

Putting passengers at the heart of rolling stock design for High Speed 2



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Round table discussion held at
KPMG, 15 Canada Square, London

Participants

Name	Job Title	Organisation
Vernon Barker	Managing Director - Siemens Rail Systems	Siemens
Prof David Begg	Chief Executive	Transport Times
Peter Broadley	Director of Customer, Operations, and Safety	Virgin Trains
Hugh Clancy	Commercial Director	First Group
Roger Cobbe	Policy Director	Arriva
Vernon Everitt	Managing Director, Customers, Communication & Technology	TfL
David Fowler	Editor	Transport Times
Ann Frye	Director	Ann Frye Ltd: Independent Consultant
Blessing Gwena	Assistant Manager (Major Projects Advisory)	KPMG
Phil Heathcote	Sales Director - Siemens Rail Systems	Siemens
Jeremy Long	CEO - European Business	MTR
Prof Sadie Morgan	Chair	Independent Design Panel HS2
Lynne Rogers	Manager	KPMG
Anthony Smith	Chief Executive	Transport Focus
Jeremy White	Head of Transport	Seymourpowell

Brief

A round table discussion was held at the invitation of Siemens Rail Systems, organised and chaired by Transport Times and hosted at KPMG. The purpose of the round table was to gather views from a range of transport industry leaders on putting the passenger at the centre of the design process for HS2 rolling stock, with particular reference to:

- Rolling stock design
- Accessibility of rolling stock (and high speed infrastructure eg stations generally)
- Digitalisation and use of technology to enhance the passenger experience.
- What high speed lines in the UK can learn from international high speed lines in all these areas

The discussion was chaired and moderated by Prof David Begg.



Introduction

HS2 has the ability to fire the public's imagination. It has the potential to match the 2012 Olympics in the way it inspires the public imagination and national pride.

Expectations for the passenger experience that the rolling stock will deliver will naturally be high. Beyond getting the basics right, the rolling stock needs to meet the requirements of a wide range of passengers, which will need innovation.

Delivering against the expectations of HS2's prospective passengers will require some trade offs and flexibility, when balanced against affordability. It will be important that the procurement process reflects this.

This is the distilled wisdom from a cross-section of industry leaders brought together by Siemens Rail Systems to explore the question of putting the passenger at the heart of rolling stock for High Speed 2.

Phase one of High Speed 2, which will connect London to the West Midlands, recently gained Royal Assent. Preparatory work is already under way to allow the main construction contracts start early next year, and procurement of rolling stock is due to begin soon with the issue of the prequalification questionnaire. The route will initially be operated by the winner of the West Coast Partnership franchise.

Siemens' Eurostar trains are part of its fourth generation of high speed trains, designed and built for railways around the world. Even with this experience, the company felt that for HS2 it was vital to see beyond the engineering project and focus even more on the experience for passengers. It sought the views of experts to challenge what this means for rolling stock design.



Passenger expectations

Transport Focus has already undertaken extensive work for HS2 Ltd on what passengers expect from the service. In addition to its regular work in producing the National Train Passenger Survey, it has convened a group of people, the Customer Community, to explore their expectations and attitudes.

"[The Customer Community] thought [HS2] was fantastic. This is a potential Olympic moment, Britain at its absolute best; they just loved it. Positive change, not shackled to the Victorian heritage. And they really liked the genuine interest that HS2 was displaying in customers."

Anthony Smith, Chief Executive, Transport Focus

The group is enthusiastic about the potential HS2 service and has been asked to address various aspects of the new railway, such as luggage, ticketing and rolling stock with the aim of getting a sense of what will be important in the future.

The key expectations were: HS2 trains and services would be a national asset and a source of pride for Britain; a "personalised experience" with customer services on a par with retail and airlines; value for money; and the ability to plan a journey easily from door to door using a range of technology.

The group felt there should be more generous provision for luggage which should both be easily accessible and lockable. The group favoured carriages for different needs, such as for business, people with children, and one for social groups, but not a conventional first class. These prospective passengers would also like to see at-seat information about the journey on screen, as well as good quality catering.

A key theme was the simplicity of using the new railway, with technology as an enabler but not a replacement for good customer care staff. It was assumed that the important basics such as punctuality, reliability, value for money and information during disruption would be there at a high standard as a matter of course.

Full results are available on the [Transport Focus website](#).

"For the first time ever we've got a real chance to design something from scratch with that intense obsessive attention to detail about the way that passengers behave and want to be treated. I think passengers are pretty under-studied as a group. The design of HS2 could really revolutionise that and make it a fabulous, seamless, world-class experience."

Anthony Smith, Chief Executive, Transport Focus



HS2 design vision

Before considering rolling stock design in detail, it is necessary to consider the overall design ethos and vision of HS2.

The HS2 Design Panel was set up to provide independent advice on all aspects of the scheme's design. Its chair, Sadie Morgan, said that she saw HS2 as "beautifully ordinary":

"It will be world class because as a country we have the ability to design, build and deliver on a world stage. It should be simple and extraordinary but not outwardly luxurious."

It was also strongly felt that HS2's design needed to reflect Britishness

"One of the things that's really important is that people feel ownership of HS2, and we are British and we have a particular sensibility, a particular style, expectation from service and so on. It needs to reflect our cultural spirit."

Jeremy White, Head of Transport, Seymourpowell

"Maybe the comparator is the opening ceremony to the Olympics. Danny Boyle hit a sense of Britishness that wasn't glitzy, wasn't blingy, it was very British and we all related to it, and that defined us."

Phil Heathcote, Sales Director, Siemens Rail Systems

It was stressed that good design should not add to the cost of the project. Designers were problem-solvers, and they needed to be brought in as early as possible during the process if they were to work most effectively.

It was believed to be vital that there is a clear design vision which should permeate through all organisations involved in the project and should apply to fencing and temporary works as much as to stations and rolling stock. To help construction bidders the design panel had already commissioned specimen designs as part of the process of procurement and dialogue. A similar approach could be taken with the rolling stock procurement.



Rolling stock design

Inclusion & accessibility

HS2 will need to cater for a wide range of people of different ages and mobility and different journey purposes.

In particular HS2 provides an opportunity to rethink how rolling stock design works better for passengers with disabilities. Today there is a tendency in modern rolling stock to provide only the minimum requirements in terms of spaces for wheelchairs and accessible toilets. The wheelchair space is often next to the accessible toilet or may be usable for luggage when not in use by a wheelchair. For HS2 such an approach will not be satisfactory.

“Wheelchair users need an accessible toilet but they don’t necessarily want to sit right next to it. I think a lot of people would appreciate a better space, an environment in which they feel more comfortable and in which they could have flexibility to move. At the moment most wheelchair users on trains in this country feel that they are bundled in with the space for luggage and sometimes the space for bikes. Wheelchair users quite often get abused because people have got nowhere to put their suitcase. So as long as you think any space where, if there’s not a wheelchair user it’s OK for luggage, it’s not good design because it compromises everybody “

Ann Frye, Independent Consultant

It was also important for the panel to think beyond disability as only wheelchair users. For example consideration should also be given to the needs of passengers with autism or reduced sight. And while the rolling stock design is important, the experience of passengers with disabilities will also depend on the journey as a whole. For older people and people with disabilities, the difficulty of transferring between HS2 and other transport modes would significantly affect their perception of the journey.

Carriage layout

There appeared to be widespread support for the idea that the interior should not be designed according to the usual standard and first class model. As mentioned previously, the HS2 user group had suggested areas designed for business users, families, or social groups.

Operators would be keen to explore innovative ideas for passenger accommodation, but were concerned that, when the rolling stock specification is issued, there will not be the flexibility to make this possible.

There were also questions about how luggage should be dealt with. Within the existing franchise rules luggage cannot be charged for on trains, though the trend is for people to bring more and heavier luggage with them. Some of the experts consulted were in favour of the idea that luggage should be put somewhere separate from the main passenger accommodation.

“I don’t think anybody would mind the concept that you’re very welcome to bring as much luggage as you want but it’s not sitting in the carriage with you: it’s down the back and you pick it up in the end.”

Ann Frye, Independent Consultant

However, others were concerned that this would lead to long station dwell times if people needed to walk the length of a 400m train to collect luggage, and there could also be security concerns.

The question of adopting a system whereby luggage was collected separately from passengers' homes to be delivered to the train was raised. This has been tried at a number of airports including Heathrow. But it was also recognised that most people would continue to want to keep their luggage within sight.

It was also noted that it may be difficult within the business case for HS2 to reduce seating capacity and hence revenue in order to provide more legroom or luggage space. Flexibility could be delivered through the provision of fold down seats. However, under normal franchise competitions these are not counted as seats for the purposes of the specification. HS2 Ltd could consider adopting a different approach for the rolling stock procurement.

Standing room only?

With a 40-minute journey time between London and Birmingham, high speed services will attract commuters. This raises the question of whether people should be allowed to stand at peak times, or whether everyone would be expected to have a reserved seat. In the latter case this could mean people being unable to catch the train they want. On this topic, there was no consensus from the expert panel.

Reservation-only is not currently permitted on UK franchises but there was a view among the experts consulted that HS2 should not automatically adopt the existing model but start from a clean sheet, as far as possible.

However a number of arguments were advanced against a reservation only approach. The experience of other countries has depended on the extent of change from the services that pre-dated high speed. In France and Spain high speed services were so much faster than what preceded them and ran over such long distances that they could be relaunched using an airline model with reservations only. In Germany there was a much steadier or gradual evolution to higher speeds, so that when the railway attempted to change to reservation only it proved impossible. The UK is much closer to the German model.

In general intercity services in the UK are faster and more frequent than their equivalent elsewhere in Europe, so that people are used to the "turn up and go" model.

When HS2 is introduced, current intercity services between London and cities such as Birmingham and (in phase two) Manchester will be withdrawn and replaced by HS2 services. Some argued that passengers would not accept existing turn up and go intercity services being replaced by reservation only high speed services.

Keeping the rolling stock up to date

HS2 trains are likely to have a long lifespan, and it was considered that they should be designed to have a flexible and adaptable interior to allow a response to changing passenger needs. In aviation, passenger jets are designed to allow the entire interior to be completely replaced at intervals. Provision for refurbishment in trains is generally more limited, and there was a general feeling that train design should become more like aircraft design in this respect and fully adopt this approach.



Other aspects of passenger experience

Station design

There was a strong view among the industry leaders that journeys should be considered as a whole because this is how they are seen by passengers. Passengers' perception of a journey is affected by experiences beyond the train itself.

Station design is therefore an important factor. This would include aspects such as how long it took to make an interchange, or if assistance requested by a person with a disability failed to appear.

Prospective operators are keen to know to what extent HS2 station design becomes locked in early. Ms Morgan said that each station was different in its operational and capacity requirements and each would have to be thought about differently. In each case some aspects would be open to change or influence and others would be fixed by the time an operator was involved. It was not possible to generalise.

"If you look at the analogy of air travel, almost all the problems and people's perceptions of the journey are what happens at the airport, not what happens on board the aircraft. They blame the airline for the way the whole system works, but it's the airport environment that colours their picture of the journey, and I suspect it will be the same with this. If things go badly wrong at the station then it's a rubbish journey – it doesn't matter how the train is.

95% of the passenger complaints from disabled people to an airline are about what's happened at the airport, so they're outside the airline's control, but the people's perception is that the airline is at fault because they had a bad experience at Gatwick or Luton or wherever."

Ann Frye, Independent Consultant



Digital technology

Digital technologies provide an opportunity to transform the passenger experience on HS2. TfL was highlighted as having led in the introduction of technology, notably smart ticketing.

For TfL, the Oyster card and now contactless payment have reduced the cost of fare collection and allow more throughput through gatelines. Experience of smart ticketing generally is that it makes the system easier to use and hence helps to increase patronage.

The panel was keen that smart ticketing for HS2 was taken to the next level. For example there could be immediate refunds or retrospective billing, whereby the smartcard or even your mobile phone is able to register if a passenger has had to stand for the whole journey and charges a lower fare. In addition the smart ticketing approach should support multi-modal journeys.

TfL has also pioneered digital information services, but perhaps the most important step has been to adopt the principle of free, open data. TfL's data on the location of its buses and other services was made freely available so that third party app developers could develop multiple ways to provide the information to passengers, at virtually no cost to TfL. HS2 could also consider a similar approach.

However it was noted that there may always be a generation of passengers who felt left behind and uncomfortable with technology, and therefore it was important that HS2 still provide staff around the station to offer help.

“That’s what we know people value. They value a human presence around the place. They need to be in a public place and they’re really helpful to provide reassurance, particularly at times of disruption.”

Vernon Everitt, Managing Director, Customers, Communication & Technology, Transport for London



Achieving rolling stock design aspirations

There was a strong consensus among the industry figures that the way in which HS2 Ltd specifies the rolling stock will be crucial. There was general concern that, to strengthen the business case, there will be desire from the customer to pack in as many seats as possible, curtailing scope for creativity.

Once the specification is issued, train manufacturers bidding for the contract have to follow it if they want to win the contract, whether they agree with it or not.

“We can talk about beautiful design, we can talk about extra luggage space, we all want bigger toilets which are more comfortable and extra tables. When the business case comes in, you’ve got to have x number of seats on this train. That’s the constant tension we’ve got. We’d all like a beautifully-designed train, but when the business case says we’ve spent £60bn on this and we need to get our money back, so we need to shift this number of people, it becomes a cattle truck.”

Peter Broadley, Director of Customer, Operations, and Safety, Virgin Trains

Operators would like to be given a free hand in the West Coast Partnership franchise bid to specify the interior of a train as they saw fit. There was a widely-held view among those consulted that output rather than input-based specifications would be a preferable way of approaching this. However it was noted that from the customer’s perspective there is a practical benefit to specifying a given number of seats as it makes tenders easier to compare.

Examples from aviation supported the view of giving operators a free hand in specifying the train. Emirates devoted a large area of business class on its Airbus A380s to a bar, which was costly but showed it had decided to prioritise quality of service over passenger density and they took the view this would provide a better commercial return. Similarly, British Airways had decided a number of years ago to reduce seat density in business class in order to introduce lie-flat beds. The result was that it took a much larger share of the market, to the extent that its competitors had to follow suit.

Procurement timing

Another difficulty identified was the relative timing of the procurement processes for the rolling stock and for the West Coast Partnership franchise. This will combine a re-let of the existing West Coast franchise with the appointment of the operator for the initial years of HS2 when it opens. The intention is to get the future operator of the high speed franchise on board early. The invitation to tender will be issued late this year, with the franchise due to start in April 2019. But there was concern that this “shadow” high speed operator would not be selected in time to have an input into the train procurement, for which prequalification is due to start imminently, with an invitation to tender issued next year and contract award in 2019.

“There’s a real possibility that by the time the operator is appointed the DfT will already have bought a train which has 13.7 first class seats, and if you want to change that the manufacturer will say: here’s my variation price, it’s very large.”

Roger Cobbe, Policy Director, Arriva

Conclusions

Designing a railway from scratch presents a unique opportunity to get things right

The UK rail industry is excited about the opportunity to show, through HS2, the rest of the world what it can achieve. The industry believes it has the capabilities to deliver against passengers' aspirations for HS2 and is equally ambitious for making an even larger improvement to passengers' experience of rail travel.

For the rolling stock this means there needs to be a greater focus on accessibility for older and disabled passengers, and on the use of digital technologies. There should also be flexibility in the rolling stock design, to allow the interior to be completely replaced or upgraded at intervals

To achieve this, the industry is clear that procurement processes need to be designed to enable and encourage the required innovation. Innovation will be constrained or stifled if the specification is too prescriptive or input-based. Two particularly difficult questions will be seating capacity and luggage space. Consideration also needs to be given to how the West Coast Partnership franchise, which will appoint the operator for initial HS2 services, can input into the rolling stock design.

Ultimately, passengers' experiences of HS2 will depend on the whole project, including stations, ticketing, information, and design of the route alignment itself as well as rolling stock. Every organisation involved in the project will need to pay close attention to passengers' needs, and the industry looks forward to meeting this challenge.

There's extraordinary talent within the [rolling stock] industry, there's huge amounts of innovation. If it's HS2's ambition to let you do that, then there has to be the mechanism to make that happen.

Sadie Morgan, HS2 Design Panel Chair



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