

# Italferr Integrates Data to Design a Modern Railway Line Along Sicilian Coast

Bentley Applications Enable Efficient Management, Data Sharing, and Consolidation of Design Formats

## DESIGNING A MODERN RAILWAY

As part of Italferr's mission to advance transportation infrastructure throughout the project lifecycle, the organization is renovating the Catania Centrale station and surrounding line in Sicily, Italy. The renovation includes a 7.4-kilometer line with a guaranteed track speed of 120 kilometers/hour to 200 kilometers/hour for passenger traffic and 100 kilometers/hour to 120 kilometers/hour for freight traffic. It will connect urban centers with coastal areas of Sicily, providing a more sustainable option.

The project sought to integrate the new track and stations with the surrounding waterfront and urban areas and to improve the public transportation system in the region. "[We wanted] to combine the transport vision and the urban planning vision to promote permeability between the sea and the city by moving the railway underground," said Daniela Aprea, BIM manager at Italferr.

However, Italferr faced challenges while designing the station. The railway construction project will need to bury the station and double the track section that connects Catania Central and Catania Acquicella stations. This section is part of the Palermo-Catania-Messina route, which is part of the core corridor that connects the Mediterranean to Scandinavia and the surrounding areas. Therefore, the team needed the latest in BIM technology to accurately and efficiently design the project.

## DIGITALIZING MANAGEMENT WHILE CUTTING TIME AND COSTS

In addition to the construction challenges, Italferr also needed to ensure that they were communicating with everyone on the project. "This project involves both a densely populated urban residential area and

the port area of the city of Catania, and therefore there are many stakeholders involved. For this reason, both activity planning and communication management were very complex," said Aprea.

Therefore, the team needed to find software that would enhance their communication while also overcoming the various engineering challenges. These challenges included minimizing demolition of buildings in urban areas, managing interference with other parts of the railway line, integrating information and plans shared by several designers, assessing environmental constraints, performing complex calculations, and completing the project within a short timeframe.

## INTEGRATING DATA USING SOFTWARE PLATFORMS

Realizing that traditional software would not allow them to meet their goals, Italferr used Bentley applications to help meet the project's complex needs. They set up a shared working environment using ProjectWise, which helped simplify the process and management of many models. Italferr kept detailed digital models of the terrain, track, civil works, roads, water works, electrical systems, telecommunication systems, and various other structures that might affect the railway's design. ProjectWise helped the team sort through all the models and optimize both access and usability for the designers.

Italferr also used the iTwin Platform, which accelerated the process by helping the team manage and share project information with stakeholders. "The use of the BIM methodology through integrated applications led to the optimization of workflow and analysis of the design choices," said Aprea. The software allowed for

## PROJECT SUMMARY

### ORGANIZATION

Italferr S.p.A.

### SOLUTION

Rail and Transit

### LOCATION

Catania, Sicily, Italy

### PROJECT OBJECTIVES

- ◆ To provide a sustainable transportation option between urban and seaside areas of Sicily.
- ◆ To effectively communicate design intent for all involved parties.

### PROJECT PLAYBOOK

ContextCapture, gINT<sup>®</sup>, iTwin<sup>®</sup>, LumenRT, MicroStation<sup>®</sup>, OpenBuildings<sup>®</sup>, OpenCities<sup>®</sup> Map, OpenRail<sup>™</sup> Designer, OpenRoads<sup>™</sup> Designer, ProjectWise<sup>®</sup>

### FAST FACTS

- ◆ Italferr is renovating the Catania Centrale station and surrounding line in Sicily, Italy to connect urban centers with coastal areas.
- ◆ The railway construction project will need to bury the station and double the track section that connects Catania Central and Catania Acquicella stations.
- ◆ Realizing that traditional software would not allow them to meet their goals, Italferr used Bentley applications to help meet their project's complex needs.

### ROI

- ◆ With Bentley applications, Italferr provided clear communication between all parties working on this project.
- ◆ ProjectWise helped ensure that the data was always up to date and easily available to all who needed it.
- ◆ OpenRail, OpenRoads, and OpenCities Map improved accuracy allowing designers to integrate track, civil, and GIS data in a single design format.

“Using BIM methodology through Bentley applications led to optimization of the process and analysis of the design choices. Different disciplines were able to work simultaneously on the study of alternative routes and update the project uniquely and dynamically.”

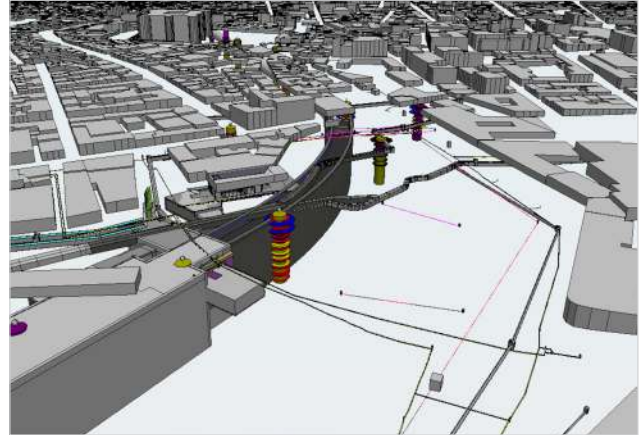
– Daniela Aprea, BIM Manager, Italferr S.p.A.

different disciplines to work simultaneously and integrate their information. By using Bentley’s OpenRail Designer, OpenRoads Designer, and OpenCities Map, the team could design the railway while combining diverse information in a common data format.

### EFFICIENT AND INFORMED DESIGNS

With Bentley applications, Italferr provided clear communication between all parties working on this project. “The services provided by the platform halved the data traffic necessary to produce the package for delivery to the customer, as they allowed the entire flow of information to be centralized within a single data-sharing environment, ensuring its retention, uniqueness, and traceability,” says Aprea.

ProjectWise helped ensure that the data was always up to date and easily available to all who needed it. OpenRail Designer and OpenRoads Designer, plus OpenCities Map, helped make Italferr’s designs more accurate by allowing the designers to integrate all track, civil works, and geographic information system (GIS) data into a single design format. It resulted in 3D realistic designs informed by the track’s surrounding context. This integration and accuracy helped the team address the myriad of engineering and construction challenges, connecting the new and old tracks and incorporating the rail way within broader urban planning goals.



OpenRail, OpenRoads, and OpenCities Map improved accuracy by allowing designers to integrate track, civil, and GIS data in a single design format. Images courtesy of Italferr S.p.A.

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