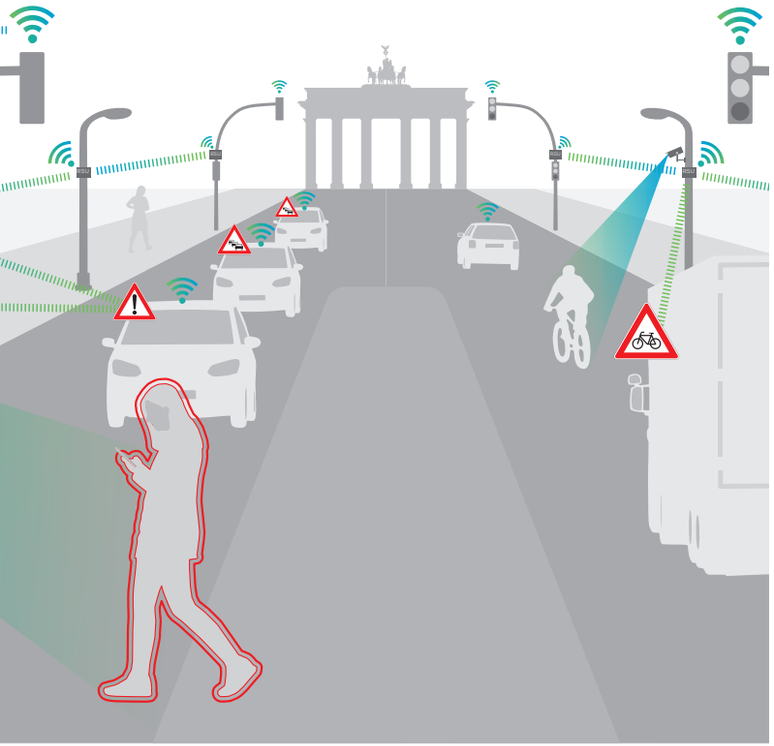

SENSOR TECHNOLOGY

Sensors along the road and on the vehicle are able to record a wide variety of data. The collected information is evaluated and forwarded to corresponding vehicles through roadside units (RSUs), allowing early detection and avoidance of risks by intervention taken by the vehicle.

RSU

Traffic light sensors inform approaching vehicles about the duration of green or red lights. Road condition sensors monitor the surface condition of the road and send such things as black ice warnings. Weather and environmental sensors provide information on weather and pollution. In addition, an intelligent street lighting is being developed which adapts to weather conditions. Furthermore, parking sensors save drivers the long search for a parking space.

CORE PARTNERS

TU Berlin

DAI-Labor TU Berlin

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Daimler Center for Automotive Information Technology Innovations

Lichttechnik

Berlin Partner für Wirtschaft und Technologie

eMO

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ASSOCIATED PARTNERS

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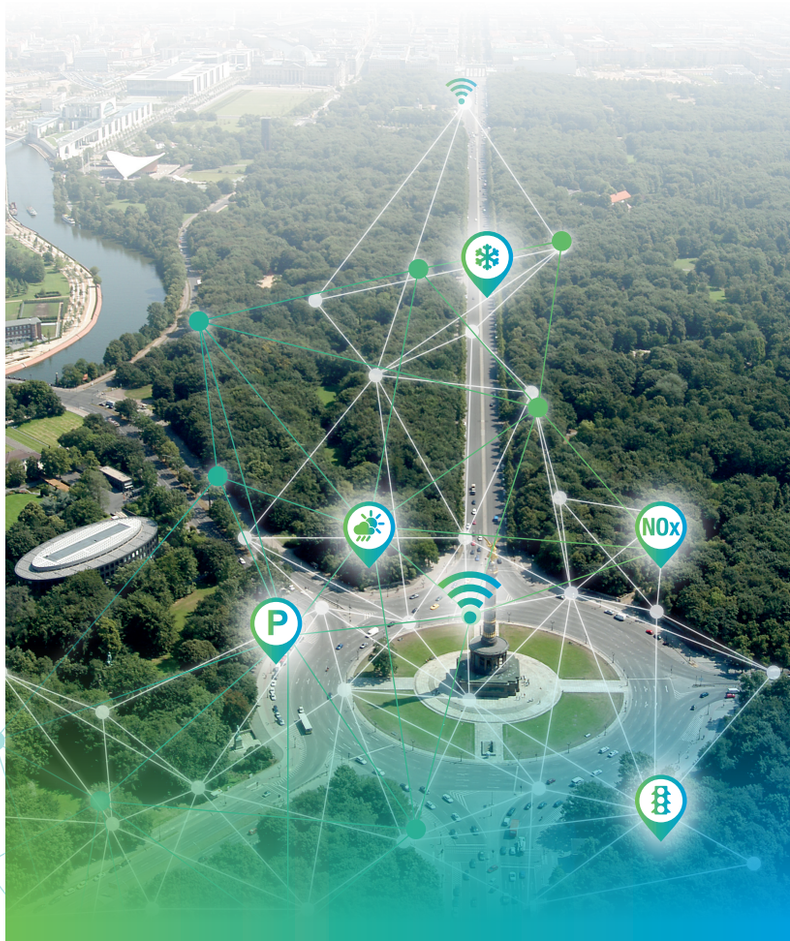
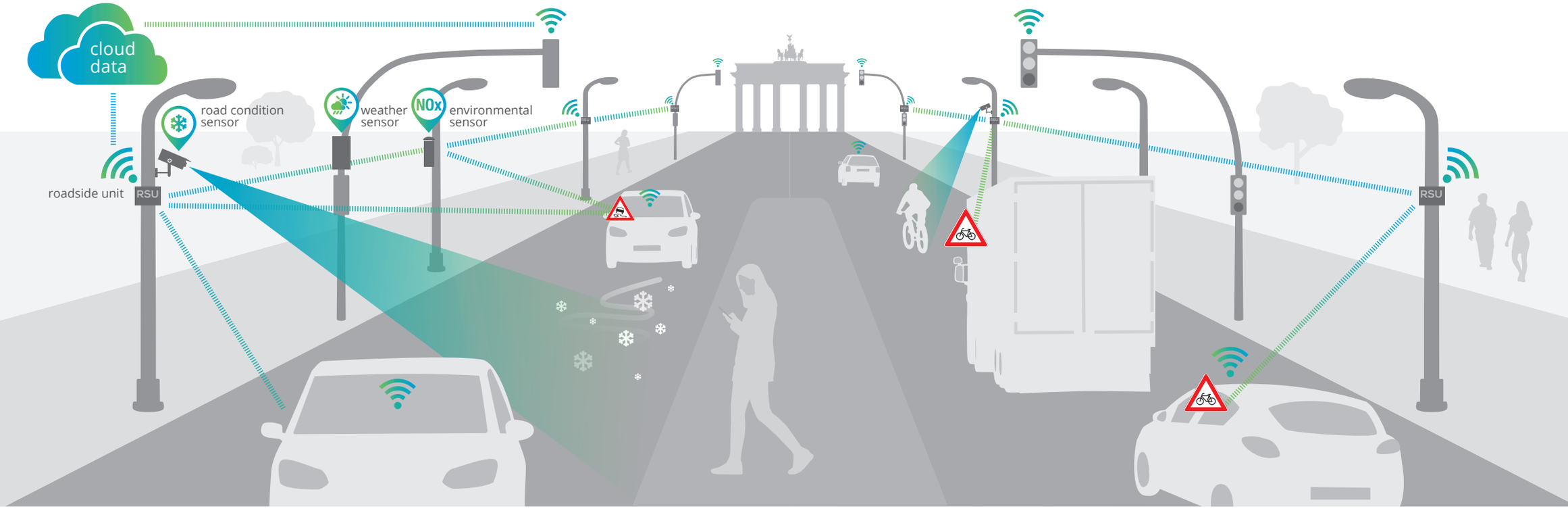
Federal Ministry of Transport and Digital Infrastructure

DIGINETPS

THE DIGITALLY CONNECTED PROTOCOL ROUTE

Urban test field for automated and connected driving in Berlin





DIGINET-PS: THE DIGITALLY CONNECTED PROTOCOL ROUTE

To allow for the development and testing of automated and networked driving under real conditions, the urban test field DIGINET-PS is being set up in Berlin's highly complex mixed traffic.

CORE ISSUES

DIGINET-PS goes far beyond the traditional concept of incorporating intelligence into vehicles. Instead, it is taking the evolution of decentralisation and distributing the computing power among vehicles, traffic infrastructure (extended roadside units), digitized road objects, and the cloud. The goal is to connect three separate units (vehicle, road infrastructure, cloud) that are each autonomous in their decision-making and have them share necessary information with each other. This information includes both current traffic conditions and forecasts for future conditions.

INTELLIGENT VEHICLES

Automated and connected vehicles can drive without a driver and thus move autonomously in traffic. To do this, they use their own sensors in the form of cameras, lidar, and radar as well as information from other vehicles, the roadside units, and the cloud. This expands the visual range of the vehicles and thus increases traffic safety and efficiency.

INTELLIGENT ROAD INFRASTRUCTURE

An intelligent road infrastructure is a prerequisite for the implementation of distributed decision-making. Different levels of communication reflect different demands on time and place. Time-sensitive or location-based data is processed using edge computing in the vehicle-to-everything (V2X) infrastructure and metadata and big data analytics are sent to the cloud. This ensures a fast and secure decision-making ability at any time.

CLOUD

Thanks to its flexible architecture, the cloud covers a large number of requirements. Data collected by vehicles, infrastructure, and sensors along the route flow together in the cloud. Algorithms developed specifically for this task allow the calculation of up-to-date data and forecasts for distributed decision making, which are made available to any number of applications via an open interface.

OBJECTIVES

The aim is to create an open and scalable platform for the testing of automated and connected driving and establish an ecosystem of stakeholders in the automated future of mobility in Berlin. In this context it is important to evaluate the extent to which the distributed decision-making approach improves vehicle capabilities to make traffic safer, more efficient, and more environmentally friendly.