Laying tracks for new railway signalling and automation

An EU-and industry-funded research project has provided guidance for ongoing research contributing to the development of a flexible, intelligent real-time traffic management and decision-support system in a bid to help boost the competitiveness and sustainability of European rail.

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The EU and industry jointly funded project X2RAIL-1 has developed the shared vision and theoretical foundations required for the hands-on research and innovation (R&I) activity deployed in four subsequent projects.

'Guidelines, specifications, prototypes and timelines were produced in the preparation of these successor projects, three of which are already under way,' says project coordinator, Robert Grosser, of lead partner Siemens Mobility, Germany.

The project's innovation areas include automated train operation, adaptable communications, testing, and smart radio-controlled objects. As of April 2020, two trials set up by X2RAIL-1 – of semi-automated systems for passenger and freight trains, respectively – are about to be conducted.

The X2RAIL collaboration also focuses on 'moving block' technology. This system is designed to enable more trains to run at any given time without jeopardising safety by calculating the space to be allowed for each one in real time. Furthermore, the partners are designing new cybersecurity technology to protect increasingly connected railway signalling and control systems.

Advances in these six areas could help to increase the capacity, sustainability and security of Europe's rail system, while reducing the associated costs. 'But before the preparations for the required collaborative R&I could even begin, a common understanding had to be developed,' Grosser explains.

The partners cooperating in X2RAIL, which jointly represent a substantial share of the European rail sector, include key players in the EU's rail supply industry along with operators and infrastructure managers – all with their own views and terminology regarding the proposed innovations.

A key element of X2RAIL-1's legacy is a detailed glossary that will be extremely valuable for research collaborations beyond X2RAIL, according to Grosser. X2RAIL-1 was one of a number of R&I projects backed by the Shift2Rail Joint Undertaking, a public-private partnership involving the EU and the European railway industry.

X2RAIL-1 has created momentum and built the foundations for the R&I activity deployed in the follow-on projects, Grosser explains, adding that demonstrators of the proposed innovations will be developed by X2RAIL-5, the final project in the series, which is due to be launched by the end of the year.

'With these demonstrators, X2RAIL will have reached its destination – delivering exciting contributions to the future of rail that the work in X2RAIL-1 will have helped to shape,' Grosser concludes.

Project details

- Project acronym: **X2Rail-1**
- Participants: Germany (Coordinator), France, Italy, Czechia, Sweden, Spain, Switzerland, Austria, UK
- Project N°: 730640
- Total costs: € 40 878 154
- EU contribution: € 18 090 998
- Duration: September 2016 to December 2020

See also

More information about project X2Rail-1:
https://cordis.europa.eu/project/id/730640

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