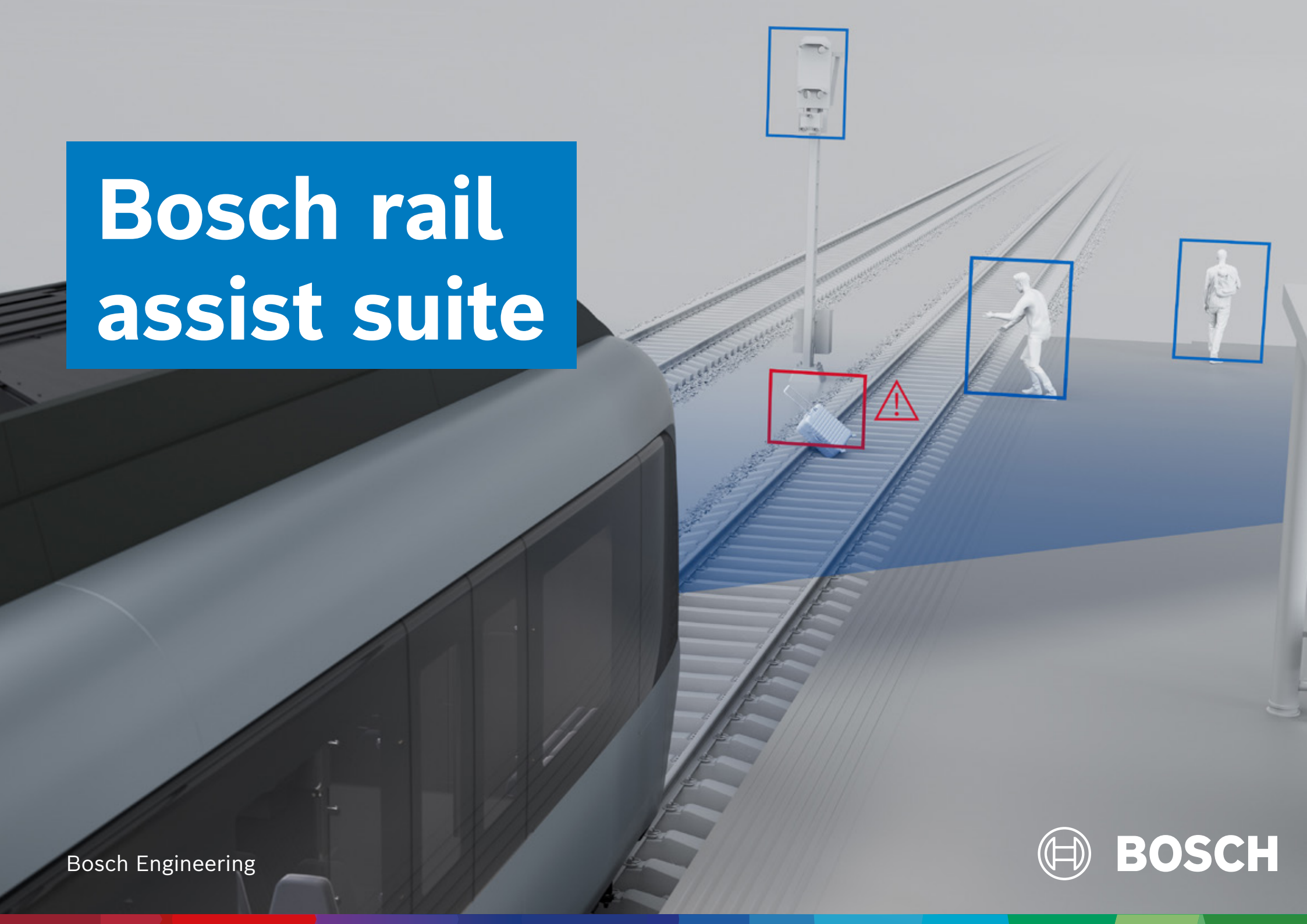
Bosch rail assist suite

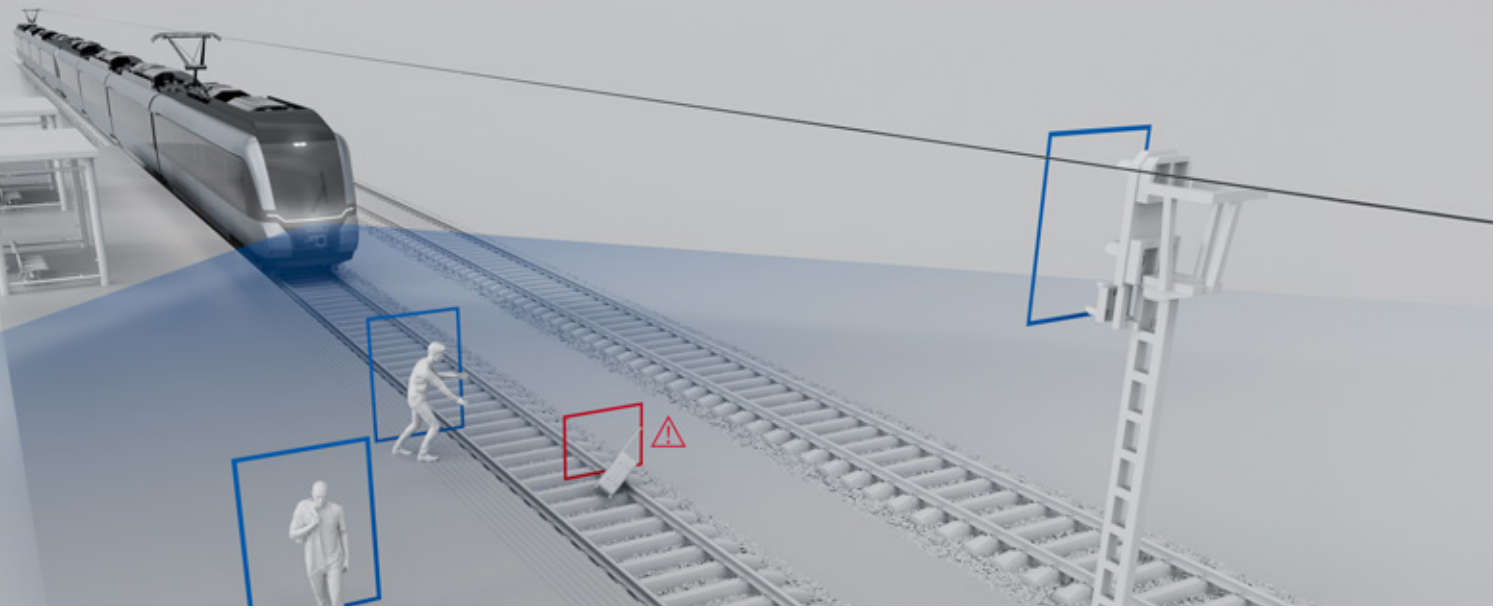


Bosch Engineering

BOSCH

Bosch rail assist suite

Assistance systems for rail vehicles: enhancing safety and relief



Bosch Engineering is developing assistance systems for rail vehicles on the basis of tried-and-tested Bosch technology from the automotive sector. Our collision warning system for trams has been available on the global market since 2017.

The Bosch rail assist suite with the very latest generation of sensors is now transferring this successful concept to railroad locomotives. The first application of the modular rail assist suite is the forward assist system for local public transport, shunting operations, and maintenance vehicles.

Sensors from different technologies complement each other to provide seamless monitoring of the area in front of the rail vehicle. Depending on the specific use case, the combined sensors used comprise camera, radar, lidar, and ultrasonic modules. These components are linked with digital positioning data. Our vision is to develop these technologies further, as we move closer towards automated rail operations.

Your benefits

- Certified to EN 50155 and EN 50657
- Robust multi-sensor concept combined with AI technologies
- Initial pilot projects for monitoring surroundings have been implemented with great success
- Versatile use for various types of rail operations
- Modularity for customer-specific use cases and special applications
- Technological basis for future automation of rail operations

Improved operational safety thanks to latest-generation sensors

Mainline and urban forward assist

For suburban railroads, regional trains and metros, the mainline and urban forward assist monitors both the area in front of the locomotive and the platform environment on a predictive basis. This helps improve safety at stations and on the open track.

Functions

- Warnings of obstacles in the track area
- Warnings of dangerous situations in the platform environment
- Brake assist for precise stopping at stations
- Signal and sign detection

User benefits

- Greater safety in station environments
- Improved operational safety on the track
- Fewer disruptions to operations due to missed signals or incorrect stopping at stations

Improved safety for shunting operations

Shunting forward assist

Staff are faced with many tasks in shunting operations: moving around groups of wagons and coupling and uncoupling wagons. At the same time, staff need to pay careful attention to rail activity on parallel tracks. During shunting maneuvers, the shunting forward assist system supports staff and eases the pressure on them by monitoring the area in front of the vehicle on a predictive basis.

Functions

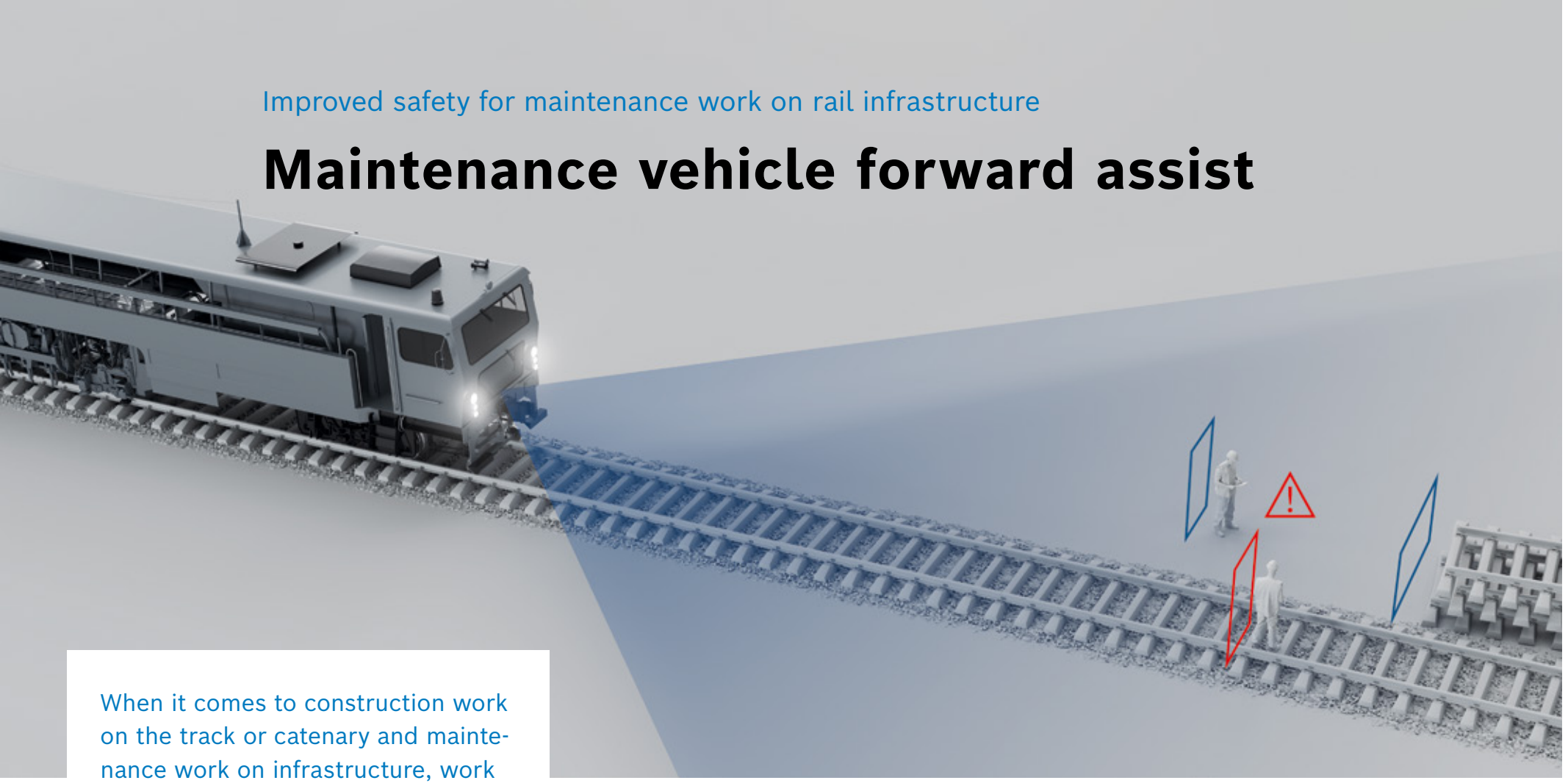
- Warnings of obstacles in the track area
- Warnings of risks of collision with other vehicles when passing incorrectly parked wagons in switch areas
- Coupling assist
- Signal and sign detection
- Catenary assist for locomotives with hybrid powertrains

User benefits

- Improved situational monitoring supports shunting personnel and eases their workload
- Greater safety, fewer injuries, and less damage
- Prevention of costly overhead wire damage

Improved safety for maintenance work on rail infrastructure

Maintenance vehicle forward assist



When it comes to construction work on the track or catenary and maintenance work on infrastructure, work generally needs to be carried out in the vicinity of the tracks. This puts staff under particular pressure to ensure both their own safety and operational reliability. This is where the environmental monitoring system of maintenance vehicle forward assist helps staff to be more aware of what is happening around them.

Functions

- Warnings of obstacles in the track area
- Warnings of risks of collision with other vehicles when passing incorrectly parked wagons in switch areas
- Catenary assist for vehicles with hybrid powertrains

User benefits

- Improved situational monitoring supports maintenance personnel and eases their workload
- Greater safety during maintenance work, fewer injuries, and less damage
- Prevention of costly overhead wire damage

Our vision

Solutions for automating rail operations

Building on the modules of the Bosch rail assist suite, we are working on comprehensive solutions to support the automation of driving functions, including maneuvers in railway yards and depots to position or park trains, shunting operations, and scheduled rail traffic. Among other resources, we can draw on our extensive expertise in assistance systems and automated driving functions that we have acquired from the automotive sector. The focus of our developments is on sign, signal and object detection systems and object classification methods that can be used to interpret the train's surroundings and help prevent accidents during rail operations. Successful projects in collaboration with the Digital Rail Germany initiative, Deutsche Bahn (Sensors4Rail, AutomatedTrain), and SNCF (Train Autonome) have confirmed the potential of our hard- and software for automating rail operations.

Do you have any questions?
Our expert is here to assist you
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