RailBusinessDaily

Amey Consulting calls for collaborative industry approach to rail design

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Amey Consulting has, today, published a White Paper to examine how synthetic environment (SE) technology, specifically 'digital twins', could benefit rail infrastructure projects and transform engineering design.

In a release, Amey said the UK government's vision is to position the UK at the forefront of digital technology. It is overseeing the development of a nationwide information management framework connecting smart virtual representations (digital twins) of UK infrastructure to promote better outcomes from design and building projects.

Furthermore, Amey said Network Rail and its successor Great British Railways face an enormous challenge of renewing the UK's ageing railways, particularly signalling systems. Without a step change in the way new projects are designed and developed, it will be a struggle to keep the railways running.

Amey Consulting's White Paper examines how establishing the platforms, protocols and working structures will underpin modernisation and the move to digitisation, creating an open development environment that suits the needs of the industry.

You can download and read the Digital Twin Whitepaper by using this link.

A digital twin is an advanced application of an SE – a realistic digital representation of a physical entity, such as a building or railway line, which looks and behaves like its real-world counterpart. In its most advanced form, the twin has the capacity to learn, as data derived from the condition and behaviour of the original infrastructure is fed back to the model. Artificial intelligence techniques ensure the twin adapts the rule set, based on the data provided, and becomes ever smarter, creating a powerful tool for design, diagnostics and problem-solving.

As the capabilities of digital twins develop, Amey says, more potential applications will open up that will enhance the efficiency, quality and safety of the rail network and its infrastructure. Over time, localised digital twins could be upscaled and connected to build the kind of industry-wide digital ecosystem envisaged by the government-supported National Digital Twin programme (NDTp).

In 2021 Network Rail announced its intent to oversee the creation of a ‘data-driven synthetic environment’ for the design and development of signalling and other infrastructure schemes. The organisation has called on its supply chain to develop the building blocks required to make the virtual design platform a reality.

Mark O’Connor, rail market director, advisory and analytics, at Amey Consulting, said: “Never has there been a greater need for UK rail to adapt and adopt new and exciting ways of working. We want to embrace technologies and capabilities that will improve how we design, build, operate and dispose of assets long into the future.

“As an experienced supplier to the rail industry, with experience in all stages of railway management, Amey Consulting can add real value to the development of a synthetic environment and digital twins in a rail environment – particularly in the domain of signalling. Where there are gaps in our capabilities, we will collaborate with partners to develop viable, innovative solutions.”

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