

# How Smart is the Railway?

Andy Woods, Siemens Mobility

# Introduction – About me



- Senior Systems Engineer for Siemens Mobility
- A decade's Industry experience in Signalling and Train Control
- Worked on Victoria Line Upgrade Programme, Crossrail and the roll-out of automatic route setting for Derby area.
- Spent the last 2 years working with Digital Railway
  - Traffic Management business case
  - Review of the requirements specs for Traffic Management
  - Traffic Management for Transpennine Route Upgrade
  - European Train Control System for Transpennine Upgrade
  - New delivery model for Digital Railway
  - Investigating the possibility as Traffic Management using SaaS
- Also have been working in:
  - Connectivity for signalling assets
  - Data Analytics



# What do Siemens Rail Automation UK do?

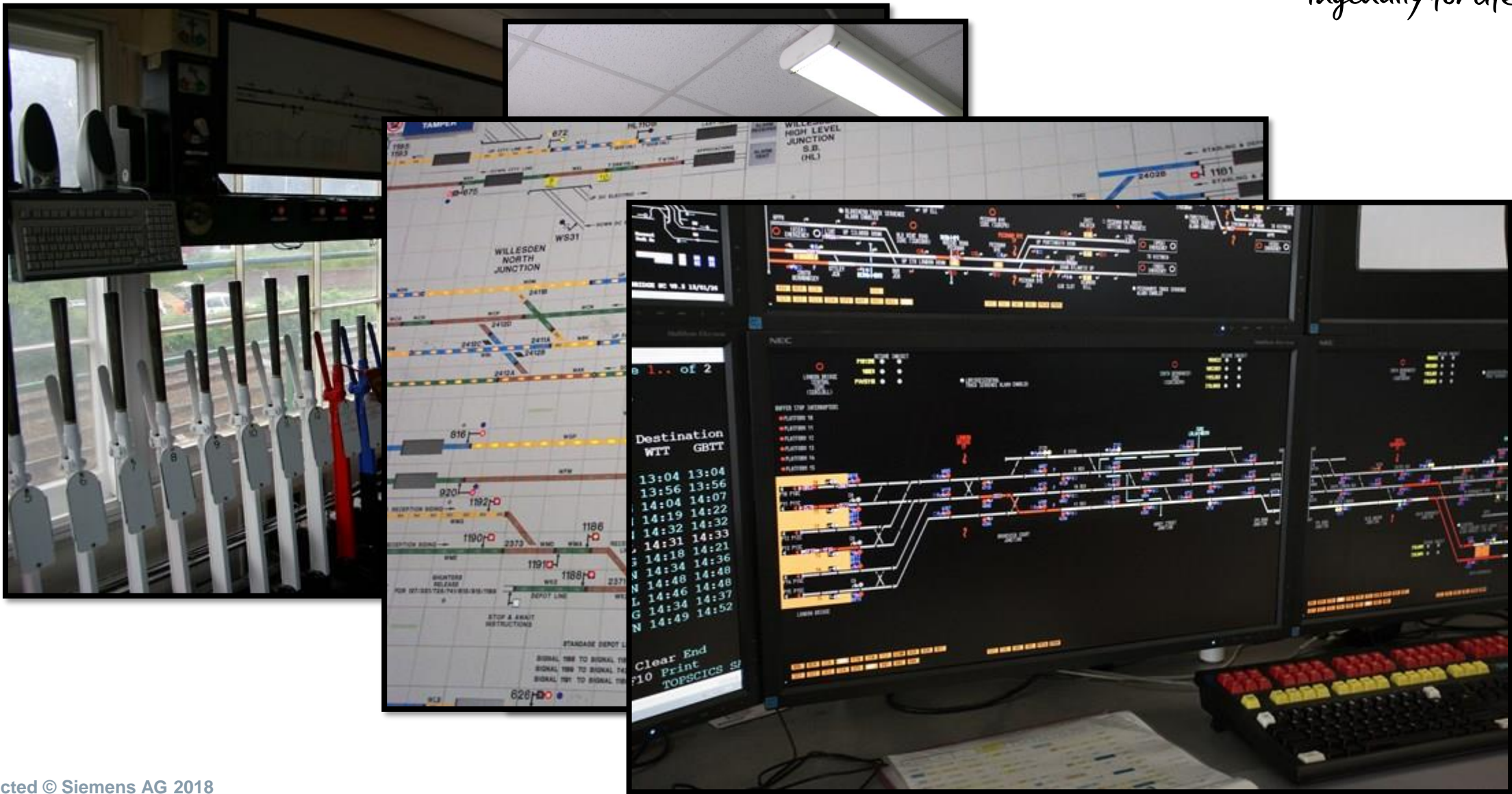


- Network Rail's biggest signalling supplier
- We design, build, integrate, test & commission signalling systems.
- Signalling ensures that trains are kept apart.
- We build to SIL4 standards (the same as Nuclear Power)
- Our systems are distributed over miles of track
- Our systems identify where trains are, predict where they will be and minimise delays where possible.





# How smart is the railway?



# How smart is the railway?

**SIEMENS**  
*Ingenuity for life*





# How smart is the railway?

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- ◆ More Trains
- ◆ Better Connections
- ◆ Greater Reliability

# Digital Railway technologies



**European Train Control System (ETCS)**



**Connected Driver Advisory Systems (CDAS)  
+ Automatic Train Operation (ATO)**

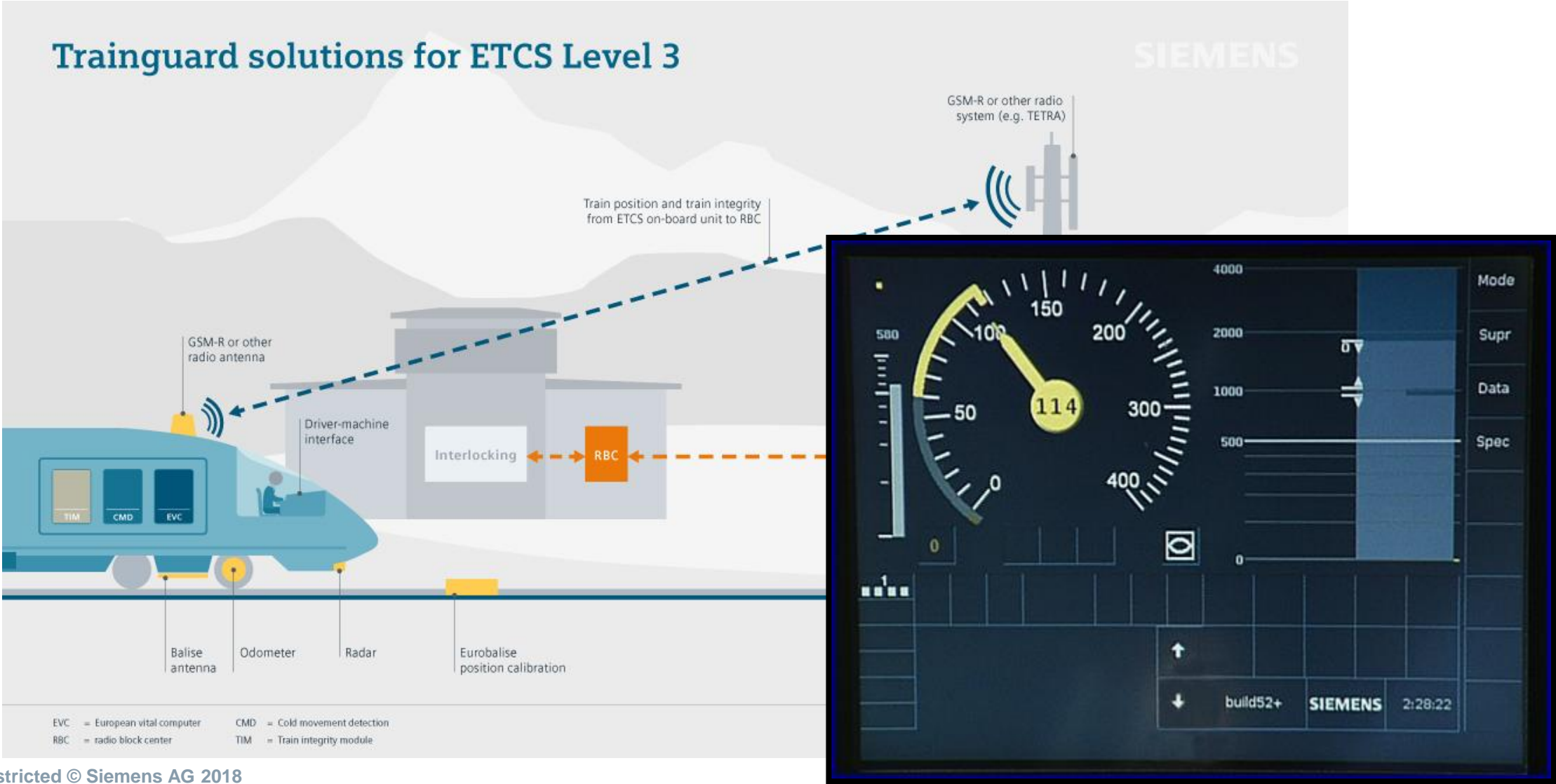


**Traffic Management (TM)**



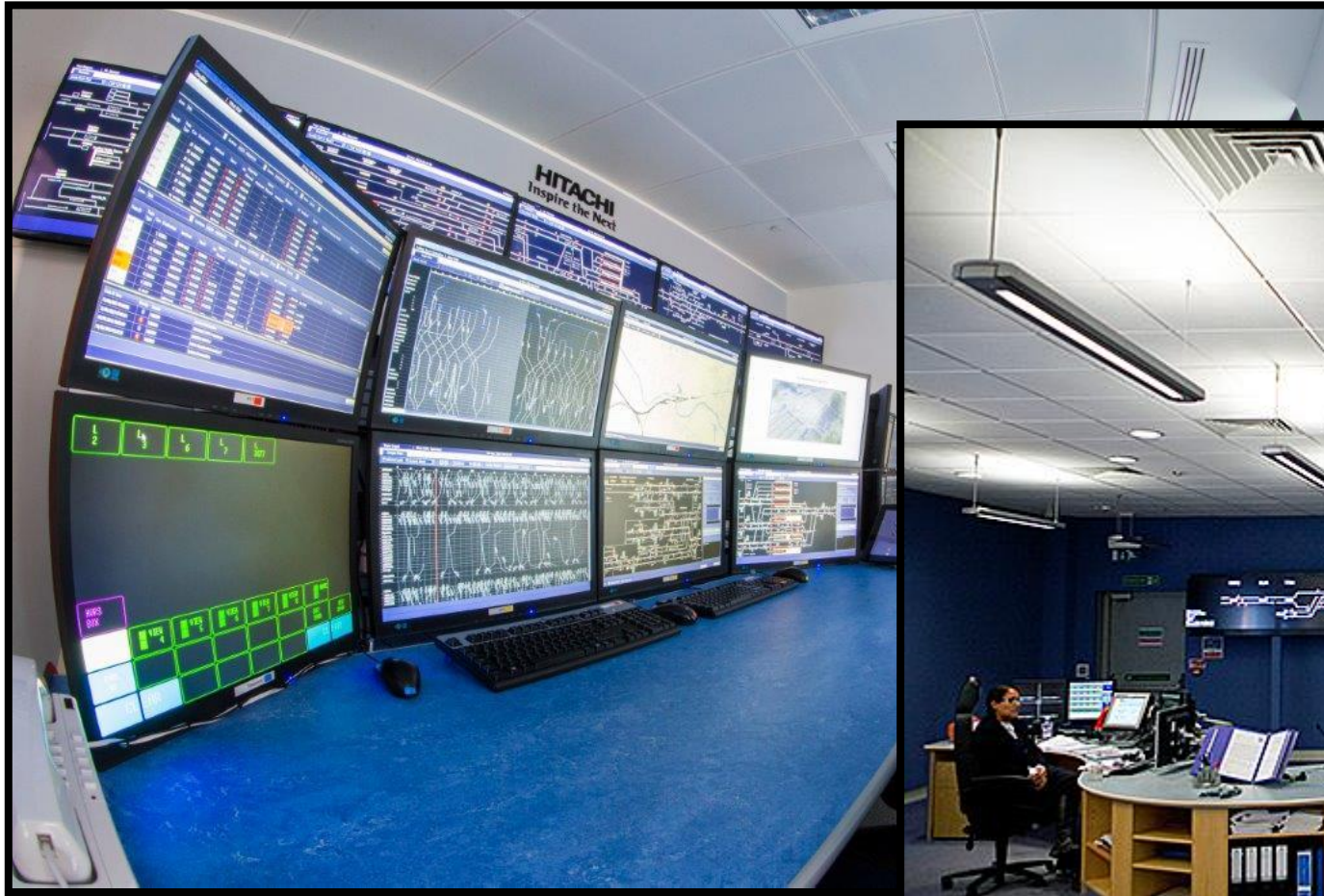
**Telecoms + Data**





# Traffic Management

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# Maintenance

Technicians are:

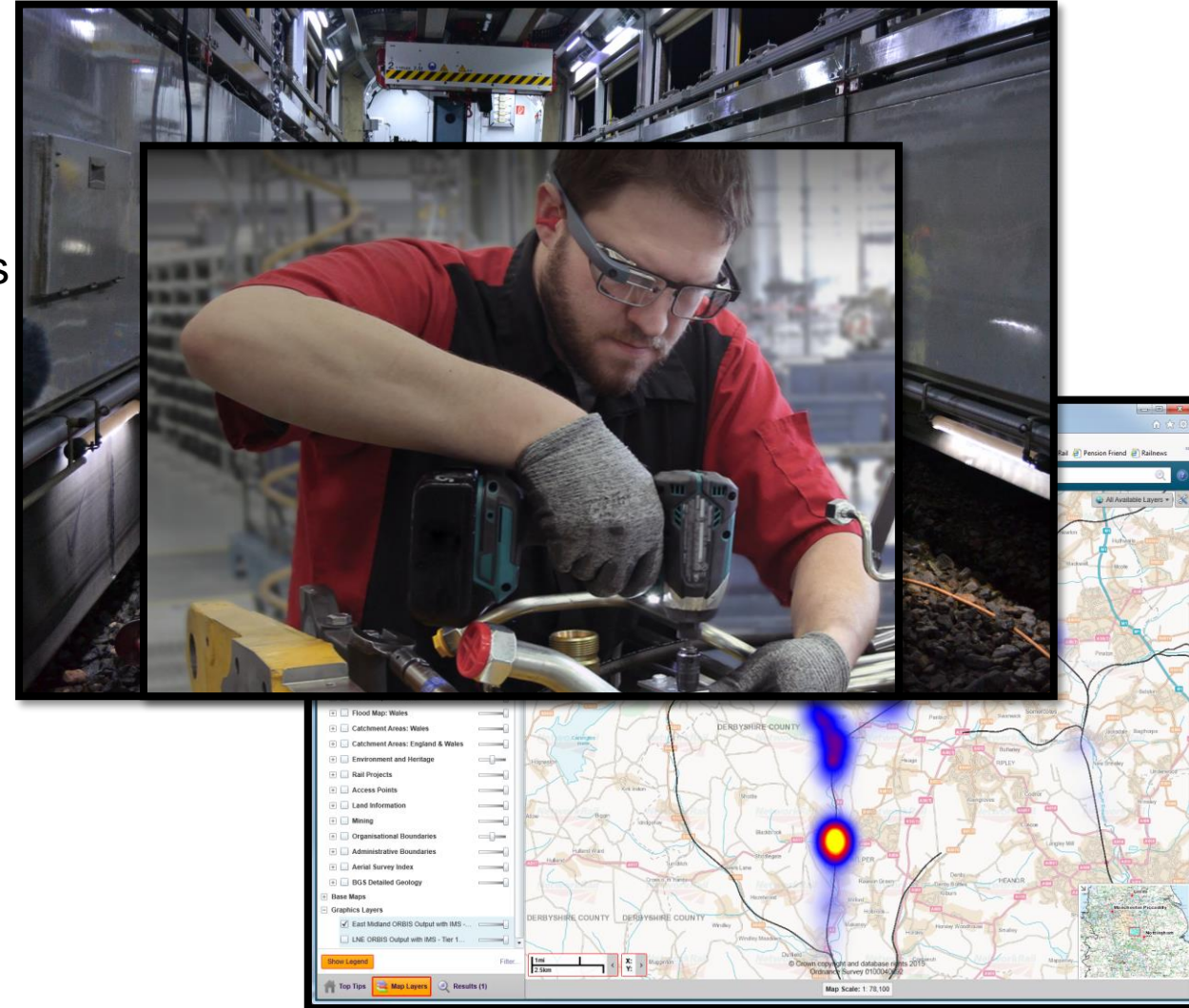
- Used to dealing with small frequent failures
- Experts in current (BR era) systems
- Trained through experience
- Working in a cold, wet and dangerous environment
- Nearing retirement



# Maintenance

Technicians are:

- Dealing with infrequent failures
- Provided information by data capture and analytics
- Multi-skilled and able to solve unique problems
- Trained and skills maintained via simulation
- Working in a warmer, drier and safer environment
- Collaborating with AI and remote experts





# Victoria Line

- Trains are driven automatically
- Trains are regulated using algorithms to ensure the service stays consistent.
- Automatic Train Operation can hold trains at the station or chose between different driving styles.
- Trains every 100 seconds





- 24 Trains per Hour
- Automatic Train Operation
- ETCS Level 2 with Signals
- Traffic Management System



# Unlocking Innovation

## Realtime Trains

Rail information across the Great British rail network

Can you help us? We're asking for GPS tracks of services.

OPENTRAINTIMES

Recent Train Times

 **TRAKSY.UK**

 **Raildar**

 **Accessible UK Train Timetables**

 **Citymapper**