

## Europe's Rail visits wayside monitoring systems in the Netherlands

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On October 4th and October 5th, ProRail hosted a tour past two Dutch Intelligent Video Gates, combined with a meeting at "de Inktpot", ProRail headquarter's in Utrecht. During the tour on Wednesday and the meeting on Thursday, most contributors to WP25.4 "Specifications for Standardised European Checkpoints" were present.

During the tour, a visit was arranged past the IVG on the marshalling yard at Moerdijk, where a demo was arranged by ProRail-experts Marcel Gerrits and Paul Kootwijk, and past an IVG on the main line at Hogebrug. The meeting on Thursday was very productive, with workshops about functional- and non-functional requirements for standardised checkpoints at borders and other operational stops, technical specifications and interoperable IT systems for data management and processing.



*Photo: the attendees to the meeting in front of "de Inktpot"*

### IVG's in the Netherlands

ProRail has tested IVGs in the ports of Moerdijk and Botlek and is now preparing for a further rollout in the ports. These IVGs are used to verify the wagon lists of trains and to keep track of how many trains enter and leave the different yards. In combination with sensors on the tracks, track occupancy can also be registered. The IVGs make videos or photos of the individual wagons and recognize the wagon numbers, container numbers and codes for hazardous substances. In addition, ProRail and NS have set up two pilot locations with IVGs for detecting damage to pantographs and bogies. NS is preparing the national rollout in 2024 together with ProRail, where 8 more IVGs will be placed at different locations along the Dutch railways.



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### The marshalling yard of Moerdijk

At the entrance of the port area of Moerdijk, 2 types of IVGs are installed:

1. An IVG for wagon number recognition
2. An IVG for recognizing and measuring the thicknesses of brake pads of freight wagons

Both types of cameras are "area-scan" cameras, where image recognition is used on the video frames for the brake pad cameras. The aim of the trial is to prevent overheated wheels by detecting thin or missing brake pads in time and on the other hand to register and verify the wagon lists of freight trains entering and leaving the port area.



*Photo: brake pad monitoring camera (left) and wagon number recognition camera (right)*

### Wayside monitoring at Hogebrug

At the location of Hogebrug (Rotterdam-Utrecht route), a pilot location has been set up by NS and ProRail with IVGs for making image recordings of the pantographs (NS and ProRail) and for making image recordings of the bogies of passenger trains (NS). The pantograph cameras are area-scan cameras and the cameras for the bogies are line scan cameras.

The aim of the pilot is to register defects in pantographs and train wheels in time, in order to avoid damage to the infrastructure and trains. NS also works on the digitization of train maintenance (predictive maintenance), for example, by preventing overhead line breaks. NS and ProRail share knowledge within the field of the development of image recognition algorithms that can automatically detect these damages.



*Photo: the pilot location with IVG's owned by NS and ProRail at Hogebrug*



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