FP3-IAM4Rail Mid-Term Event:

a step forward for railway innovation

Held at UIC Headquarters, Paris

The FP3-IAM4Rail project recently celebrated its Mid-Term Event, hosted at the UIC (International Union of Railways) premises in Paris. The gathering provided an opportunity for project partners, stakeholders, academia and industry experts to reflect on achievements, share insights and set the course for the second phase of the project.

The event served as a platform to present the project's accomplishments to date, including advancements in robotic maintenance systems, AI-based inspection tools and infrastructure monitoring technologies.

The event opened with welcoming speeches from three of its leaders:

- **Sébastien Denis**, Senior Programme Manager at Europe's Rail Joint Undertaking, emphasised the critical role of innovation in advancing Europe's railway infrastructure and reaffirmed the EU's commitment to supporting projects that promote sustainability and digital transformation.

- **Arianna Amati**, Project Manager at Hitachi, highlighted the importance of collaboration and technological advancements in creating safer, smarter and more efficient railway systems, preparing the way for rail asset management solutions.

- **David Villalmanzo Resusta**, Project Coordinator, focused on the collective efforts and holistic vision behind FP3-IAM4Rail, motivating participants to continue pushing the boundaries of innovation and collaboration.

The project is supported by the Europe's Rail Joint Undertaking and its members.

Opening speeches

The event then continued with an overview of the project's journey so far, highlighting the milestones achieved during its first half. Key metrics, successful implementations and early results demonstrated the project's effectiveness and alignment with its initial goals.

Engaging Panel Discussions on Critical Topics

The event featured four dynamic panel discussions that explored the challenges and innovative solutions shaping the future of railway infrastructure and asset management:

1. Cost-Effective Asset Management with Digital Technologies

Moderated by Marco Borinato (Hitachi Rail STS), this panel featured Luca Oneto (Università degli Studi di Genova), Emilia Andreva-Moschen (ÖBB), Jerzy Baranowski (AGH University of Science and Technology), Daniela Pietranera (Hitachi Rail STS) and Torben Holvad (ERA-European Union Agency for Railways). The discussion revolved around how digital solutions are transforming asset management, enabling enhanced efficiency, reduced costs and improved sustainability in railway operations.

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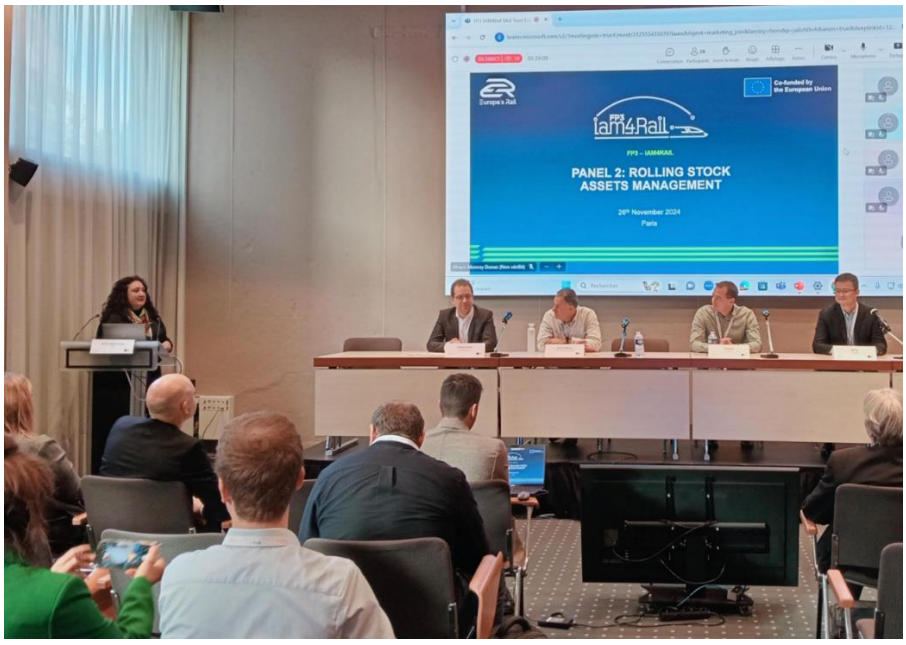
Panel Discussion 1

2. Rolling Stock Asset Management

Led by moderator Mónica Pelegrín (Adif), this panel included experts Sebastian Kassner (Knorr-Bremse), Yan Niu (ALSTOM), Ricardo Melgarejo (NS) and Jörg Bisang (SBB). They explored innovative strategies and digital advancements shaping the future of on-board and infrastructure-based rolling stock management, with a focus on reliability, efficiency, data sharing/analysis, and sustainable practices.



Panel Discussion 2

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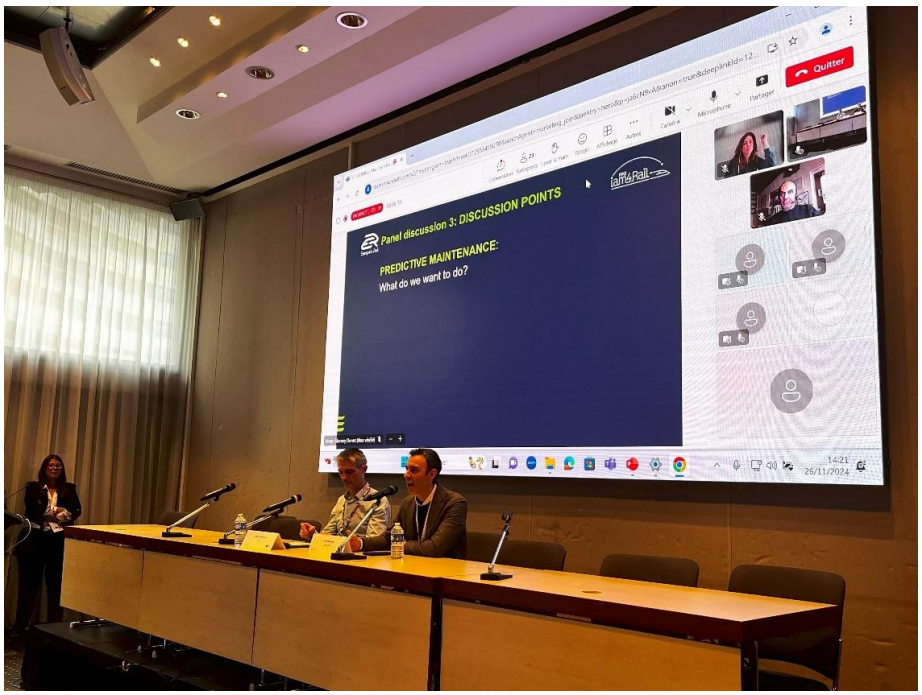
3. Environmentally Friendly Asset Production and Maintenance Support Technologies

Moderated by Ángela Veiga (CEIT), this session featured Louis-Romain Joly (SNCF), Unai Alvarado (InspectRail), Matina Loukea (CERTH and The Hellenic Institute of Transport) and Lazaros Georgiadis (CERTH and The Hellenic Institute of Transport). Panellists highlighted cutting-edge technologies and sustainable practices in railway asset production and maintenance, balancing environmental responsibility with operational excellence. Besides, the topic of cohabitation and complementarity of artificial and natural ecosystems in the railway environment was tackled.



Panel Discussion 3

4. Future Trends in Railway Infrastructure Management participation

Henk Samson (Strukton) moderated this discussion with Noemi Jiménez Redondo (CEMOSA), Jörn Gross (DLR), Fulvia Berti (Italferr S.p.A.) and Thomas Gugler (SBB). The panel examined emerging innovations such as predictive analytics and advanced automation, implementation of railway Digital Twins, from data asset management to BIM Model&Predictive Maintenance, Multi-Source/Multi-Purpose Asset Monitoring ensuring smarter, more resilient rail networks for the future.

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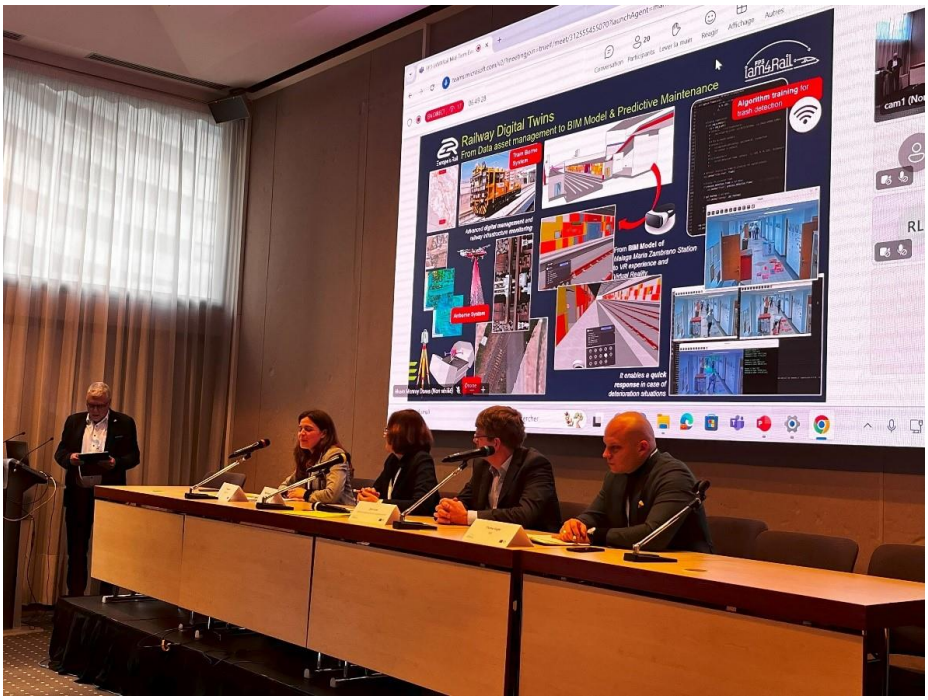

Panel Discussion 4

Showcasing progress: presentation of four demonstrators

Following the panel discussions, the event moved to **presenting four demonstrators**, highlighting the progress made in driving innovation and collaboration. These demonstrators represent the dedication and vision of the FP3-IAM4Rail project team to solve real-world challenges and create an important impact.

- **PRIME robot**, which was presented by SNCF. It will be used to monitor the railway infrastructure and detect possible elements that invade or obstruct it, improving the safety of rail traffic by increasing the efficiency of inspection and maintenance works.

- **IAMS, Intelligent Assets Management System Platform**, presented by Hitachi consist in some dashboards showing the data collected from the IXL (Interlocking) and TMS (Traffic Management system) and allow monitoring of functional parameters (currents and voltages) and computation of some basic KPIs on asset operation (such as the average movement time for the Point Machines or the number of transits on Track Circuits, etc). The key innovation is the fact that to collect this data, we do not need to install sensors on the line as we manage to extract them from the existing railway systems (IXL and TMS in this case).

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- The reality model presented by Strukton, the **LEONARDO platform**, is a digital representation of the actual field conditions, overlaid with as-built drawings or design information for future work. This enables to verify whether real-world conditions align with design assumptions. To achieve this, we utilize advanced technologies such as LiDAR systems, 360-degree point clouds, track scan data, and ground-penetrating radar to identify both surface and subsurface objects. These tools provide an accurate visualization of the external environment as it truly exists. By comparing this reality model with design plans, we can optimize planning and execution. For instance, when planning the placement of balises, the reality model helps identify areas where installation may cause interference with existing assets, thereby avoiding potential conflicts or unexpected issues during implementation. This proactive approach ensures that designs are both practical and compatible with real-world conditions.

- The **CEMBOX** integrated station asset management demonstrator, presented by FS with CEMOSA technology that uses digital twin technologies capable of being operated from immersive 3D environments for facility maintenance and increased energy efficiency.

From cutting-edge robotic systems to AI-driven solutions, these demonstrators showcased practical applications of the project's innovations, illustrating their potential to revolutionise railway infrastructure management and enhance operational efficiency across the sector.

The four demonstrators presented during the event.

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A Collaborative Round Table to Close the Day

The event concluded with a round table discussion on **Collaboration and Stakeholder Engagement**, moderated by David Villalmanzo Resusta (Adif). The panellists Elena Crespo (Global Rail Group), Arianna Amati (Hitachi Rail STS), Rosa Casquero (UIC), Alfredo Núñez (TU Delft) and Silvia Domínguez (INECO), emphasised the critical role of collaboration in promoting innovation, aligning diverse stakeholders and driving the ambitious goals of the FP3-IAM4Rail project. They also discussed how the results of FP3-IAM4RAIL can support system architecture and decision making from a more comprehensive and holistic perspective that maximises value for railway stakeholders. Finally, they mentioned how important it is, to achieve greater resilience, safety, sustainability and efficiency, by implementing digitalisation strategies in railways.

Round Table

Key takeaways from the Project Coordinator

David Villalmanzo Resusta, the Project Coordinator, summarised the event with three key conclusions:

1. **The Eagerness for data:** data is at the heart of railway innovation. Reliable collection methods must align with user needs, and while rapid development of demonstrators is crucial, the historical relevance of data must be respected to ensure it remains meaningful and actionable.

2. **Harmonisation:** a more unified framework or at least a harmonised architecture for the railway system is essential for standardising solutions and integrating

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diagnostic data to enhance asset management. This framework will guide the development of innovative actions and demonstrators.

3. Practical Cooperation: collaboration should address real-world user needs, ensuring the project delivers meaningful and impactful results. With limited time, maintaining momentum and focusing on tangible outcomes and quick wins is key to benefiting stakeholders effectively.

Thank You, UIC

The choice of venue made the occasion even more special. UIC at their prestigious headquarters in Paris, as a global leader in railway development and innovation, provided the perfect place for promoting collaboration and knowledge exchange. We are deeply grateful to the UIC team for their warm hospitality and for facilitating such an enriching event.

The FP3-IAM4Rail Team gathered at the UIC premises.

As we move forward, the FP3-IAM4Rail project continues to push boundaries in shaping the future of rail transport. We thank all partners for their dedication and commitment and look forward to the exciting steps ahead!

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Europe's Rail

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