



Project summary

Organization:
Italferr S.p.A.

Solution:
Project delivery

Location:
Palermo, Catania, and Messina;
Sicily, Italy

Project playbook:
Bentley LumenRT™, MicroStation®,
OpenRail™, OpenRoads™,
ProjectWise®, SYNCHRO™

Project overview

Italferr S.p.A. led the modernization of the Palermo-Catania-Messina railway to increase the competitiveness of passenger and freight transport by rail in Sicily.

Once completed, the project reduced time travel between Palermo and Catania from three to two hours, and between Catania and Messina from 75 minutes to 45.

By improving the connection by train between these major cities in Sicily, the project reduces dioxide emissions and contributes to the European climate goals.

ROI

Integration between ProjectWise and iTwin® delivered an 80% reduction in the time required to update federated models across revisions, enabling simultaneous updates to multiple models.

Rapid and easy access to models through the cloud platform eliminated over 4,500 design interferences analyzed during the verification phase.

Italferr S.p.A. supported Sicily's connectivity with an upgrade of its major railway

Implementing an integrated digital ecosystem cut model-update time across revisions by 80%.

Sicily's next-generation railway corridor

Italferr S.p.A., the engineering company of the Italian State Railways Group, led the ambitious modernization of the Palermo-Catania-Messina railway in Sicily. As part of the Scandinavia-Mediterranean corridor of the Trans-European Transport Network (TEN-T), the project aimed to transform mobility across Sicily by improving travel efficiency, enhancing regional connectivity, and supporting long-term economic development. It created the conditions for a major shift toward rail, as "the upgrading of the Palermo-Catania-Messina connection will significantly increase the competitiveness of passenger and freight transport by rail," noted Lorenzo Cambi, BIM coordinator at Italferr S.p.A.

Beyond its transportation value, "the railway also plays a fundamental role in the development of the island as it connects three areas that alone account for more than 50% of the population," highlighted Cambi. By expanding and modernizing existing infrastructure while introducing new works, the project laid the foundation for faster, more sustainable mobility across Sicily.

Managing large and fragmented data flows

The scale and complexity of the project introduced significant challenges during the design verification phases. "The challenge concerned the management

of the verification phases of executive railway infrastructure projects that may have a significant impact on the territory and on the national economy, all while maintaining compliance with the deadlines and the highest quality standards," explained Cambi.

The work was divided into multiple functional lots, creating a continuous flow of design outputs from various contractors and disciplines. In total, the project covered "185 kilometers of line, of which more than 9,800 executive information models have been managed and verified, relating to more than 20 different disciplines," noted Cambi. This volume of data in different formats, from different teams, and at different times, made it difficult to maintain version control, ensure traceability, and coordinate verification activities. Italferr needed a way to consolidate all information, keep it updated, and support multidiscipline review without slowing down the project's timeline.

A unified digital ecosystem for seamless coordination

To manage thousands of models, documents, and revisions across multiple contractors, Italferr built a unified digital ecosystem powered by Bentley's solutions. They built the entire verification environment around ProjectWise, which became the central hub for coordinating verification activities and structuring workflows.

“The entire flow of more than 300 incoming and outgoing transmittals was managed through ProjectWise Deliverables Management,” said Cambi, a process that ensured every file was traceable, consistently coded, and accessible to all disciplines.

On this foundation, Italferr integrated iTwin, SYNCHRO, and Bentley LumenRT to create a fully integrated digital twin of the new railway. The cloud-based environment connected design models, survey data, CAD files, and orthophotos into a single, federated representation of the corridor. Teams were able to review 4D models through SYNCHRO Control, while Bentley LumenRT provided contextual visualizations integrated with real-time terrain data. This ecosystem “made it possible to create the digital twin of the infrastructure, which can be consulted via browser,” noted Cambi, enabling real-time verification and streamlined coordination across all project phases. These tools allowed multidisciplinary teams to easily access and work from a cloud platform, constantly updated with real-time data and transmittals.

Real time savings, better mobility, and sustainable impact

Italferr’s integrated digital approach delivered significant benefits across the project, improving both the pace and the quality of design verification.

With centralized data and automated exchanges, teams conducted more accurate blueprint analyses and avoided information loss across revisions. Cambi noted that “the integrated use of ProjectWise with the deliverables management system reduced the time it takes for contractors to send transmittals by 50% and the time it takes to access data by 30%,” accelerating review cycles and improving collaboration with stakeholders. These gains translated into higher design reliability, helping the team identify and resolve over 4,500 interferences during the verification phase.

In terms of sustainability, the project also supported the region and Europe’s environmental goals by prioritizing environmentally conscious construction methods, such as “naturalistic engineering techniques and building tunnels and viaducts to reduce the impact on the soil and sensitive areas,” highlighted Cambi. Once operational, the upgraded line will improve air quality with the reduction of dioxide and microparticules emissions. This modernization of the line promotes cleaner mobility, improving transportation efficiency for the Sicily’s population, while enhancing the long-term railway resilience.

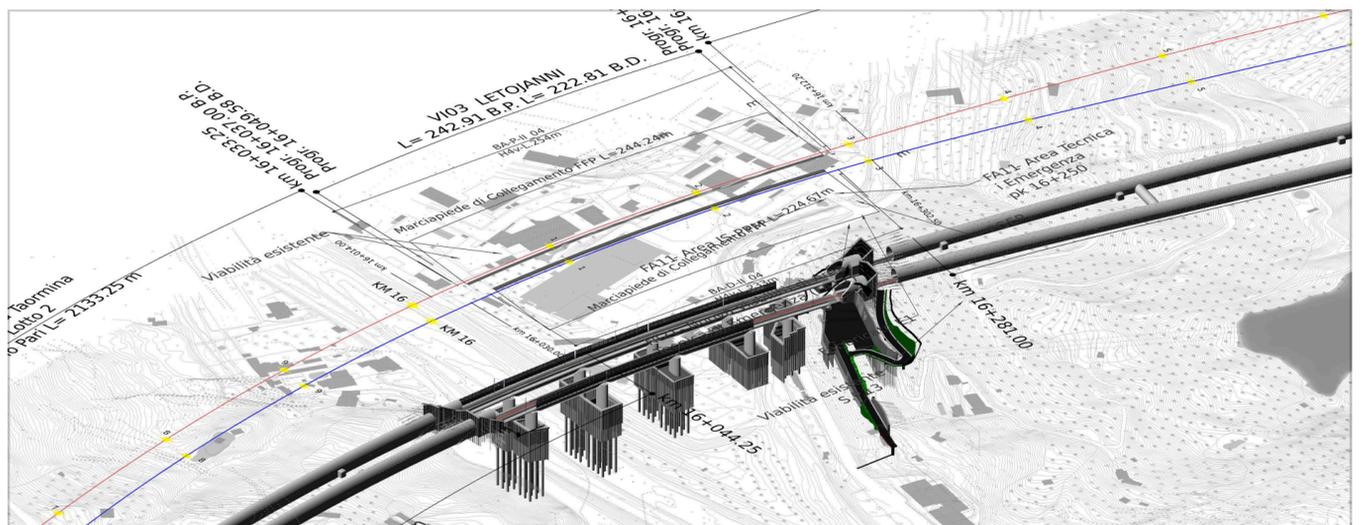
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Bentley’s ProjectWise was the hub of the data exchange for verification activities in the new railway, allowing multiple works to be organized and managed simultaneously. The user-friendly features of the software have also made it possible to collaborate with a large number of different users and professionals within a single platform.

— Lorenzo Cambi, BIM Coordinator, Italferr S.p.A.



Italferr developed 4D models easily accessible on the web, enhancing decision-making.



The railway has been designed with sustainability in mind with infrastructure reducing the impact on the soil and sensitive areas.

Find out more at [Bentley.com](https://www.bentley.com)
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