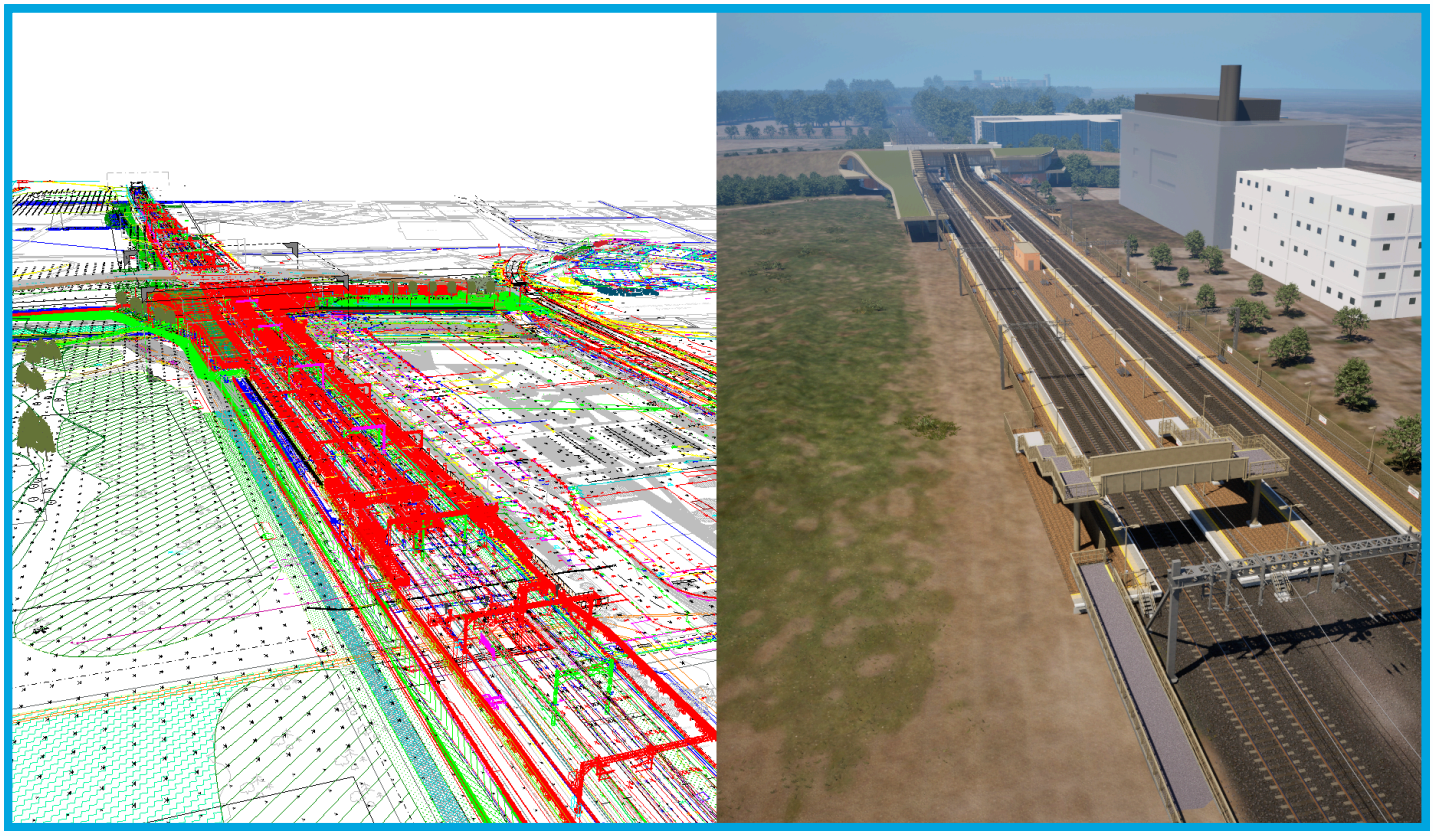
True North Rail



TRUE NORTH RAIL CASE STUDIES

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CREWE BASFORD HALL & INDEPENDENT LINES DRIVER ROUTE LEARNING PACKAGE

Client: Freightliner

"It's been great working on it and been a great team. Hopefully the map book will complement the route PowerPoint and the amazing True North Rail CGI runs of the routes."

Chris Hewitt AIRO
Production Manager (Driver Manager)
Freightliner Crewe

OVERVIEW

The Crewe Independent Lines play a critical role in managing freight traffic around Crewe, avoiding the need for freight trains to pass through the station itself. The layout of Crewe is an intricate hub in the UK rail network, where multiple lines converge. These Independent Lines, running through a deep cutting west of Crewe station, help divert freight traffic away from passenger services, easing congestion at this major junction. These lines are vital for freight moving between destinations like Manchester, Liverpool, and the Midlands. Historically, Crewe has been pivotal on the West Coast Main Line, serving as the last major junction before key destinations like Liverpool, Manchester, North Wales, and Scotland. Its importance dates back to its opening in 1837, originally designed to connect several key routes and canal systems. Over the years, Crewe became even more significant as new lines were added, including connections to Stoke-on-Trent, Derby, Shrewsbury, and beyond. The team at True North Rail using their Truesight™ platform worked in conjunction with Pennant in order to produce virtual reality (VR) training videos of a train drivers journey via various Crewe driving routes. The creation of our Truesight™ VR videos & 3D training animations were then used for virtual route driver training courses enabling train drivers to rapidly learn their driving routes. At True North Rail we have developed route creation tools which quickly create event sequences for specific driver routes. Brilliant for driver route learning, as well as easy fly-through creation for stakeholder engagement.

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CREWE BASFORD HALL & INDEPENDENT LINES DRIVER ROUTE LEARNING PACKAGE

Client: Freightliner

"A great project to work on with professional colleagues and friends. The industry needs more projects like this where a common theme is to do the right thing for the benefit of the whole industry. A special thanks to our friends at True North Rail."

Alistair Culff
Director A.C.R.O.S.S Ltd

OUR ROLE

These tools enable us to create sequential events such as speed changes and signal aspect changes and activate which crossovers to take. These routes were then exported and shared with the wider project team, who were able to play, review & provide feedback progressively. For an MVP approach in the complex Sorting Sidings North area for which the majority of changes were 'like for like', Pennant provided animated versions of the Map Book combined with screen shots from the Truesight™ environment. Utilising our Truesight™ tools, we were able to quickly create animations, implement updates, and seamlessly issue them to the relevant teams for review. Our technology significantly supported team collaboration, enabling rapid updates and efficient turnarounds. The core technology driving this success was Unreal Engine. Crewe Sorting Sidings and the Independent Lines are exceptionally complex pieces of railway infrastructure. Initially, there were concerns about the feasibility of a virtual solution, but Unreal Engine's capabilities, combined with our commitment to delivering high-quality results, allowed us to create an incredibly realistic environment. This was demonstrated by the Freight Operator's request to use the simulation for training their shunting staff. This project, one of the most intricate and challenging Driver Route Learning initiatives we have undertaken, was successfully delivered on time. The achievement was made possible through the collaboration and support of all involved parties.

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SALTAIRE STATION PLATFORM EXTENSION PROJECT

Client: North South Rail

"True North Rail helped the Signal Sighting Committee find a compliant solution to a very difficult problem. L4001 Signal and Banner Repeater's readability were not compliant to today's standards. We needed a realistic model, flexible to move the assets around and provide accurate data. Jay from True North Rail was a pleasure to work with and very knowledgeable about the model."

Russ Mosley - Signal Sighting Chairperson North South Rail


Truesight™ Modelling


Saltaire Station

OVERVIEW

Saltaire station is on the Airedale line between Bradord and Leeds and Skipton. It is a busy commuter station both for passengers travelling to Leeds & Bradford and for staff in companies based in Salt's Mill, as well as serving tourists visiting UNESCO World Heritage Site at Saltaire.
The team at True North Rail were called upon to assist with Signal Sighting requirements in order to avoid the need for a costly data change to a new Signalling Control System.
Saltaire station is located on a very curved section of railway, and was facing a significant cost impact due to the perceived need to relocate a Signal several hundred meters onto a straighter section of track; a location not preferred by Railway Undertaking representatives. This relocation would also have required a data change for the new Control Centre Signaller Workstation, leading to substantial project costs.
True North Rail deployed its advanced gaming engine platform, TrueSight™, to provide an innovative and cost-effective solution. Our team utilised client BIM data and various GIS datasets to create a photorealistic Signal Sighting model using Unreal Engine. This model allowed for rapid review and adjustment of multiple Signalling options in real-time.

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True North Rail

SALTAIRE STATION PLATFORM EXTENSION PROJECT

Client: Network Rail

"The TrueSight™ tool was excellent and made everyone's job easier, removing a lot of the 'if's and but's' typically encountered when discussing Signal placement. The realism of the model was almost indistinguishable from video footage. I will be recommending True North Rail to all my colleagues with Signal Sighting problems."

Ricky Scarff - Senior Signalling Project Engineer Network Rail

OUR ROLE

Key Actions:
1. Rapid Implementation: Our Signal Sighting model delivered within 10 days from the client's purchase order, allowing for swift review and decision-making by the Signal Sighting Committee.
2. Signal Placement: Our TrueSight™ modelling tools enabled the Signal Sighting committee to quickly visualise and test options and demonstrate that a cantilevered Main Signal positioned to the right, combined with a high-up, reduced offset Banner Repeater would provide a compliant solution. This allowed for the Signal to be repositioned at the end of the new 43m platform extension on the curved section of track and avoid a costly data change to the Signalling Control System.
3. Dispatcher Visibility: Our TrueSight™ platform provided a realistic dispatchers eye view for the Sighting of OFF Indicators on both platforms, ensuring the optimal Signal/Passenger Train interface arrangements.

True North Rail unblocked the signal sighting problem, avoiding any significant cost and programme impacts, whilst also ensuring compliance with Signal Sighting standards. The entire review process was conducted during a 2-hour Teams meeting with the Signal Sighting Committee and other project Stakeholders, showcasing the efficiency and effectiveness of the TrueSight™ tool.

The Saltaire Station platform extension project demonstrates True North Rail's commitment to innovation, efficiency, and cost-effectiveness. The successful application of the TrueSight™ platform not only provided a compliant solution but also significantly reduced project costs and timeframes. True North Rail continues to set new standards in the Rail Engineering sector, delivering best-in-class solutions for complex Signalling challenges.

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REDCAR STATION SIGNAL SIGHTING PROJECT FOR PROPOSED SCAFFOLD ARRANGEMENT

Client: North South Rail

"Working with True North Rail and their TrueSight™ Tool has been highly effective. Its realistic driver's eye view significantly aids the signal sighting committee in risk assessment and mitigation, enabling swift adjustments to meet tight project deadlines. TrueSight's accuracy was confirmed during the Christmas 2023 stage commissioning and subsequent blanking board installation, making it our preferred choice for future signal sighting projects."

Dean Mansell - Signal Sighting Chair & Director North South Rail

Approach R228 scaffold visible

Redcar Station VR Proposed Scaffolding

OVERVIEW

Conservation works totalling £6m to transform Redcar Central from an empty building into a more welcoming gateway to the town began in May 24. The project was funded by the government's Levelling Up Partnership Fund, Welcome to Redcar and Cleveland fund administered via Tees Valley Combined Authority, and the Railway Heritage Trust.

During Station renovation works the team at True North Rail were called upon to assist North South Rail with a comprehensive Signal Sighting Assessment report in order to assess the impact of a proposed scaffold arrangement which was to be erected around the Redcar Station building adjacent to the Down Main Line (Platform 2).

The signals subject to our Signal Sighting Assessment report whilst using our Truesight™ (VR) technology was Down Main Line Down R228, and Down Main Line Up R224. The proposed scaffold was required in order to allow for work to take place on the roof of the station building.

As well as using our Truesight™ (VR) platform the following documents were also used to carry out this Signal Sighting Assessment report:

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REDCAR STATION SIGNAL SIGHTING PROJECT FOR PROPOSED SCAFFOLD ARRANGEMENT

Client: North South Rail

"From a Signal Sighting perspective, the ability to review the approach to a signal is of paramount importance. For Redcar, the True North Signal Sighting Model made this process simple, in that signals were reviewed throughout their readable distances with adjacent buildings in situ and scaffolding modelled to proposed designs. The accuracy and real-life modelling provided a safe and reliable methodology to allow for an accurate, right first-time signal sighting decision to be made."

Alan Colclough - Signal Sighting Chair North South Rail

OUR ROLE

- Network Rail Eastern Line Diagrams, Middlesbrough: Version 2.5 Aug 23
- Network Rail Signalling Plan – Redcar SB 4010H-A3, Version AU1
- Proposed scaffold layout cantilevered access platform Redcar Station Drawings ISS-12363-1-DRG-1 A 4.4010H-BO-R228 Signal Sighting Form (SSF)
- Network Rail Sectional Appendix LN632-004-LN8

Our team conducted a desktop review using both Automated Intelligent Video Review (AIVR) train cab video footage and Virtual Reality (VR) modelling. Using the tools of our Truesight™ platform we were able to identify the following:

- R224 – No lineside signage was identified as being affected by the temporary scaffold.
- The approach to R228 was found to be compliant to the distance documented on R228 SSF. In addition, the AvRD of R228 was found to be 270m unobscured with Platform 1 occupied, and 370m unobscured if Platform 1 is not occupied.
- That the proposed temporary scaffold would not obscure the readability of R228 & R224. However, works taking place on the building may act as a distraction to train drivers. It was therefore recommended that Network Rail & Train Operating companies issue notification of the works to train drivers to mitigate any risk.
- It was also recommended that Network Rail should assess the possibility of sunlight reflection from the scaffold and any possible impact of this on train drivers in both the Up and Down directions.

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WELLINGTON & COLLUMPTON SIGNAL SIGHTING PROJECT FOR 2 PROPOSED NEW STATIONS

Client: AtkinsRéalis

"Congratulations for another superb VR model. For signal sighting alone, not only did we save time on site, but we were able to visualise in detail how the station would look. This enabled us to move station equipment, raise a signal to ensure sighting over stationary vehicles and ensure alignment was optimised to enhance sighting. This is in addition to removing 2 Banners from the scheme, which without such a detailed model would have been installed to de-risk the commissioning."

Paul Harrison MIRSE MIET
Signal Sighting Chairman
Central Rail Systems Alliance

OVERVIEW

Somerset West and Taunton Council and Mid Devon District Council put together plans to reopen Wellington and Cullompton railway stations. Both stations closed during the infamous Beeching cuts of the mid-1960s. Network Rail is currently spearheading the development stages of the project with detailed designs and a full business case following receipt of £5m from the Department for Transport.

Once complete, Wellington and Cullompton will provide two additional stations that will serve the Great Western Mainline from London Paddington to Penzance and sit either side of Tiverton Parkway station. Both stations closed in 1964 and both towns have grown in population since then and are the largest settlements unserved by a rail station between Exeter and Taunton.

The team at True North Rail were called upon to utilise their TrueSight™ platform to review the current proposed signalling designs and then to gain approval from the Signal Sighting Committee on any future signalling design changes.

We then set to work using our advanced gaming engine platform, TrueSight™ to provide an innovative and cost-effective solution. Our team utilised client BIM data and various GIS datasets to create a photorealistic Signal Sighting model using Unreal Engine.

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WELLINGTON & COLLUMPTON SIGNAL SIGHTING PROJECT FOR 2 PROPOSED NEW STATIONS

Client: AtkinsRéalis

"True North Rail VR models are brilliant"
Martin Brown Senior Signalling Design Manager/CRE AtkinsRéalis

OUR ROLE

Key Actions:
Using our TrueSight™ tools we were able to dive the Signal Sighting Committee into a real-world demonstration by showing them complex signalling design changes during our discussions which enabled them to swiftly reach compliance. We were also able to provide a seamless review of any signalling design changes identifying a non-compliance, due to a train stationed on an adjacent track, through the collective effort to adjust and meet sighting standards promptly.
Our platform was able to revise the positions of station equipment, & raise signalling to enhance sighting over stationary vehicles and optimise alignment to increase sighting.
In just a half-day session, the Signal Sighting Committee achieved approval on all the required signalling changes for the two new stations, eliminating the need for two signal banner repeaters. This not only expedited the project but also generated substantial savings of approximately £500k.
TrueSight™ doesn't just facilitate signal sighting; it fosters a dynamic environment for collaboration, enabling stakeholders to iterate and agree on solutions with unmatched speed and efficiency.

Our client reported: “Absolutely Amazing. The models produced by True North Rail are outstanding and enable signal sighting to be visualised in detail and decisions to made with confidence, saving the committee time on site and ensuring detailed decisions can be made early, saving time, money and rework.“

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CAMBRIDGE SOUTH SIGNAL SIGHTING INFRASTRUCTURE ENHANCEMENTS PROJECT

Client: North South Rail

"Working with True North Rail and their TrueSight™ Tool has been highly effective. Its realistic driver's eye view significantly aids the signal sighting committee in risk assessment and mitigation, enabling swift adjustments to meet tight project deadlines. TrueSight's accuracy was confirmed during the Christmas 2023 stage commissioning and subsequent blanking board installation, making it our preferred choice for future signal sighting projects."

Dean Mansell - Signal Sighting Chair & Director North South Rail

OVERVIEW

We were proud to be working alongside North South Rail, Murphy & Alstom assisting with their Signal Sighting requirements for the new railway station being built by Network Rail for Cambridge South.
Cambridge is one of the UK's most successful and fastest growing cities. The new station will connect the Cambridge Biomedical Campus with potential destinations such as central London, London Stansted Airport & Birmingham. The station will be managed and served by Greater Anglia, with other existing train operators expected to call at the new station.
The station will also provide access to a growing area of high-quality employment and help relieve congestion in the local area by supporting the development of environmentally sustainable transport in Cambridge.
It is also anticipated that in the future, East West Rail services from Bedford to Cambridge could also serve the new station.

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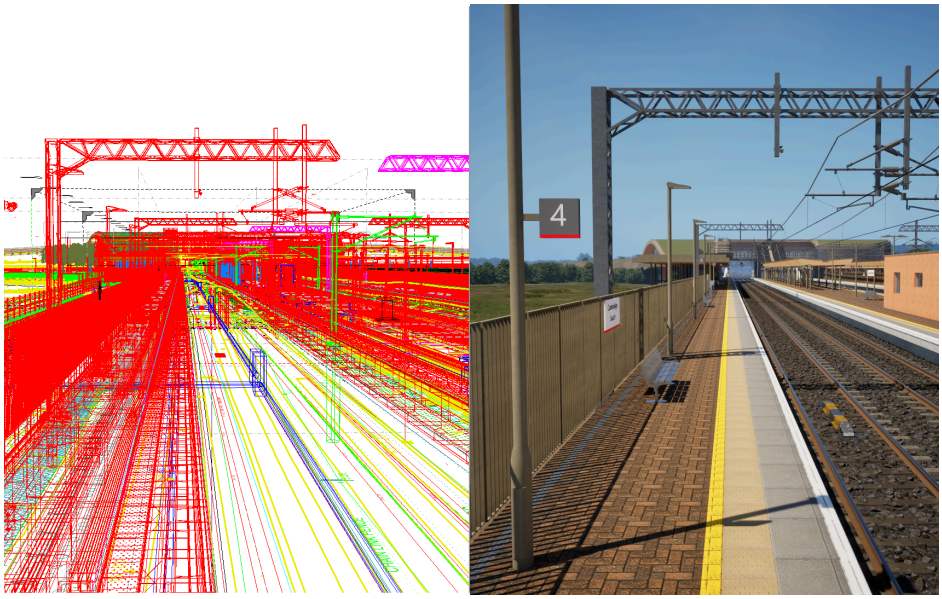
CAMBRIDGE SOUTH SIGNAL SIGHTING INFRASTRUCTURE ENHANCEMENTS PROJECT

Client: Murphy



"Understanding that for complex signalling projects this interactive media can be used to conclude signal sighting assurance (incl. temporary/interim arrangements/scenarios) and provide driver training prior to the project entering in to service, it makes sense to undertake this work early in the preconstruction phases so that designers and contractors understand what they're up against to maintain compliant and safe railway throughout the programme of works; these models help to eliminate risks and allow people to understand and overcome issues much earlier in the programme"

Andrew Ratcliffe - Senior Engineering Manager Murphy

OUR ROLE

We achieved successful facilitation of the Signal Sighting Process for the Cambridge South Infrastructure Enhancements Project, achieving full sign-off of all sighting forms. We achieved this by creating a 5km virtual world integrating local GIS data with all the clients project BIM data (including intelligent PWay infrastructure with interactive "physically correct" S&C and client 3D design models).

Leveraging our TrueSight™ platform, we positioned circa 80 signalling assets as fully intelligent, interactive objects within minutes. TrueSight™ powerful photorealism bridges the gap between the virtual and the real world, fostering trust and confidence amongst all internal project personnel and external stakeholders. This not only accelerates stakeholder buy-in but significantly reduces the need for on-site presence, aligning perfectly with Network Rail's MVP policy for safer and more efficient operations.
Our BIM to TrueSight™ software transformed the complex CAD data from this project into a realistic, accessible, VR model with detailed life-like images. All of which highlighted the precision & complexities of the project without compromising on engineering accuracy. We also significantly reduced project timescales, avoiding any rework whilst generating substantial cost savings.

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NETWORK RAIL NEWQUAY STATION DRIVER ROUTE LEARNING

Client: Network Rail

“I engaged True North Rail to provide CGI videos of new rail infrastructure to support driver training. Ian, Jay and Sarah were great to work with – they were friendly, professional and were able to accommodate our challenging timescales.”

George Collinson - Lead Portfolio Manager Network Rail

OVERVIEW

We were proud to be working alongside Network Rail, & Pennant to deliver an Immersive VR Solution for Driver Route Learning for the Newquay Branch Line Enhancement Project.
The Mid Cornwall Metro is an exciting £56.8m project that’s set to bring a reliable, hourly coast-to-coast rail service linking Newquay, Par, St Austell, Truro, Penryn, and Falmouth.
One of the key upgrades is a new passing loop at Tregoss Moor, which will allow trains to run in both directions at the same time. This means local and long-distance services can operate together, making year-round local train services possible.
The project will include station improvements and better walking and cycling access, including at Roche and Bugle stations. Tap in, tap out Pay As You Go ticketing with a GWR smartcard will also be extended to the whole of Cornwall, plus Plymouth and the Tamar Valley Line, as part of the project.

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True North Rail

NETWORK RAIL NEWQUAY STATION DRIVER ROUTE LEARNING

OUR ROLE

The Mid Cornwall Metro is a joint venture between Network Rail, Cornwall Council and Great Western Railway to bring more trains to Cornwall and provide coast-to-coast connectivity.
Commissioned in August 2024 by George Collinson, Lead Portfolio Manager of the Network Rail Wales and Western Integrated Infrastructure Team, TNR was tasked with creating an immersive VR solution to facilitate driver route learning. The project focused on two key areas with significant infrastructure changes: Newquay Station and a newly constructed passing loop. Recognising the complexity of these changes, TNR recommended a blended approach, combining high-fidelity VR models of the new infrastructure with existing cab footage and motion-tracked assets. This strategy ensured an efficient and cost-effective solution while meeting the demanding project timeline. The project commenced on September 1st, and despite the ambitious deadline of October 2024, TNR successfully delivered the VR components ahead of schedule. This timely delivery facilitated the seamless integration of these components into the comprehensive driver route learning package created by Track Access Services.

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True North Rail

Our Services

- Virtual Signal Sighting
- Driver Route Learning
- Virtual Teams Training
- Train Platform Interfaces
- Design Visualisation

See Website for Details

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