

OPENRAIL

ASSOCIATION

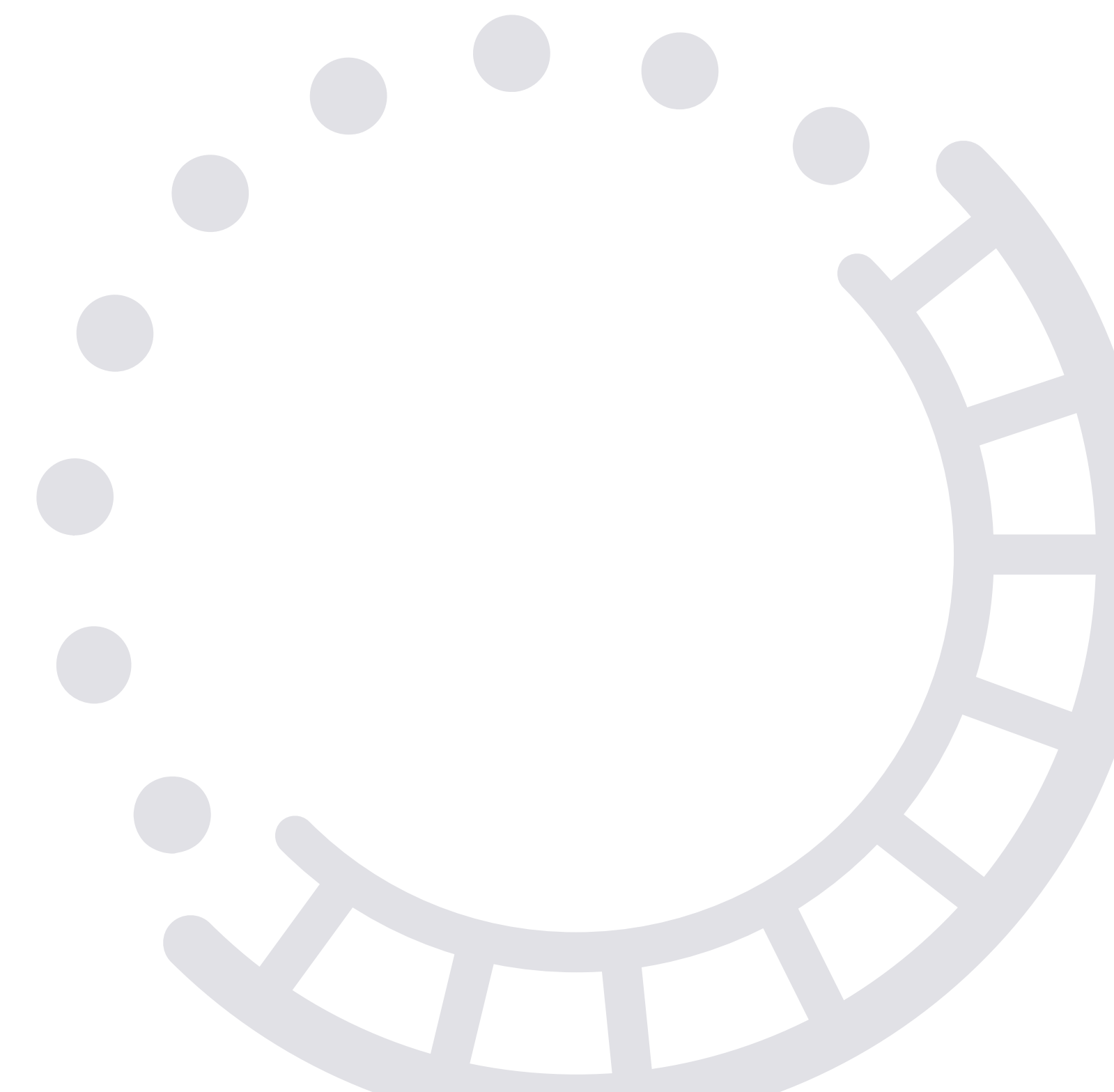
From Collaboration
to Impact

Annual Report 2025



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Introduction

Message from the Chair of the Board

The railway industry can't ignore geopolitics. In a rapidly evolving geopolitical environment, digital resilience – grounded in sovereignty and security – has become a strategic necessity for critical infrastructure. Across the rail sector, open source is increasingly recognized as a cornerstone of resilient digital systems. This reinforces the strategic relevance of the OpenRail Association and its mission to advance the collaborative development of open source software for rail.

From Foundation to Delivery

During 2025, we further strengthened our organization by improving governance, increasing efficiency, and sharpening our ability to support members and projects. This consolidation has positioned us to scale collaboration more effectively.

Creating Real Value

OpenRail projects create value by translating collaboration into solutions that are built and used in real-world operations. The collaboration between Netzgrafik-Editor and Open Source Railway Designer (OSRD) involving SBB and SNCF is one example that demonstrates this approach. Together, OpenRail projects show how open source practices generate tangible business outcomes.

A Community Gaining Momentum

The growing maturity of our community was clearly visible at OpenRail Day in Paris. The professionalism, openness, and engagement on display reflected an ecosystem aligned around collaboration as a driver of digital transformation in rail.



Looking Ahead

2025 marked the shift from foundation-building to measurable impact. As we enter 2026, momentum is growing and collaborative software development is proving its ability to build practical solutions for rail.

Yours sincerely,

Jochen Decker

Chair of the Board of Directors at OpenRail Association, Chief Information Officer at SBB

Perspectives from the Board (1/2)



Daniel Woithe
Vice-Chair

CTO at **DB System GmbH**

“ The year 2025 was marked by significant progress and increasing engagement within the OpenRail Association. OpenRail Day in Paris was a highlight that demonstrated both the speed of development and the effective collaboration within the community. In 2026, open source will become an even more important part of IT strategies, particularly in light of economic pressures and geopolitical tensions.



Jean-Michel Evangelou
Vice-Chair

Director Digital Systems & Innovation, Director Financial Control & Project Operations at **UIC**

“ 2025 has seen the acceleration of the open source concept all over the world, particularly through the intensive and impressive evolution of AI models but not only. It now becomes clearer and clearer that open source is a major vector of innovation and business, not contradicting the search by private companies for market leadership or financial outcomes, because the genuine capacity to sustain the pace of innovation is to replace more and more the traditional owned assets in intellectual domains. The mission of OpenRail is then obvious and exciting: to facilitate this disruptive transition also in the railway domain.



Mounir Belhamiti
Vice-Chair

Director Strategy and Development at e.SNCF Solutions **SNCF**

“ At SNCF Group, we strongly believe that open source and open standards are key drivers of innovation and resilience for the railway sector. As members of the Board of the OpenRail Association, we are proud to actively contribute to this collective initiative and to support the development of open and interoperable digital foundations for rail. We were also honored to welcome the OpenRail Day in Paris last December, a strong symbol of our shared commitment to collaboration across the railway community.



Fatima Zohra El Ouerkhaoui
Director

Chief Information and Digital Officer, Board member at **ONCF**

“ OpenRail is the platform to design and build strong standardized and interoperable Railway solutions, reinforce the collaboration around that in the Railway community, and take all advantages offered by open source to achieve that. At ONCF, and because Railway sector is still facing challenges of complex in house development, we believe that this community is here to bring answers to the daily complexities that the sector is facing and empowering the digitalization of future mobility following open standards and giving the capabilities for acceleration and interoperability. These initiatives are also necessary to reduce the technical debt, and respect best standard for cybersecurity and sovereignty. The outcome exhibited during the OpenRail day in Paris confirms that we are on the right track and makes us proud and excited about the success to come.

Perspectives from the Board (2/2)



Brede Dammen
Director

Product owner,
national journey planner at **Entur**

“ Open source and open standards are fundamental to enabling seamless, cross-border rail services in Europe. Frameworks such as MMTIS and the new TSI Telematics clearly point in the same direction: interoperable, standardized, and easy-to-use data across operators and national borders. From Entur’s perspective, openness is a practical necessity – it lowers barriers for collaboration, reduces fragmentation, and allows shared digital services developed through the OpenRail Association to deliver real value for railway operators, developers, and the passengers.



Erik Nygren
Director

President at
Flatland Association

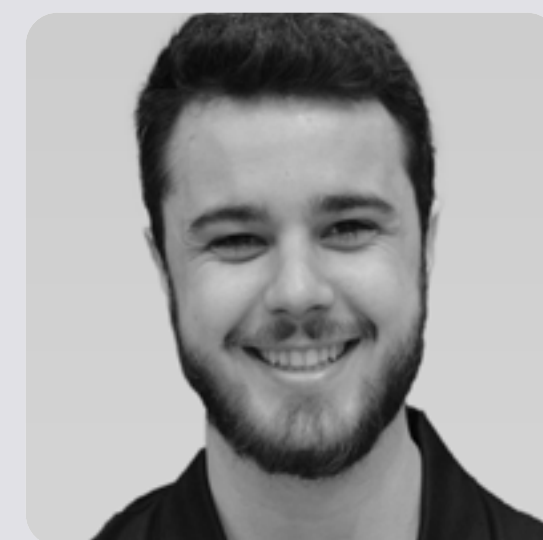
“ In an industry that inherently depends on collaboration across borders and organizations, open source has proven to be a vital enabler of innovation with real-world impact – but to truly transform the railway sector, it must be accessible not only to developers but also to the domain experts who understand the real-world challenges. At the Flatland Association, this is at the heart of what we do: building an open ecosystem that empowers anyone to contribute, lowering the entry barrier so that open research and open source can reach the people who need it most. Together with the OpenRail Association, we are making this ecosystem stronger, and events like OpenRail Day in Paris show that this community is growing every year.



Peter Franken
Director

Deputy CIO,
Head of Real Time & End User
Solutions at **Infrabel**

“ When introducing the open-source philosophy to Infrabel’s Product Owners, I was struck by the genuine enthusiasm it generated. Everyone immediately recognised that we share the same challenges—and that building solutions together is the most natural path forward. Now let’s all free up some space in our busy agendas to put this strategy into action and truly get the ball rolling!



Florian Amsallem
Chair Technical Committee

OSRD Technical Lead
at **SNCF Réseau**

“ I am proud to look back on a year marked by significant progress. The technical committee has matured in terms of both governance and execution, formalizing clearer incubation stages – now Onboarded → Qualified → Adopted – to better guide projects and contributors. We celebrated key milestones, such as the close cooperation between SNCF Réseau and SBB on Netzgrafik-Editor and the integration of PopUpSim into the DAC migration DSS. Projects such as OSRD, NGE, RCM-OSS, and LibLRS flourished with new releases, new features, and improved documentation, while promising candidates progressed through the incubation process. Going forward, our improved processes will position us well to welcome more projects and foster collaborations. This is just the beginning.



Executive Summary

2025 marked a turning point for the OpenRail Association. Open source for railways is no longer an experiment. It is delivering production impact, enabling cross-organizational collaboration, and strengthening digital resilience.

Production impact is visible in operational deployments. OSRD became the first project to reach the Qualified stage under OpenRail's incubation process, meeting rigorous criteria for governance, security, licensing, and contributor stability. It is now used in production at SNCF Réseau with around 100 active users, integrated into enterprise infrastructure and authentication systems. RCM OSS supports more than 500 users with an open diagnostic data format, reducing dependency on proprietary tools. With libLRS, OpenRail demonstrated that practical accessibility and openness can accelerate adoption across organizational boundaries.

Cross-organizational collaboration has become tangible. The Netzgrafik-Editor evolved from an internal SBB tool into a shared platform with significant external contributions, including cooperation between SBB and SNCF. In the context of the Digital Automatic Coupler migration, PopUpSim emerged as an open solution to a sector-wide challenge affecting more than 500,000 freight wagons across Europe. Events such as OpenRail Day and Hack4Rail reinforced a growing, connected ecosystem.

Strategic positioning has become clearer. Digital sovereignty and resilience are now strategic priorities for railway operators. Open source alone does not create sovereignty, but sovereignty cannot be achieved without open source. Through structured governance, defined project maturity stages, and a neutral institutional framework, OpenRail provides practical foundations for interoperable, resilient digital infrastructure in the railway sector.

In 2025, OpenRail demonstrated that open source in rail is operational, collaborative, and strategically relevant.



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)

OpenRail Qualified

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

Further information:

[↗ OSRD Website](#) | [↗ OSRD on Github](#) | [↗ OSRD Demo Instance](#)

Netzgrafik-Editor (NGE)

OpenRail Onboarded

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.

Further information: [↗ Netzgrafik-Editor Frontend on GitHub](#)

[↗ Netzgrafik-Editor Backend on GitHub](#) | [↗ Online Demo Instance](#)

Library for Linear Reference Systems (libLRS)

OpenRail Onboarded

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.

Further information: [↗ libLRS on GitHub](#)

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

OpenRail Onboarded

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.

Further information: [↗ DAC Migration DSS on GitHub](#) | [↗ PopUpSim on GitHub](#)

Rail Condition Monitoring (RCM OSS)

OpenRail Onboarded

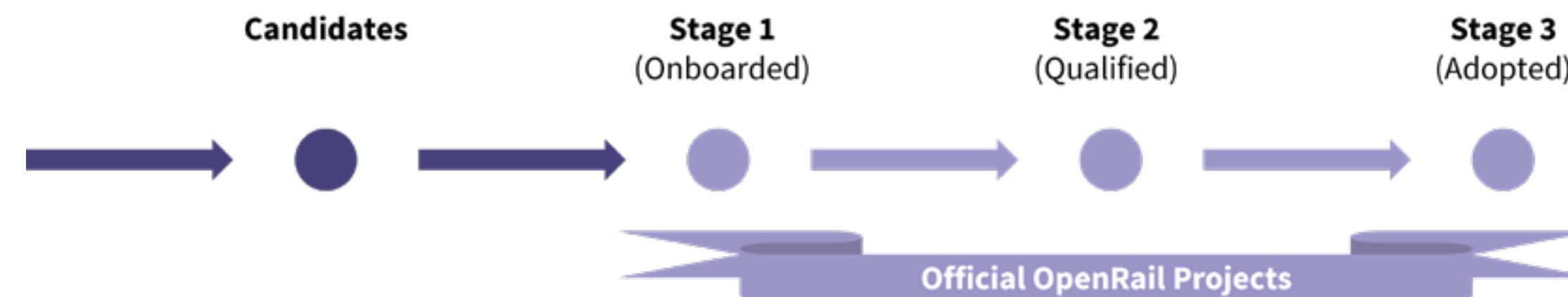
RCM by SBB comprises a suite of products for rail condition monitoring. Based on the open source data format RCM-DX (RCM Data eXchange), RCM enables easy accessibility and visualization of railway diagnostic data.

Further information:

[↗ RCM OSS on GitHub](#) | [↗ RCM DX Examples](#)

First Project Reaching the Qualified Stage

On February 27, 2025, OSRD became the first OpenRail project to reach the Qualified stage, marking a significant milestone in the association’s incubation process, achieved in just one year after being hosted by the OpenRail Association. The Qualified stage represents projects that have achieved a high level of quality and maturity, ready for production use by end users.



Project Funnel

To reach this stage, the OSRD team undertook substantial work to meet eight rigorous criteria covering governance, security, and development practices. Key achievements included documenting the release process, establishing a comprehensive security policy, and conducting an OpenSSF Scorecard benchmark that scored 6.1/10.

The project implemented REUSE compliance with automated CI checks to ensure licensing clarity, and enforced the Developer Certificate of Origin (DCO) to ensure code provenance.

Perhaps the most significant requirement was demonstrating a healthy and stable contributor base, which OSRD achieved through consistent contributions from SNCF Réseau and active production deployment.

This qualification signifies that OSRD has established robust processes for external contributions, transparent governance, and industry-standard security practices. The improved documentation and clear pathways for participation make OSRD more accessible to contributors and adopters throughout the railway industry, positioning it as a mature, production-ready solution for railway operations and capacity planning.





How OpenRail Drives Impact

Open Source Railway Designer – Open Source in Production

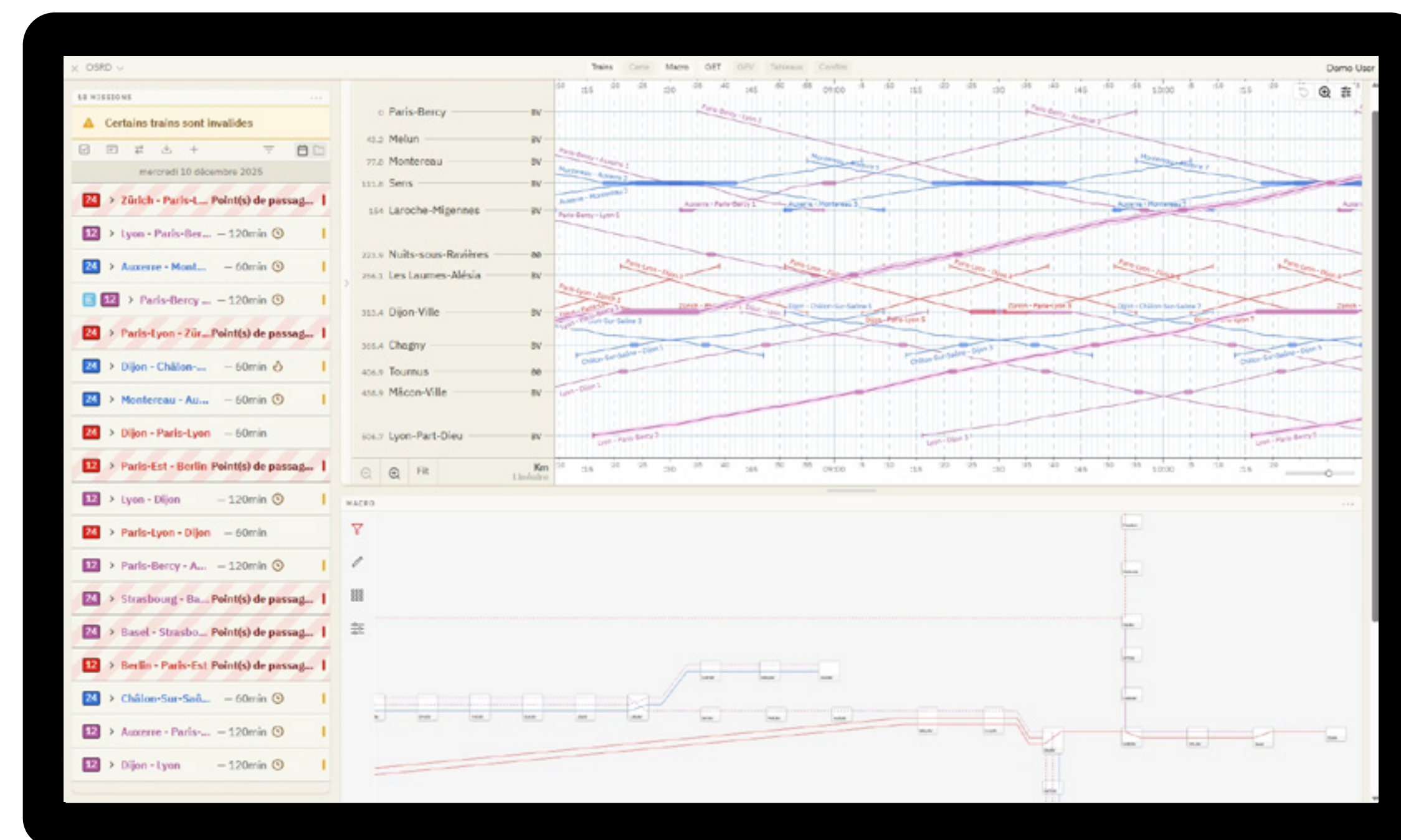
Since 2023, OSRD has been operational at SNCF Réseau, proving that open-source software can support critical railway infrastructure management. With around 100 active users, OSRD addresses diverse needs: timetabling, operational studies, infrastructure management, and short-term capacity planning. The platform offers a modern, web-based tool for collaborative timetable creation, integrating both macroscopic and microscopic railway data. This unified approach bridges high-level planning and detailed operational analysis, replacing outdated methods with a seamless, comprehensive solution.

The short-term capacity management module serves multiple railway companies. Users search daily for available train paths within France's residual network capacity. When OSRD identifies viable options, requests are forwarded to SNCF Réseau's validation and ordering tools. This accelerates processes by avoiding impossible requests and suggesting alternative options, enabling more trains to run on the network.

OSRD's success in production stems from its customizable integrations. SNCF Réseau developed private connectors to process internal data before feeding it into OSRD, while the railway_manager_interface supports specific organization operations, such as importing proprietary timetable formats and exporting schedules to private IT systems. This flexibility demonstrates how open source projects can integrate smoothly into complex enterprise environments without sacrificing specialized requirements. It can also operate on open data, ensuring that it does not depend on internal services.

A public [demo instance](#) of OSRD is available on OpenRail's infrastructure so you can try it out without having to install any software yourself. At SNCF, OSRD runs on a scalable AWS Kubernetes cluster, using the project's public Helm chart for efficient orchestration and maintenance. This infrastructure guarantees high availability and performance, essential for supporting a growing user base and intensive simulation requests.

Authentication integrates with SNCF's internal identity provider, allowing users to access OSRD via their existing SNCF credentials through OpenID Connect. It can work with any other OIDC provider as well. This simplifies onboarding and ensures compliance with security policies. Deployments use SNCF's internal tools: public Docker images are mirrored internally, and updates are applied via Helm upgrades.



Timetabling module, Space Time Diagram, Train List and NGE integration

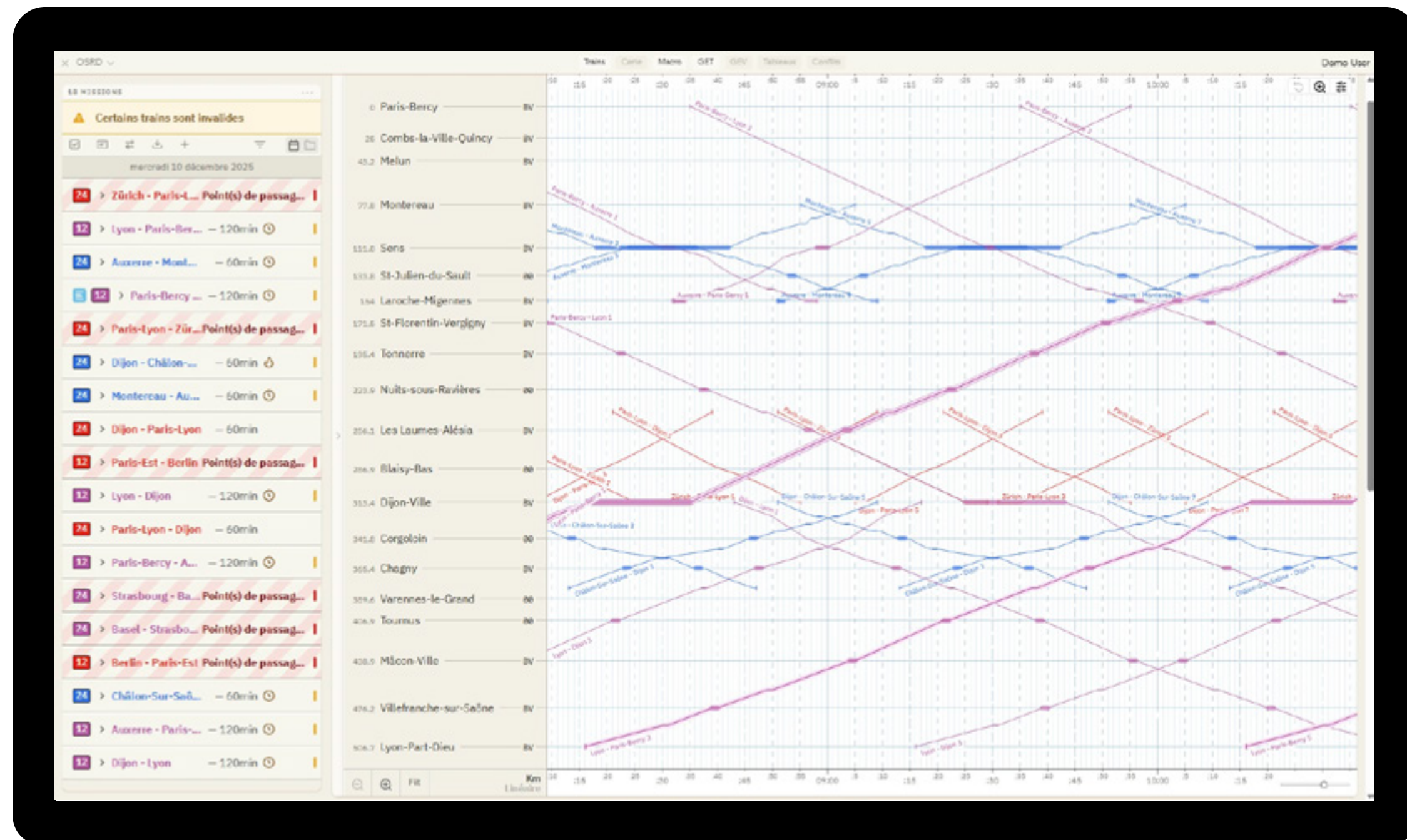
OSRD's granular roles and permissions system assigns high-level functionalities through roles and fine-grained access, such as permissions for specific railway infrastructures to users or groups. This ensures users only access relevant data and tools, matching the level of data protection desired by the company.

To improve accessibility, OSRD is fully localized in French and English, with partial support for German, Dutch, Portuguese, and Spanish. SNCF contributes to ongoing translations via Weblate, an open-source platform. This collaborative effort not only

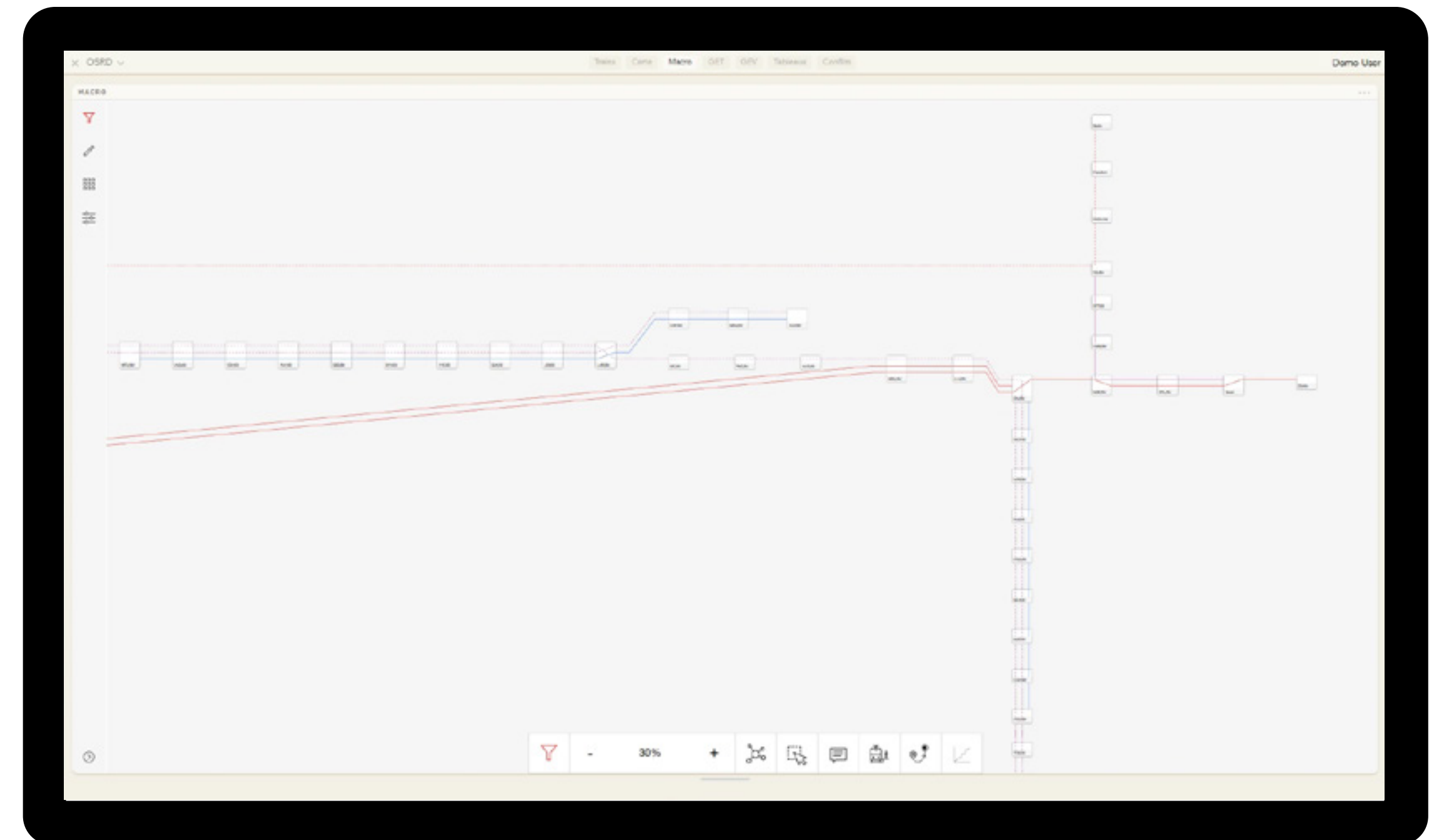
benefits French-speaking teams but also supports OSRD's mission to enable cross-border railway interoperability.



Beyond operational gains, OSRD's open source model advances a strategic goal: creating a standard platform for European-scale timetable collaboration. Since many features requested by SNCF Réseau align with broader industry needs, the open development approach ensures improvements benefit all stakeholders, promoting interoperability and reducing redundant efforts across Europe.



Timetabling module, Space Time Diagram



Timetabling module, NGE integration

Netzgrafik-Editor – Shared Path Creates Shared Value

If you want to go fast, go alone.

If you want to go far, go together.

– African proverb

Open Source as a Shared Path

The Netzgrafik-Editor serves as an example of a software solution that was originally created by a single railway company – the Swiss Federal Railways (SBB) – in response to a capability gap not addressed by existing market offerings. Available planning tools did not support the early-stage development of strategic long-term timetable and service concepts, nor did they enable planners to efficiently model, analyze, and iteratively test network-level service scenarios. This reflects a broader pattern across the railway industry: challenges are complex, markets are small, and specialized tools are often developed in isolation.

At this stage, the Netzgrafik-Editor was already being used for planning tasks within daily business operations when the idea of publishing the software as open source was first raised. The underlying assumption was that other railway companies – and potentially educational institutions – might face similar planning challenges and could benefit from a shared solution. However, there was limited experience in publishing software that directly supports core business processes, as previous open source contributions had typically focused on technical tooling for IT specialists. After internal discussions, it became clear that the risks of opening the software were low, while the potential benefits of collaboration were significant. At this point, the support and expertise of colleagues from the OpenRail Association proved essential.

Building Trust and Community

Early interest from the [OSRD](#) team at SNCF played a key role in shaping the initial phase of the Netzgrafik-Editor as an open source project. Establishing trust through direct, in-person exchange proved essential in forming the foundation for this collaboration. The OSRD team – itself deeply rooted in open source principles and values – brought both commitment and practical experience in collaborative development, which supported the emergence of a broader community around the Netzgrafik-Editor.



NGE Screenshot

Through active community building, we attracted additional adopters and development partners. It was hard work, but the results are tangible – today, the project benefits from a diverse community of software developers, planners, designers, students, and enthusiasts. Half of the commits now originate outside SBB. Such a broad and interdisciplinary community is an important prerequisite for advancing open innovation in the railway sector.

To generate interest among the user community, we provided – in addition to publishing the source code – a fully functional, publicly accessible [demo instance](#) with the support of the [Flatland Association](#), an associated member of the OpenRail Association. These users actively participate in the project by integrating the tool into their daily workflows, providing direct feedback, and introducing feature requests grounded in real-world operational needs. This user perspective is essential for the continuous improvement of the project.

Conclusions for Domain-Driven Open Source Projects

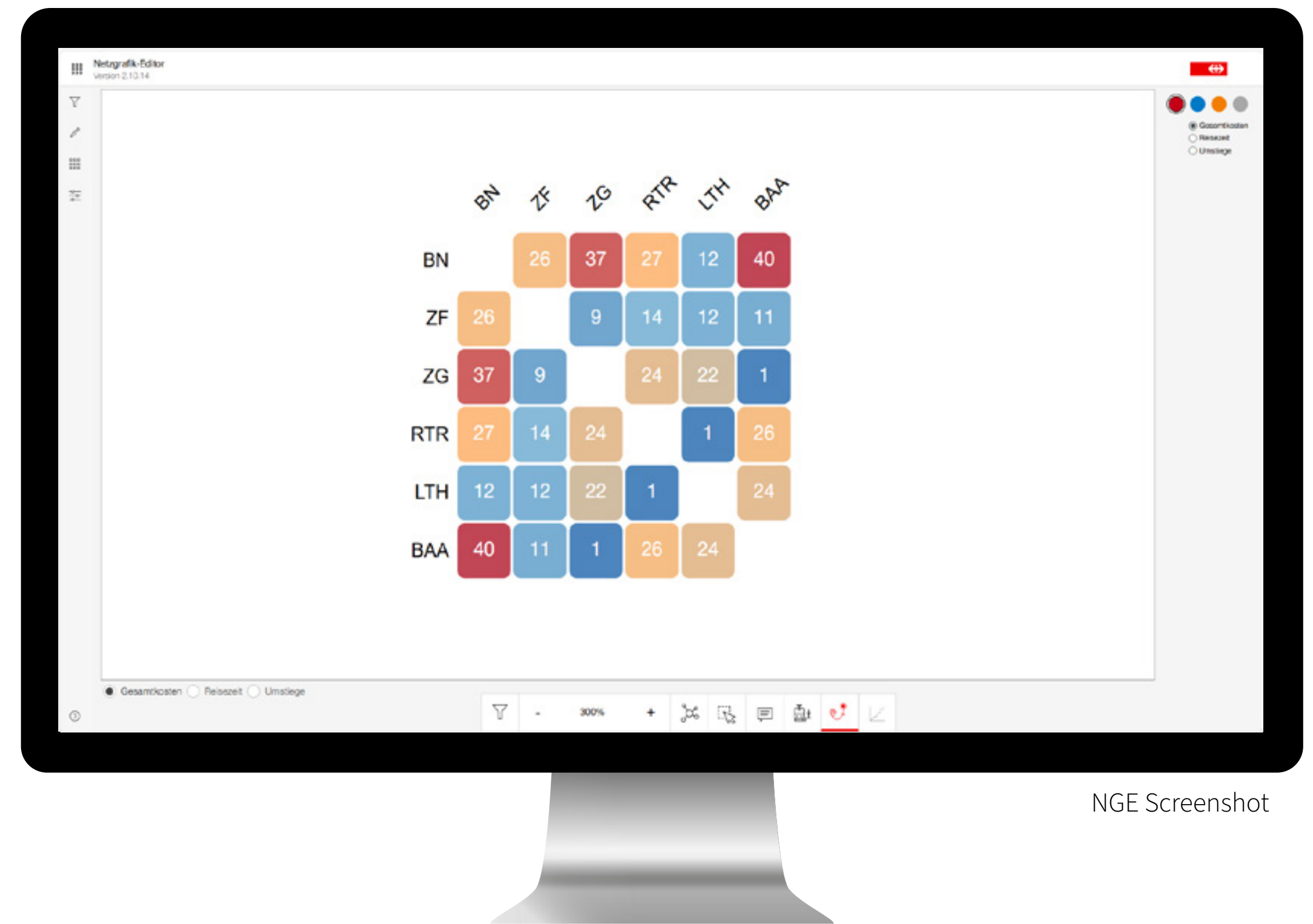
Opening the Netzgrafik-Editor has measurably changed how the tool evolves and how planning knowledge is shared across organizational boundaries. What began as an internal innovation project has developed into a collaborative solution that benefits from contributions across companies and disciplines.

Based on this experience, several conclusions may be relevant for similar domain-driven open source projects in the railway sector:

- Releasing business-critical tools as open source is a viable strategy when market solutions are unavailable or insufficient – or when seeking to avoid vendor lock-in.
- Collaborative development across organizations enables the implementation of new features that would be difficult to realize within a single organizational context.

- Collaboration across organizational boundaries reduces duplicated effort and supports interoperability between planning tools.
- Integrating user feedback from operational environments improves practical applicability.
- Transparency and openness support trust-building between organizations and partners.
- Open collaboration enables innovation beyond the capabilities of a single company.

If you want to go far, go together with open source values and principles.



NGE Screenshot

DAC Migration DSS – Innovation through Open Source

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 OpenRail Association in 2025.

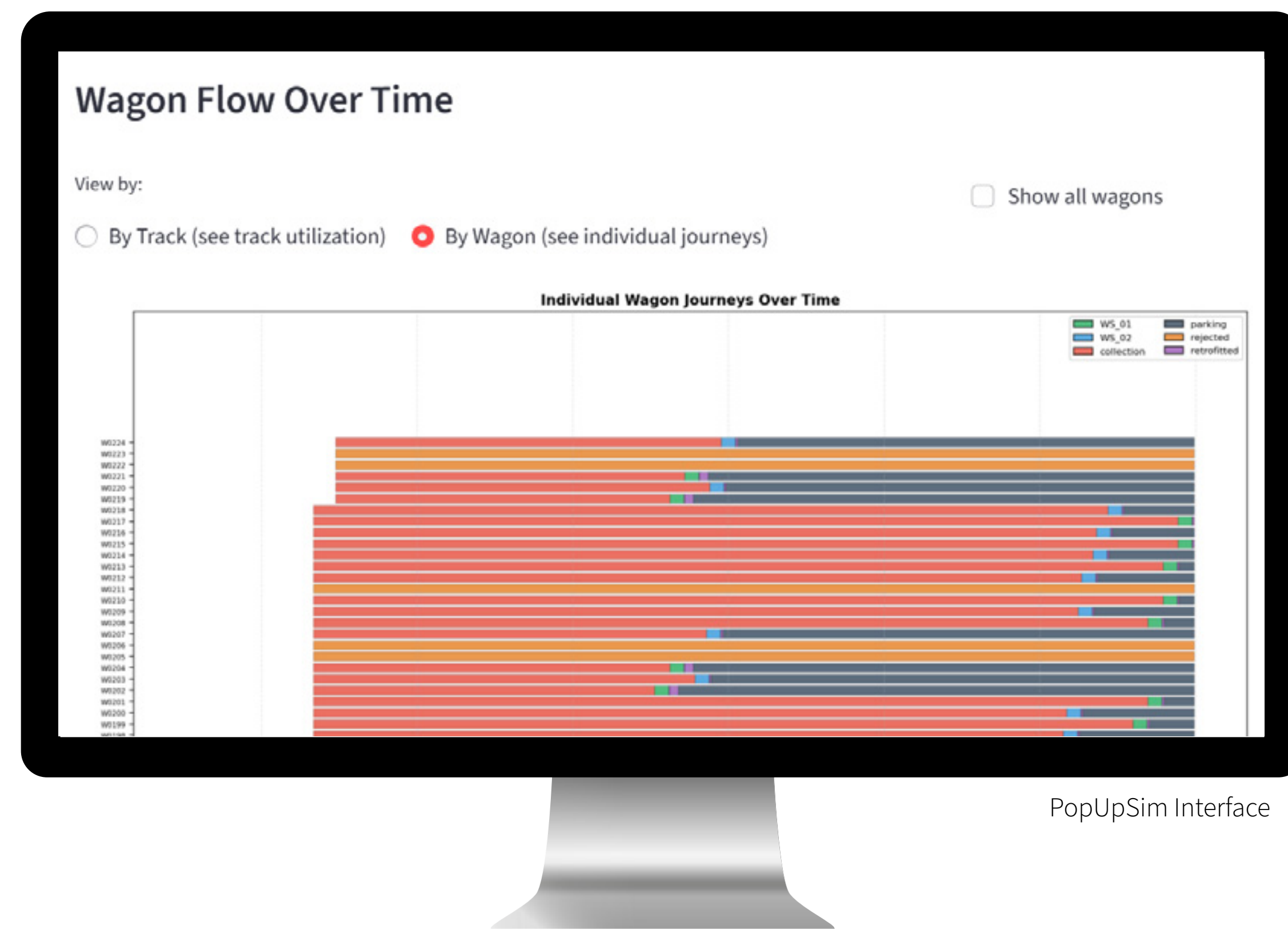
The idea for PopUpSim emerged during the Dreiländerhack (now: Hack4Rail), which took place from 30 September to 1 October 2024 in Berlin. A team of developers from DB, SBB and ÖBB tackled a challenge concerning the simulation of wagon flows from operations to workshops and back to operations during the 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 OpenRail Day 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.



PopUpSim Interface

libLRS – Building Blocks for Rail

Linear referencing systems are used everywhere in the railway industry to describe the network. They hold the specifics of guided transportation and it is trivial to understand how the objects (switches, signals, etc.) are positioned. A coordinate is a simple distance – such as 12+340 – from a milestone on a given track.

It is easy to communicate orally where an object is located, and it seems such a trivial system, that many naive implementations exist across any company working on linear infrastructure.

However, the infrastructure is over a century old and has been developed over time. This means that the data is not always consistent and can be difficult to work with. There is always an exception to the rule, and libLRS provides a solution to this problem by providing a standard format for storing and manipulating linear referencing data.

When we designed libLRS, we wanted to create a simple, efficient and modern library that manages all the small quirks of the network. The development was made for the OSRD project, but we wanted it to be used by anyone having a similar problem.

When we contacted other sub-entities of SNCF Réseau, we noticed an interesting pattern: having defined an exchange format with the library allowed us to give immediately the data to other entities (a simple sharepoint link to the data file, no access to a database through a VPN and credentials that require weeks to obtain). With that file, they could test on the public demonstrator taking a shortcut compared to traditional IT projects. This accelerated the adoption.

In conclusion, the key aspects for the successful adoption of libLRS, much more than the technical aspects, were:

- Data that is easy to share
- A demonstrator that requires no setup
- The publication of the library on PyPI and NPM



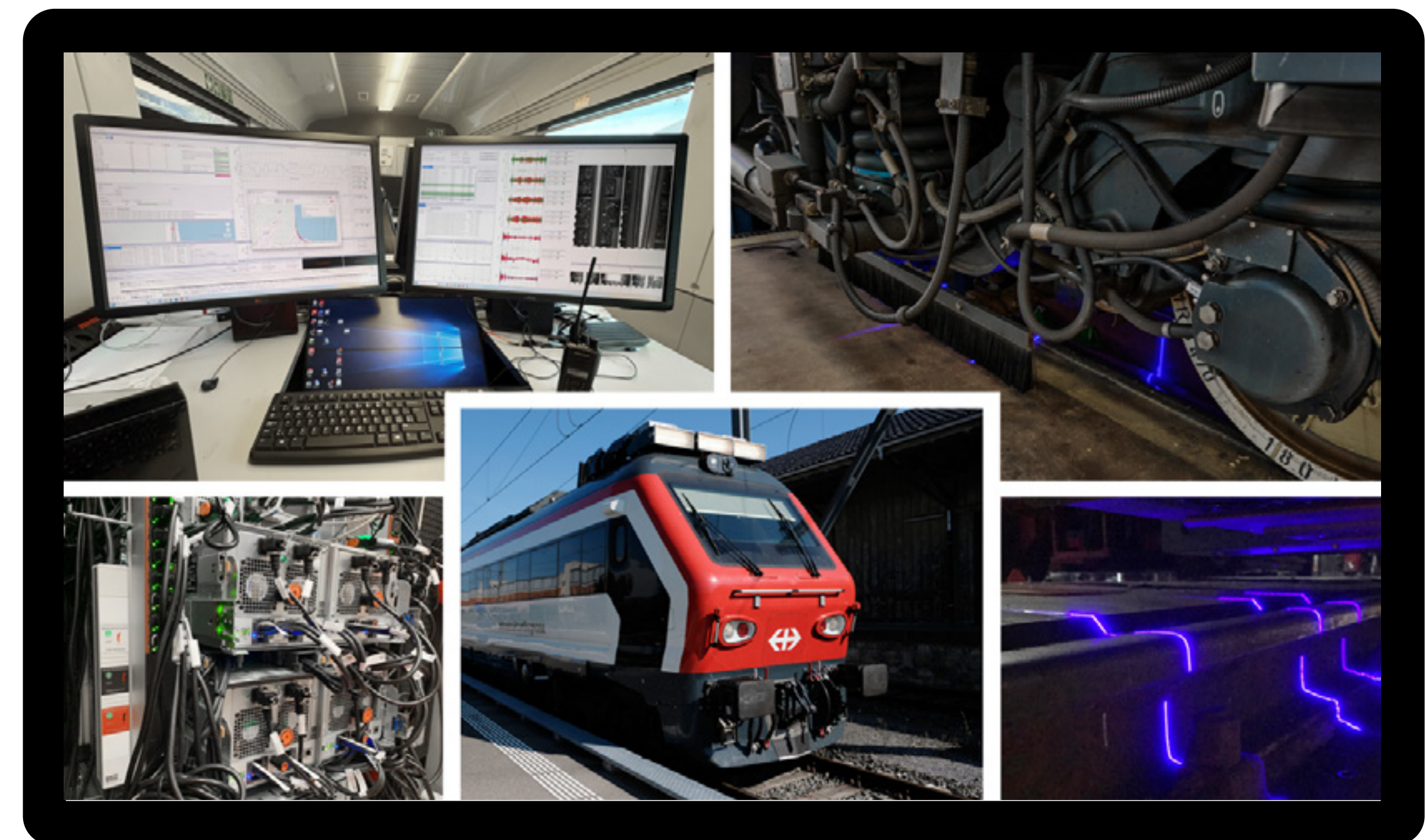
Rail Condition Monitoring OSS – Open Source Fosters Adoption of Standards

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 harbor multiple such 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 specialized 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 in Paris – Collaboration in Practice

With OpenRail Day in Paris, the OpenRail Association brought its community together in person at scale for the first time. On December 17th 2025, hundreds of participants joined for a full day of workshops, conference sessions, and networking, demonstrating that OpenRail has evolved into a visible and growing ecosystem.

Participants explored the OpenRail projects at dedicated stands, learned about recent developments and upcoming plans in presentations, and engaged directly with developers and contributors. The event made tangible what OpenRail stands for: practical collaboration around shared digital building blocks for the railway sector.

One highlight of the conference was the keynote by Jochen Decker, Chair of the OpenRail Association, who outlined the common digital challenges faced by railway operators and infrastructure managers and emphasized the role of open source in addressing them through transparency, shared development, and interoperability.

François Davenne, UIC Director General, reinforced the importance of open collaboration at an international level and positioned OpenRail as a concrete enabler of interoperability across organizations and borders in his [keynote](#).



In a [panel discussion](#) with Lucian Balea (LF Energy, RTE France), Fatima Zohra EL Ouerkhaoui (ONCF), Daniel Woithe (DB Systel), Peter Franken (Infrabel), Pierre Tane (UIC), and Loïc Hamelin (SNCF), moderated by Amel Charleux (University of Montpellier), the discussion focused on lessons learned from other industries and how open collaboration in the railway sector can be structured for long-term success. The conversation made clear that open source in rail is no longer experimental; it is becoming operational.

The European Commission's Open Source Program Office contributed a European perspective on digital sovereignty, interoperability, and cross-sector collaboration, represented by Miguel Díez Blanco and Catalin Moruju. This underlined that OpenRail's work is aligned with broader European ambitions for resilient and interoperable digital infrastructure, as shared in their [presentation](#).

But beyond the stage program, the most important element was direct exchange. Developers, decision-makers, and contributors met at project stands and in informal conversations. Many met in person for the first time after months of virtual collaboration. These interactions strengthened trust, created new connections, and turned shared code into shared community.

OpenRail Day demonstrated that the ecosystem is active, connected, and growing – and that collaboration in practice is the foundation for sustainable digital transformation in the railway sector. A big thank you goes to SNCF and UIC for organizing the event and to SNCF for hosting it at their headquarters on the Campus Rimbaud.



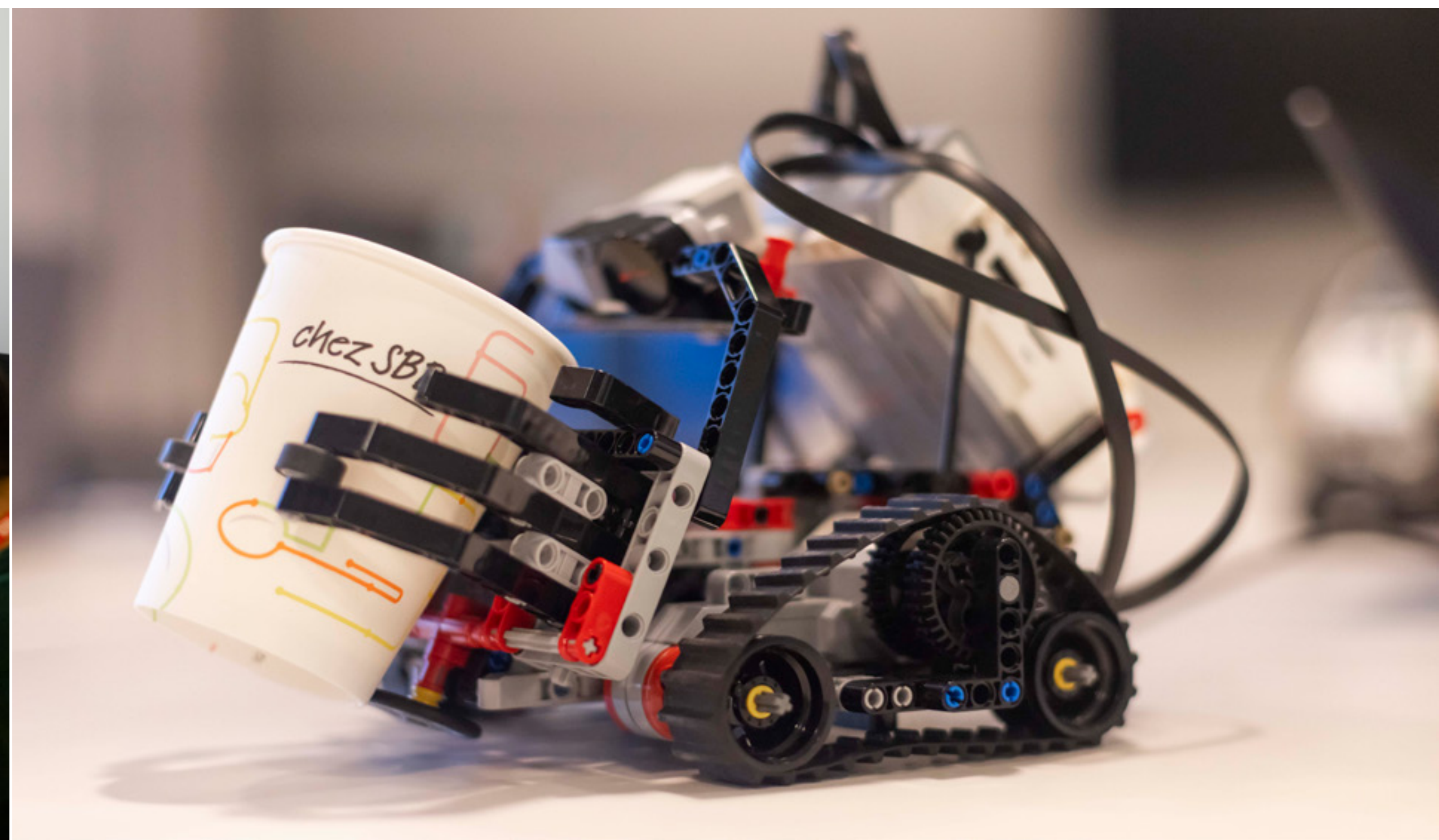
Hack4Rail 2025 in Bern – Innovation through Open Source

OpenRail Association partnered Hack4Rail 2025, hosted by SBB, which took place from June 23 to 25 in Bern, Switzerland.

The hackathon brought together around 170 creative minds from the railway industry, including members from DB, Flatland Association, Infrabel, ÖBB, SBB, and SNCF, working in 21 interdisciplinary teams to tackle some of the key challenges faced by rail operators and infrastructure managers today.

With the theme “Connected Railways for Intelligent Solutions”, Hack4Rail focused on multinational collaboration and open source solutions. OpenRail Association contributed by providing technical infrastructure, financial support, and a collaborative space on GitHub, while its members brought in real-world challenges and actively collaborated within the teams, helping to open-source these challenges from the very beginning.

The teams’ open way of working ensured that results remain transparent and easy to build upon beyond the event itself, making the work carried out during the hackathon more sustainable over time.





The response was overwhelmingly positive, with many challenges naturally initiating as open source projects. This approach aligns with our vision to foster cooperation, openness, and shared growth in the digital transformation of railways. Participants were encouraged to explore and adapt innovative models, leveraging open data to drive progress across the industry.

The hackathon showcased impressive solutions to real-world rail challenges through collaborative efforts:

- **Brave New Station:** Enhanced passenger count analysis at stations using near-real-time data for improved safety and operational efficiency.
- **LoCo2 LoCo:** A smart CO₂ dashboard for real-time emissions tracking, promoting sustainable travel strategies.
- **Trip HackerZ:** Personalized travel solutions using natural language processing to tailor travel experiences to individual needs.
- **Parametric Travelers:** A tool that recommends travel options based on personalized criteria, encouraging exploration of lesser-known connections.

These winning projects exemplify the transformative potential of open source collaboration, which OpenRail Association is committed to nurturing. By collaborating and sharing insights, the railway industry can accelerate innovation and achieve more efficient and interoperable solutions.

We look forward to continuing this journey and exploring new opportunities to connect and innovate with our members and partners at [Hack4Rail 2026 in Vienna](#). For an engaging recap of Hack4Rail 2025, we invite you to watch the event [video](#).

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

FOSDEM is Europe’s largest gathering of Free and Open Source Software developers and enthusiasts, with thousands of people attending and hundreds of talks taking place each year in Brussels at ULB University. The two-day conference is volunteer-run, free to attend, and non-commercial. It promotes Free and Open Source Software and serves as a major European platform for community exchange and project presentations.

For the third year in a row, a team of individuals rooted in the OpenRail Association coordinated the “Railways and Open Transport” devroom, which took place on the weekend of 1–2 February 2025.

The devroom covered the whole of Sunday afternoon, and the programme was packed with interesting topics such as European standards; presentations from OpenRail projects including the Open Source Railway Designer and the Netzgrafik Editor; machine learning research for railway rescheduling; post-processing of GNSS train positions; routing approaches; and a report about a real train journey aboard the HackerTrain.

The devroom was at capacity most of the time, so unfortunately some attendees had to be turned away. Luckily there was an also excellent hallway track as alternative. Recordings of the talks and related materials are available on the [FOSDEM website](#), so everyone can catch up there.



Digital Resilience – Strategic Outlook

For railway operators and infrastructure managers, digital resilience is no longer an abstract concept. Dependencies in software and digital infrastructure directly affect operational flexibility, long-term planning, and the ability to adapt.

Recent geopolitical developments have highlighted the risks of structural dependencies in digital infrastructure. At the same time, many organizations have experienced firsthand what it means to rely on single vendors and how difficult it can be to regain agency once critical systems are locked in. As a result, the ability to make self-determined decisions in a globally interconnected digital environment has become a strategic priority.

Open source plays a central role in addressing this challenge. Transparency, neutral governance models, and collaborative development across organizational boundaries create the conditions for choice and interoperability. By enabling competitors to collaborate on shared building blocks, open source strengthens markets, reduces dependency risks, and increases resilience. The OpenRail mission to establish a broad ecosystem of open source software for the railway sector directly contributes to this objective. A shared, openly governed software foundation increases flexibility for operators, infrastructure managers, and vendors alike. It provides practical alternatives, reduces lock-in risks, and enables informed technological decisions. In this sense, digital sovereignty is not an additional topic for OpenRail. It is embedded in its core mission.

Digital sovereignty does not mean isolation or self-sufficiency. It means building on globally developed, transparently governed software that can be adapted, operated, and further developed according to local needs. Open collaboration and local agency are not contradictions. They reinforce each other. Open source alone does not automatically create sovereignty, but sovereignty cannot be achieved without open source. Access to code, the right to modify, and the ability to collaborate openly are fundamental prerequisites for technological self-determination.

In 2025, OpenRail actively contributed to the broader discussion on digital resilience. In October, we participated in the [Digital Resilience Forum](#) in Madrid, where leaders from multiple sectors explored practical strategies for strengthening Europe's digital infrastructure. In November, OpenRail signed the [Declaration of Digital Independence](#) on the occasion of the Summit on European Digital Sovereignty in Berlin. We also supported the initiative to establish a [European Sovereign Tech Fund](#) to provide sustainable funding for critical open source projects that underpin digital infrastructure.

This funding dimension is essential. Open source ecosystems thrive when there is a healthy balance between using and contributing. Sustainable digital infrastructure requires not only adoption, but also long-term investment. The discussion on digital sovereignty will continue to evolve. OpenRail will remain engaged, both in shaping the dialogue and in strengthening resilient and openly governed digital foundations for the railway sector.





The Association

How the OpenRail Association Works

The OpenRail Association provides a neutral space for shared development and governance of software in the railway sector. It is firmly rooted in open source principles and open to the entire railway ecosystem. OpenRail connects member organizations and open source projects within a structured and reliable framework.

There are several ways to engage: join as a member, collaborate in a working group, or initiate or contribute to an OpenRail open source project.

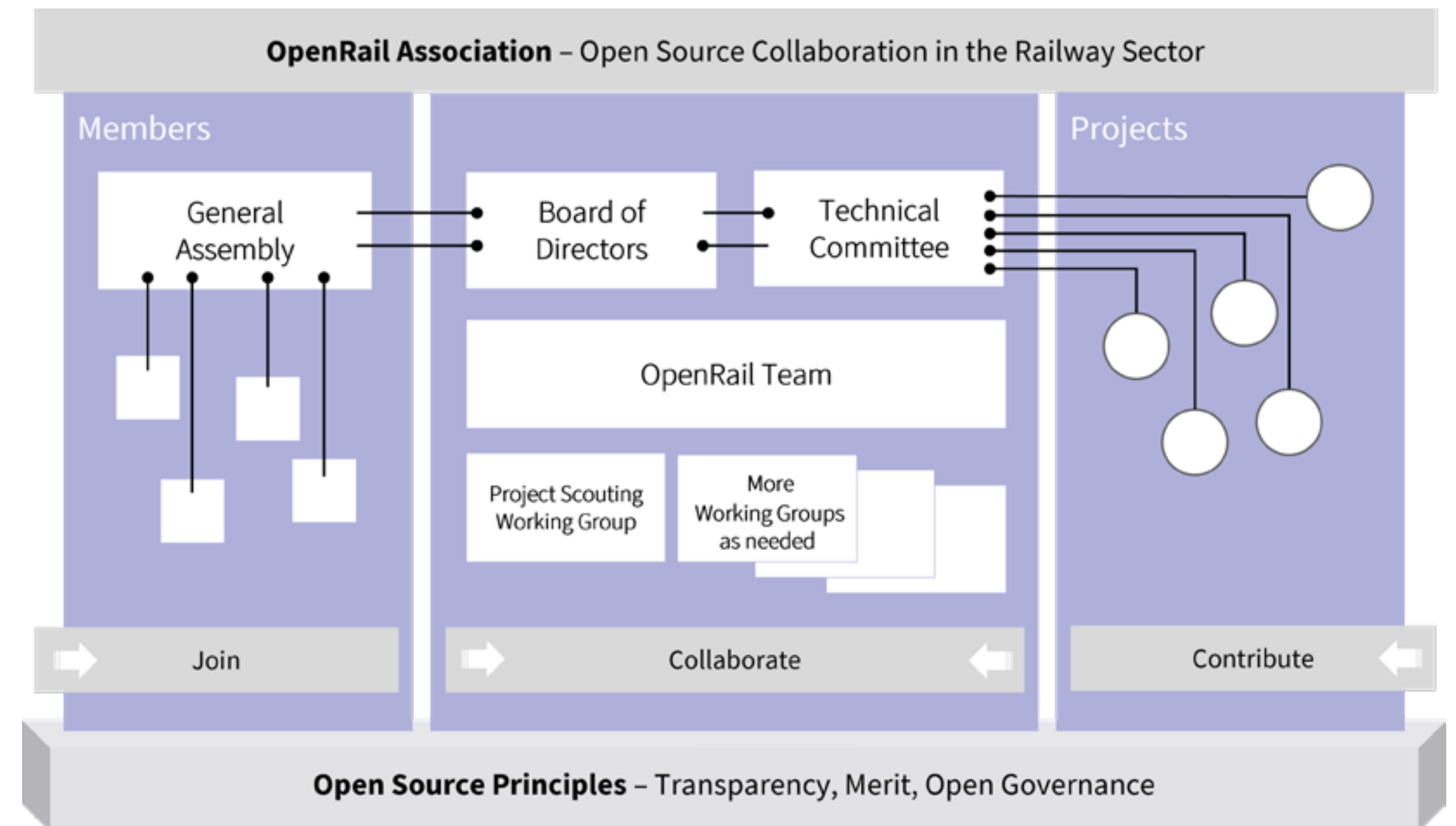
OpenRail Association Structure

Member organizations are represented in the General Assembly, which elects the Board of Directors. These statutory bodies define the strategic direction of the association and ensure its long-term stability.

OpenRail projects are represented in the Technical Committee. The Technical Committee provides overall guidance based on open source principles and ensures that projects follow an open governance model and keep a high level of quality. Contributions are open to anyone. You do not have to be a member to use or contribute to OpenRail projects.

The Technical Committee forms the institutional bridge between member organizations and projects. Its chair is an ex officio member of the Board of Directors, and the Board appoints a limited number of additional members. The majority of the Technical Committee consists of representatives from the projects themselves. This structure ensures that projects retain autonomy while remaining aligned with the strategic direction of the association.

Working groups carry out the operational work of the association. They address cross-project topics, support new projects in joining OpenRail, and handle communication and day-to-day activities. The OpenRail Team coordinates and supports these efforts. OpenRail is a lean organization focused on practical collaboration and long-term sustainability. Participation is open, and engagement is welcome.



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



Associate



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](https://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](https://github.com/OpenRailAssociation/technical-committee)



Become a Member – Organizations can support and shape the ecosystem by joining as members:
[➔ openrailassociation.org/about](https://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	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](https://openrailassociation.org).



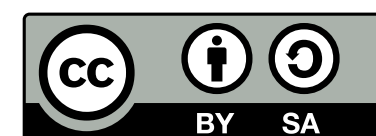
Contact

To contact the OpenRail Association send us an email at [↗ contact@openrailassociation.org](mailto:contact@openrailassociation.org).



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