C4R

Capacity for Rail

# SP3: Capabilities Trade-offs Tool

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Work Package 3.1

TRL THE FUTURE OF TRANSPORT

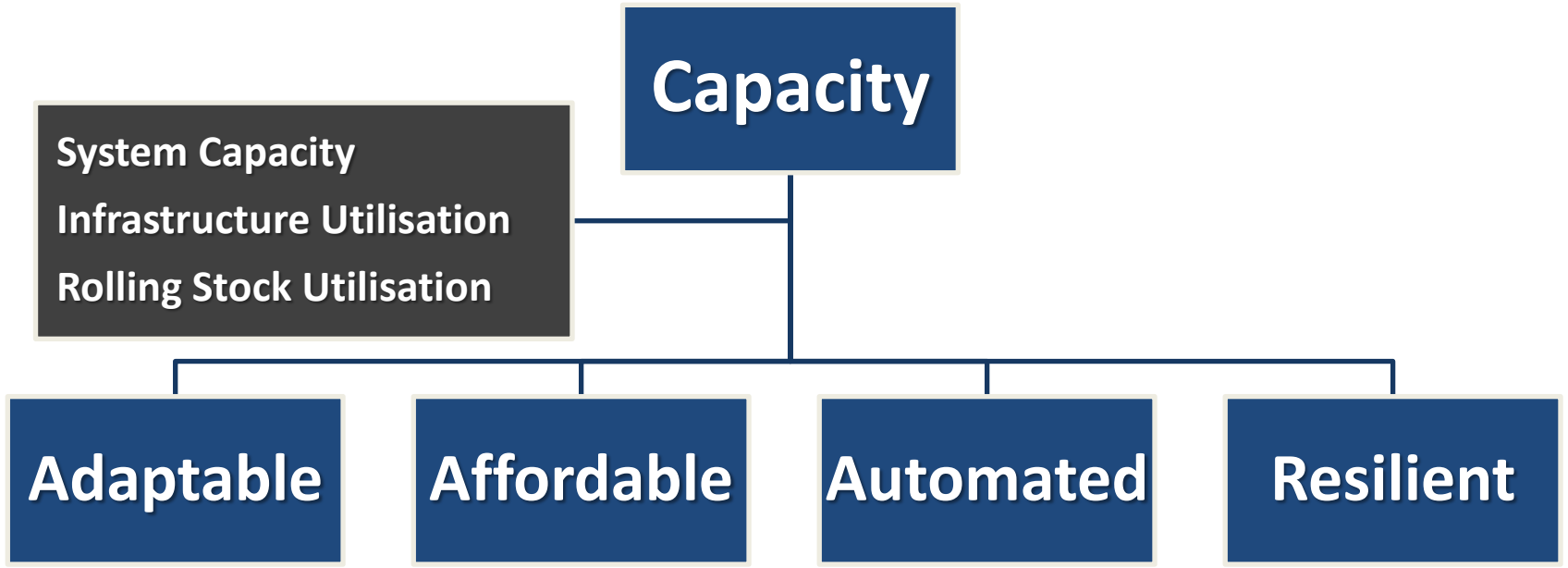
oltis group

Network Rail

UNIVERSITY OF BIRMINGHAM

SEVENTH FRAMEWORK PROGRAMME

# *Capacity Trade-off Key Goals*




**Quick, E**

- Cha ermined sub-
- Ena ndencies are

**Which investment option(s) should be taken forward?**

# *System thinking for the Railways*

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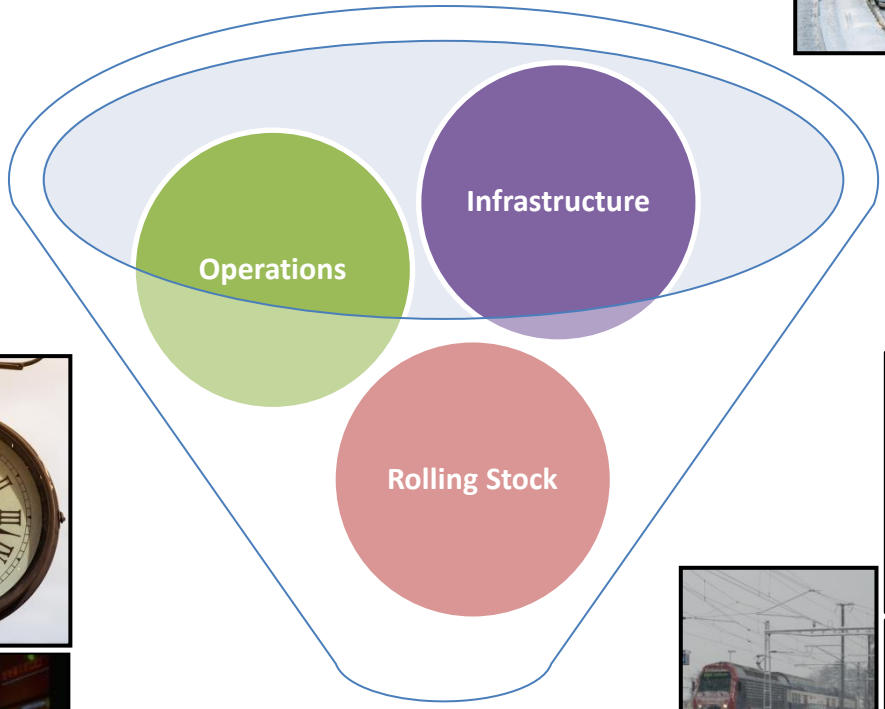
## Railway Functions & Capabilities





**Performance of the railway**



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# *Capability trade-offs Tool*

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**Whole System Approach**
**+**
**Capabilities Trade-offs**

**Benefits of different innovations/improvements**

| **Determine best way to …** | **… by doing …** | **… by comparing …** |
|---|---|---|
| Get 50000 people an hour through Route A | Capability design trade-offs | High performance low capacity trains vs low performance high capacity trains |
| Get 300 people off the train every 3 minutes | System design trade-offs | Acceleration/braking vs number/size of doors. |

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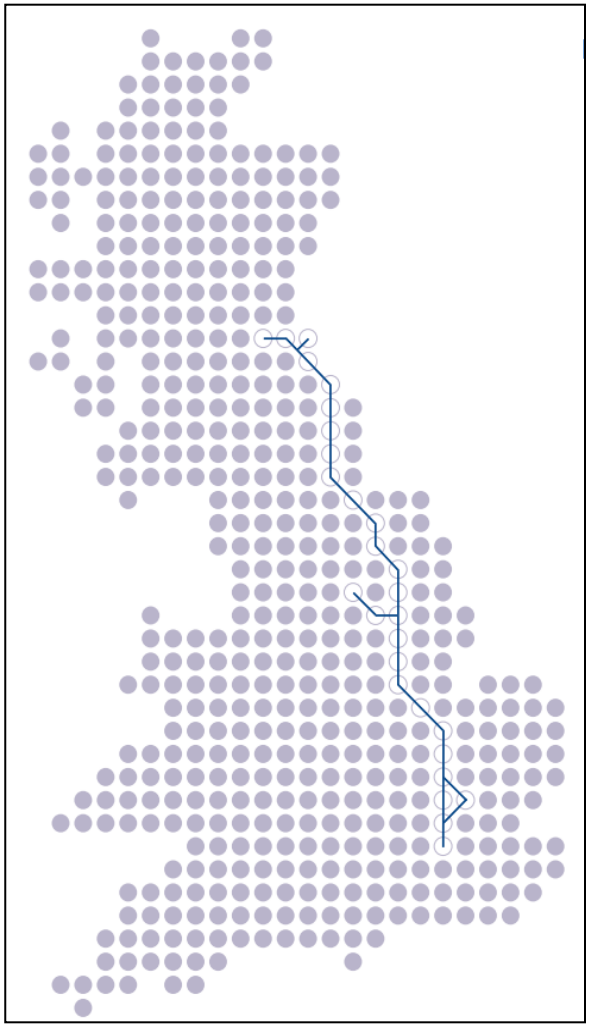
# Improving East Coast Mainline (ECML) capacity

## Problem

Significant passenger capacity increase needed to meet growing demand



Geographic Scope, ***East Coast Main Line Route Utilisation Strategy, Network Rail, 2008***

# *Case Study – Peterborough to Doncaster*

Capacity for Rail

Sub-section on the major railway link between London and Edinburgh

Traffic
- 6 High Speed Intercity Passenger Services (200 kmh)
- 2 Regional Passenger Services (145 kmh) – *part of the route*
- 1 Freight (100 kmh)

Signalling
- 4-aspect

Tracks per direction
- 1 (Doncaster to Stoke Tunnel)
- 2 (Stoke Tunnel to Peterborough)

Structures
- > 30 Level Crossings
- > 100 bridges & 4 tunnels



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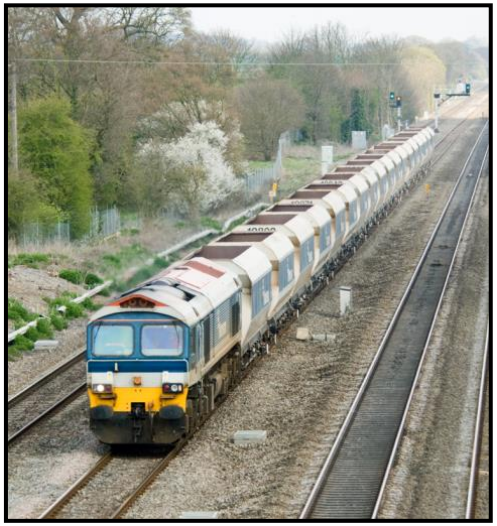
1. Increased train capabilities (braking/acceleration/max speed) allowing closer running
2. Introduce new freight paths elsewhere (find alternate routes/build new tracks for freight)



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# *Case Study – Peterborough to Doncaster*

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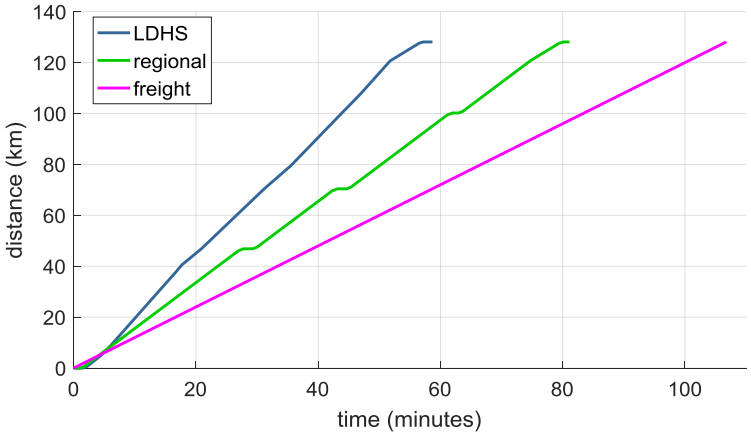
- **Baseline**: current conditions




- **Investment Option 1**: Upgrade rolling stock

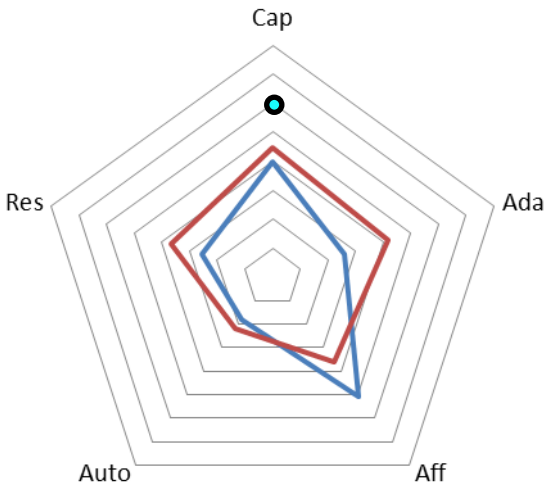
- **Investment Option 2:** Option 1 + remove freight from ECML

- **Investment Option 3**: Option 2 + upgrade to ETCS L2, optimised block sections

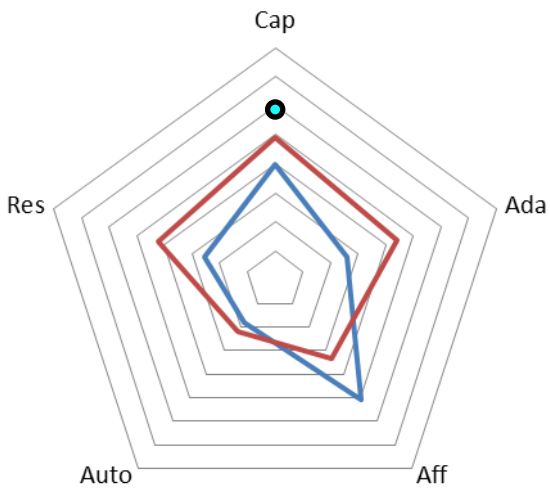


**Target: Increase Capacity by 50%.**

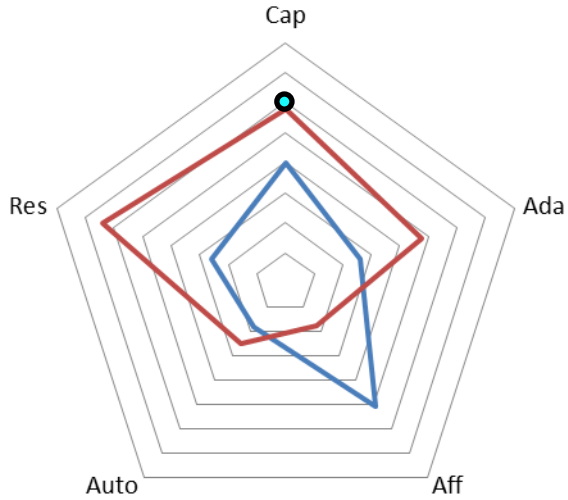
# Reporting Outcomes




**Current** vs
**Upgraded Rolling Stock**




**Current** vs
**Upgraded Rolling Stock & Removal of freight**




**Current** vs
**Upgraded Rolling Stock, Removal of freight & ETCS L2 (w/ Optimised Blocks)**

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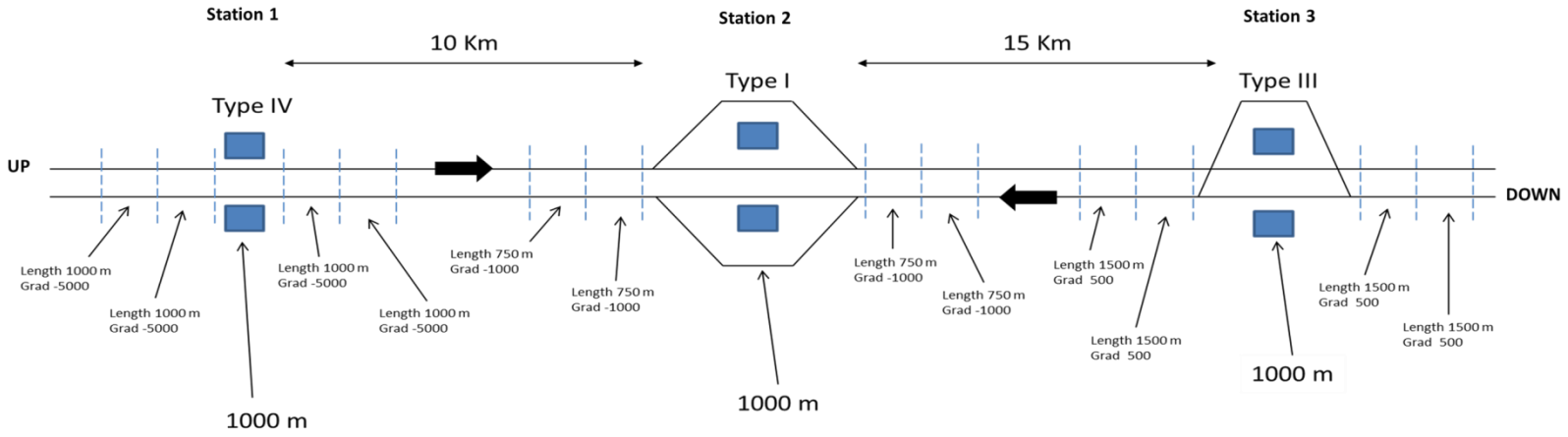
# Demo

**http://c4r.jerid.cz/**

# Capabilities Trade-Off Tool



*Thank you for your kind attention*

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