



Transforming the Northern economy through data and analysis

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Overview

Who we are, what we do, our projects

Our models, how they work

Our analysis

Our data

What next





What is Transport for the North?

National

Pan-Northern

City Regions and Local Enterprise Partnerships

Local Transport Authorities, Combined Authorities

Local District, Planning and Highway Authorities





Our vision

“A thriving North of England where world class transport supports sustainable economic growth and improved opportunities for all.”





A transformed North



	2015	2050 Business as usual scenario	2050 Transformational scenario (baseline for TfN)
 Employment	7.5 million	8.3 million	9.2 million
 GVA (2011 prices)	302 billion	603 billion	695 billion

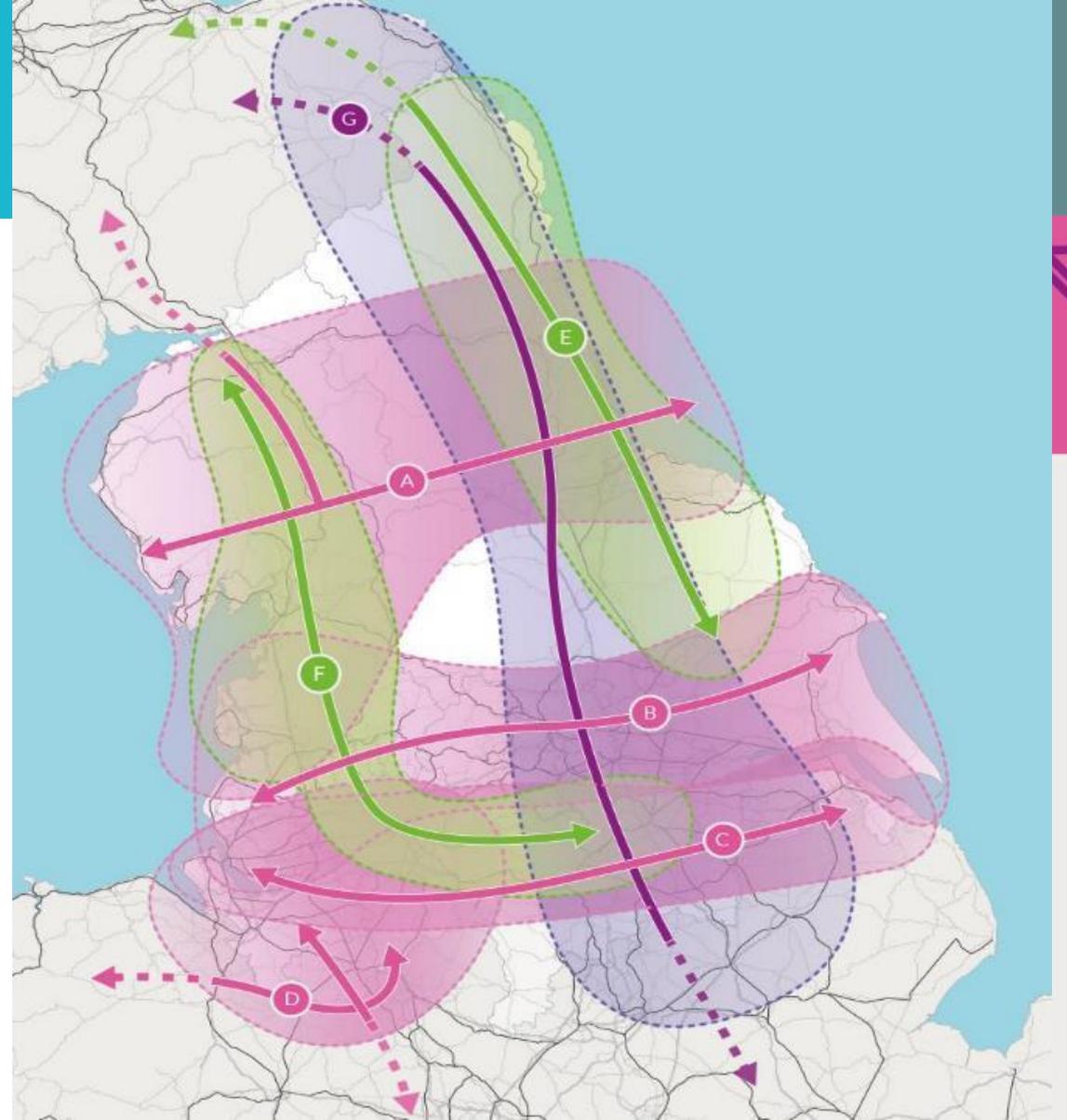




Strategic Development Corridors

Developing the major strategic transport interventions along economic growth corridors

- A** Connecting the Energy Coasts
- B** Central Pennines
- C** Southern Pennines
- D** West and Wales
- E** East Coast to Scotland
- F** North West to Sheffield City Region
- G** Yorkshire to Scotland





HS2 and Northern Powerhouse Rail

Significantly improving capacity, frequency, speed and services between the North's main economic centres

- Northern Powerhouse Rail - upgrade line
- Northern Powerhouse Rail - new line
- Linking Liverpool to HS2
- HS2 line
- TransPennine Route Upgrade
- Existing line
- Northern Powerhouse Rail hub station
- Other significant economic centre
- Northern Powerhouse Rail junctions with HS2





Major Road Network

Improving the reliability, efficiency, quality and resilience of the North's road network



2,444 km

Strategic Road Network (SRN)

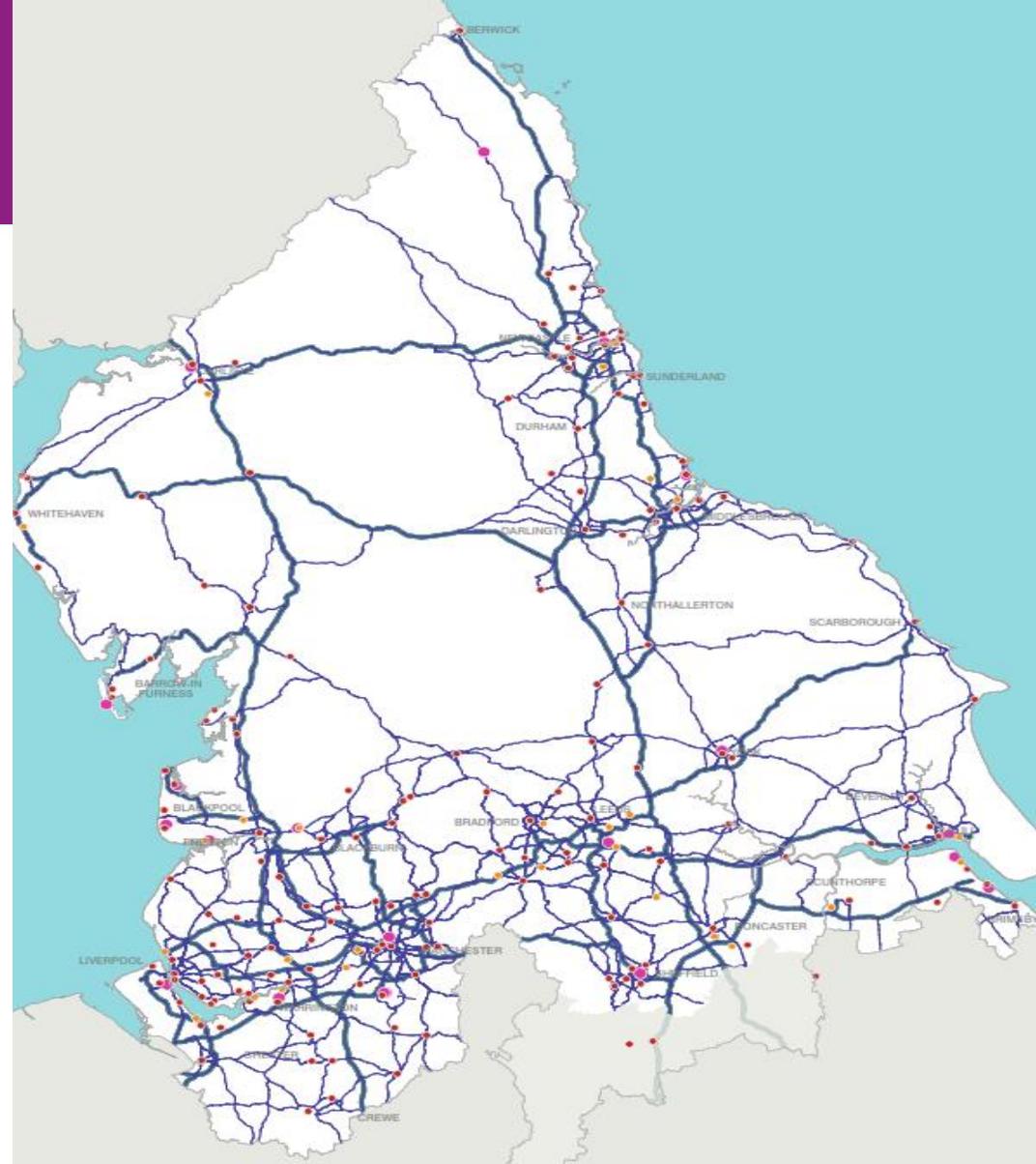


5,454 km

Major Road Network (MRN) (excluding SRN)

7,899 km

Major Road Network (MRN) (including SRN)





Integrated And Smart Travel

- **Phase 1 (2018):** Smart tickets for rail season tickets
- **Phase 2 (2018/19):** Enhanced real time customer information
- **Phase 3 (2019 - 2021):** Roll out of multi-modal contactless travel with simpler fare structures





Why TfN?

Small organisation with big ambitions
Collaborating with private, public and academic sectors to elicit a change in the economic geography of the North

A government start-up
Unique opportunity to do something different...

... Which includes making available more data, and working more collaboratively, removing historic pain-points, creating new markets...

Analysis at the centre of decision making
Modelling the interaction between discrete systems and human behavior all in a spatial context





Transport and the economy

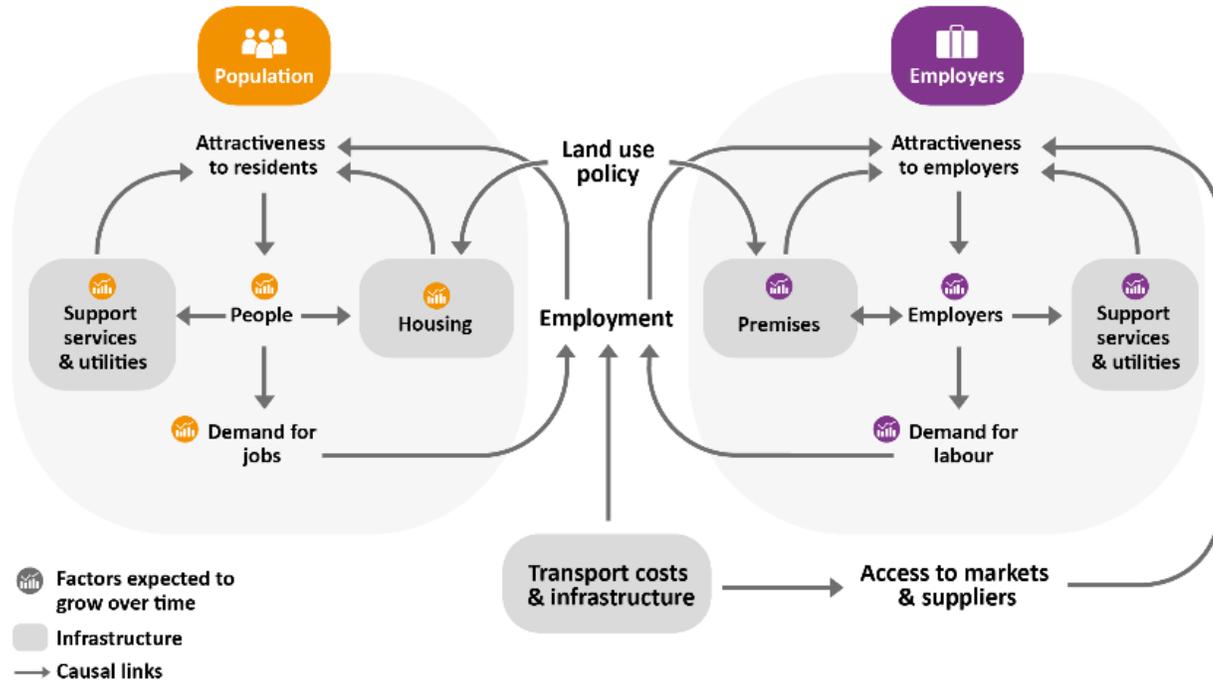
How does transport impact the economy:

- **Faster travel** – reduced commuter and business costs, and allowing easier trade and collaboration
- **Better matching** of people to jobs (increasing quantity and quality of employment)
- **Enabling dense urban centres** of employment (agglomeration)
- **Land-value uplift**, bringing forward investment





TfN's approach: NELUM





Unanswered questions

Open questions for TfN research, analysis and modelling:

- **Polycentricity** – How do these mechanisms vary in a polycentric region like the North compared to a monocentric region like the South East?
 - Agglomeration between centres
 - Choice of attractive jobs
- **Trade and specialisation** – Could improved transport links allow Northern cities to specialise and become more efficient internal economies?
- **Investment and regeneration** – How much new land will be made available as a direct result of transport investment vs counterfactual?
- **Social welfare impacts** – How can we value all of the dynamic benefits and disbenefits and ensuring no double-counting?





Analytical Framework

Tier 1: Economic & Land Use Modelling System (Dynamic Model)

Exploration, Transformation, Sequencing & Wider Impacts

Key insights for Strategic Case

NELUM

Northern Economy & Land Use Model

Translator:

Northern Model Integration Tools

NorMITs

Network & Service Capacity Restraint



Transformational Travel Markets

Tier 2: Transport Modelling System (Equilibrium Model)

NorTMS

Northern Transport Modelling System

Operations, Optioneering & Conventional Appraisal

Key insights for Economic Case

INCLUDES

NoRMS

NoHAMs





Building blocks

A detailed picture of the current North

- Current land use
- Current travel demand
- Current travel costs

Information about planned future changes

- Planned developments
- Economic forecasts
- Modelled future demand
- Modelled future travel networks





Challenges

Different data segmentation

Transformation

Base misalignment

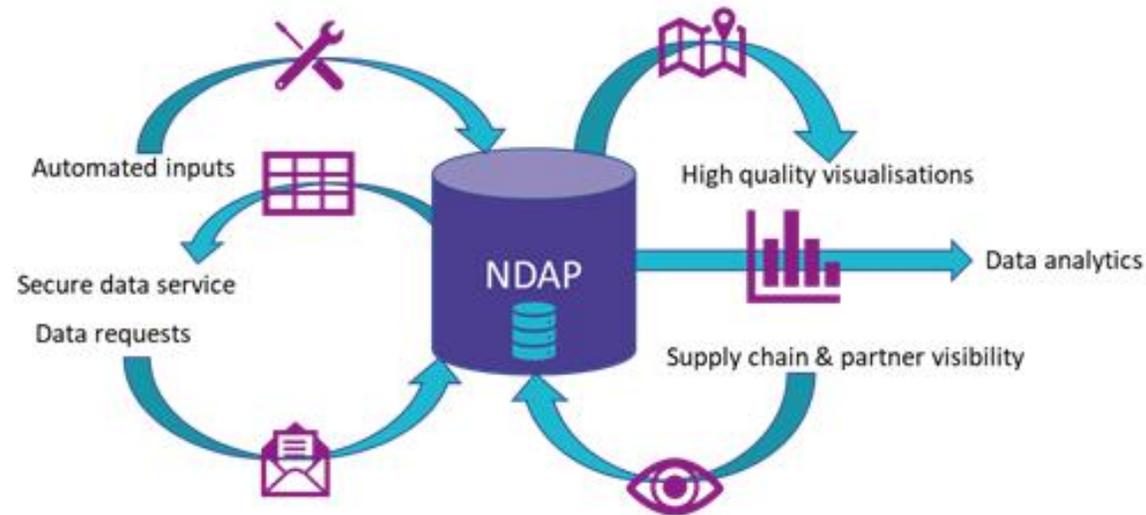




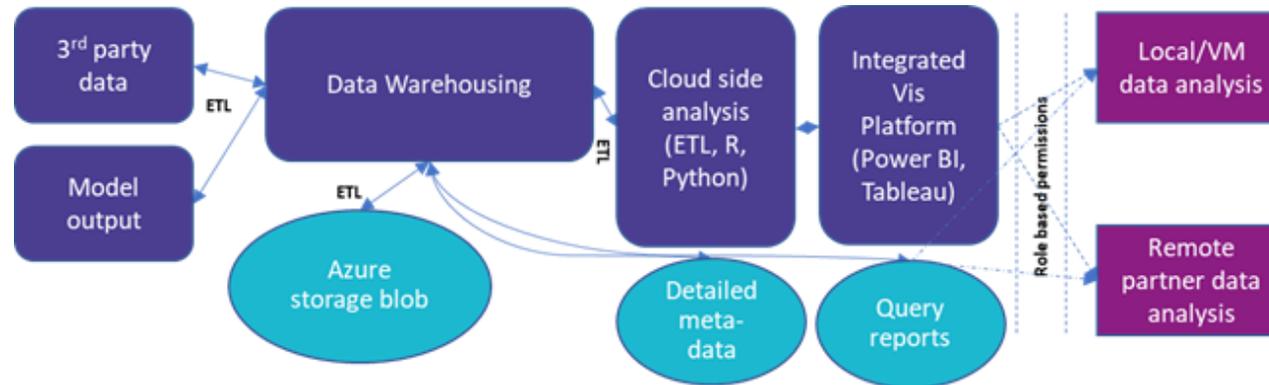
Northern Data Analytics Platform

Platform needed to tie together:

- High volumes of model output
- Large data storage objects
- Data analysis
- Request handling & sharing



Northern Data Analytics Platform



Platform schematic summary





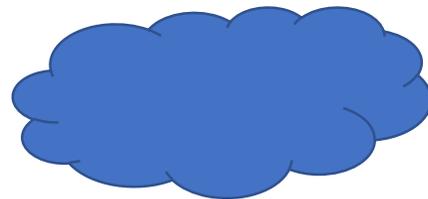
Northern Data Analytics Platform

Made possible by...

- Scalable computing & storage
- R and Python integration
- General high standard of computer literacy (ie. Technical but not IT)
- Role based controls

Makes possible...

- Data sharing
- Reuse of code & analysis
- Solution agnosticism (plug and play...)
- Oversight & security





Thanks for listening

- The future of analysis in Government is Open
- Big problems require big solutions...
- ... But they need to work a local level





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