Nodes & Links

HS2 CASE STUDY

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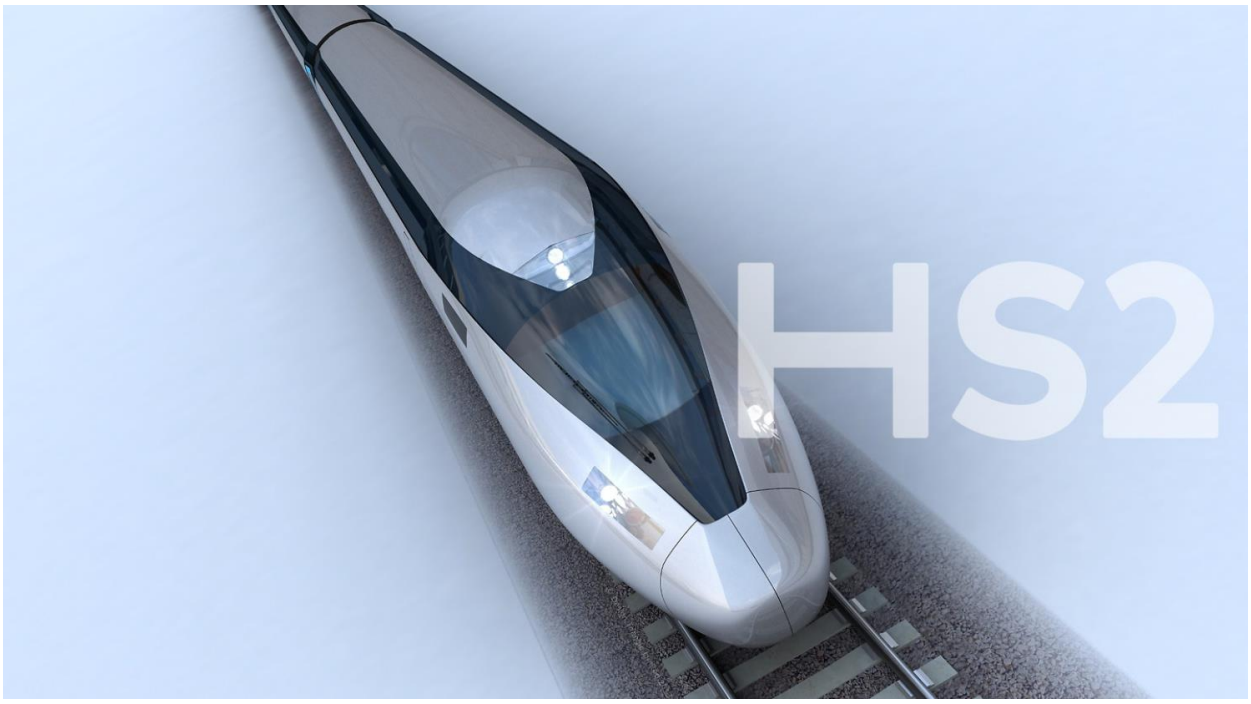

HS2 embraces intelligent decision support to better assure project outcomes

High Speed 2 (HS2) is the largest infrastructure project in the UK, and one of the largest projects in Europe. Its goal is to provide unprecedented transport capabilities between the north and the south of the UK through the delivery of a high-speed rail line and associated stations. Delivering HS2 is a monumental objective: hundreds of thousands of tasks and dependencies, spread across 20 years and with an estimated cost of £106Bn (as of February 2020).

The Goal

- Reduce the schedule risk of HS2 Phase 2

The Approach

- Apply the latest data science to better isolate the elements of the schedule that drive delivery risk so that effective mitigation strategies can be proactively developed
- Introduce enhanced auditability, repeatability and data-driven learning to the schedule risk evaluation process

The Result

- 245% increase in the accuracy of identifying critical activities
- 61% reduction in process time
- 73% reduction in workload
- Enhanced auditability, repeatability and data-driven learning introduced

In order to control the impact of complex decisions during project delivery, HS2 must extract insights from noisy project data in a fast and auditable way

Schedule risk evaluation is central to HS2 for assuring its time and cost outcomes. HS2 undertakes extensive and regular risk reviews to deliver confidence, identify relevant threats and opportunities, and to iteratively improve its execution plans.

Currently, a lot of time and effort is spent in setting up schedule risk evaluations in order to identify the project's most critical tasks. This is because current methodologies, like CPM and PERT, are incomplete and often misleading. As a result, additional manual work is required by project experts to compensate for these shortcomings. This additional work takes valuable time away from their most important jobs - iterating the project's schedule and tackling areas of risk - and makes capturing learnings more challenging.

Here's the story of how HS2 worked with Nodes & Links to resolve these challenges in an innovative and scalable way.

HS2 strives for leading digital innovation across project management

In 2019, HS2 set to improve their ability to tackle the challenges associated with traditional schedule evaluation methods. Michael Bartlett, HS2's Head of Enterprise Risk, knew the size of the challenge ahead.

"HS2 is acknowledged to be a highly complex project, one of the most complex projects this country has ever undertaken," Michael explained. "There is growing recognition that this complexity limits the ability of standard project management practices to forecast results and, in particular, Monte Carlo Analysis, the core technique used to model schedule risk."

Michael followed, "This has become a critical factor in developing the recent schedule baselines, and the resulting risk models have limited capability to provide assurance to the levels we require."

"We knew that we were looking for a range of solutions: one that could make up for the limitations of traditional methods; one that could support us in better evaluating the schedule risks within our programme; and one that could lighten the workload of our project managers, risk managers and planners so they could apply their expertise more effectively".

HS2 also needed a solution that could be deployed across the entire organisation and was simple to use and understand. Their goal was to better enable risk mitigation strategies to be actioned through effective communication across the entire HS2 team.

Augmenting schedule risk decisions with Nodes & Links

In coming across Nodes & Links' technology, Michael immediately recognised it's high-value potential. At the time, Nodes & Links was in the process of building Aegis - its commercially available, intelligent decision support platform.

"Its potential to change the way we make these complex decisions around schedule risk was apparent from the beginning", Michael confirmed. "I saw an opportunity to resolve specific challenges in HS2, whilst contributing to the wider goal of improving current best practice across all project professionals". Aegis' ability to provide enhanced capabilities in the evaluation of schedule risk means that the entire organisation can focus on areas that have the biggest impact

to HS2's outcome ahead of time. It's auditability further ensures that these improvements can be repeated and captured across time.

"We knew that change comes from within, so to have key stakeholders present from the beginning was paramount." With the full support of key HS2 stakeholders, Michael and Nodes & Links set to work.

"On a project with the scale of HS2, a day of delay can equate to millions in unplanned spending. As such, it is crucial to be able to uncover insights fast and reliably whilst dealing with imperfect data in an auditable way". Michael chose to test Aegis' ability to generate such insights on the upcoming assurance activities for Phase 2A and 2B, together totaling more than £50Bn in spending. The plan was to compare the accuracy and precision of Aegis' insights against traditional tools and methodologies, and to evaluate its overall presentation and user experience.

Michael worked with Stephen Cresswell, lead Risk Analyst for HS2 Phase 2, to establish appropriate data and KPIs, in order to benchmark the quality and performance of Nodes & Links' Aegis platform against industry standard solutions.

HS2 also collaborated with Nodes & Links to understand the limitations of existing solutions, shaping Aegis into a platform that can support the decisions of multiple project professionals across all project sizes.

HS2's innovation delivers colossal improvements

HS2's use of Aegis gave project experts the support they needed to identify new sources of schedule risk, far beyond the capabilities of existing industry standard tools. Aegis also saved project experts precious time by expediting the risk evaluation processes, along with enabling easy data exploration.

"The speed savings alone constitute a significant saving to the British taxpayer and enable us to more efficiently utilise bottlenecked resources. And the user experience is stunning."

61%
Reduction in process time

73%
Reduction in workload

245%
Increase in accuracy

The strategic opportunity unlocked by utilising Aegis stretches far beyond its direct benefits.

“Nodes & Links' approach to tackling the challenge of project complexity is the biggest breakthrough in project risk management since the introduction of Quantitative Risk Analysis,” said Michael.

“With the Aegis platform our people can more effectively and efficiently evaluate the schedule risk of HS2. This allows us to more comprehensively identify hidden risks, direct actions and make decisions more efficiently. Ultimately we will deliver better project outcomes.”

As a direct outcome, HS2’s deployment of Aegis has influenced the official schedule risk evaluation reports of Phase 2A and 2B, which feed into the most senior levels of decision making.

“When making strategic decisions we must pull on our best sources for input,” Michael said. “Aegis has proved itself to be one of these sources.”

HS2's innovation journey continues

Since launching this collaboration, Michael's message on the future of project management has penetrated far beyond HS2.

"The core stakeholders for HS2 are the Department for Transport and the Treasury, but these departments also have interests in many other projects. They are watching us with a keen eye to see how we get on.", Michael confirmed. "It's a tremendous opportunity for the industry, as whole. It is my vision that our efforts can be used to better assure project outcomes across all capital projects within the UK, and beyond"

Contact Nodes & Links directly for more information about our work with HS2 or to learn about how Intelligent Decision Support can support your project goals.

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