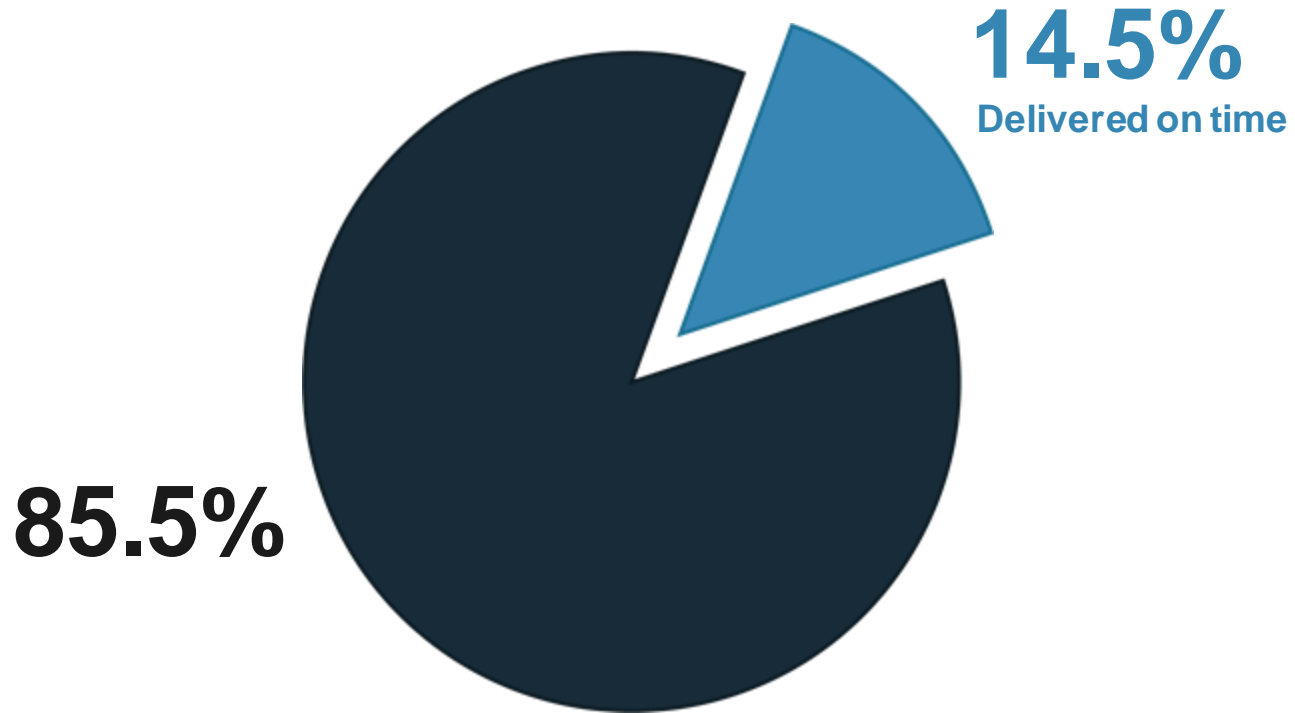


AI Driven Schedule Risk Analysis on the Transpennine Route Upgrade

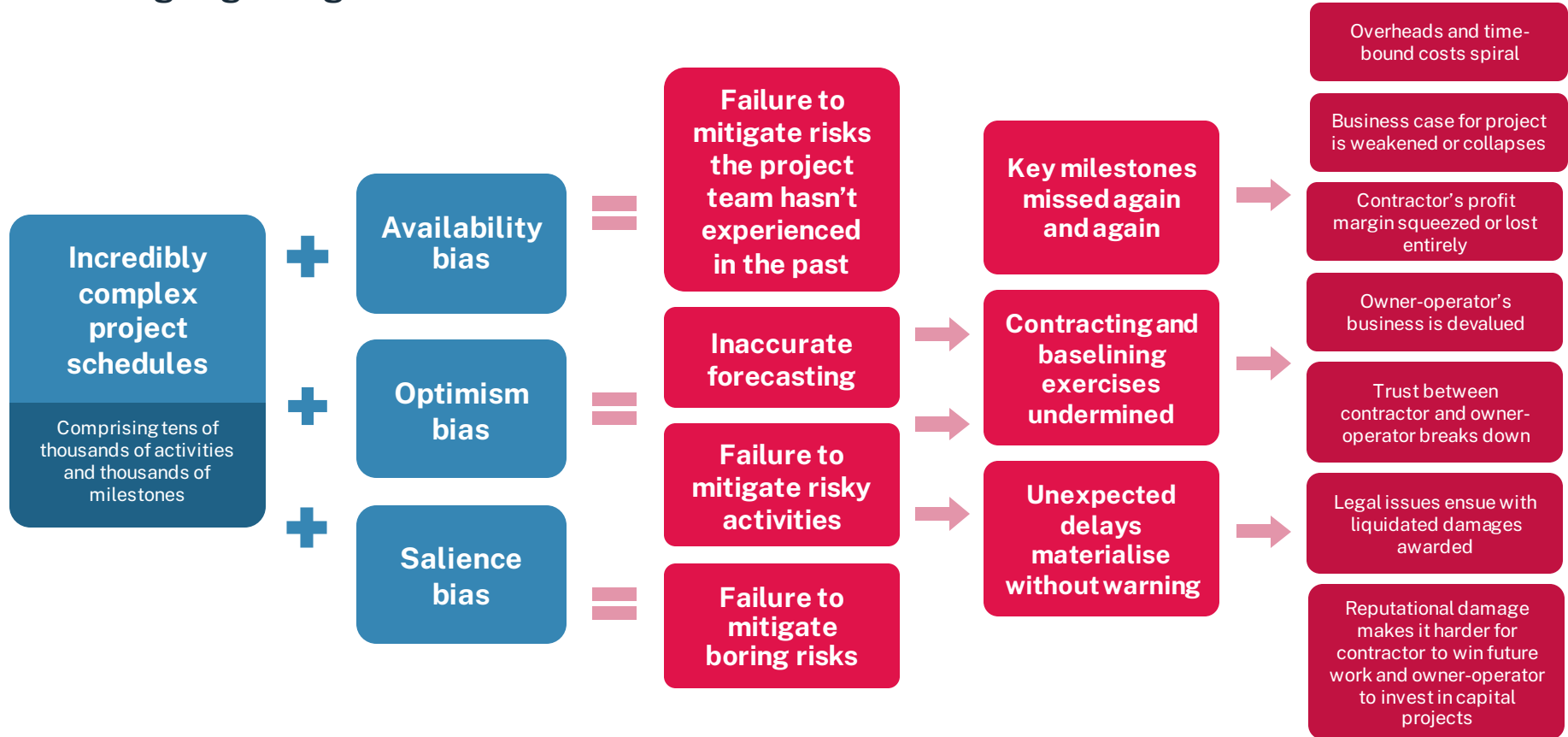
Dev Amratia
15/11/23

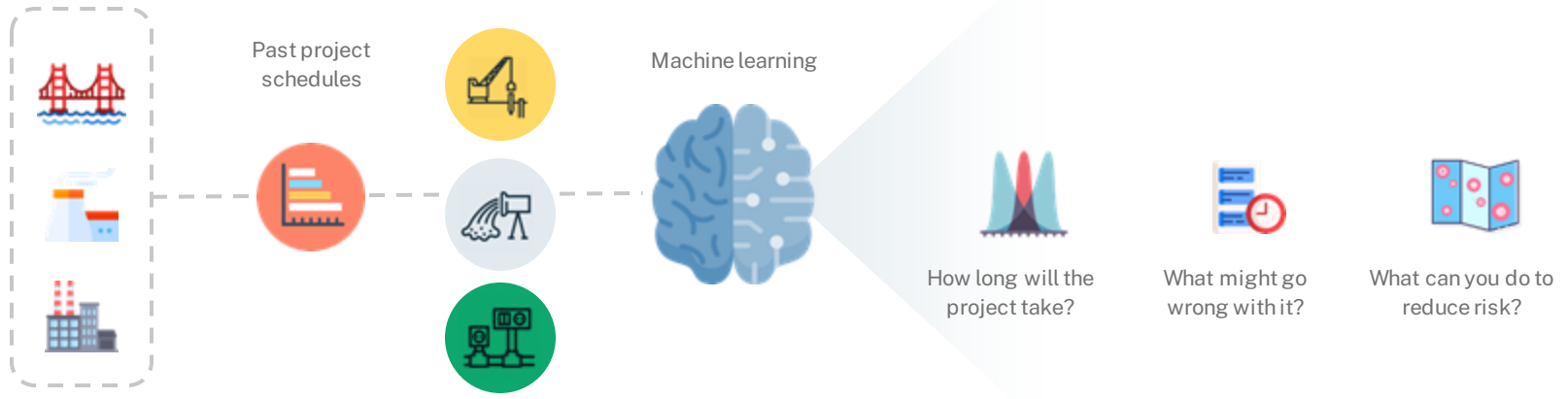


Only one out of every seven large-scale projects finishes on time



What's going wrong?





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About the Transpennine Route Upgrade (TRU)

- Multi-billion pound railway programme that will better connect passengers in the North between Manchester, Huddersfield, Leeds and York.
- Aim to slash railway carbon emissions, equivalent to taking 6 million cars off the road for an entire year
- Delivering more than £4bn in social value and a further £4bn in wellbeing



Why has TRU brought in nPlan?

Issues with traditional QSRA:



Bounded
uncertainty
models



Limited
resources



Human
biases

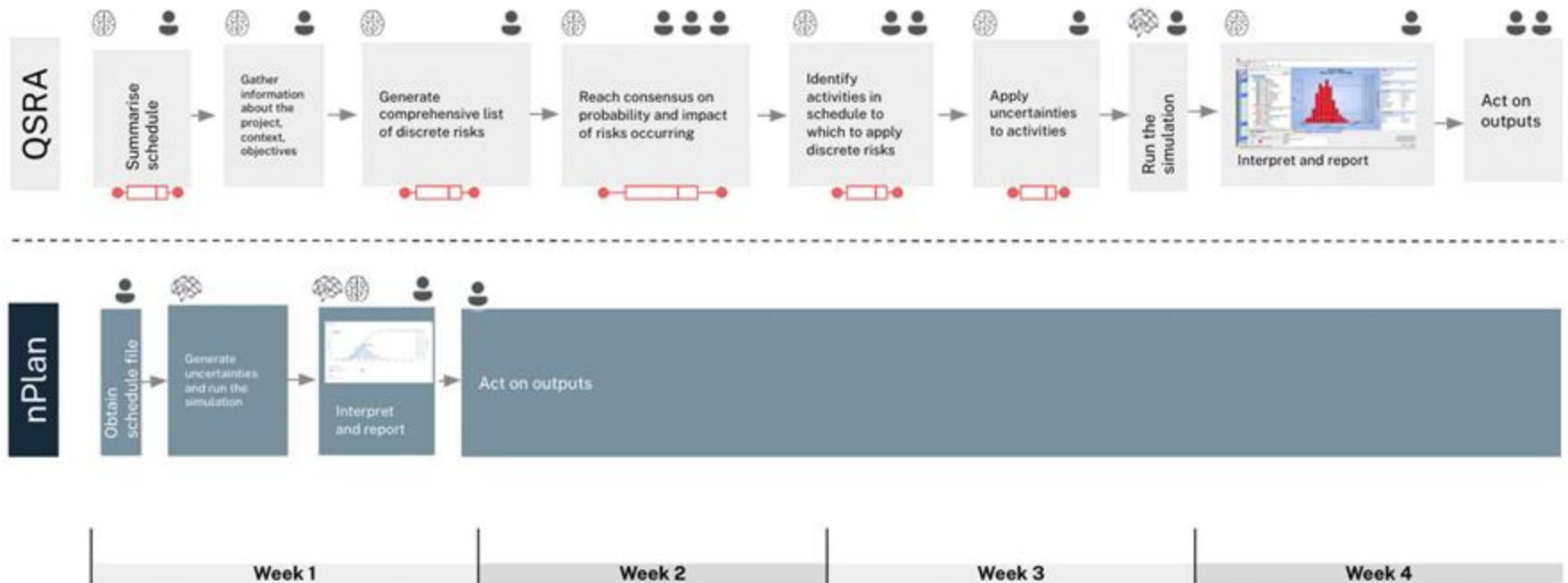


Overly
summarised
plans

Aspirations for improved risk management process:

- Identify 'unknown unknowns'
- Perform (higher quality) risk analysis on more schedules
- Go from intermittent risk analysis to continuous risk management

Introducing AI-SRA





AI-SRA in practice I: reviewing the AI-generated forecast and top threats

nPlan
All Clients > Public Domain
All Projects > Demo 3
All risks captured

Review

- Dashboard
- Driving Paths
- Schedule Integrity

Manage

- Insights
- Mitigation Strategy
- Actions

Chat with Barry

File upload

Project Home

New Insights

You have 135 new insights to review

[View New Insights](#)

Pending Actions

130 insights have no mitigating actions

[Add Actions Now](#)

Schedule Integrity

Schedule integrity information about your schedule

[View Schedule Integrity](#)

Your Dashboard

[+ Add new widget](#)

Forecast End Date

Milestone Code: CON-14500

Probability	Date
100%	02 Mar 2026
90%	05 Feb 2025
80%	05 Dec 2024
70%	05 Nov 2024
60%	14 Oct 2024
50%	25 Sep 2024
40%	10 Sep 2024
30%	27 Aug 2024
20%	12 Aug 2024
10%	24 Jul 2024
0%	13 Jun 2024

Forecast End Date

Milestone Code: CON-13280

Probability	Date
100%	25 Nov 2025
90%	19 Sep 2024
80%	26 Jul 2024
70%	28 Jun 2024
60%	04 Jun 2024
50%	16 May 2024
40%	03 May 2024
30%	24 Apr 2024
20%	11 Apr 2024
10%	27 Mar 2024
0%	06 Mar 2024

Forecast End Date

Milestone Code: PRECON-2960

Probability	Date
100%	23 Mar 2026
90%	03 Mar 2025
80%	14 Jan 2025
70%	29 Nov 2024
60%	07 Nov 2024

Forecast End Date

Milestone Code: CON-13280 P-Value: 80

Date	P-Value
Feb 2024	80%
Jun 2024	0%
Oct 2024	0%

AI-SRA in practice II: diving into key risks

nPlan

All Clients > Public Domain

All Projects > Demo 3

All risks captured

Insights

Status	Activity Type	Risk Impact	Risk Type	Labels
Open	All	5 options selected	All	
Description		Risk Impact ↓		
Near real-time satellite Cabling Link 16-17 Section 1		████████		
Verge Work Finishings & snagging		████████		
Near real-time satellite active equipment install Link 16-17 Section 1		████████		
Near real-time satellite Cabling Link 16-17 Section 2		████████		
Latest Preparation and completion of VRS & Finishes		████████		
New Duct chambers		████████		

CON-13170

Verge Work Finishings & snagging

Due Date: 06/09/2023

Owner: Unassigned

Status: Open

Insight Details | Actions

Generated based on file: Example_Project_Feb23_Ver5.xer

Data date: Feb 16, 2023

This Link 16-17 verge works task has been identified as potentially impacting the project complete milestone.

Based on historical data, our forecast indicates an average potential delay of 12 days at P80 for the "Verge Work Finishings & snagging" activity.

If the risk to this activity were mitigated the expected saving at the end milestone would be 8 days.

Click below to view potential causes of delay. To mitigate the impact of these potential causes of delay, we recommend that the project manager works closely with the contractor to ensure that all necessary resources are available to complete the work on time. Additionally, we suggest developing contingency plans to address any unforeseen technical challenges and closely monitoring the contractor's performance to ensure that the project stays on track.

View potential causes for delay

Activity Details

Activity ID: CON-13170

Labels: Threat

WRS: CONSTRUCTION / VRS & Finishes

Review

- Dashboard
- Driving Paths**
- Schedule Integrity

Manage

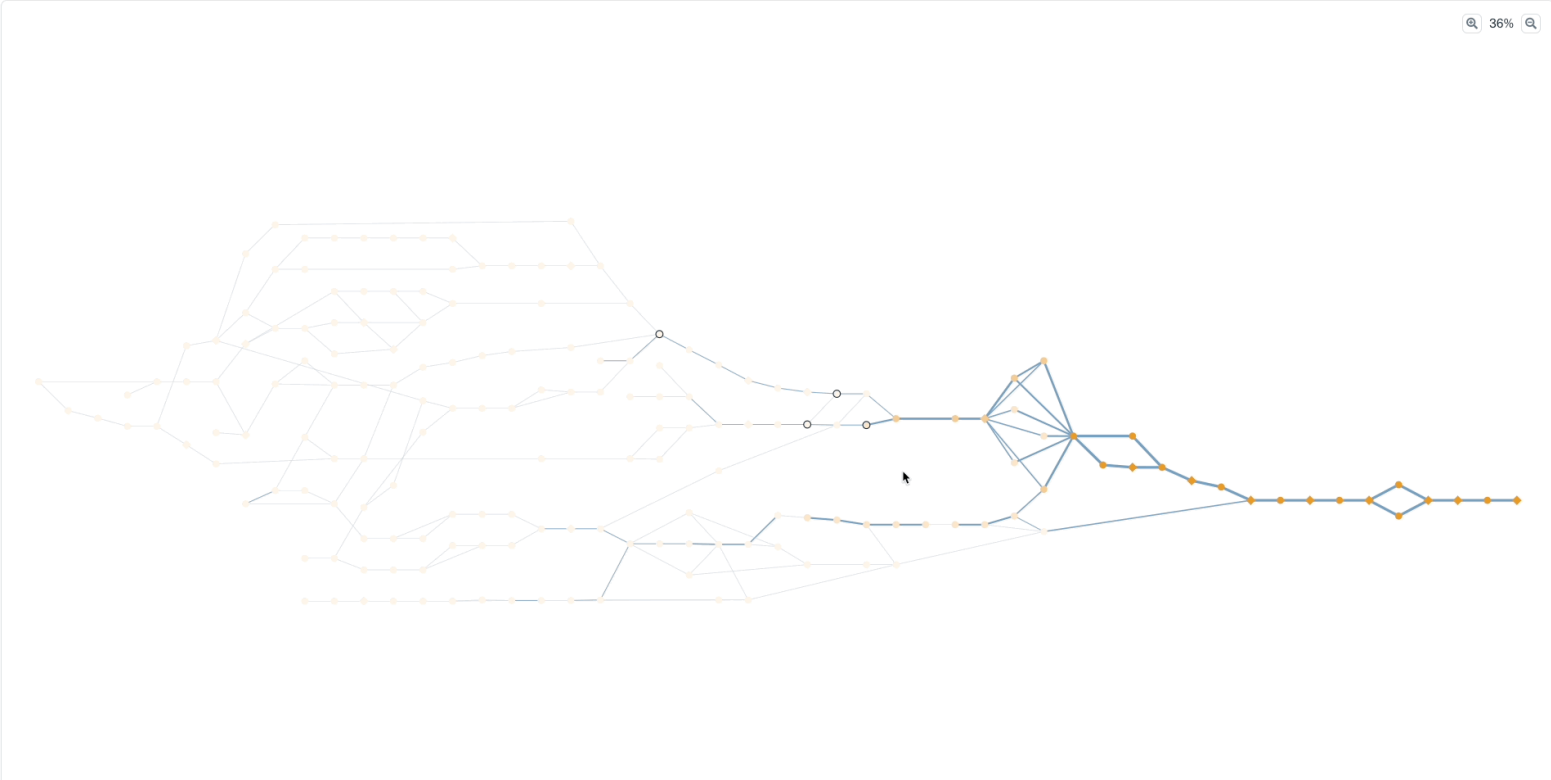
- Insights
- Mitigation Strategy
- Actions
- Chat with Barry
- File upload

Driving Paths

Change target PRECON-2960

Deterministic critical path Arrange by WBS Filter nodes by criticality 0%

36%



Zoom/Pan view Add/Move labels

A next-generation AI system called Barry that understands the project and provides the team with recommendations

Chat with Barry

Hi. I am Barry, your AI assistant.

General questions I can answer for you

The more specific your question, the better Barry can answer it

Summarise the top insights that nPlan has found for me

Can you give me a list of activities sorted by their likelihood to meet their duration?

Dig deep into an activity

When asking about an activity, it's best if you refer to it by ID

For the top risk activity in nPlan Insights, show me its planned duration, likelihood to meet duration, criticality, and successors.

For the top risk activity in nPlan Insights, show me what is the potential impact that it may have in the end date as calculated by nPlan

Assist in your process

The more context you give Barry, the more specific answer you get

Which activities in my programme could be affected by a delay in procurement?

What are some risks that may affect the top insights highlighted by nPlan?

A next-generation AI system called Barry that understands the project and provides the team with recommendations

Which activities should I focus on to potentially accelerate the project?



Based on the data provided, the following activities have been identified as critical and should be focused on to potentially accelerate the project:

1. **CONTROLLED MOTORWAYS ACHIEVED (CON-14610)**: This task has a 100% probability of being critical. It is forecasted to start and end between 2025-01-22 and 2025-03-19. It has dependencies on tasks like "Speed Flow Threshold Algorithms Performance Systems Review", "Handover to Maintenance Service Providers", and "HADECS high speed drive through".

Could you create an action plan for me to go address these?

Certainly, here's a suggested action plan based on the critical tasks identified:

1. **CONTROLLED MOTORWAYS ACHIEVED (CON-14610)**:

- Review the task dependencies and ensure they are on track.
- Identify any potential bottlenecks or delays in the dependent tasks and address them proactively.
- If possible, consider parallelizing some of the dependent tasks to reduce the overall duration.

2. **CTI 2 - Move to ALR (CON-14490)**:

- Review the status of the dependent tasks "3-lane MQP Available" and "Sat 3 Testing (Transfer Capability to RCC Ops)".

“

With nPlan as a delivery partner, we're able to take a new approach to analysing our schedules - removing the human bias in favour of learning from actual data and historical performance - and driving efficiency into the process. Being able to get more frequent analysis done on a larger volume of schedules is a game-changer for us - we simply don't have the resources to use QSRA to generate the insights the programme needs to stay on track.

”



Rich Palczynski,
Head of Strategic Programme Controls

“

**Our vision is to build a
world no longer limited by
its appetite in risk**



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nPlan

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