# Managing the Safety Imperatives for a new High Speed Line Infrastructure Manager: the LISEA case

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*The SEA High Speed Line*

Construction of the South Europe Atlantic high-speed line (HSL), a major public interest project, will provide a continuous high-speed rail link between Paris and Bordeaux. With trains travelling at a cruising speed of 320 km/h, the two cities will be only two hours apart. Works started in 2012 and commercial service will start in 2017. The challenge: to build 340 km of new line (including 38 km of connecting lines) between Tours and Bordeaux in just five years, on an alignment that passes through 113 municipalities, six departments and three regions. This exemplary project will drive development and boost the attractiveness of France's southwest regions.


Brussels
Bordeaux
4hr30
London
Bordeaux
5hr30
to Lille, Brussels,
London
Paris
Bordeaux
2hr
PARIS
to
Strasbourg,
Frankfurt
to Lyon
SEA Tours-Bordeaux High Speed Line
Existing high-speed lines
Other railway lines
Existing railway line that will be mainly
used to expand regional and freight traffic
Tours
Bordeaux
1hr30
Paris
Poitiers
1hr17
Angers
TOURS
Nantes
Châtellerault
Paris
La Rochelle
2hr21
Niort
POITIERS
Poitiers
Tours
30min
La Rochelle
Limoges
Paris
Angoulême
1hr40
Royan
Cognac
Angoulême
Bordeaux
Angoulême
35min
Bordeaux
Poitiers
55min
Poitiers
Angoulême
37min
Périgueux
Libourne
Arcachon
BORDEAUX
Paris
Agen
3hr10
Paris
Bayonne
3hr50
Agen
Paris
Toulouse
4hr10
Montauban
Hendaye
Toulouse
Pau
Paris
Pau
4hr08
SPAIN
to
Montpellier

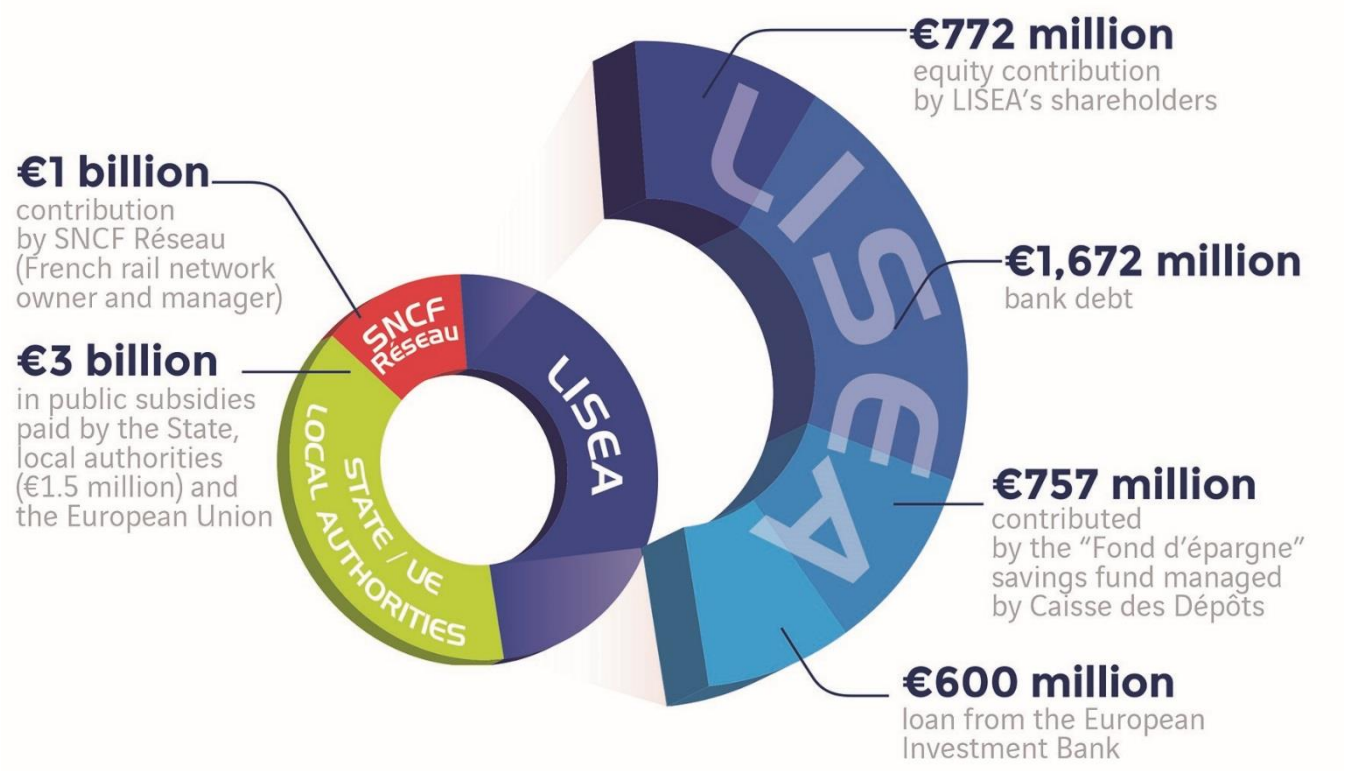
Often presented as a high-figures operation, the construction required more than 70 million cubic meters of earthworks, 1 million sleepers, 500 engineering structures, 1360 km of rails, 3 millions of tons of ballast, 4 sub-stations, 2 signalling systems (TVM and ERTMS level 2) At the peak of the construction, more than 8,500 people worked simultaneously on the site. Among them 2,000 were locally hired employees and, in total, the project has generated more than € 800 million for local subcontractors.

Since there are no stations on the new High Speed Line, ten junctions to the existing network have been built by LISEA. These junctions will enable High Speed Services towards the city centers of Bordeaux, Angoulême, La Rochelle, Poitiers, Châtellerault and Tours. Simultaneously, the central command centres of SNCF Réseau.

The SEA concession contract was signed in June 2011, construction works started in 2012 until 2016. Dynamic tests are currently ongoing and commercial operations on the new Line will start on July 2nd, 2017, ahead of the initial schedule.

*The SEA Concession Scheme*

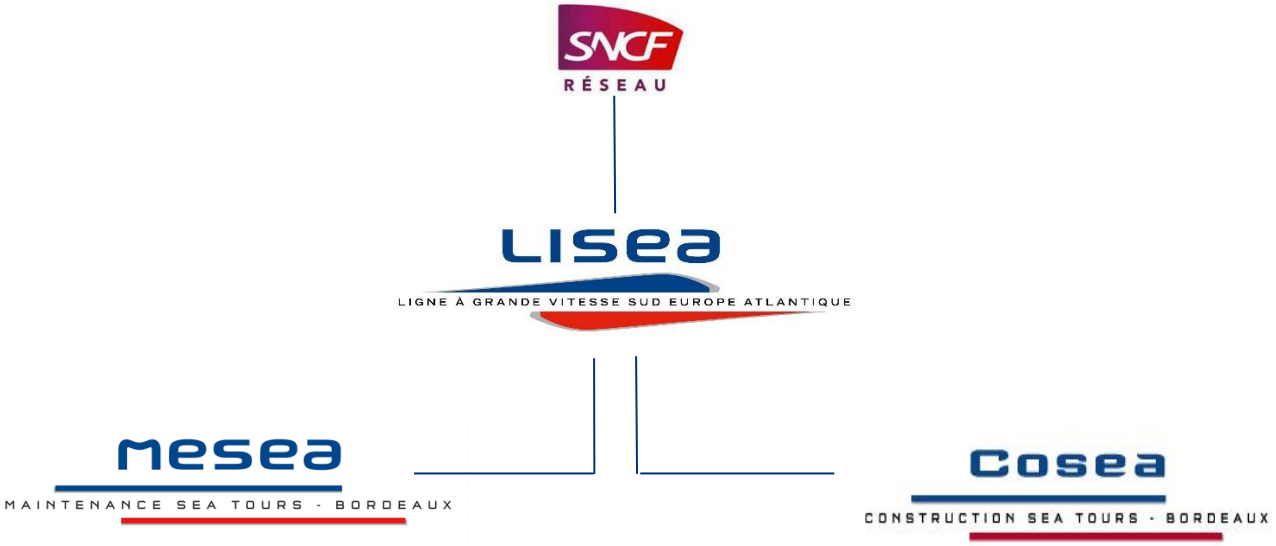
Construction of the SEA HSL, a public interest project involving a total investment of €7.8 billion, is financed in the framework of a 50-year concession contract signed between LISEA, the Concessionnaire, and SNCF Réseau, the Grantor or Concession Authority. It is the first time that this procedure has been used in France to build a high-speed rail line.




This choice, made in line with the recommendations of the State, answers to a rationale of effectiveness: shorter construction schedule, controlled and known costs and transfer of the traffic risk to the concession holder.

Following a call for tender, LISEA was awarded the concession contract for the future line for a period of 50 years, i.e. until 2061. Its mission is to finance, design, build, operate and maintain the new 340 km rail infrastructure throughout the concession period. The project represents a public-private investment of €7.8 billion, with 50% provided by public funds.

LISEA assumes responsibility for all operations. As program manager responsible for the private financing component, LISEA assumes the risks related to design, construction, operation and maintenance of the line. In return, it will receive track access charges for use of the line, paid directly by the rail operators. The price of train tickets is set by the Railway Undertakings in accordance with their commercial choices and the other costs on national or international links.




LISEA has contracted the design and construction of the SEA Tours–Bordeaux HSL to the COSEA joint venture led by VINCI Construction. As soon as the line enters service, operation and maintenance will be carried out by MESEA, a subsidiary of VINCI Concessions and Systra.

*LISEA's Safety Imperatives*

On-site safety is on top of the agenda of all actors during the construction phase. Similarly, Rail Safety during the operation phase is the top priority of LISEA and MESEA as well as their SNCF Réseau partners. As Infrastructure Manager, LISEA is responsible for the relations with the French National Safety Authority, the EPSF (Etablissement Public de Sécurité Ferroviaire)

In order to start the commercial operation and according to the French regulation, LISEA requests a specific permit from the EPSF. This permit is delivered based on the High Speed Line's Safety Case, mainly produced by the COSEA, and the opinion of the Safety Assessor CERTIFER. Simultaneously, CERTIFER as Notified Body issues the Interoperability Certificates according to the European Regulation. The EPSF also delivers a Safety Agreement to LISEA that is based on its Safety Management System which is mainly developed by MESEA.

Setting up the Safety Case and the Safety Management System according to national and European regulations is a new process for LISEA, COSEA, MESEA and their partners. It differs from the traditional design and build or the maintenance businesses. Specific organizations were implemented within the parties. They are based on LISEA's Interoperability and Safety Management Plan (PMSI) that was developed in order to clarify and manage all the responsibilities and intermediate deliverables. As managing the interfaces with the existing networks and with the central command centers is also critical, a specific joint Interoperability and Safety Management Plan was developed by LISEA and SNCF Réseau together. LISEA, together with SNCF Réseau for the joint one, presented these plans to the NSA early on and applied them since then.

The early involvement of the maintenance and the operation entities within the Safety Processes was definitely a key to its success.

As a new player, LISEA had to set up an efficient and long-term relationship with the Safety Assessor and with the NSA. The common aim is to anticipate as much as possible the instruction period of the Safety Case end of 2016 – beginning of 2017. Monthly and quarterly meetings were then organized in order to present the progress of the design and of the construction as well as the progress of the safety documentation.

*Innovations*

Main innovations on the High Speed Line concern the construction methods as well as the quality and management systems during the construction and operation stages with extensive use of non-paper processes, GIS and CMMS. For the operation phase, specific road-rail trucks were designed in order to reduce the access time to the incident sites.

The INTELO truck (hereunder) also enables the inspection of the external faces of the viaducts from the platforms during the dialy operations.