



Mobility Division

# Thameslink – Desiro City & Signalling Press Trip April 20 to 21, 2015

Evolution in Motion

# Rolling Stock Portfolio in Great Britain

SIEMENS

We have some of the most reliable trains in UK.....



Over 350 trains in service each weekday travelling over 50 million miles per annum





Support from some of the most advanced depots in the UK

Heathrow Express, CL332, CL360/2



York, TPE CL185



Northam, S. West Trains, CL450/444



Siemens has the widest experience in Full Train Service contracts and is at present fulfilling six Train Service Agreements (TSA) for Commuter Multiple Units

Ardwick, TPE, CL185



Shields, FSR, CL380



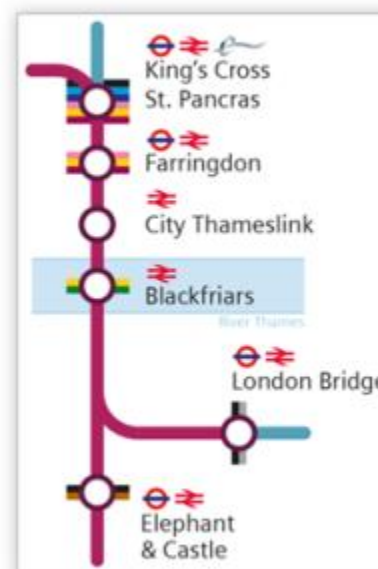
Kings Heath, LM, CL350/1, CL350/2



# What does Thameslink deliver?

- Reduced overcrowding on Thameslink and other cross London services
- New cross-London services
- Reduced overcrowding on the Underground
- Facilitate dispersal of passengers from St Pancras International
- Less need for interchange between main line and underground services

## London Connections



**Capacity raised to 24 trains per hour in the core area bottleneck**

## Future Connections





# What does Siemens deliver for Thameslink?



- 115 Desiro City Thameslink trains
- Two new depots
- Full maintenance service
- Signalling and control:
  - ETCS and ATO onboard equipment
  - ETCS radio block centre and balises
  - ATS, control and display, interlockings
- Telecoms



## Desiro City Platform

An evolution of proven technology

As we started the Desiro City development back early 2007 we have used the opportunity to **design clearly towards minimizing whole-life, whole-system cost.**

The trains incorporate the feedback of existing UK train crews, operators, cleaning and maintenance staff, as well as Siemens' own extensive experience as one of the world's leading train manufacturers. A survey prepared for Passenger Focus in a joint project with the DfT and London TravelWatch was also used to influence the design.

Our approach was to design a light weight train and to dimension the subsystems adequately.

1.	<b>Improving Reliability (<i>availability, SAF, mission failures</i>)</b>
2.	<b>Optimising Maintenance (<i>overhauls, intervals, clean ability, accessibility, repair ability</i>)</b>
3.	<b>Reducing Energy Consumption (<i>including weight reduction</i>)</b>
4.	<b>Infrastructure (<i>track charges and interfacing</i>)</b>
5.	<b>Reducing Capital Cost</b>
6.	<b>Maximising Capacity (<i>maximizing furnishable space</i>)</b>
7.	<b>Flexibility (<i>configurations, interiors and power supply</i>)</b>

# Executive Summary Thameslink

## Overview to date:

- Mock up, design reviews, manufacturing all ahead or as per programme.  
All key dates met to date.
- 6 FLUs (Full Length Units – 12 car) in PCW.
- 7<sup>th</sup> FLU scheduled for delivery to PCW for April 2015.
- 1 RLU (Reduced Length Unit – 8 car) in PCW.
- Test programme ongoing in PCW since March 2014 (1<sup>st</sup> FLU in PCW).

## Key dates:

- Type testing PCW completed – July 2015
- Delivery of first Unit to UK – August 2015
- Handover of first Unit: December 2015
- Handover of last Unit: June 2018.





## Climatic testing:

Three vehicles performed intensive climatic tests in March and June 2014 in the RTA climatic chamber (Vienna).

In addition to the normative HVAC testing further component tests were performed including wind speeds, icy conditions, heavy rain and different types of snow.





# The Depots





# Current Status at Three Bridges



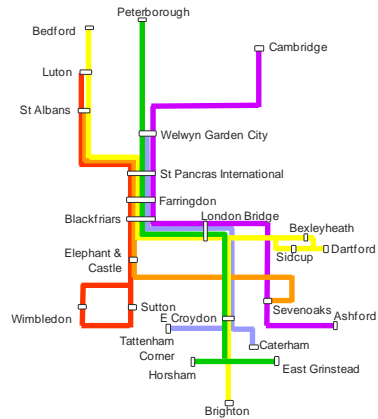


# Current Status At Hornsey



# Thameslink

## Metro style core area



- All services stop at closely spaced stations in the core area
- 24 trains per hour normal service
- 30 trains per hour recovery service
- Trains have a variety of routes and must normally be presented in the expected order



St Pancras International



Farringdon



City Thameslink



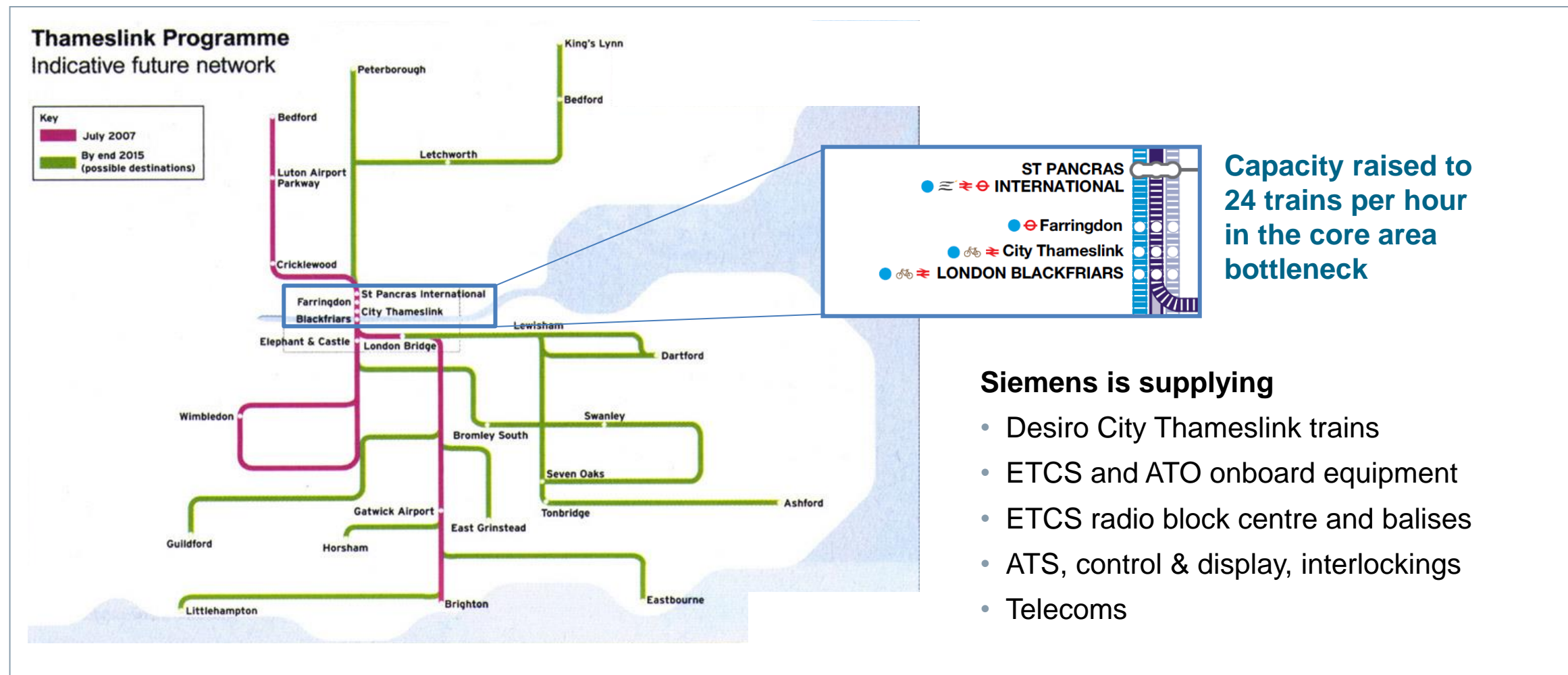
Blackfriars

Metro style core area, large catchment areas north and south of London



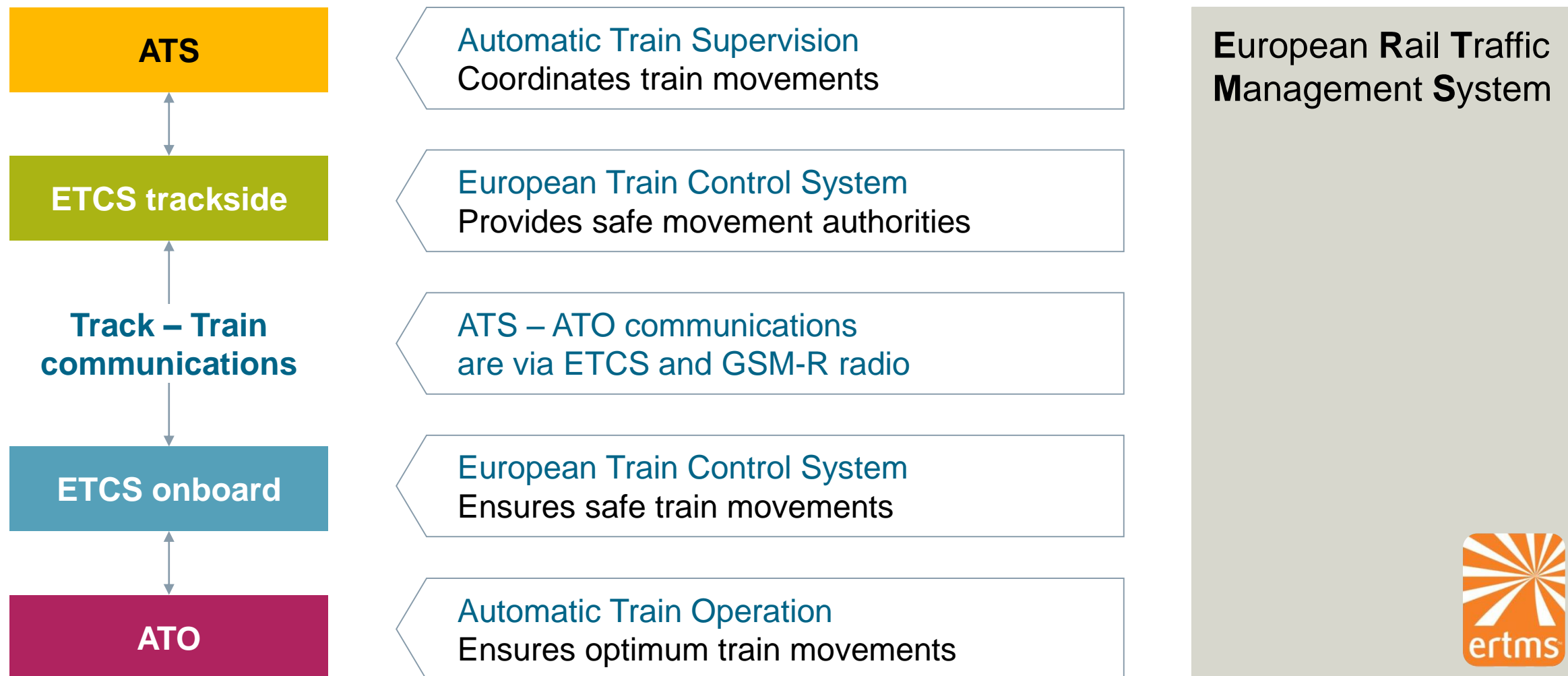
# Thameslink

## North-South London Connections



# Overall system concept

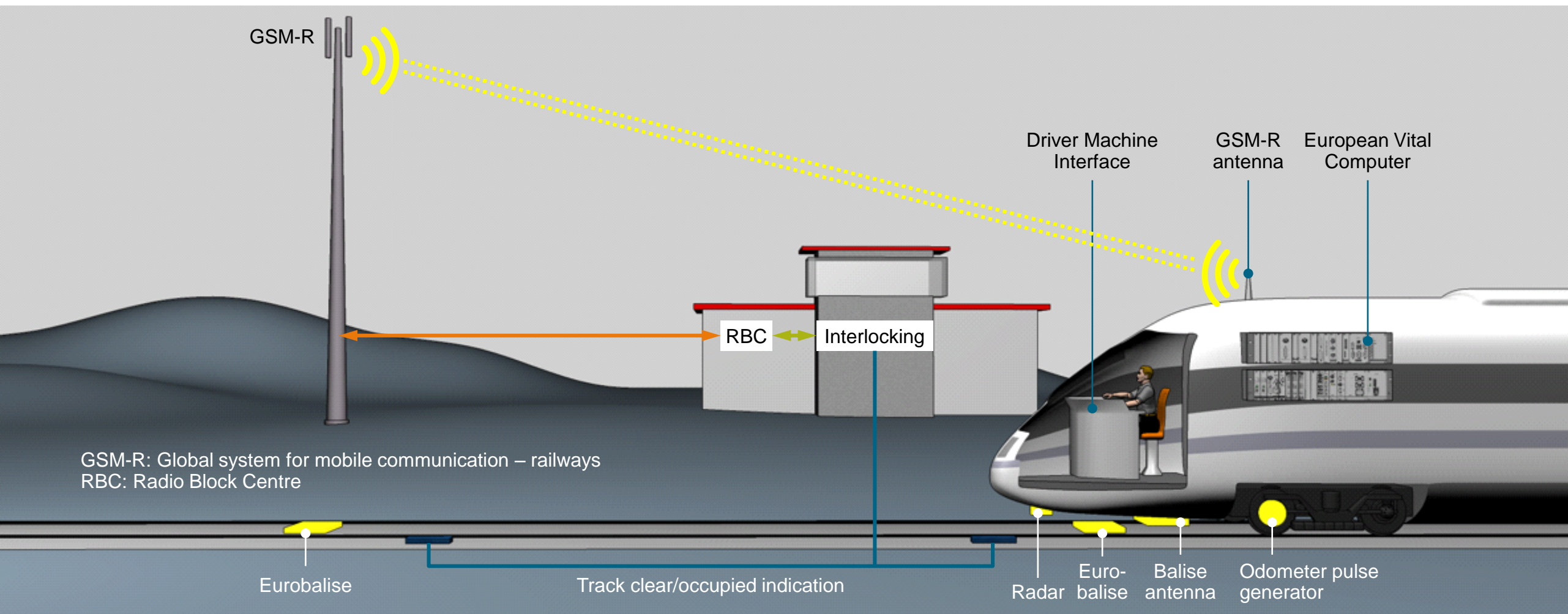
## Functional overview





# European Train Control System

## ETCS ensures safe train movements



# Automatic Train Operation

## ATO saves energy by coasting

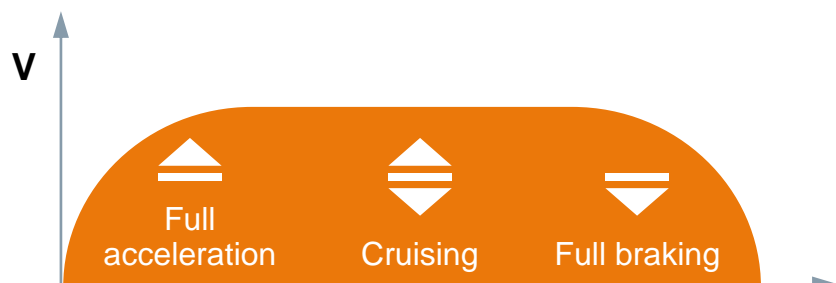
### ATO ensures optimum train movements

Trainguard ATO adjusts the amount of coasting in the speed profile to get the train to the next station or waypoint at exactly the required time and with the least energy possible.

- Accelerating
- Cruising (maintaining line speed)
- Coasting (rolling without traction)
- Braking

### DAS

Trainguard ATO provides both ATO and DAS modes of operation to optimise train movements.



**Time-optimal train run**

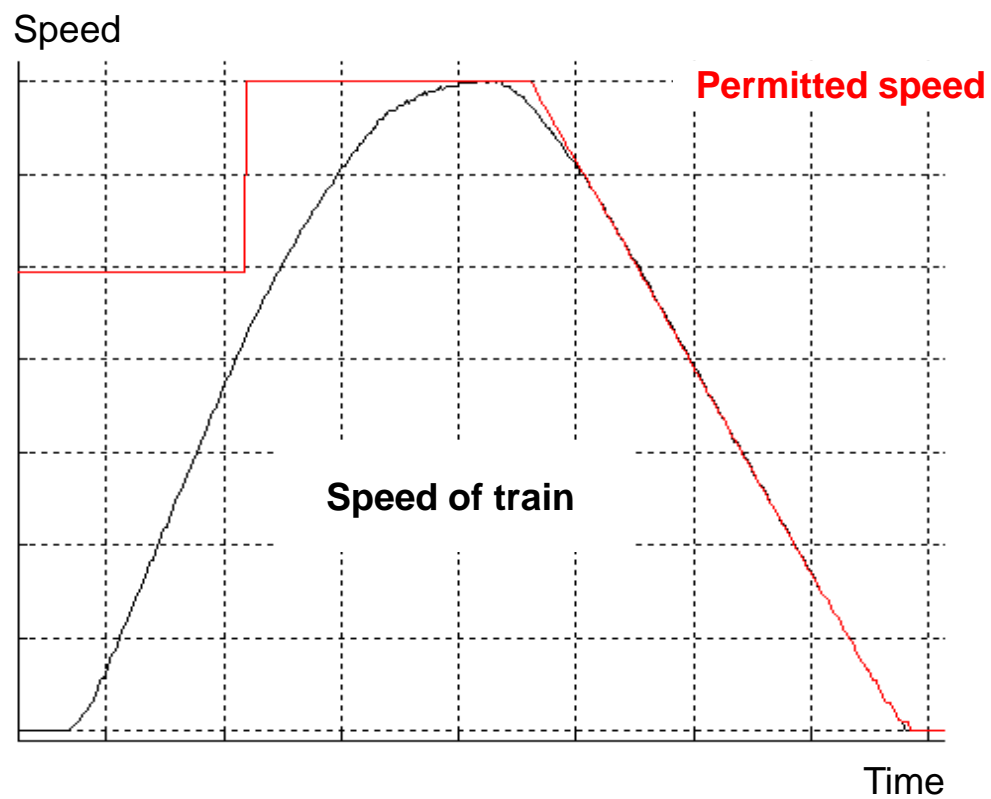


**Energy-optimal train run**

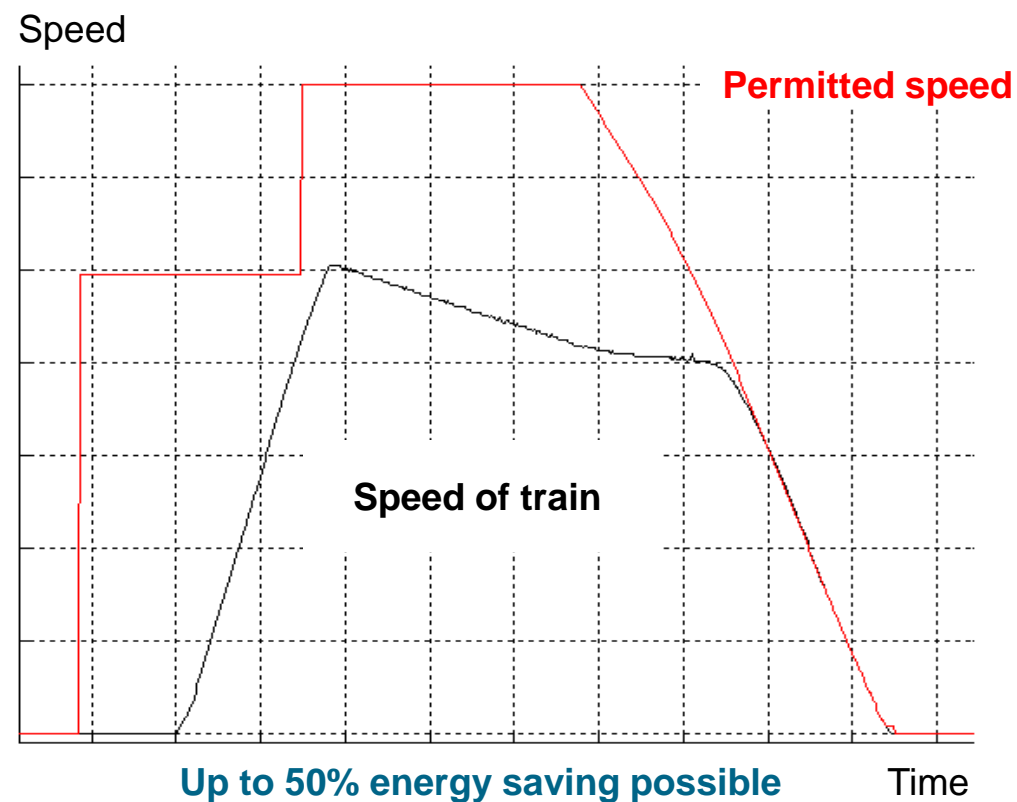
# Automatic Train Operation

## ATO saves energy by coasting

### Time-optimized driving mode

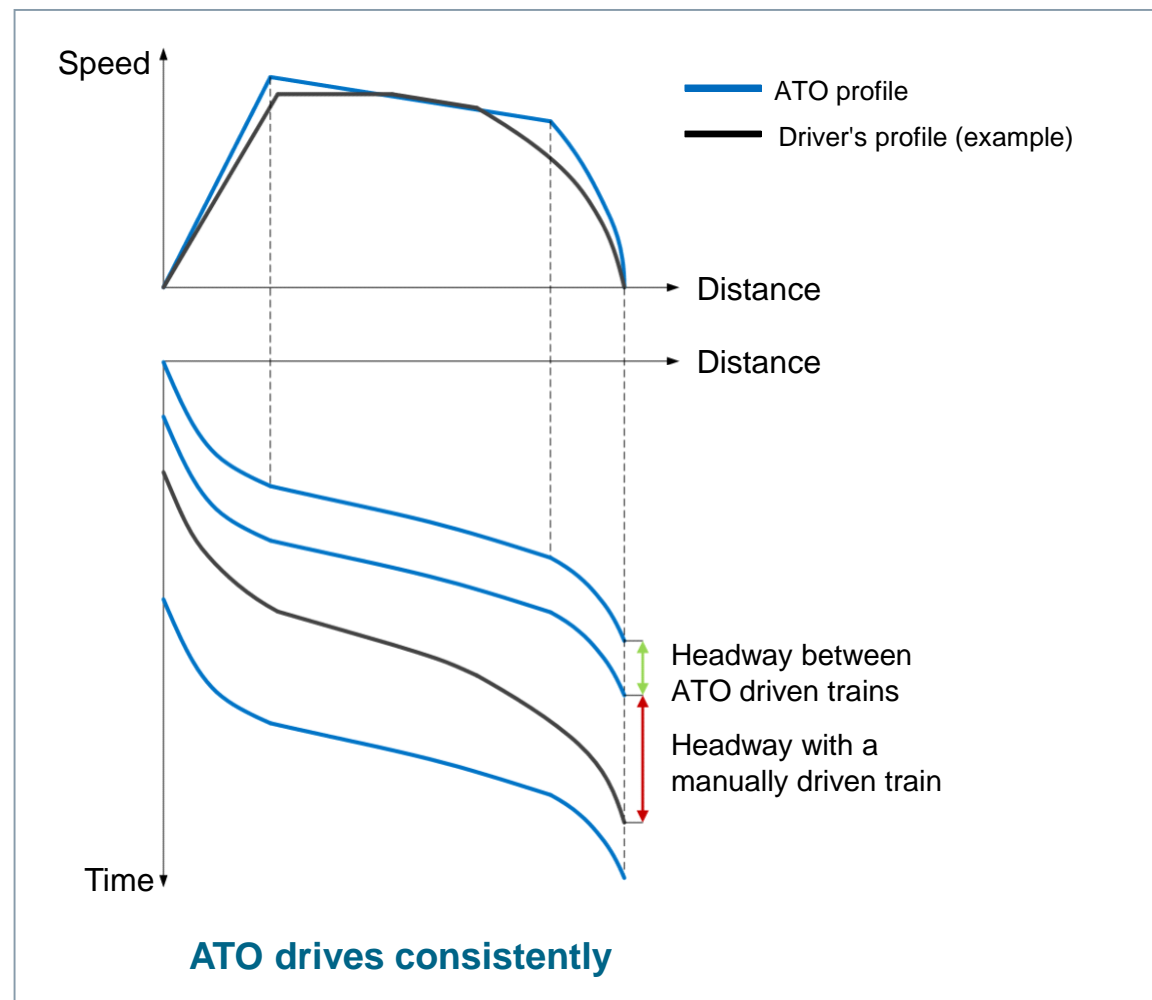


### Energy-optimized driving mode





# Advantages of Automatic Train Operation



## ATO reduces headway

- Eliminating variability in driving styles
- Driving more accurately
- Driving closer to safe ETCS braking curves

## ATO stops accurately ( $\pm 0.25\text{m}$ possible)

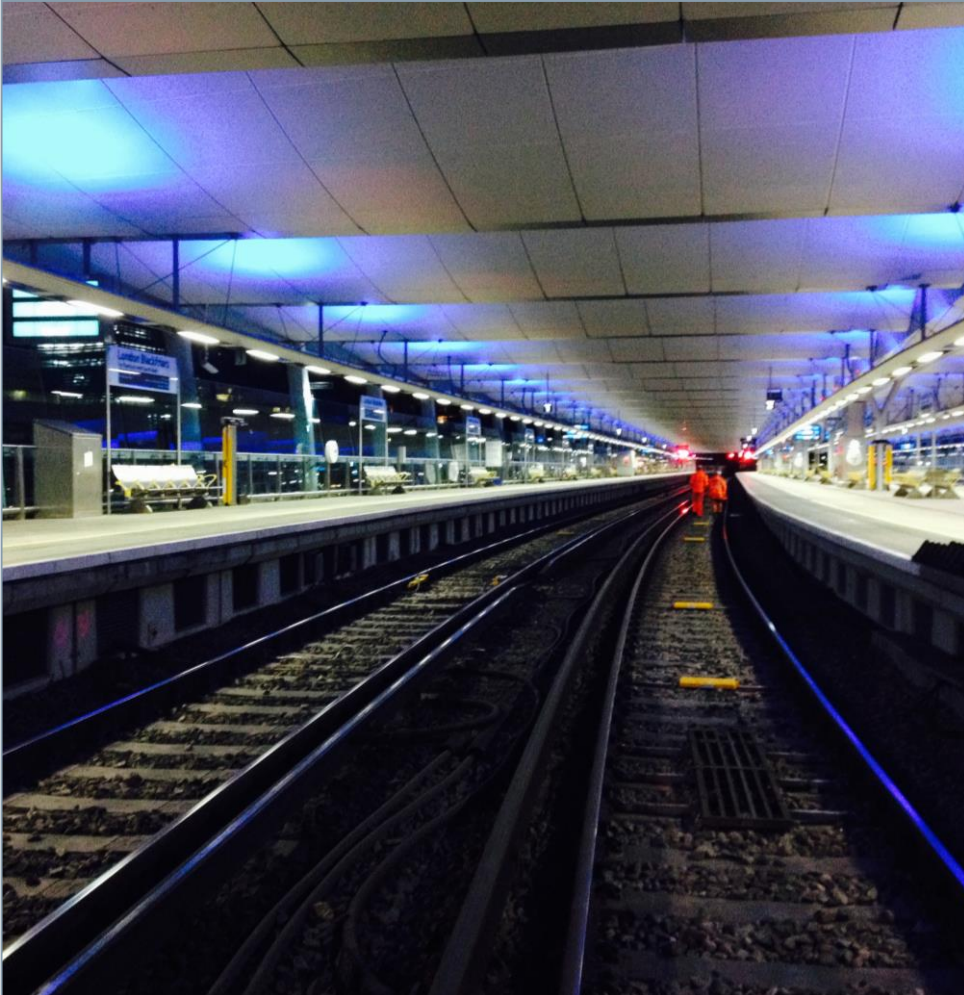
- Suitable for wheelchair ramps and screen doors
- Opening doors when safely released by ETCS
- Shortening dwell times

## ATO improves performance

- Shortening recovery times following delays
- Reducing energy costs and wear
- Lowering carbon footprint

# Trackside Signalling and Control Systems

## 2015 is a big year for Thameslink



**March:** Successful recontrol of the Thameslink Core interlockings to the Three Bridges Control Centre

**Ongoing:** Production of ETCS Level 2 Interlocking, Balise and RBC data prior to ETCS proving

**Ongoing:** Design and data production to provide Automatic Selective Door Opening functionality

**Ongoing:** Balises are currently being installed

**May:** Final (B3) RBC software release

**May:** Changes to the Control System to facilitate ETCS proving and testing

**August:** Test runs at the ETCS National Integration Facility to begin following delivery of the first train



# Trackside Signalling and Control Systems

There many challenges that have and will be overcome



One major challenge is fitting equipment into the available space