3D Repo

The Remodelling of King's Cross Railway Station

SPECIALIST PROJECT INTEGRATION

NetworkRail

Figure 1: The reality model of part of the King's Cross remodelling project. See the case study presented by Simon Wray of SPI: https://youtu.be/Ai02tpVdRU8

Remodelling King's Cross Station

London's King's Cross railway station is one of the busiest stations in the United Kingdom, serving close to 40 million passengers each year. But it's been 25 years since any major intervention has taken place on the railway, and it is now in need of some major renewal and remodelling work. The remodelling will allow for an increase in the length and number of long-distance trains, and facilitate future improvements to journey times.

Specialist Project Integration (SPI) are undertaking this massive £250 million project which includes:

- Extending passenger platforms
- Recommissioning an unused tunnel
- Optimising the track layout
- Modernising the signalling control system

One of the major challenges for this complex project is that the new railway needs to be built on top of existing railway whilst it remains open.

Improving Coordination

With about 300 designers, contractors, and managers across multiple companies, and some 3,500 CAD files; SPI knew that traditional methods of communication and design coordination were not appropriate. Furthermore, they needed to be sure that disruption to one of the UK's busiest railway stations was kept to a minimum.

Despite using ProjectWise as a common data environment (CDE), there was also a need for a design coordination and collaboration tool that could run easily in a web browser. 3D Repo's digital platform for Building Information Modelling (BIM) was chosen as the platform to help SPI with coordination due to the fact that it required minimal training, and it could be accessed from any computer without the need for software installation or licencing.

40 mil	£250 mil	50%
Passengers served each year	Estimated project budget	Station to close during remodelling

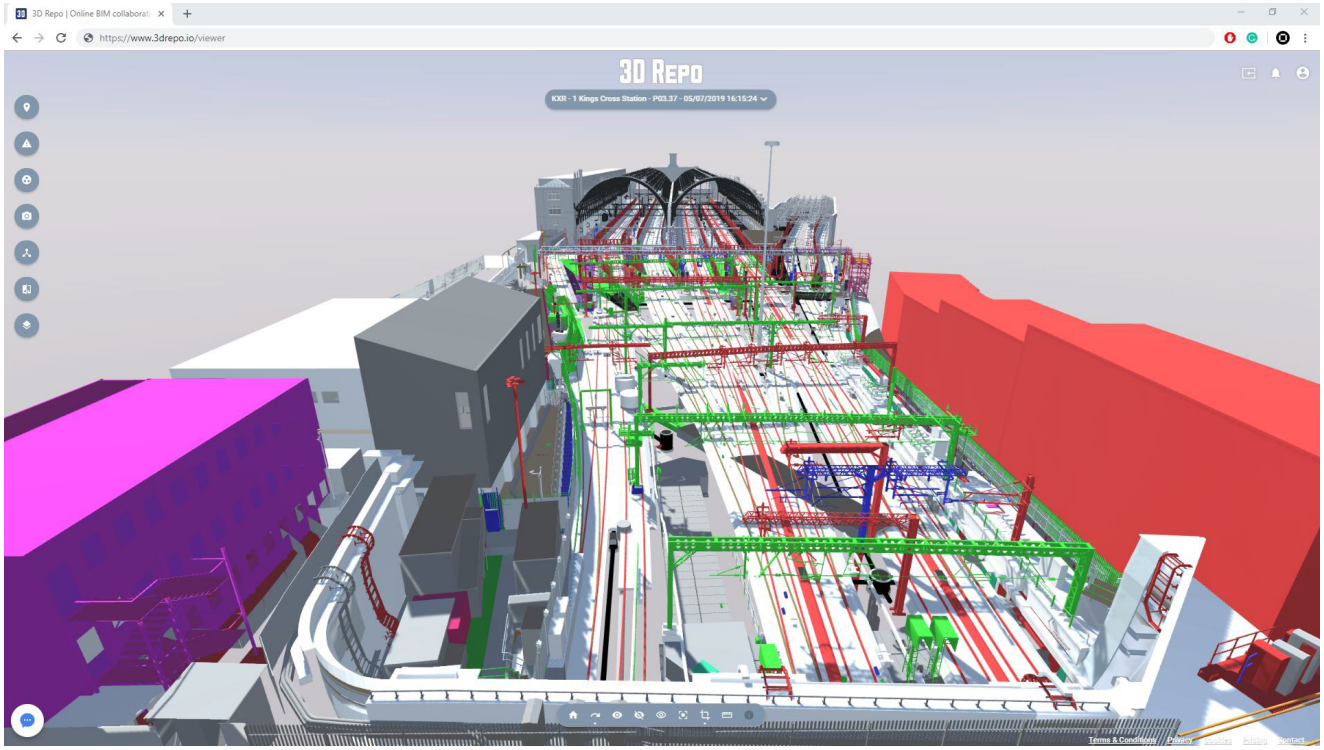

Figure 2: Federation of the King's Cross railway station model in the 3D Repo platform. Model courtesy of SPI.

The Digital Construction Platform

SPI are using 3D Repo as a design coordination tool and also as a communication tool to help them bring this project together. A predicted saving of about 10,000 hours of on-site work thanks to the combination of software applications being used including Bentley Microstation, 3D Repo, and SPI V-RAM

Design Coordination

One of the key features used is Instant Clash, which identifies issues e.g. steelwork clashing with overhead lines, highlighting the exact intersection point to save potential re-work during construction. Designers and engineers simply sign-in from a web browser to view the latest models and log issues and comments into the platform as a central hub for communication – no more lost emails.

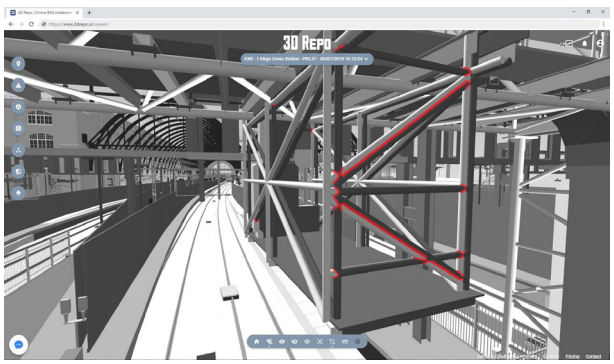

Figure 3: Multiple elements clashing as highlighted in red, using Instant Clash.

3D Diff detects changes made to the model regardless of file type, making it easy for multidisciplinary teams to collaborate when different design software applications are being used. It compares actual geometry changes between models, highlighting new elements in green and deletions in red. 3D Repo supports many popular file formats including Autodesk Revit and Navisworks, Bentley DGN, IFC, FBX and many more.

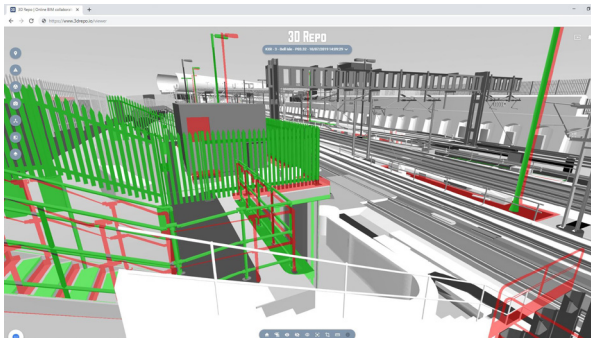

Figure 4: 3D Diff shows changes in green, and deletions in red.

"The great thing about 3D Repo is that we're only using the most basic features and we're getting a strong return on investment"

- Simon Wray
Managing Director, Specialist Project Integration

Communication Tool

3D Repo is also being used to host a "reality model" of the project with the purpose of democratising data and reducing complexity for all other stakeholders, as they do not necessarily understand CAD drawings and BIM models.

The reality model is a realistic version of the design, adding context to the remodelling project and removing the need for interpretation. SPI have found that this has helped to minimise time scales in decision making from local authorities, station management, train operators etc. as they are able to relate the reality model back to a real-world context.

Other tasks that 3D Repo is being used for during the King's Cross remodelling project:

- Stakeholder engagement
- Engineering meetings
- Planning e.g. site logistics
- Obtaining consents

Figure 5: A train at a platform at King's Cross Station.

"We found 3D Repo intuitive to use, and capable of navigating extremely complex models, even when using textured elements"

– Keith Wakeford
Head of Modelling and Simulation, Specialist Project Integration

Democratise data

Reduce complexity

Minimise time scales

Get in touch today

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