



**ENTRUST**



# Entrust and Microsec Accelerate the Autobahn's Secure Smart Highway Project

## Challenge

In order to enhance road safety for drivers, passengers, and maintenance workers, the Autobahn GmbH des Bundes, the German highway operator, is expanding existing projects based on the Cooperative Intelligent Transport Systems (C-ITS).

C-ITS has been available on German highways since April 2021, with the aim of creating a fully digital, connected and automated traffic system. This requires trusted secure interactions between vehicles and the digital road infrastructure.

## Solution

To deliver a fully digital, connected and automated traffic system in which infrastructure is used optimally and securely, the Autobahn GmbH needed to integrate a public key infrastructure (PKI) to enable trusted, secure vehicle to everything (V2X) communications.

## CUSTOMER PROFILE

Since January 1, 2021, the Autobahn GmbH has been responsible for the Autobahnen in Germany.

### Objectives

- Support secure communication enhancements to the first cooperative intelligent transport systems (C-ITS) in Germany
- Implement and offer secure, standardized solution for vehicle-to-everything (V2X) communication
- Secure creation and management of millions of digital certificates and keys

### Technology

- Entrust nShield HSM
- Microsec V2X PKI platform
- Spread across two locations for redundancy
- Professional Services and consultancy from Microsec and Entrust

**MICROSEC**

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**Initially, the service will start on selected motorway corridors. By 2023, it is to be rolled out over the remaining motorway sections throughout Germany. With this first C-ITS application, we are increasing the safety of road users and our construction site personnel. In addition, we are supporting a forward-looking driving style, which makes traffic flow more efficient and at the same time conserves resources.**



Prof. Gerd Riegelhuth, Head of Traffic Management, Operations and Traffic at Autobahn GmbH

**Source:** [Intelligente Mobilität für weniger Verkehrsunfälle](#) | [Aktuelles](#) | [Die Autobahn GmbH des Bundes](#)

Working to develop the German motorways with V2X communication, the Autobahn GmbH contracted the Hungarian Qualified Trust Service Provider, Microsec to provide message security services for the German motorway infrastructure's cooperative intelligent transport system (C-ITS) utilizing Entrust Hardware Security Modules (HSMs).

## Results

Starting in April 2021, the more than 500,000 V2X communication-capable passenger vehicles in Europe have been able to enjoy live and trusted messaging services in Germany. In addition:

- The Autobahn has a planned rollout of 1,500 roadside units with secure C-ITS message certificates from 2023
- It provides certificate authority solutions that would incorporate the necessary new attributes into the digital certificates required for V2X communications

## The Transformation

Only recently has Germany created a central organization - The Autobahn GmbH des Bundes - to maintain and develop the nation's 13,200 km of motorways, called Autobahnen.

With the aim of increasing road safety, decreasing traffic congestion, and preparing the infrastructure for automated management across its roads, the Autobahn GmbH needed to deploy a complex network of interconnected devices to communicate with each other and the cars traveling on them. Initially this will be focused on safety-related information, but can be expanded in the future. Such a complex network creates a wide range of potential attack vectors, so it is critical that these communications be protected, trusted, and managed.

This required a PKI to be embedded permanently into the communication structure. Following a public tender, Microsec was selected to provide the V2X platform.



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Microsec has been a Qualified Trust Service Provider since 2016 and has been using Entrust HSMs since 2006. Microsec has been an Entrust Strategic Alliance Partner for more than five years, working successfully to drive innovation and solve real business challenges for their mutual customers. As a V2X PKI service provider, Microsec already has the necessary background and compliance to ensure large-scale trusted and authentic message broadcasting with a production service.

## Measure of Success

In April 2021 the Autobahn GmbH put Road Works Warning (RWW) – as the first service of C-ITS – into operation, which communicates with C-ITS equipped series vehicles from Volkswagen. Initially, the service will start on selected motorway corridors and then be rolled out over the remaining motorway sections across Germany by 2023.

With approximately 6,000 km of European roads now C-ITS enabled, suitably equipped vehicles, road users, service providers, and road operators are all networked and can now securely exchange anonymized data with one another as the pilot feature. The Autobahn GmbH is the first infrastructure operator to meet EU security requirements for C-ITS and to be in real operational use.

## The Entrust advantage

Entrust nShield HSMs are among the highest-performing, most secure, and easy-to-integrate HSM solutions available, facilitating regulatory compliance and delivering the highest levels of data and application security for enterprise, financial, and government organizations. The purpose-built hardware devices are designed to generate, safeguard, and manage cryptographic keys on behalf of applications. The unique nShield Security World key management architecture enforces important separation of duties with dual controls that segregate security functions from administrative responsibilities.

**Learn more about Entrust nShield solutions at [Entrust.com](https://www.entrust.com).**



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