

Findings report

ProRail market consultation

SCADA Operational System 2026 - 2040

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Introduction

On April 16, 2024, ProRail published a European market consultation document on www.tenderned.nl describing the context and questions to the market in the context of the 'SCADA Operational System 2026 - 2040' project.

All interested market parties could freely participate in this consultation and submit a written answer to the published questions to ProRail via www.tenderned.nl until May 20, 2024. Ultimately, twelve market parties have submitted a written response, after which additional interactive 1-on-1 consultations took place with six of the participants.

Purpose of this report

The aim of this report is to share the findings gained by ProRail in general terms with all participating market parties. ProRail strives to provide all market parties with equal information. This report will also be included in the possible subsequent relevant tender. The report has been drawn up anonymously to safeguard the privacy of the participants. The design of the findings report is in line with the questionnaire as initially published, with the various answers received being placed behind each question as an anonymous summary. Answers to questions of a financial nature have been excluded from this report as they constitute commercially confidential information.

Comments

- Participation in the market consultation and subsequent consultations was entirely voluntary.
- Participation does not lead to any assessment advantage in the event of registration for a subsequent tender. Likewise market parties that did not participate in the market consultation and/or the interactive consultations will not experience an assessment disadvantage.
- Participating market parties cannot in any way derive any rights from information provided during the written market consultation phase and/or the interactive consultations.
- The market consultation phase is not part of a tender process. ProRail is in not in any way bound by the information provided during the market consultation phase and the interactive consultations, including our shared findings from this report.
- Not in all cases it was possible to establish a clear link between the information provided and the questions from the market consultation. This has made it difficult to properly summarize the answers to each question for all parties. In the answers below we have done our best to provide a coherent summary. We therefore apologize for any possible omissions in the response.

Findings on the questions

no.	Question	Findings
	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: 1. Modularity 2. Connectivity (users) 3. Security (e.g. according to ISO 27001 and IEC 62443) 4. Configurability 5. Integration with other source systems (both OT and IT systems) 6. Platform integration (e.g. PaaS, IaaS)	All participating parties seem to have a similar opinion: The common denominator which has been advised is a modular architecture which is connected through an integration layer. According to most suggestions a SCADA user system is connected on top of the integration layer. Connectivity is key in a modular integrated system because of the interaction between the different systems. Also logging of user interactions is highly valuable. Systems and platforms must be highly configurable so that the need for ProRail specific customization during configuration is minimized. On the subject of integration with assets in the field, many solutions have toolkits with different protocols to setup connections. The way different systems can work together depends on their business use. Many solutions currently run on-premise and are being developed for kubernetes-based platforms so they can be lifted to the cloud.
	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?	1. Many parties indicate that user experience is centered around creating an intuitive, efficient, and adaptable interface that caters to the diverse needs of various user groups involved in the management of transportation infrastructure. The possibilities are endless and the user interfaces are individually configurable to the enduser / workstation. All this can be logged with an adjustable details. - UI's are often managed and stored centrally. - Also the advice was to use automated behavioral observation in the designing of the user interface. The look and feel should be the same on different devices.
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?	2. Permissions allocation based on role, function and location was often suggested. In addition, various role authorizations have been discussed. Including for example two-stage scenarios, that makes it possible to enforce the 4-eyes principle. Concepts that are also suggested: 1. Role-Based Access Control (RBAC): - Granular Access Control - Dynamic Access Management 2. Secure Communication Channels - Encrypted Data Transmission - Virtual Private Networks (VPNs)

no.	Question	Findings
		3. Multi-Factor Authentication (MFA) - Enhanced Authentication 4. Audit Trails and Monitoring - Comprehensive Logging - Real-Time Monitoring 5. Safety Protocols and Training - Regular Safety Drills - User Training Programs
	Migration and management setup	
4	What is your vision on and/or solution for lifecycle management, software updates and continuous development of the system?	The following aspects have been suggested by several parties: 1. Lifecycle Stages Clearly defined stages from initial design and development, through deployment, operation, and final decommissioning. 2. PLM Integration Utilize Product Lifecycle Management (PLM) tools to manage all aspects of the system's life. This includes configuration management, version control, and traceability of changes. 3. Feedback Loops Establish continuous feedback loops from the operational environment to facilitate a quick return time for future improvements, as part of the development process. Software Updates and Continuous Development: 1. Modular Design Develop the SCADA system based on a modular architecture, allowing individual components to be updated or replaced without impacting the entire system. 2. Agile Development Employ agile methodologies to ensure that software updates and new features can be developed, tested, and deployed rapidly. 3. Automation Use automated testing and CI/CD pipelines to ensure that updates are reliable and do not introduce regressions. There were also a number of parties advocating a DevOps approach. Managing critical infrastructures, requires stringent security protocols and resilience to ensure uninterrupted operations and safeguard against potential disruptions.

no.	Question	Findings
5	In your opinion, what does the ideal management and development setup look like for both the supplier and the client?	All participants preferred using a DTAP environment (development, testing, acceptance, production) for a controlled development and deployment strategy. Different participants suggested to deploy part of the infrastructure inside of the Railcenter in Amersfoort. Using the DevOps method, new development can be quickly brought to production. Different participants also pleaded for dedicated teams and advised ProRail to use automated testing.
6	What do you consider the optimal lifespan and how would you achieve this?	The most participants responded differently to this from 5 years to a neverending lifespan. In most cases the lifespan For the hardware platform there is a low dependency thanks to the use of virtualization.
7	What is your vision on, experience with and/or solution for a migration strategy?	All participants implied to set up a parallel system and manage migration using small steps so there is always a fallback system.
8	What is your vision on the collaboration between client and supplier and how is this service provided?	3. The following components have been considered by different participants in the partnership: - Mutual Trust - Respect - Clear communication - Shared objectives - Agility - Responsibility - Adaptability - Accountability - Continuously improve - Involvement of ProRail is seen as key
	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?	Participants see a growing trend of integration of various applications into a single workplace for the operator. This not only includes infrastructure topics, like PIDS, CCTV, Public Address and Telephony, but also train-operation related assets, Switching devices etc. Furthermore, participants see the significance of AI and Big Data Analytics in enhancing operational efficiency. By leveraging SCADA data, analytics (whether performed by humans or AI) will play a pivotal role in concepts like predictive maintenance and energy management.
10	What are other key issues here and can you elaborate further?	There is concern among several participants if ProRail realizes how big this project is. A crucial condition is that the business side of ProRail puts a lot of effort into the realization of a new SCADA platform.