

AFRY & Tyréns Introduces Bentley iTwin Technology to Design Sweden's East Link Railway System, Transforming Delivery of the Country's Sustainable Transport Infrastructure Projects

- *The East Link is a 28-kilometer, double-track railway project that is the key to the development of sustainable transportation infrastructure in Sweden.*
- *The Swedish Transport Administration commissioned AFRY & Tyréns to perform conceptual design and environmental impact assessments for the project.*
- *Six years into the project, AFRY & Tyréns planned to review the entire conceptual design within a three-week period but faced coordination and communication challenges, compounded by COVID-19.*
- *AFRY & Tyréns' success was predicated on successful design review processes using the Bentley iTwin platform to provide a connected digital solution that set the bar for Sweden's future sustainable transport projects.*

A New Generation of Railways

The East Link high-speed railway is a key transport infrastructure project as part of Sweden's initiative to develop sustainable transportation systems. Capable of running trains at speeds up to 320 kilometers per hour, the East Link will facilitate commuting and cut travel times to and from Stockholm and the southern provinces. The project is the first stage of a new generation of railways, part of a future high-speed network modernizing railway travel between the major metropolitan regions of Stockholm, Gothenburg, and Malmö.

AFRY & Tyréns won the contract in 2014 to create and deliver conceptual designs of the 28-kilometer, double-track line that includes 15 bridges, six tunnels, and one station. In early 2020, they planned a three-week design review session for the entire conceptual design to verify buildability and sustainability, with minimal impact to the surrounding environment. As the first phase of the Swedish Transport Administration's long-term efforts to transform the country's railway infrastructure, the project sets the bar for future rail line development initiatives.

Rethinking the Design Review Processes

AFRY & Tyréns originally planned on conducting their design review using traditional methods that involved physical meetings and documenting review comments in SharePoint, while a BIM pilot navigated the coordination model. "We had prepared workflows to be able to use the coordination model on the project, and because most of the technology managers were not designers, we always needed a BIM pilot," explained Kågas Ramström, BIM strategist. They estimated a three-week period to perform a conventional BIM review for six years of design work at a cost of EUR 95,000, but soon recognized that their methods were time consuming and presented risks of miscommunication and misinterpretation among the 30 different disciplines using over 23 software applications.

Although they were wary of implementing new methodology on the already six-year running project, when COVID-19 hit, they realized that they needed to reevaluate their design review process and how they used their coordination model to accommodate remote workflows. To meet their timeline and implement more collaborative, streamlined processes, they no longer could work across several platforms, but needed a single, integrated environment to effectively perform their design review. “We needed to find a way that enabled a review from home,” added Ramström. “We had to rethink the way we used our coordination model both from the designer’s perspective and from the project management perspective.”

Leveraging iTwin Technology for Coordinated Workflows

At Bentley’s *Year in Infrastructure 2019* Conference, AFRY & Tyréns was introduced to iTwin Services, which led them to reevaluate the way that they collaborated on projects. They decided to use Bentley’s platform as a new solution to change their inefficient and insufficient workflows, and move forward with their design review amid the global pandemic. They set a goal to have the most efficient design review possible. Together with the management, quality, and lead-design teams, they implemented Bentley’s iTwin solution and created a digital twin platform that enabled integration between people, workflows, and data to help meet the tight three-week timeline.

Using iTwin Services as the common platform simplified and streamlined coordination among the multiple disciplines. From a quality and BIM perspective, they were easily able to adapt the software’s features to their internal work and quality review processes, resulting in coordinated digital workflows. Working in a unified digital environment enabled real-time data exchange among the team and provided an effortless way to communicate the coordination model to the local stakeholders, helping them to better understand the design intent and impact of the railway design choices.

“That we at the ‘last minute’ decided to implement a new application in a project that we have been working on for six years is brave,” said Ramström. “Everyone should understand how easy it was with the new [Bentley iTwin] platform. In less than four weeks we were up and running.”

Digital Twin Solutions Industrialize Project Delivery

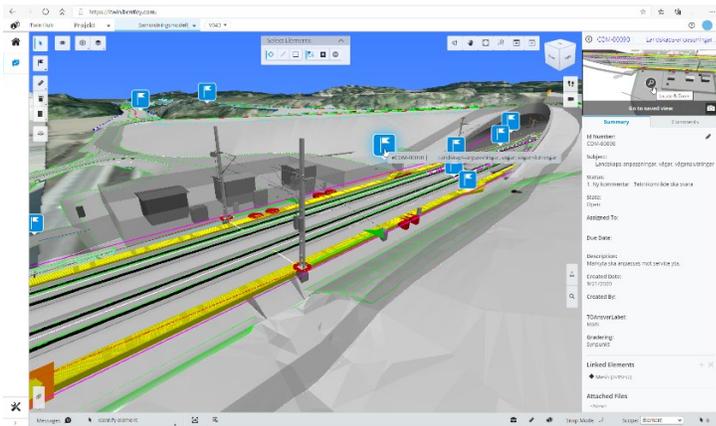
“Without iTwin Services, we would have spent more time coordinating actions instead of verifying conceptual design,” stated Ramström. That situation would have risked deviating from the tight schedule. With Bentley’s digital twin technology, they managed to complete the review in only two weeks, instead of three, saving 33% in design review time and 21% in costs. The user-friendly platform helped the multidiscipline team seamlessly transition to a new, collaborative, digital work environment and accelerated model accessibility by 75%.

Having an integrated digital platform and model of the railway project accessible to everyone was crucial in creating unity and connecting all team members and stakeholders. The digital twin solution streamlined workflows to complete the conceptual design review ahead of schedule amid a global pandemic. The successful implementation of Bentley's iTwin solution industrialized delivery of this first phase of Sweden's high-speed railway network, transforming the design process and setting a benchmark for the country's future sustainable transport projects to bring people closer with reduced environmental impact.

For more information, contact Christine Byrne at christine.byrne@bentley.com, or +1 203-805-0432.

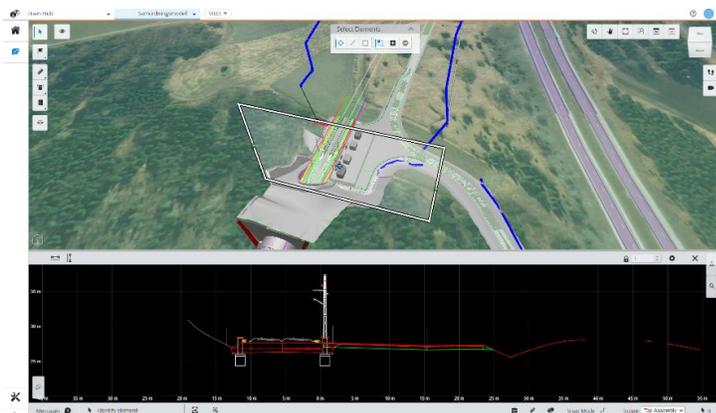
##

[Image 1:](#)



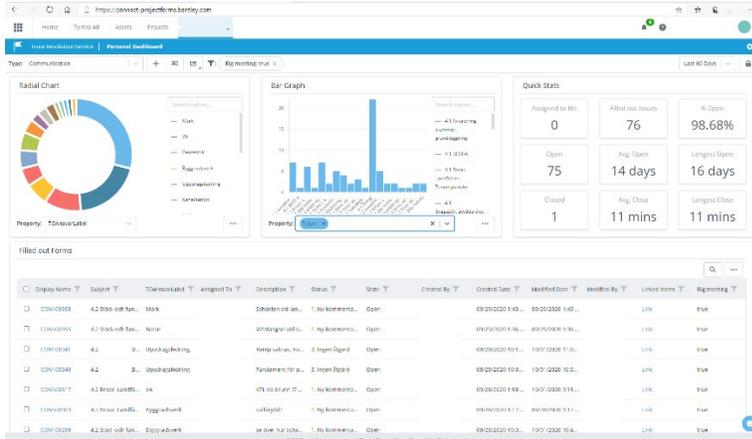
Caption: The Swedish Transport Administration commissioned AFRY & Tyréns to perform conceptual design and environmental impact assessments for the project.
Image courtesy of AFRY & Tyréns.

[Image 2:](#)



Caption: The East Link is a 28-kilometer, double-track railway project that is the key to the development of sustainable transportation infrastructure in Sweden.
Image courtesy of AFRY & Tyréns.

Image 3:



Caption: AFRY & Tyréns’ success was predicated on successful design review processes using the Bentley iTwin platform to provide a connected digital solution that set the bar for Sweden’s future sustainable transport projects.
Image courtesy of AFRY & Tyréns.