Find out here about the trains that could run on HS2, including:

- the types of trains;
- how much they would cost; and
- what facilities they would have.

**The types of trains**

All trains running on HS2 would be high speed trains designed to have the same operational characteristics such as maximum speed, rate of acceleration and braking. This is essential to maximize the capacity (number of trains that can run) along HS2. The trains would meet the European standards known as the Technical Specifications for Interoperability. They would have high levels of reliability and safety.

Two basic types of trains would operate on HS2:

Some trains would only be capable of running on High Speed lines (including the link to HS1 and the Channel Tunnel). They would be built to full European dimensions, known as “GC gauge”, so they would be taller and wider than UK rolling stock. GC gauge trains could be either single or double deck. These types of trains are similar to standard high speed trains already running in many parts of Western Europe.

“Classic Compatible” trains would be similar in performance to GC gauge trains, but would be built to fit the UK railway infrastructure. This means they wouldn’t be as tall or as wide as the GC gauge sets and could only be single deck. This would allow them to fit into existing stations and under existing bridges. They would be used to operate high speed services which run along HS2 and then on to the existing UK network, such as services from London to Liverpool, Newcastle and Scotland. The Eurostar trains used on the high speed London to Paris services are examples of a high speed train adapted to fit UK railway infrastructure.

The basic unit for both types of train would be 200 metres long and units would operate either singly or in pairs, giving a maximum length of 400 metres. They would initially travel at speeds of up to 225 mph (360kph). Trains available today already operate at over 220 mph. In the future, trains could reach 250 mph on the condition that there would be no unacceptable increase in noise levels.
Some typical European high speed trains:

1. A German ICE3 train in use on the conventional German railway network.

Source: © Brian Stephenson

2. The prototype AGV train manufactured by Alstom. The first of these trains will enter passenger service in Italy during 2011.

Source: © Alstom Transport

3. A Eurostar train on HS1 in Kent. This is an example of a high speed train built to the UK gauge.

Source: © Brian Stephenson

4. A TGV Duplex double-decker high speed train in France.

Source: © Brian Stephenson

How much would they cost?

We have used the following cost assumptions:

**GC Gauge**

The estimated cost of each 200 metre set is around £29.5 million, including a risk allowance of 18%. This is similar to the cost of standard European high speed trains recently ordered for Spain, France and Germany.
Classic Compatible

These sets would be a bespoke design requiring an entirely separate manufacturing and assembly set-up. The estimated cost of each 200 metre set is around £52.5 million, including a risk allowance of 40%. The higher cost and risk allowance reflects their customised nature and the commercial premium which may be associated with a one-off order. This is similar to the equivalent premium for Eurostar trains which were also bespoke UK sized trains. (Eurostar trains had further expense on top of this to meet the special requirements of the Channel Tunnel.)

What facilities would they have?

A decision does not need to be made now about what facilities the trains would have. The trains themselves would not need to be ordered until the early 2020s. The internal layout of trains and the facilities onboard would be tailored to the anticipated needs of HS2 passengers. Facilities would be provided for all passengers including those with reduced mobility.

The number of seats per 200-metre train would depend upon the ratio of first and standard class seating and other choices of layout configuration, for example, the number of airline-style seats as opposed to seats at tables and the amount of luggage areas provided. For short duration journeys, only simple refreshment facilities may be required which would free up additional space for seating.

Trains would be designed to provide a range of modern systems such as passenger information systems, audio and visual media, and Wi-Fi connections.

How much noise would HS2 trains cause?

The HS2 trains would be designed according to the latest European Interoperability standards. These include noise levels so the trains would comply with these requirements. For additional information on noise, please refer to separate factsheet “Noise – Summary Note”.

If you would like more detail on this topic

Please visit our website – http://highspeedrail.dft.gov.uk/ – where you will see the “High Speed Rail: Investing in Britain’s Future – Consultation” and all the documentation published alongside it, as well as detailed maps of the proposed route between London and the West Midlands and images and visualisations.