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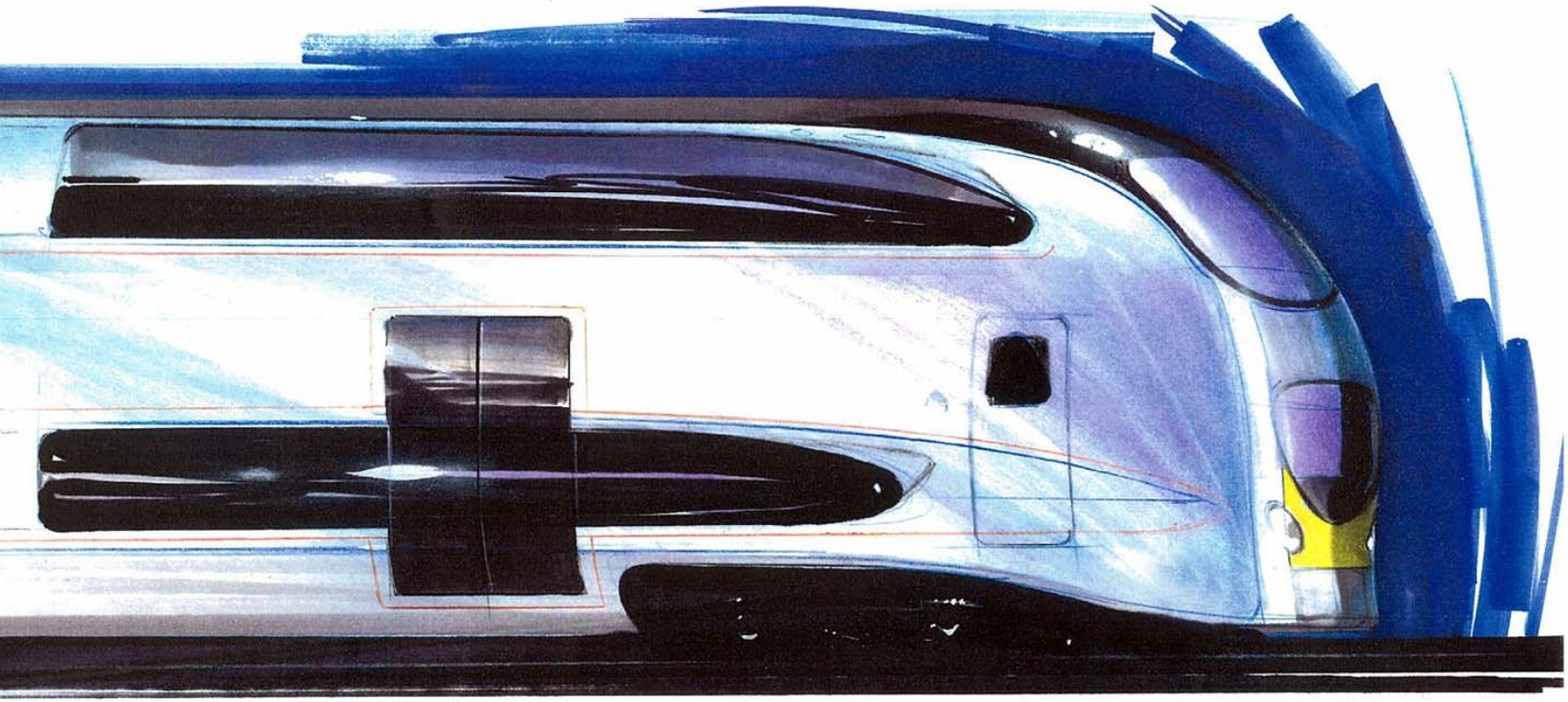
Space trains – a double deck vision



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Overcrowding is becoming an issue the world over …

Background

"In total, in the last ten years passenger journeys in the UK have increased by **40.4%.**

This increase in travel and ATOC's forecast of a **28%** increase in the next ten years to 2016 underscores the need for investment to grow the capacity of the railway"

Source: The Association of Train Operating Companies (ATOC)

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The problem

Increasing the capacity of Britain's railway network clearly needs investment.

The fundamental problem facing transport planners, the DfT, designers and the railway industry is how to invest in solutions that provide the extra capacity.

The options are:

1. Increase the frequency of trains
2. Make trains longer and lengthen platforms to suit
3. Increase the capacity of trains

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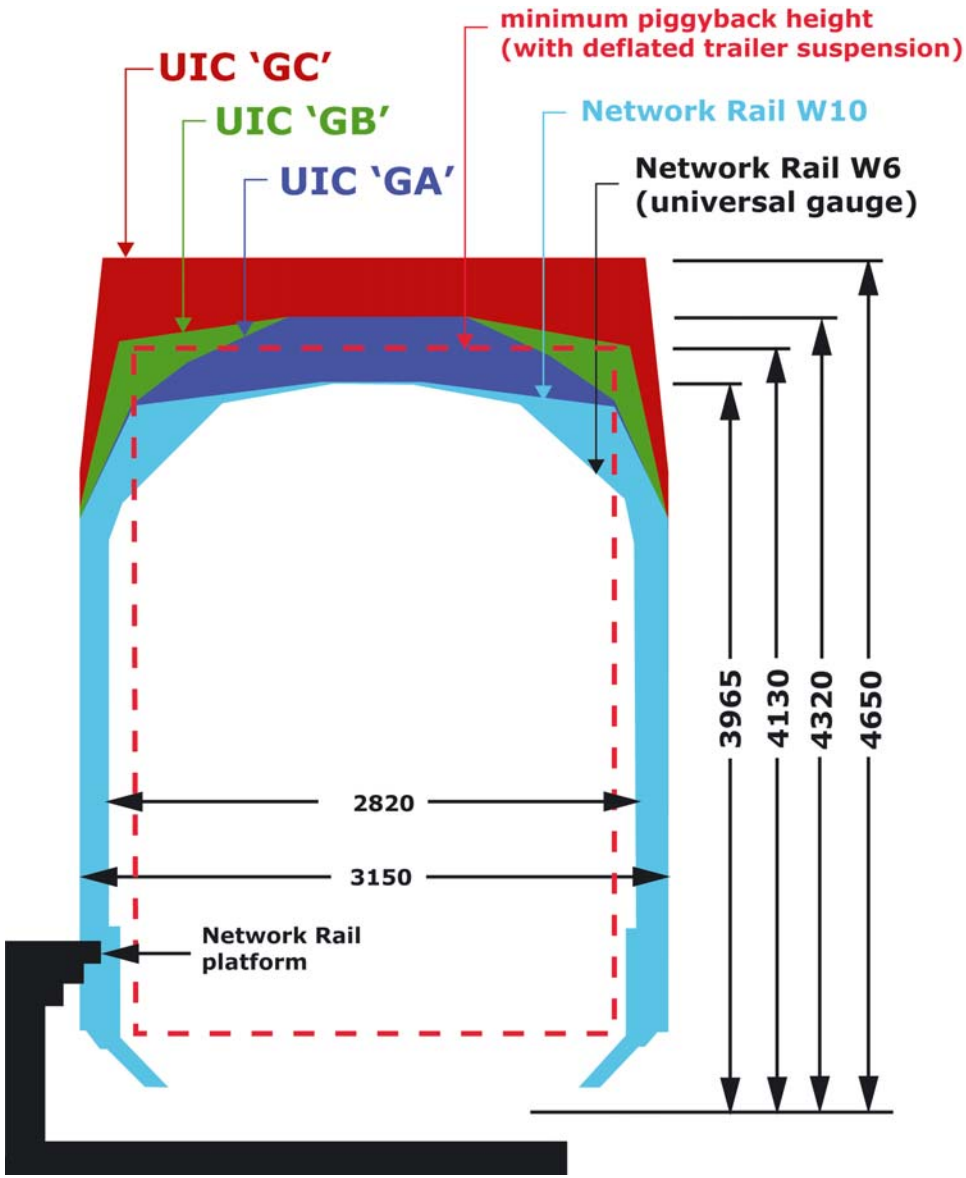
The context

Gauging issues …

UK trains have to fit the hole in the middle!



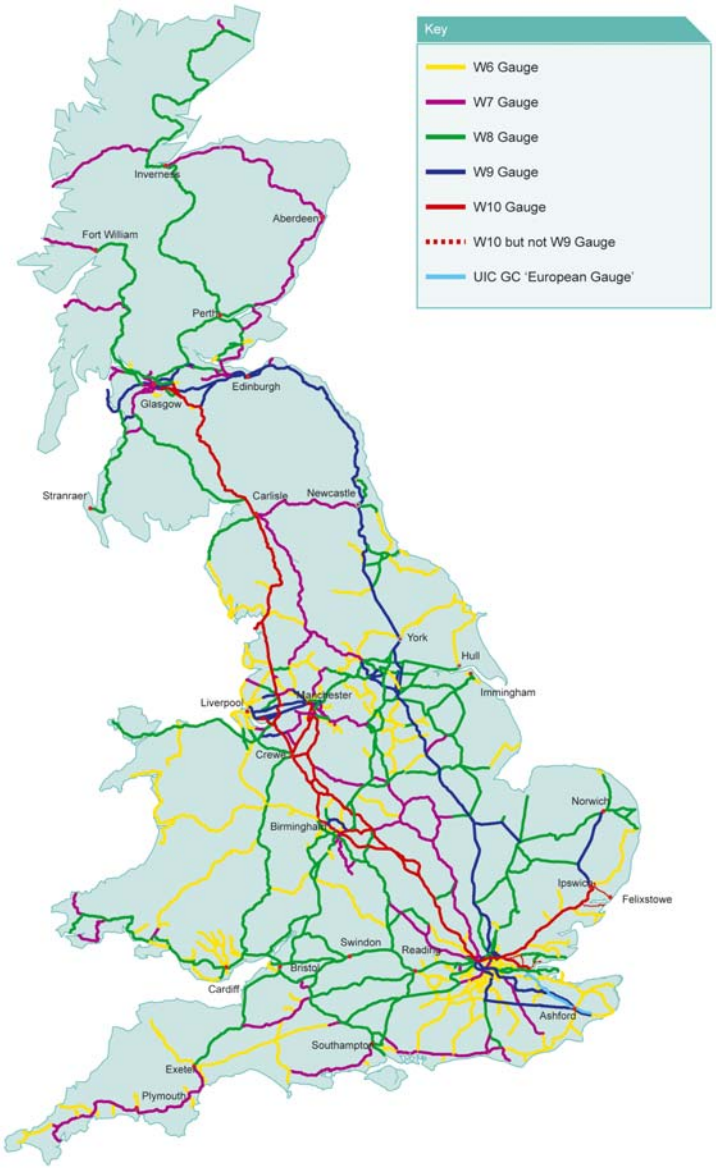
The freight issue

"A 30 per cent growth in freight tonnes lifted is forecast over the study period (the 10 years to 2014/15) which equates to an additional 120 trains per day compared to the base year of 2004/05"

Source: Route Utilisation Strategy Draft Consultation

Network Rail

Figure A7: 2004/05 gauge clearance map (indicative)



A review of gauge capability is being undertaken during this and next year. The programme which is agreed with the ORR, will verify the accuracy of published data for this measure.

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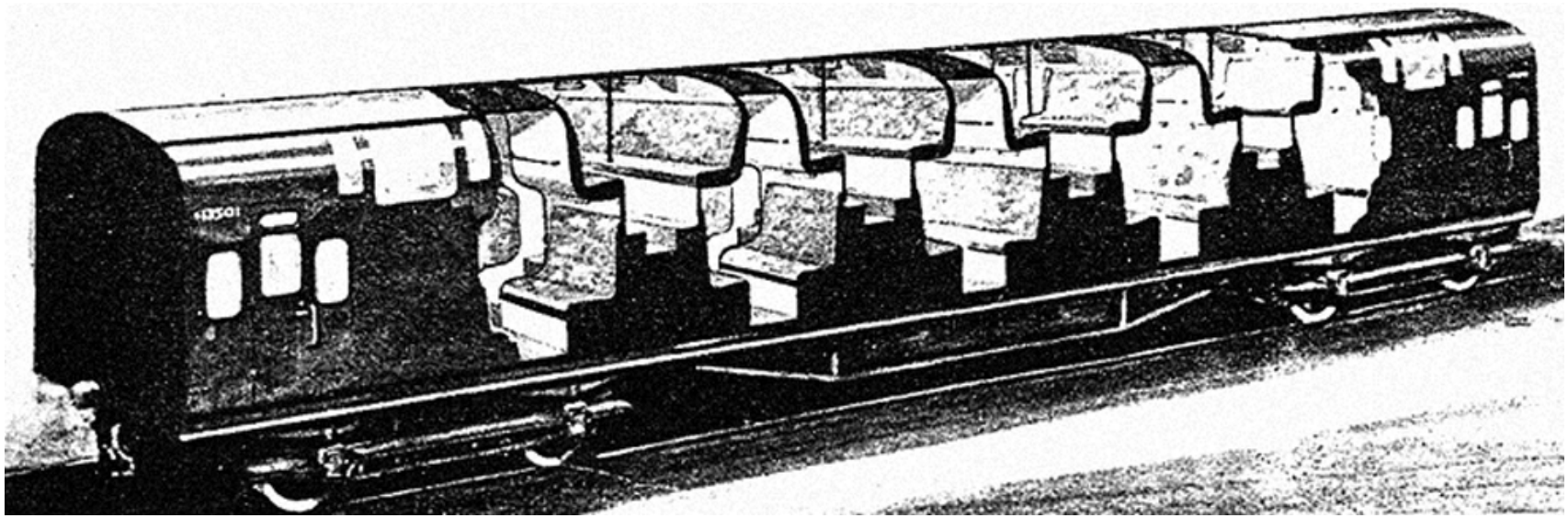
The double deck option

The UK’s only double deck train, operated between 1949-1971, was the Southern Region 4DD designed by Oliver Bulleid.

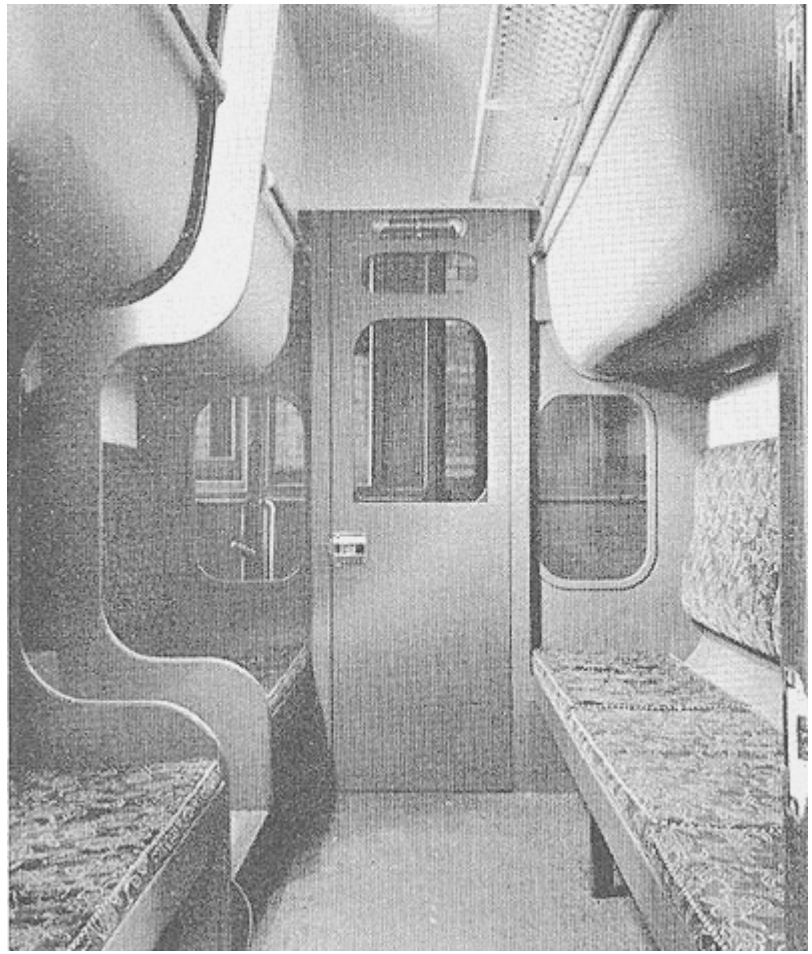
This had an ingenious arrangement of alternate high and low level compartments in a coach size that operates within the standard W6 static gauge.



The double deck option

The issues then are familiar to designers and engineers today:

- Cramped seating areas
- Restricted access from the upper deck increased dwell times at stations
- Lack of proper ventilation and adequate heat/cooling



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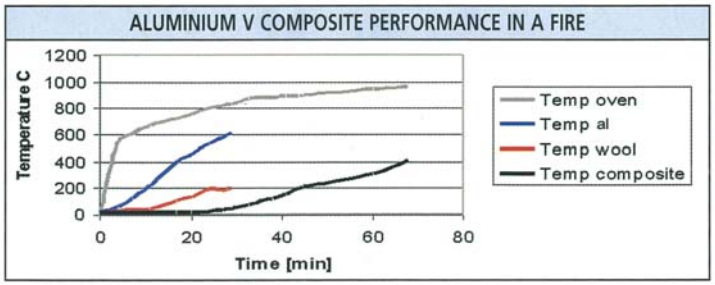
The double deck option

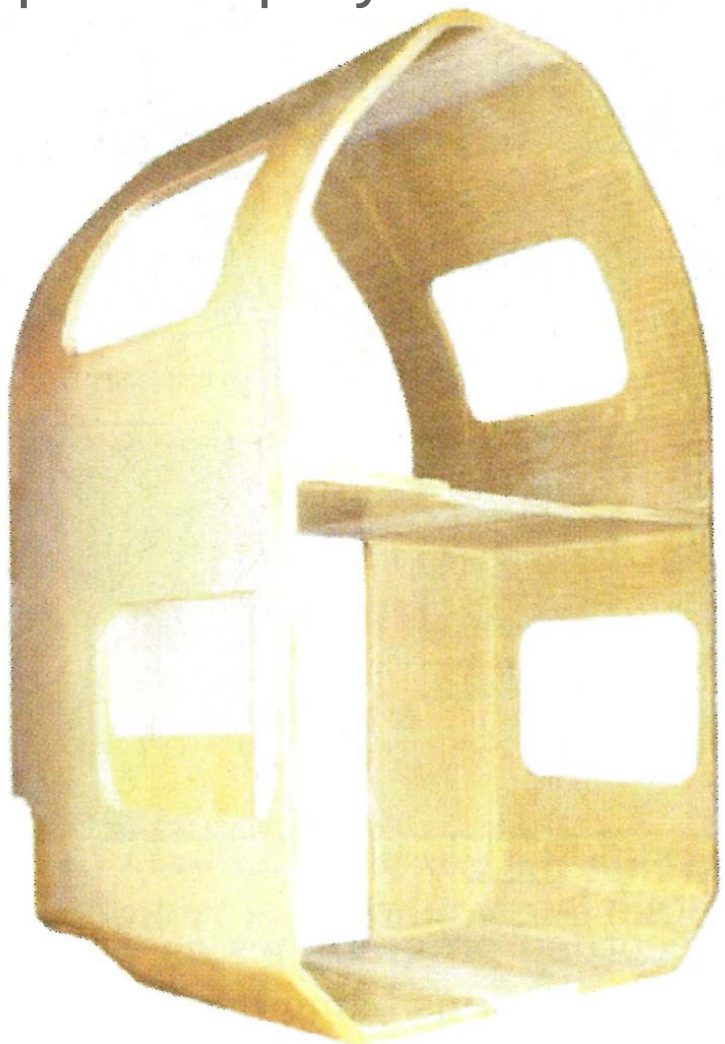
Examples of two British icons of double deck design

Innovative design has a part to play

This original and unique Talgo 22 shows how creative engineering and imaginative design can provide solutions to difficult challenges like this revolutionary double gangway

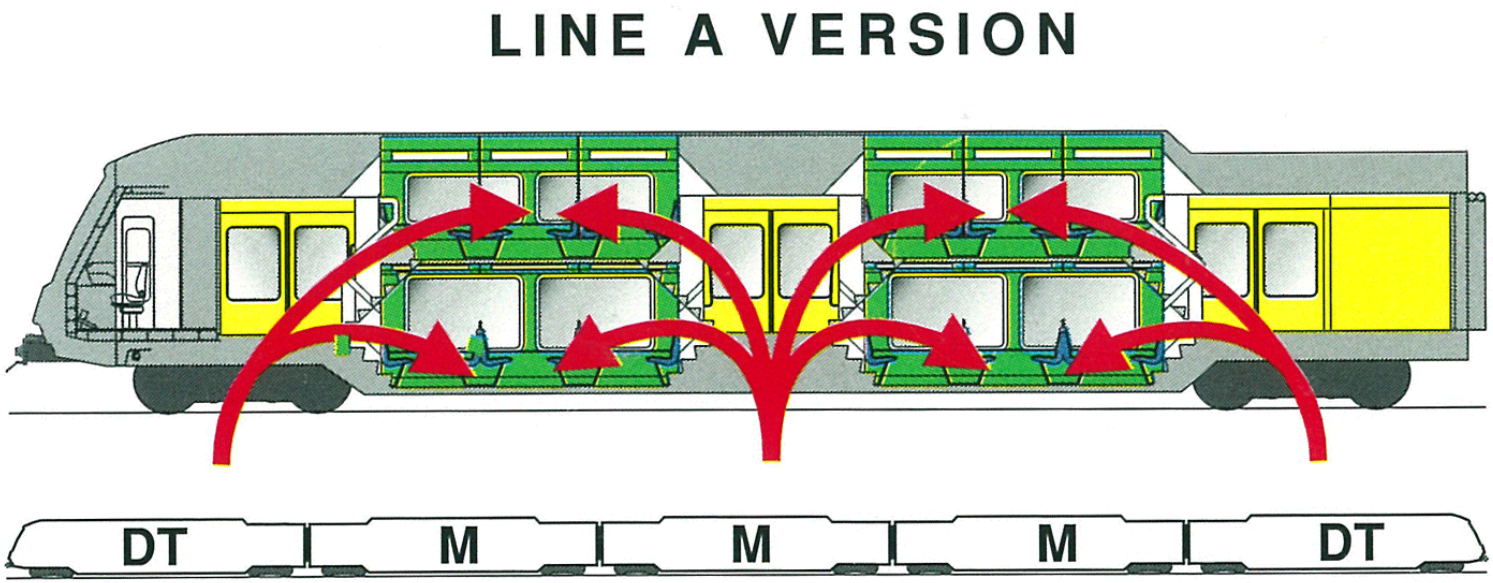
Innovative design has a part to play





This groundbreaking all composite double deck bodyshell design by Fibrocom Oy shows the potential for weight saving, energy absorption and design flexibility

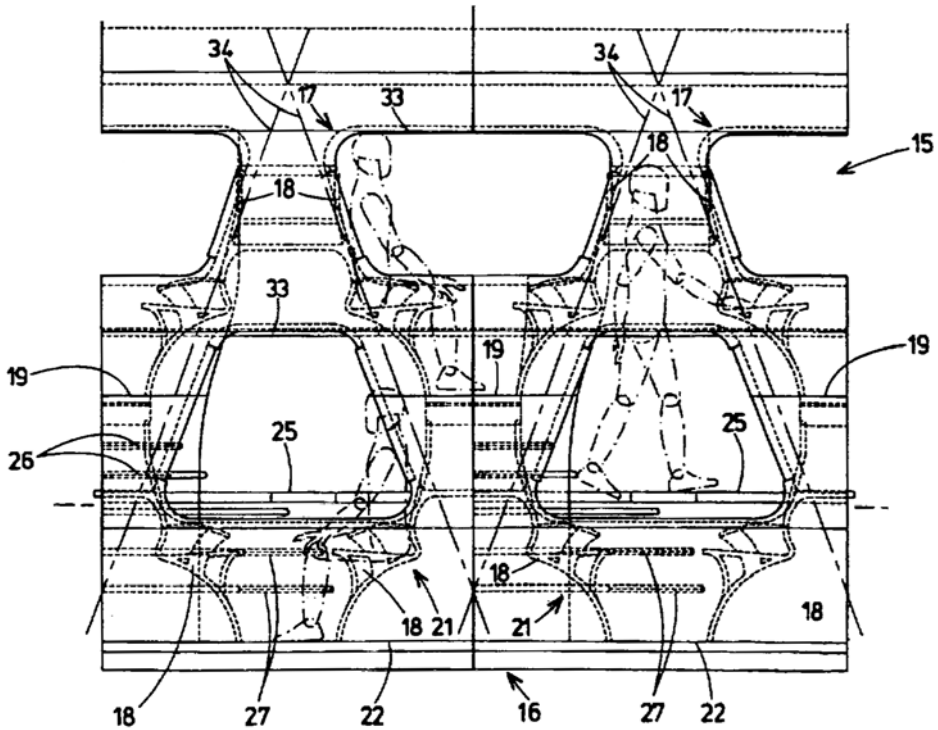
Good examples exist – Bombardier M12N in Paris

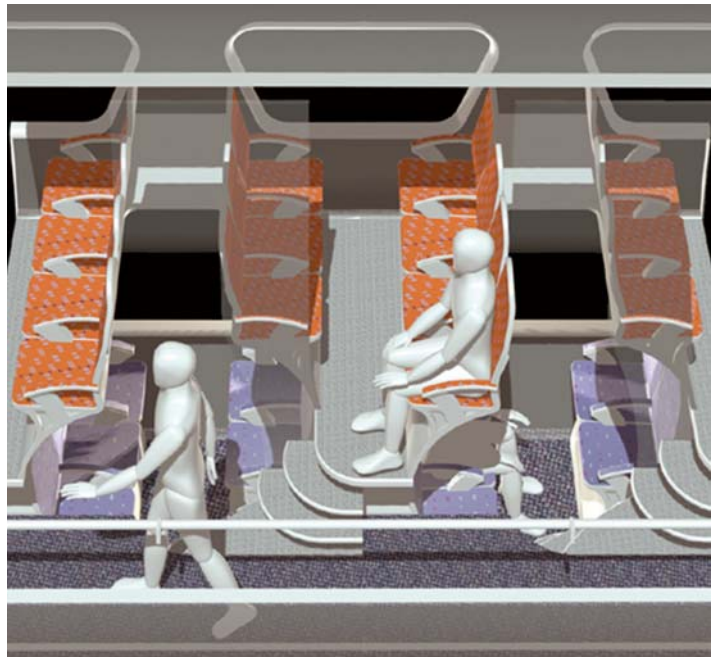


In double formation, 2x5 cars these trainsets can carry 2500 passengers allowing a passenger flow of 90,000 per hour on dedicated routes.

Egress and access times are minimised with 3 sets of 2 meter wide doors

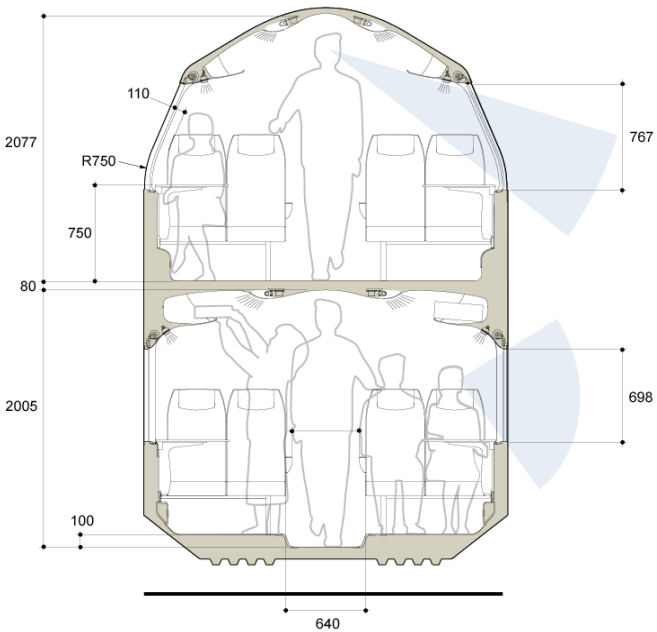
One solution is a modern step deck design





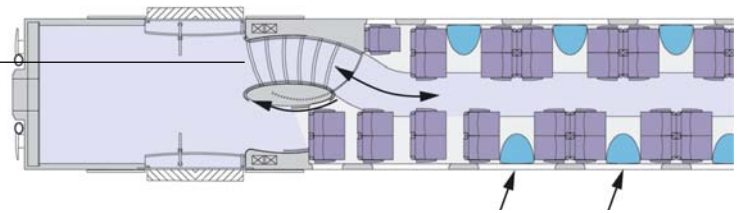
This configuration is ideally suited to 26m coaches operating on outer suburban and intercity routes increasing capacity by up to 30%
... and
can operate within the standard W6 static gauge.

Understanding all the passenger issues…



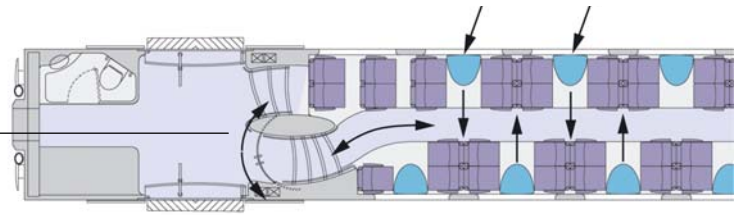
Curved staircase for better access and egress

Single curved door on the top deck



Staggered seat layout

Bi-parting doors to the lower deck



Luggage storage easily accessed from each seat position

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… and by using a creative design approach

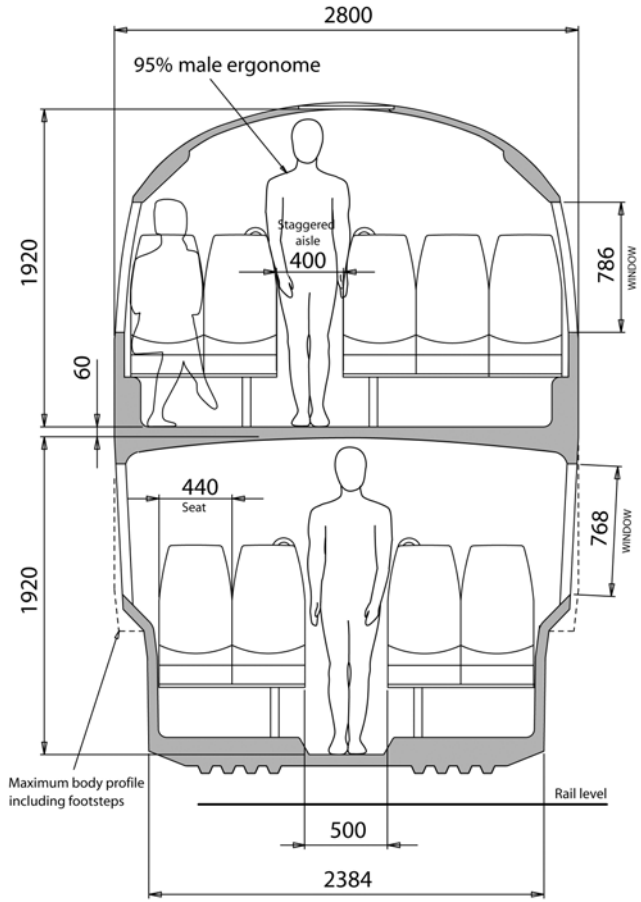
M5 interior - before

M6 interior - after

… could lead to an alternative UK double deck design

With the right investment, visionary design and correct gauging we believe that there is an opportunity to design a versatile double deck platform that can provide:

- A high density commuter train to suit the London conurbation and possibly Crossrail
- A high speed version for Intercity operation
- A regional mixed use train to suit franchises like South West Trains on routes south of London



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Thank you

Tangara double deck trains, Sydney designed by DCA Design Consultants