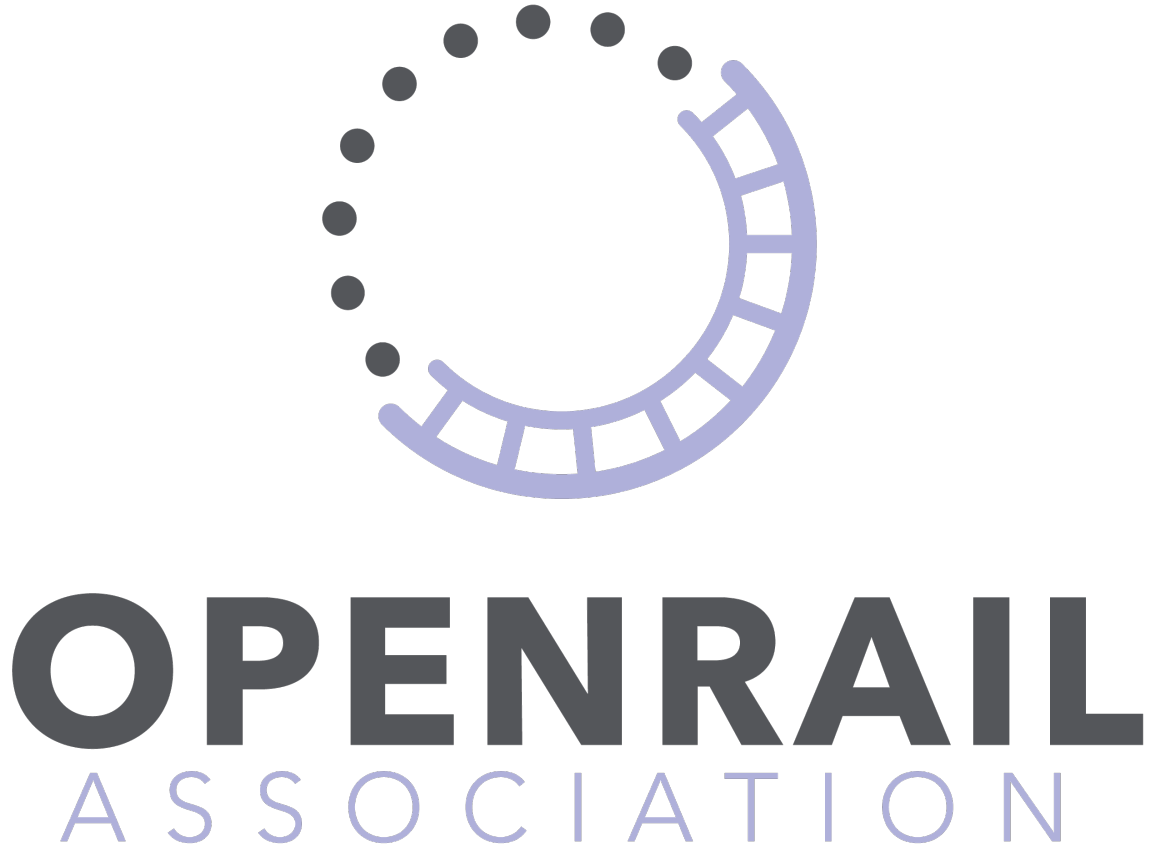
Building Open Foundations for Railways

Annual Report 2025 of the OpenRail Association



OpenRail Logo

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Introduction

Message from the Chair of the Board

Jochen Decker

Dear OpenRail Community,

tbd

Yours sincerely,

Jochen Decker, Chair of the Board of Directors, OpenRail Association, CIO at SBB

Perspectives from the Board

Daniel Woithe

Daniel Woithe

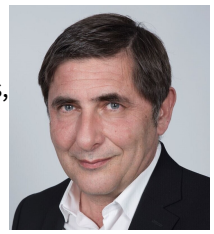
"*tbd*" – Daniel Woithe, *Vice-Chair*, CTO at **DB Systel GmbH**

Mounir Belhamiti

Mounir Belhamiti
Mounir Belhamiti

"*tdb*" – Frédéric Novello, *Vice-Chair*, Director Strategy and Development at **e.SNCF Solutions**

Jean-Michel Evanghelou



Jean-Michel Evanghelou

"*tbd*" – Jean-Michel Evanghelou, *Vice-Chair*, Director Telecom, Signalling & Digital Applications, Director Financial Controlling & Project Operations at **UIC**

Peter Franken

Peter Franken

"*tbd*" – Peter Franken, *Director*, Deputy CIO, Head of Real Time & End User Solutions at **Infrabel**

Fatima Zohra El Ouerkhaoui

Fatima Zohra El Ouerkhaoui

"*tbd*" – Fatima Zohra El Ouerkhaoui, *Director*, Chief Information and Digital Officer, Board member at **ONCF**

Brede Dammen

Brede Dammen

"*tbd*" – Brede Dammen, *Director*, Product owner, national journey planner at **Entur**

Erik Nygren

Erik Nygren

"*tbd*" – Erik Nygren, *Director*, President at **Flatland Association**

Florian Amsallem

Florian Amsallem

"*tbd*" – Florian Amsallem, *Director*, Chair of the **OpenRail** Technical Committee

Executive Summary

The OpenRail Project Portfolio

OpenRail Projects Overview

The following projects are the official OpenRail projects incubated through the incubation process.

Open Source Railway Designer (OSRD)

OSRD is an open source web application for railway infrastructure design, capacity analysis, timetabling and simulation and short term path request.

Rail Condition Monitoring (RCM OSS)

RCM by SBB comprises a suite of products for rail condition monitoring. Based on the open source data format RCM-DX (RCM Data eXchange), RCM enables easy accessibility and visualization of railway diagnostic data.

Digital Automatic Coupling Migration Decision Support System (DAC Migration DSS)

Within the next years around 500 K freight wagons all over Europe owned and operated by various corporations will be converted from screw couplers to digital automatic couplers (DAC). To facilitate the migration process, a decision support system (DSS) is planned under the project.

Netzgrafik-Editor (NGE)

Netzgrafik-Editor is now a mature tool for creating and analyzing regular-interval timetables. It’s versatile for logistics planning in various domains. Features include interactive editing, graphic timetables, trainrun editing, and logistics analysis.

Library for Linear Reference Systems (libLRS)

The goal of the library is to have a flexible, high performance and easy to integrate linear referencing systems (LRS) library that can be used in any system to manipulate LRSs.

First Project Reaching the Qualified Stage

Explain how OSRD reached the Qualified stage in the incubation process and what that means.

How OpenRail Creates Impact

Open Source in Production

How OSRD is used in production. This shows how open source projects can be used for production use cases, and how OpenRail projects increase their relevance.

Collaboration between OpenRail Projects (NGE)

Tell how Netzgrafikeditor gained contributors from SNCF and how collaboration works today. Show the metrics for this and hint to the metrics report.

Innovation through Open Source (DAC Migration DSS)

Innovation doesn’t always start in boardrooms. There is also grassroots development in the railway sector, such as PopUpSim. PopUpSim is an independent part of the DAC Migration DSS with its own repository. It joined the OpenRailAssociation in 2025.

The idea for PopUpSim emerged during the Dreiländerhack (now: Hack4Rail), which took place from 30 September to 1 October 2024 in Berlin. A team of developers from DB, SBB and ÖBB tackled a challenge concerning the simulation of wagon flows from operations to workshops and back to operations during the migration from the screw coupler to the Digital Automatic Coupler. The team created a demonstrator and won third prize at the hackathon.

After some time, which was necessary to create an environment for further development, a new team started working on the project. On 17 December 2025, it was already possible to present a veritable Minimum Viable Product to the public at OpenRailDay in Paris.

The team is now working ambitiously to fully realize the idea of PopUpSim, secure funding for further development, and promote its use. Another aspect is worth noting: as mentioned above, PopUpSim supports the rollout of the Digital Automatic Coupler. The introduction of the Digital Automatic Coupler is not just a challenge faced by every actor in the rail freight sector; it is a challenge that must be solved collectively by the entire sector. There are more than 500,000 freight wagons across Europe. A typical freight wagon does not operate in only one country; it usually runs cross-border and is hauled by traction from many different railway undertakings. In many cases, wagons are owned by leasing companies rather than by the railway undertakings themselves. To make matters even more challenging, not only mainline railways must be able to handle wagons; port railways and industrial sidings must also be able to receive and move wagons at all times during the migration period. This shared challenge clearly calls for an open-source solution. It can be used by everyone free of charge, its code is transparent, and users can adapt it to their needs and share it with their customers and partners.

Building blocks (libLRS)

Show how liblrs is used as a building block in ORSD and other projects. Explain what makes liblrs suited for that.

Open Source fosters adoption of standards (RCM OSS)

Show how RCM OSS is used as a standard, who uses it, and how open source helps with that.

Data from diagnostic measurement vehicles is essential for SBB to manage maintenance efficiently and to enable safe railway operations. These vehicles continuously record detailed infrastructure data — forming the foundation for a reliable diagnosis of track and overhead line condition. One of the challenges in Railway Infrastructure Diagnostics is the prevalence of proprietary data formats and software. Measurement system suppliers deliver their hardware with proprietary data formats and software. Diagnostic measurement vehicles harbour multiple of these systems and are therefore easily subjected to a variety of data formats and required software licences. In addition to the resulting complexity of data processing, proprietary elements also make it difficult to store such data in a readable form for the required period of time of up to 20 years. The RCM-DX file format is available open-source. With RCM-DX we step away from proprietary data formats which require specialised software and know-how, towards a self-contained and open format. RCM-DX can be accessed through standard HDF5 tools. In addition to the already published MATLAB function, we have added a python function to facilitate more specific reading of RCM-DX files. The accompanying visualisation software, RCM-DX Viewer, is available as freeware. By using the open RCM-DX format together with a freely available viewer, we can create a consolidated view of different sensor data and perform time-series diagnosis across multiple measurement runs. More than 500 users such as rail inspectors, data scientists, engineers and infrastructure managers are using RCM Tools regularly. The use of an open standard ensures full control and data sovereignty, enabling long-term flexibility in the choice of analysis methods and tools.

Community and Ecosystem

OpenRail Day @Paris - Collaboration in Practice

Report from OpenRail Day. Workshops, Exhibition, Conference, Board Meeting. Use photos.

Hack4Rail 2025 in Bern - Innovation through Open Source

Report from Hackathon and how OpenRail acted as partner. Outlook to Hack4Rail 2026 in Vienna.

Railways and Open Transport Devroom at FOSDEM 2025 - Community at Scale

Report from FOSDEM 2025

Digital Resilience - Strategic Outlook

How and why digital resilience is an important topic for OpenRail. Report from Digital Resilience Forum, and about support for European Sovereign Tech Fund and the Declaration of Digital Independence.

The Association

How the OpenRail Association works

Add canonical picture of organization structure and description of how it works. Different working bodies etc.

The Association

Our Members

We are grateful to our members for their commitment to open collaboration in the railway sector. Their engagement and support drive the success of the OpenRail Association, helping to build a strong, sustainable, and innovative open source ecosystem. The following organizations are part of this movement.

Platinum

Gold

Silver

Entur

Associate

EONA-X

Join us

The **OpenRail Association** is more than just an organization—it's a **community of people and companies** working together to bring **open source to the railway sector**.

Railways across Europe face **shared challenges** that require **shared solutions**. Open source enables us to **collaborate, innovate, and break down silos**, ensuring that essential software is **interoperable, efficient, and sustainable**.

Bring Your Project to OpenRail

OpenRail actively **welcomes new projects** into its **incubation process**. If you have a project that could benefit from **structured governance, a wider community, and long-term sustainability**, our **Technical Committee** provides guidance, best practices, and a neutral home for open source railway software.

Ways to Get Involved

Join as a Contributor – Explore our projects and start contributing: github.com/OpenRailAssociation

Propose a New Project – Learn about our **incubation process** and bring your open source initiative to OpenRail: github.com/OpenRailAssociation/technical-committee

Become a Member – Organizations can **support and shape the ecosystem** by joining as members: openrailassociation.org/about

Membership Levels & Engagement

OpenRail offers **four membership categories**, providing different levels of engagement and governance representation:

Membership Category	Role & Influence	Annual Fee (2024)	Representation on Board
Platinum	Strategic leadership in OpenRail's direction	**25,000 €**	**7 seats**
Gold	Active participation in governance & decision-making	**15,000 €**	**3 seats**
Silver	Engaged collaboration in OpenRail's open source ecosystem	**10,000 €**	**1 seat**
Associate	NGOs, academic institutions supporting OpenRail's mission	**Free**	**1 seat**

Platinum, Gold, and Silver members **directly shape OpenRail's governance**, with seats on the **Board of Directors**, where key decisions about the association's strategy and operations are made.

Be Part of the Movement

Our work is **transparent, community-driven, and open to all**. If you're interested in **being part of this movement**, explore our projects, participate in discussions, and see how you or your organization can contribute.

Endnotes

Website

Find more information on the OpenRail Association at https://openrailassociation.org.

Contact

To contact the OpenRail Association send us an email at contact@openrailassociation.org.

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