X — it is way of information exchange for any communication technology. This means that the same message can be sent using V2X as well as using mobile internet connection. In C-ITS, short range communication using V2X can easily be complemented by long-range communication using IP protocols.

The C-ITS communication is standardized Europe-wide. Strong emphasis is put to security of communication — all messages are signed and accompanied by a certificate. Thus, the receiver can be sure that the message comes from a trustworthy source.

C-ITS actors

OBU	RSU	C-ITS BACK OFFICE
OBU (On-board unit) is a C-ITS station placed on a vehicle or other moving object (e-bike etc.)	RSU (Road-side unit) is a fixed device connected to a traffic infrastructure, such as a traffic light controller.	The C-ITS Back office server is responsible for C-ITS message distribution and monitoring of units.
Moving in the field	Installed in the field	Virtual central unit

Use-cases

C-ITS offers a wide range of use-cases. It can be used in cities for making the public transport faster as well as on highways to better inform drivers.

Urban use

PRIORITY OF VEHICLES

Priority at intersections thanks to C-ITS allows dedicated vehicles to travel through the city faster and more efficiently. C-ITS allows emergency vehicles to reach their destination faster and makes public transport more ecologic and attractive.

TRAFFIC LIGHTS STATUS

RSU broadcasts a signal plan of a traffic light controller to all vehicles around. The drivers can then adapt their speed to save fuel and emissions. In addition, the same RSU can provide vehicle priority and also send warnings to the driver.

Highway use

DRIVER WARNING

Using C-ITS, the driver can be warned about a moving grass mower, stationary warning trailer when lane is closed or about a car accident behind a turn.

ELECTRONIC TRAFFIC SIGN

For a variable speed limit control or other dynamically-created events, C-ITS allows a unified way how get this information to the driver.

C-ITS in a city

In a city, there are typically RSUs at intersections and OBUs on public transport, emergency and roadwork vehicles. All units can be connected to a C-ITS Back office server.
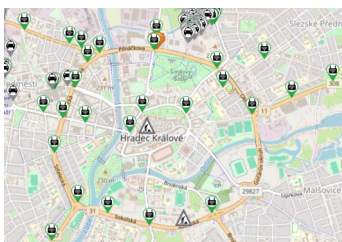
C-ITS Back office server

Monitors and configures all units and creates warnings for drivers. The warnings are then distributed by the RSUs and OBUs to vehicles. C-ITS Back office is a central server system.
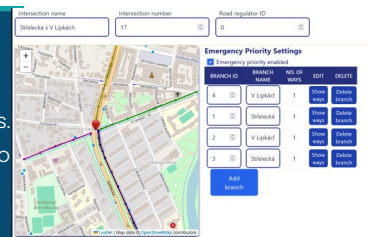
RSU at traffic lights

Used for priority of vehicles, sending of signal plan and information for drivers

OBU for public transport

Used for requesting priority at intersections and information for the driver .

OBU for emergency vehicles

Used for requesting priority at intersections and warning of other drivers.

OBU in a vehicle

Warns and Informs the driver.

C-ITS on a highway

Highway can be equipped by RSU units along the road. OBUs can be installed on various types of the road operator vehicles. The centrally triggered warning messages are generated by the C-ITS Back Office and distributed via RSUs and OBUs on the operator vehicles or trailers.

C-ITS Back office server

Monitors and configures all units and creates warnings for drivers. The warnings are then distributed by the RSUs and OBUs to vehicles.

OBU on warning trailers

Used to automatically warn about road work and for sending of messages from C-ITS Back office

RSUs along the highway

Used for sending of information for drivers and monitoring traffic

OBU on road operator vehicles

Used to automatically warn about road work and for sending of messages from C-ITS Back office

Our portfolio

Herman offers all parts of the C-ITS system:

- OBUs for any vehicle type,
- RSU for traffic controller and highway,
- C-ITS back office server Anbos,
- Displays for drivers.

Everything is tightly integrated and interconnected.

OBU

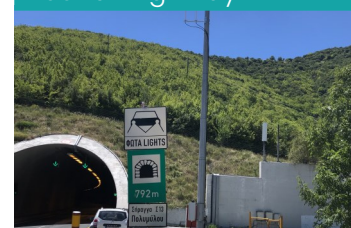Public transport OBU

Road operator OBU

Emergency vehicle OBU

RSU

RSU for intersection

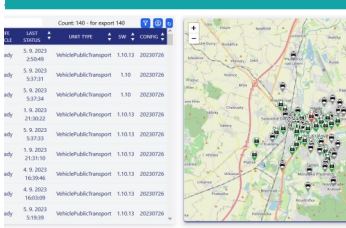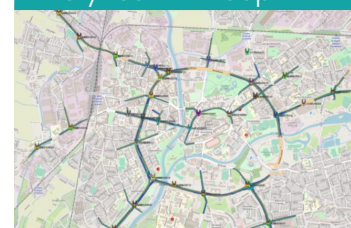RSU for highway

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SW

Driver information

Anbos – C-ITS BO

Analytics –V2Deep

Experience and professionality

Thousands of units installed

Expertise in vehicle prioritization

Tens of C-ITS projects

Tight integration to other systems

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