

Market Consultation SCADA Operational System 2026 - 2040



Join us in thinking about an operational system for railway assets!

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1 Market Consultation: SCADA Operational System 2026 - 2040

ProRail B.V. is responsible for the construction, maintenance, management and safety of the Dutch rail network. Every day, round the clock, our employees ensure that 1,200,000 passengers and 100,000 tonnes of goods reach their destination, carried on 6,550 trains using over 7,000 kilometres of track. The railway network is rightly called the beating heart of the mobile Netherlands. ProRail works on the accessibility of the Netherlands by optimising its rail network. We distribute the capacity on the railway, regulate all train traffic, build and manage stations and lay new track. ProRail also maintains existing infrastructure such as tracks, points, signals and level crossings.

1.1 Introduction

The framework contract between ProRail and the current supplier for the use of the SCADA operational system is expiring, prompting us to explore the possibilities for a new contract for the period 2026-2040. The end of the contract also offers the opportunity to evaluate changes within the organisation and developments in the market.

ProRail is evolving as an organisation, and this impacts the requirements for operations and the monitoring and operation of railway assets. ProRail is currently exploring new systems that can meet these needs. We aim to utilise expertise and insights from the market to find the most suitable solution for our requirements.

In this document, the term “system” may also be understood as a platform, consisting of a combination of functionalities and/or systems.

1.2 Purpose

This market consultation aims to collect insights into the possibilities for a new operational system for the railway assets within ProRail. Based on the information in this document, we would like to engage with the market at an early stage. This document contains relevant information to understand the challenge we face in the coming years.

ProRail wants to clarify that this market consultation is not directly related to a tender process. No rights can be derived from this document and/or participation in this market consultation in the context of a potential future tender. Participants are requested to answer the questions, see section 3, but will not be admitted to or excluded from any potential future tender procedure as a result of answering or not answering the questions.

1.3 Scope

ProRail is looking for an integrated solution using SCADA features to monitor, safeguard and operate railway assets. This concerns the following railway assets:

- Power supply (PS).
- Tunnel technical installations (TTI).
- Programmable logic controller interlocking (PLC-X).
- Points heating installations (PHI).
- Level crossings, discrete level crossing signalling systems (DLCSS).
- Fire extinguishing installations (FEI).
- Track monitoring.

2 Current operational systems (background)

2.1 Context

The Asset Control Centre (ACC) is the point of contact within the railway sector for making and keeping the ProRail infrastructure (maximally) available. This component is responsible for monitoring and controlling the railway infrastructure to resolve any deviations in performance. The Operational Control Centre for Infrastructure (OCCI) is the part of the ACC responsible for the management and availability of the railway infrastructure. It stays operational 24/7 to resolve deviations in performance. Operational activities mainly take place outside office hours, while the preparation for these activities occurs during the day. The team monitors and operates various railway assets to ensure that the railway infrastructure continues to function properly.

These assets fall within the current operational systems and thus within the scope of this market consultation.

Within the current setup, multiple SCADA systems are implemented to ensure the availability and safety of the power supplies in the railway, tunnel technical installations and supporting systems. There are five SCADA systems in place:

1. SCADA system for 1500VDC and 3KV Power Supply, multiple Tunnel Installations, Level Crossings, PLC Interlocking and Fire Extinguishing Installation.
2. SCADA system for 25kVAC HSL and multiple HSL Tunnel Installations.
3. SCADA system for 25kVAC Betuwe Route and multiple Betuwe Route Tunnel Installations.
4. SCADA system for Delft Tunnel.
5. SCADA system for ERTMS balise monitoring and ASD-UT axle counter reset.

2.2 Asset types

The different railway assets that are operated or monitored by a SCADA system are explained below.

PS

1500V DC and 3kV AC power supply

The 1500V DC and 3kV, 400V and 110V AC infrastructure is monitored and controlled by a SCADA system. It was originally developed to monitor and control ProRail's 1500V traction power supply and rail infrastructure feeds.

25kV AC power supply

Two different infrastructures, the Betuwe Route systems and the HSL, are monitored and controlled by two different SCADA systems. Although they are currently owned by different organisations, a future acquisition by ProRail is planned for central monitoring and operation.

TTI

Tunnel technical installations are increasingly monitored and controlled via a central SCADA system. However, to ensure safety, they can also be operated locally from the tunnel technical rooms and from client workstations of the SCADA system. Monitoring and operation mainly occur remotely, while tunnels also have a local SCADA system, currently with a client of the central SCADA system. These local systems are gradually being converted to the same system. Tunnel technical installations can provide up to 40,000 measurements or signals, most of which are used for analysis and monitoring.

PHI

The installation of points heating installations still needs to be completed. Monitoring and operation will be integrated into a SCADA system: the ability to grant maintenance contractors access to operate the points heating will be essential. At the moment, heating installations are sourced from different suppliers.

DLCSS

The monitoring of the operation of level crossings with discrete level crossing signalling systems is integrated into the central SCADA system. This not only checks the status of the level crossing but also generates alerts for unnecessarily prolonged crossing closures.

PLC interlocking

The programmable logic controller interlocking monitors the electronic train protection system that ensures the safe handling of train traffic by controlling and operating infrastructure elements such as points and signals. The OCCI mainly monitors its availability.

FEI

Monitoring and controlling the availability of fire water supplies. This is a facility with a safety function.

Track monitoring

Monitoring deviations in railway track stability. If the immediate action value is exceeded, immediate intervention is required for the safe passage of trains on a section of track.

2.3 Architecture

The architecture of the current SCADA operational systems is based on decoupling external access, the supporting automation functions and the user interface.

External access involves retrieving and sending data to:

- sensors/actuators,
- decentralised or regional control units, and
- intelligent assets.

Protocols

To establish a connection with RTUs and PLCs, it is essential that at least the following protocols are supported:

- IEC 60870-5-104.
- OPC-UA (OPC Unified Architecture) .
- SNMP (Simple Network Management Protocol).
- MQTT (Message Queuing Telemetry Transport) and AMQP (Advanced Message Queuing Protocol).
- SMS (Short Message Service) or other messaging services.

User interface

The user interface serves several different types of users:

- a. Operating Experts, who are operators responsible for safety and availability;
- b. System Operators, who are operators responsible for asset availability and reliability;
- c. Project Contractors, who are responsible for change and work concerning assets;
- d. Maintenance Contractors, who are operators responsible for asset availability;
- e. Installation Managers, Specialists and Inspectors , who are responsible for assets;
- f. Data Engineers, who are responsible for change;
- g. Functional and Application Management, who are administrators;
- h. Central Service Desk, offering 24/7 incident support.

Below is a non-exhaustive list of the most important functions and automations.

1. SCADA functionality for monitoring and operating energy networks and tunnel technical installations among others.
2. Functionality for energy management including PV systems and storage systems.
3. User and rights management including user-specific environments.
4. Preparing, simulating and executing switching operations.

5. Ability to remotely apply software blocks on switches.
6. Support of switching order processes for ProRail and contractors.
7. Monitoring and possible operation of railway assets.
8. Ability to remotely perform operating actions on railway assets.
9. Display of schematic and geographical information at different levels.
10. Easy access to alarms, faults, notifications, notes and blocks.
11. Extensive filtering options for lists and logs.
12. Programmable switching and repeatable applications.
13. Choice between list view and graphical display of data.
14. Display of measurement values and setpoints in graphs.
15. Ability to perform data engineering changes without impacting monitoring and operation.
16. Expandable symbol library for data engineering.

2.4 Limitations/obstacles

In recent years, various limitations/obstacles have arisen due to changing infrastructure and the growing demand for SCADA and additional operational functionalities. The most important limitations are listed below, divided into three themes.

Architecture

- Limited external access possibilities due to security requirements, resulting in a lack of digital connectivity for external users (such as maintenance contractors) within the ProRail system;
- Limited insight into process management and process log (mining) due to the absence of monitoring and insight into user activity logs;
- Limited support of open standards and protocols, resulting in limited flexibility and compatibility with other systems and devices in the current SCADA systems;
- Limited functional scalability for asset and object types due to the lack of standardisation, necessitating custom modifications and additions, leading to long lead times;
- Limited alignment with the architecture proposed by the government based on open standards and open source code can lead to compatibility problems and non-compliance with guidelines in the future.

User experience

- Limited configuration possibilities of the User Interface, resulting in limited flexibility and dependency on suppliers;
- The use of different SCADA systems results in limited uniformity in the interface and functionality, which in turn creates an inconsistent user experience and requires different operator skills for different assets.

Migration and management setup

- ProRail experiences significant dependency on current suppliers due to the closed nature of systems; changes are costly and have long lead times.
- Responsibilities internally (within ProRail) and externally (at suppliers) are unclear when it comes to making adjustments / introducing new functionalities and implementing management. Various projects are therefore poorly aligned, resulting in speed and quality issues.
- In the current systems, upgrades are performed periodically. Upgrades are treated as a separate project, whereas continuous upgrades (minor changes) need to be implemented more frequently.
- Due to ProRail's obligation to tender, we have to periodically re-tender the entire contract and potentially replace the system, which is a costly and extensive operation.

2.5 Ambition

In the future, ProRail wishes to have the ability as an asset manager/owner to more extensively centrally monitor, safeguard and intervene on assets that directly affect ProRail's services. ProRail wants to be able to exercise this responsibility itself, but third parties must also be able to perform these tasks on its behalf.

End users should be able to monitor, safeguard and operate the railway assets within the railway infrastructure through developed functionalities, offering a uniform experience and distinguishing between the rights and possibilities of different users.

2.6 Desired outcomes of this market consultation

- Gaining insight into the possibilities and solutions for an operational system for monitoring and operating railway assets, as described in the scope (1.3).
- Discovering improvement potential within the set scope.
- Getting to know (potential) suppliers and partners within the market.

3 Questions

Based on the identified limitations/obstacles (section 2.4) and the changing demand from the environment, this part formulates a set of questions from ProRail, organised into four themes:

1. Architecture and functional flexibility
2. User experience
3. Migration and management setup
4. General

3.1 Architecture and functional flexibility

1. How would you describe the optimal system architecture for the required SCADA and additional operational functionalities, including aspects such as:
 - a. Modularity
 - b. Connectivity (users)
 - c. Security (e.g. according to ISO 27001 and IEC 62443)
 - d. Configurability
 - e. Integration with other source systems (both OT and IT systems)
 - f. Platform integration (e.g. PaaS, IaaS)

3.2 User experience

2. What is your vision on and/or solution for user experience and the needs of different user groups and personas, such as central operators, maintenance contractors and ProRail specialists?
3. What is your vision on and/or solution for ensuring and providing access and usage for various internal and external user groups and personas within a safety-critical environment?

3.3 Migration and management setup

4. What is your vision on and/or solution for lifecycle management, software updates and continuous development of the system?
5. In your opinion, what does the ideal management and development setup look like for both the supplier and the client?
6. What do you consider the optimal lifespan and how would you achieve this?
7. What is your vision on, experience with and/or solution for a migration strategy?
8. What is your vision on the collaboration between client and supplier and how is this service provided?

3.4 General

9. Can you tell us more about your general vision on operational systems for monitoring and operating railway assets and your plans for their future development?
10. What are other key issues here and can you elaborate further?

4 Procedure of the market consultation

4.1 We want to hear your ideas!

In preparation for the prospective tender for a new operational system for the railway assets within ProRail, ProRail wants to gain more insight into the market possibilities.

With this market consultation, we expect to get an idea of the suppliers who have an “off-the-shelf” solution, as well as suppliers who have ideas about development in this area. With your input, ProRail wants to get a better understanding of the possibilities in the market.

4.2 Procedure

This market consultation has been published on TenderNed as an open market consultation, which means that all parties in the market have the opportunity to participate.

Respondents are asked to respond in writing. You are asked to submit the questionnaire by email by the deadline mentioned in paragraph 4.4.

If the answers given are unclear or raise further questions, ProRail may subsequently ask for clarification.

A summary of the results of the market consultation will be produced, along with the main conclusions. This report will not contain any competition-sensitive information. This document will be shared with all participants after completion and will - if applicable - be attached for information to the tender file of a potential future tender procedure. The conclusions can be included in the tender file and/or tender procedure wherever ProRail deems it possible and useful.

The market consultation consists of the following steps:

Step 1: Information meeting / answering questions (online).

Step 2: Written responses to the questions (see section 3) by market parties.

Step 3: Individual sessions with some of the market parties that have responded.

Step 4: Reporting.

Step 1: Information meeting

An online meeting will be organised for all interested parties to discuss with ProRail the themes or questions relevant to ProRail.

For the date and time, see section 4.4.

During this meeting, ProRail will further explain the survey, with ample opportunity for questions.

Step 2: Written responses

You are asked to submit the attached questionnaire by email by the deadline mentioned in paragraph 4.4.

Step 3: Individual sessions

ProRail will analyse the responses and decide which parties to invite for individual follow-up sessions. This selection is based on the diversity of the answers and has no bearing on the chance of success in a potential tender. This session is expected to last about 2 hours.

ProRail would appreciate your participation in this follow-up session. We request that you send at least an account manager and a subject-matter expert to participate in the consultation. During the sessions, we will discuss themes from section 3. Participants are free to bring up themes that could contribute to or influence the objective of this market consultation.

A meeting report will be made of each individual session, which will be submitted to the participating party for approval. This report will not be shared with other parties.

Step 4: Reporting

ProRail will create one aggregated (anonymised) final report from all the talks, recording the main conclusions from the conversations.

This report will not contain any competition-sensitive information. This document will be sent to all participants in the consultation as a draft for review/addition.

The final document can be attached for information to the tender file of a future tender procedure. The conclusions will be included in the OCCI vision for market approach where ProRail deems it possible and useful.

4.3 Market consultation rules

The following principles and conditions apply to this market consultation:

1. The market consultation is explicitly not part of any potential tender procedure.
2. In particular, no rights can be derived from the information provided in the context of the market consultation.
3. Participation in the market consultation does not put participants in a preferential position regarding any potential tender procedure, nor will non-participation lead to exclusion from such a procedure.
4. The market consultation has a non-binding nature and no rights can be derived from the (insights from the) market consultation.
5. The following parties are barred from taking part in this market consultation: public parties, interest groups, individuals, press and academic institutions.
6. The market consultation will be held in Dutch and/or English.
7. By participating in a market consultation, parties unconditionally agree to the aforementioned conditions.
8. Participation in a market consultation is voluntary. No remuneration will be provided for participation, nor will reimbursement be provided for expenses arising from participation.

All communication regarding the market consultation and the submission of answers and/or response forms will take place via TenderNed or a contact person (Section 4.5)

4.4 Schedule

Date	Activity
16-04-2024	Publication/invitation to participate in market consultation by ProRail

30-04-2024 10:00 – 11:00	Information meeting (Teams)
8-05-2024	Deadline for asking questions regarding the information provided
17-05-2024	Submit answers to the questions asked and any changed documentation by ProRail
29-05-2024	Deadline for submitting answers to the questions in section 3.
31-05-2024	Selection of individual sessions
11-06-2024 t/m 13-06-2024	Individual sessions (if invited)
21-06-2024	Draft report sent to market consultation participants

4.5 Contact

For questions about and to sign up for this market consultation, please contact:

Marcel Lacomblé, ICT Tender Manager

marcel.lacomble@prorail.nl; +31 88 - 231 6317

4.6 Register now!

If you are enthusiastic about our project and interested in discussing it with us or expressing your opinion, please register via email by the date mentioned in section 4.4.

Please include your contact details (name, phone, email address) and the names of everyone who will be attending.

4.7 Open and honest

Participation in the market consultation is entirely voluntary and will not lead to any privileges in a tender. Likewise, not participating in the market consultation will not lead to exclusion from a potential tender.

By participating in this market consultation, you agree that the information you provide may be used by ProRail in a tender or in preparations for a tender. Commercial (numerical) information you provide will be treated confidentially by ProRail.

ProRail attaches great importance to a transparent process and will not favour participating market parties in the market consultation or put non-participating parties at a disadvantage. From this perspective, all relevant information resulting from the market consultation will be made available to all potential bidders upon publication of a potential future tender or be added to the tender file.

List of abbreviations

Abbreviation	Meaning
ACC	Asset Control Centre
FEI	Fire Extinguishing Installations
DLCSS	Discrete Level Crossing Fault Signalling
ERTMS	European Rail Traffic Management System
PS	Power Supply
OCCI	Operational Control Centre for Infrastructure
PLC	Programmable Logic Controller
PMP	ProRail Monitoring Platform (OSI soft)
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
TTI	Tunnel Technical Installation
UI	User Interface
PHI	Points Heating Installations