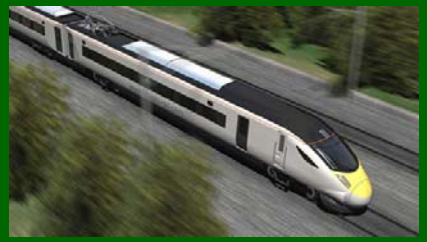

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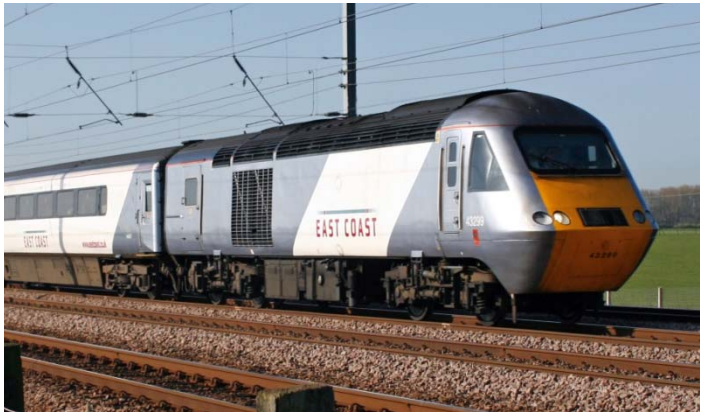
Intercity Rail Travel



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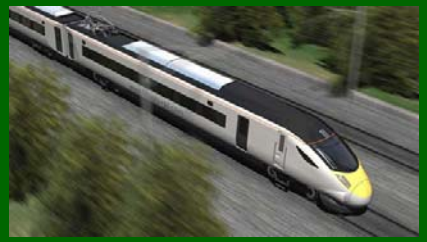

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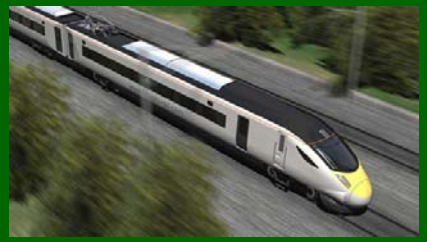
What is it?

- 100 new trains (around 600 new carriages) on the East Coast and Great Western Main Lines from 2016 - 2018
- Long-term 27½ year contract worth around £4.5bn
- Integration with Network Rail projects
- Future flexibility built in
- A transformation in passenger offering
- A significant procurement and investment in the UK railway



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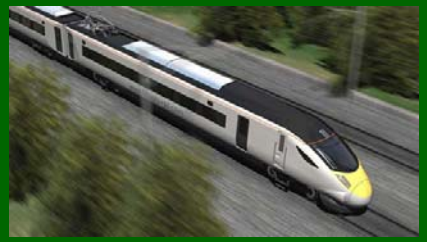
Why do we need fleet renewal?

- Traffic growth forecasts show crowding if fleet capacity is not expanded significantly
- Existing stock – getting older, need for ‘RVAR’ compliance by 2020
- Increasing understanding of track - train interface and cost of train movement on the infrastructure
- Increasing energy cost makes it important to improve efficiency
- Increasing customer expectations – hard and soft issues



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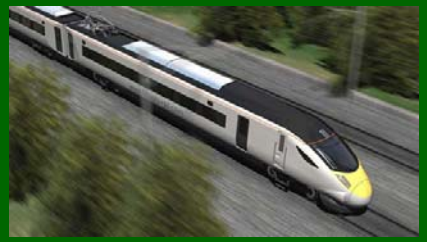
The Options

- Initial Ideas in 2005/6
- Conclusion 1 - an electric train which may or may not carry its own ‘power station’
- Conclusion 2 – main line electrification may be justified alongside train renewal and route resignalling
- Foster Review “period of reflection” of options
  - Life extension of HSTs
  - Electric trains plus interchange at edge-of-wires
  - Coupling
  - Bi-mode
- Procurement re-launched by SoS in March 2011



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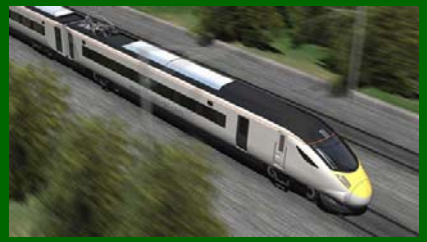
Why DfT?

- Government most likely to take a long term strategic view
- Cost optimisation over whole life and whole system
- Larger order size leads to economies of scale
- Deployment flexibility as not customised to route
- Government underwriting for best value financing

vs.

- Train Operating Companies are closer to market
- Perhaps less “red tape” if done outside of Government
- Fit with emerging policy



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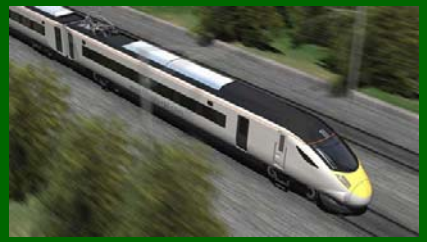
Key elements of the Inter City Express Programme

- An output based programme, not a train
- Train Operator contract with Train Service Provider (Agility Trains)
- Master Agreement to cover full contract term normally applies only at franchise relet
- Network Rail Infrastructure changes
- Route utilisation and timetable changes
- Major inter-dependencies
  - GWML electrification, upgrading and renewals
  - Crossrail
  - Thameslink



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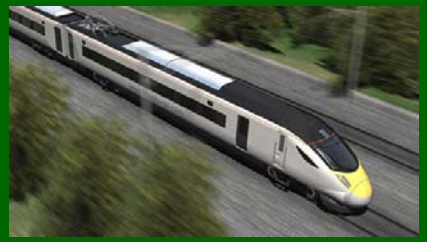
Benefits

Higher capacity trains

- 16% more seats per carriage

- Lighter trains
  - 11% lighter than existing trains – despite being longer
- More environmentally friendly
  - 18% less energy per seat-km
  - Electric and bi-mode variants
  - Use the electric wire where it is available



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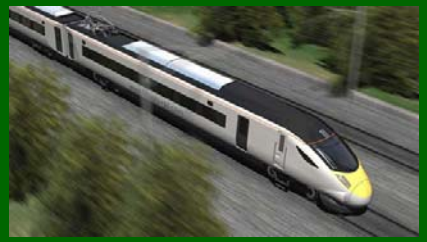
Contract strategy

- Mix of rail and PFI-style contracts
- Change in risk transfer from “hell or high water” lease to “no train, no pay”, with performance regime attached
- TSP responsible for trains, depots and maintenance, so that durability and reliability are incorporated into the design
- Bidders were free to decide solutions, e.g. between
  - Loco and coaches vs. distributed traction
  - End-car vs. underfloor diesel generators
- TOC remains responsible for operations
- Trains are delivered each morning, and returned by the TOC each evening
- In the meantime, the TOC can do what it wishes



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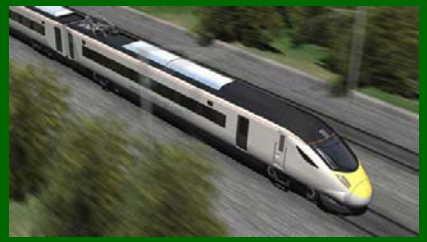
IEP as a Route Solution

- Capacity for growth – answers many of the RUS issues
- 260m is practical limit of many key locations (10x26m)
- Line Capacity effects of the train
  - Station dwells
  - Excellent and consistent acceleration (both by formation and less prone to poor adhesion effects)
- Investment to Optimise Outputs
  - Power Supplies
  - Capacity works
  - Speed profile on main lines and branches
- Value of the Route Outputs very strong – justifies both the trains and the route investments.



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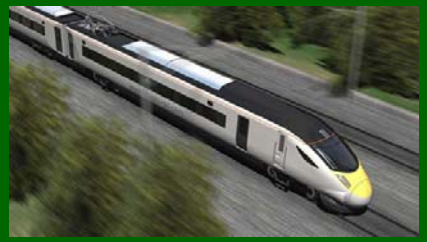
Great Western – by December 2017

- Electrification of all the busier and high speed sections – challenging, especially with planning issues
- Bimode for the low and medium speed route sections with lower frequencies
- Uses the capacity gains from the Reading scheme
- Takes Paddington to Reading up to ‘safe’ capacity limits
- Mix of 5 car, 8 car and 2 x 5 car workings with options to extend 8 car sets to 9 or 10 cars
- Greatly increased peak capacity with fast EMUs as extra ‘peak busters’ – in total 11,000 more peak period seats
- Reduced off peak waste by use of 5 car trains



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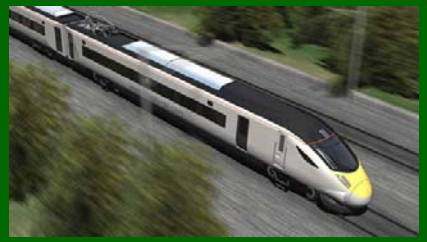
Putting the ‘Inter City’ back in Great Western

- More trains serving more segregated markets
- Efficient resource utilisation
- Likely standard hourly pattern:
  - Swansea fast (non stop Reading to Newport)
  - Cardiff semi fast
  - 2 x Bristol fast (non stop to Parkway)
  - 2 x Bristol via Bath
  - Cheltenham
  - Worcester
- Bristol (Parkway and T.M.), Swansea, Cardiff, Worcester and Cheltenham all 15 – 22 min faster than today.



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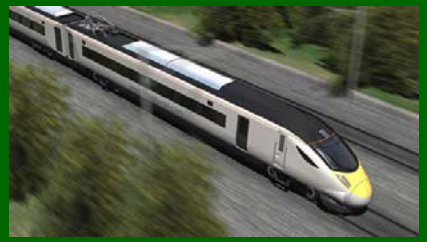
East Coast – for December 2018

- Power Upgrade – London to Doncaster Auto Transformer
- Various capacity works:
  - Joint Line
  - Flyovers Hitchin and Shaftholme
  - Peterborough capacity and possible grade separation
  - Line speeds
- IEP trains primarily on semi fast services which enable MkIVs to operate faster fast trains to Leeds and Edinburgh
- Mix 5 car, 9 car and 2 x 5 car trains
- Use of IEP to Cambridge/ King's Lynn and to N of Edinburgh
- 16 Min faster to Edinburgh and 3 trains per hour to Leeds and Newcastle



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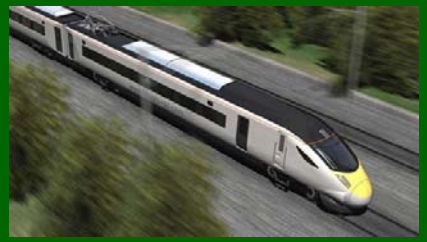
Bimodes (Electro/diesels) or other solutions for places ‘off the wire’?

- Bimodes facilitate electrification
- Use where lower frequencies and speeds do not justify the high fixed cost of electrification
- Identical outputs to electrification (e.g. Swansea)
- EC and GW largely do not have electrified diversionary routes (unlike WC and Southern)
- Today’s HST flexibility retained on GW and improved on EC
- Very detailed work to numerately assess the pros and cons of bimode vs connections or loco hauling



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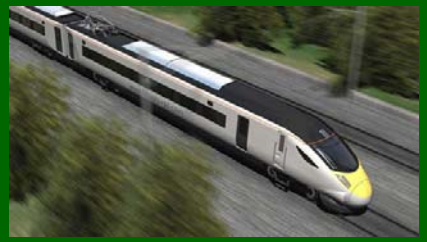
Recent Developments and Workstreams

- 1 March announcement
  - Proceed with IEP
  - Proceed with Great Western electrification to Cardiff
- All-Industry Programme Board
- Greater involvement of TOCs
- Planning for transition arrangements
- Work on deployment statement for final pricing
- Firming up the contracts, including careful work on the in-built flexibility



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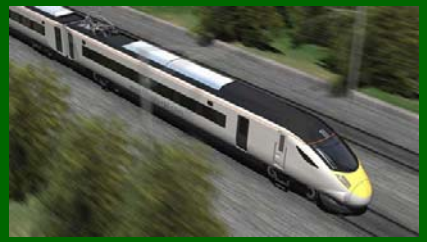
Challenges ahead

- Moving to contract award, and into delivery
- Integration with other projects
  - Electrification, Crossrail on Great Western Main Line
  - Thameslink on East Coast Main Line
- Integration with emerging franchising regime and franchise timescales
- Better understanding and engagement across industry



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Timeline

- 2005 Programme conceived and launched
- 2007 Invitation to Tender issued
- 2009 Agility Trains appointed preferred bidder
- 2011 Programme re-launched
- 2014 First trains delivered for testing
- 2016 Fleet commences deployment on Great Western
- 2017 Fleet fully deployed on Great Western
- 2018 Fleet fully deployed on East Coast