

C-ITS for Vulnerable Road User (CITRUS)

The goal of the CITRUS project is to develop a system for cities that detects people at intersections and warns them of dangers on their way across the intersection in real time. The implementation is based on a system that can be integrated into the existing infrastructure at intersections and includes C-ITS functionality. A reference architecture consisting of road sensors and C-ITS road-side units will be designed.

According to the European Road Safety Observatory, VRUs (Vulnerable Road Users) accounted for 47% of all road fatalities in 2022, with collisions with motorised private transport posing a particularly high risk. Preventing these collisions and the associated road deaths is the motivation behind the CITRUS project. The aim of the CITRUS project is to develop a system for cities that detects people at intersections and warns them of dangers on their way across the intersection in real time. The implementation is based on a system that can be integrated into the existing infrastructure at intersections and includes C-ITS functionality. A reference architecture consisting of road sensors and C-ITS road-side units will be designed and implemented in order to detect connected and non-connected road users. A hybrid real-time capable 'cloud-edge' solution serves as the processing logic, which communicates with the existing infrastructure via open interfaces and generates warning messages. The warnings are sent to the VRU via apps (e.g. AnachB,) and to the vehicles via on-board units. The innovation lies in the integration of the CITRUS solution with the legacy infrastructure, the assessment and prediction of collision probabilities from different data sources in real time and the warning of VRUs and vehicles via a real-time capable 'cloud-edge' solution. The result is a reference architecture that will be evaluated from a technical, organisational and economic perspective in a trial operation lasting several months and will form the basis for Europe-wide harmonisation (e.g. C-Roads) and a future roll-out of CITRUS. The CITRUS consortium covers a large number of users such as companies from the transport sector, local authorities and associations as well as scientific institutions.

The Logistikum team is responsible for the project management, the interface specification and the evaluation of the project results.

Research programme

Digitale Transformation in der
Mobilität & Rail4Climate

Duration

09/2025 – 02/2028

Total project budget

ca. 1.470.351,-

Project partner

ANDATA

Kuratorium für Verkehrssicherheit (KFV)

Politecnico di Milano

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Verkehrsverbund Ostregion (VOR)

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