

"PLANNING FOR THE OPTIMAL HSR CITY PAIRS" THE MEDITERRANEAN HSL IN FRANCE

Fabrice MOREL

*Sncf Voyages, International Development Director
Paris, France*

2013 Rail Conference



"PLANNING FOR THE OPTIMAL HSR CITY PAIRS" THE MEDITERRANEAN HSL IN FRANCE

- RAIL SYSTEM
- SYSTEM PLANNING
- DEFINING SUCCESS
- CLOSING COMMENTS

RAIL SYSTEM

THE FRENCH HSR NETWORK

High Speed Lines in France:

- 2 036 km in operation
(1 265 miles)
- 757 km in construction
(470 miles)
- 2 407 km planned
(1496 miles)

Source UIC 2012

Cities served by HSR:

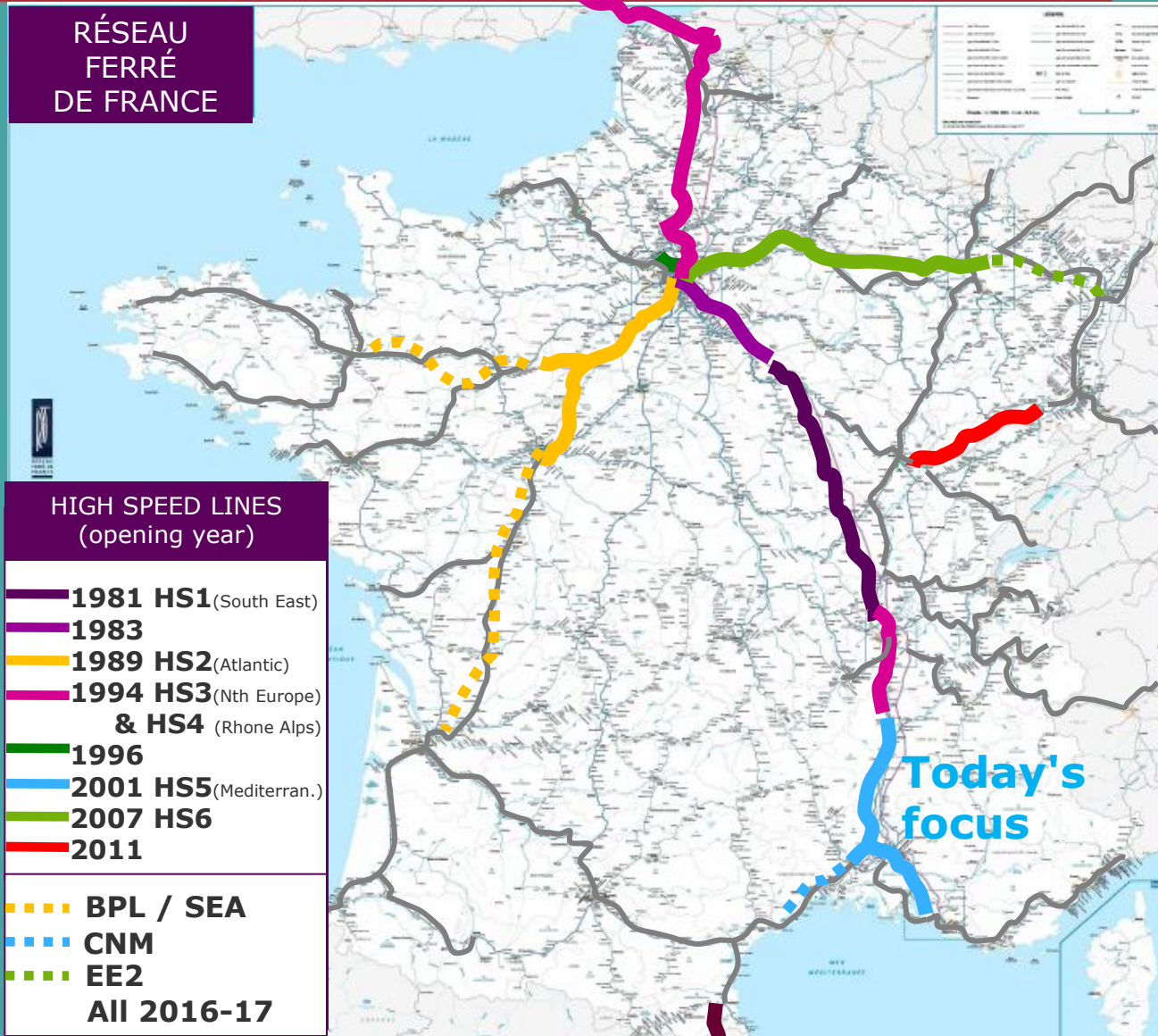
- **France** 230
- Germany 47
- Japan 17
- Spain 16
- Italy 15

RÉSEAU FERRÉ DE FRANCE

HIGH SPEED LINES (opening year)

- 1981 HS1 (South East)
- 1983
- 1989 HS2 (Atlantic)
- 1994 HS3 (Nth Europe)
& HS4 (Rhone Alps)
- 1996
- 2001 HS5 (Mediterran.)
- 2007 HS6
- 2011

- BPL / SEA
- CNM
- EE2
- All 2016-17



RAIL SYSTEM

MEDITERRANEAN HSL

1989: Following success of the Paris-Lyon HSL (1981), extension study toward Marseille, Italy and Spain

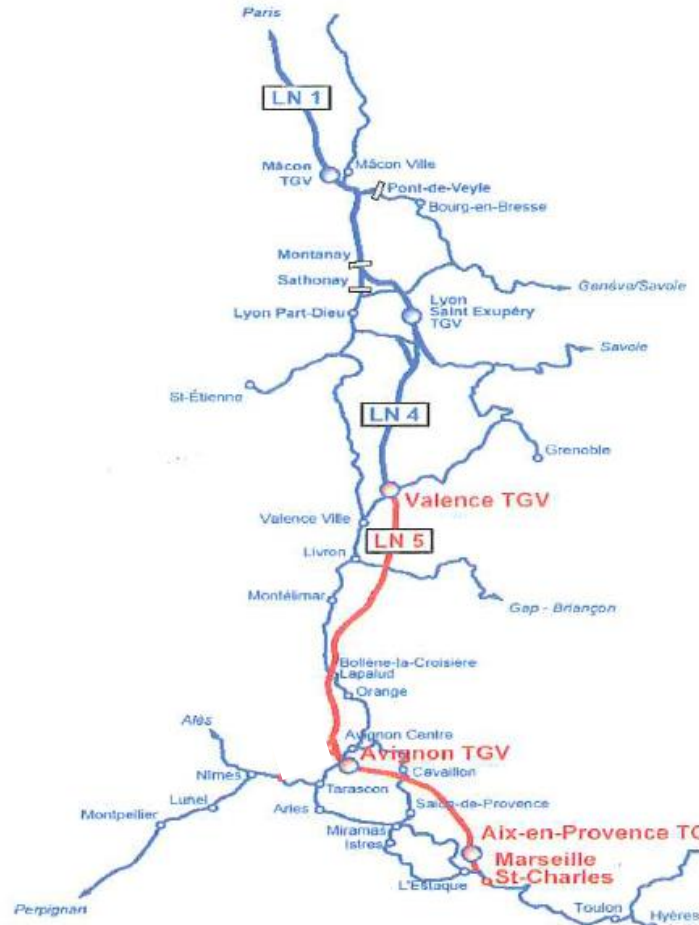
1990: Project definition

1994: HSL declared of public interest

1997: Construction (RFF/SNCF)

06/10/2001: Opening Valence-Marseille

Objective: connect large Southern French cities with the entire country including Western/Northern France and with Europe.



Commissioned 06/2001
250 km-long ballast HSL
(155 miles) dedicated to
passenger trains

500 works of art
max gradient 35‰
7 major viaducts
13 km (8 miles) of tunnels

3 new stations :

- Valence
- Avignon
- Aix en Provence

Max speed 350 km/h
(217 mph)

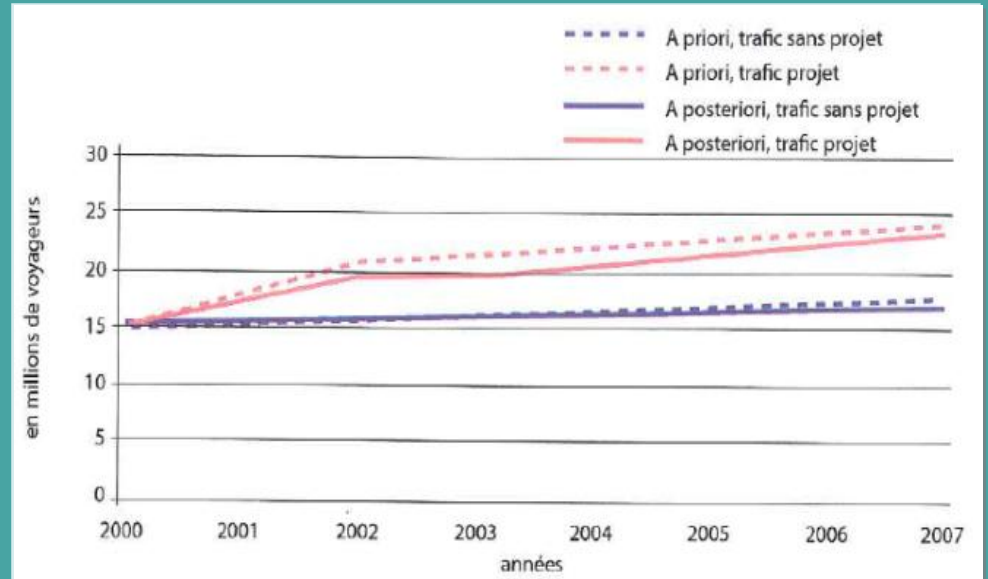
Comm. speed 300 km/h
(186 mph)

Paris-Marseille : 3 hours

RAIL SYSTEM

MEDITERRANEAN HSL

Traffic:	Passenger volume (reference)	Passenger volume (with project)
Paris-Provence	3,899	6,356
Paris-Côte d'Azur	0,719	1,695
Paris-Languedoc Roussillon	1,528	3,006
Total Paris-Provence	6,146	11,057
TGV Junction	2,000	2,637
TGV Province-Province	1,468	4,616
Total TGV	9,614	18,310
Classical Trains	5,796	3,083
Total	15,410	21,393



Rolling stock:

renovated TGV Réseau & TGV Sud-Est dual voltage and 300 km/h compliant (186 mph)
+ 16 TGV additional Duplex bought for the project



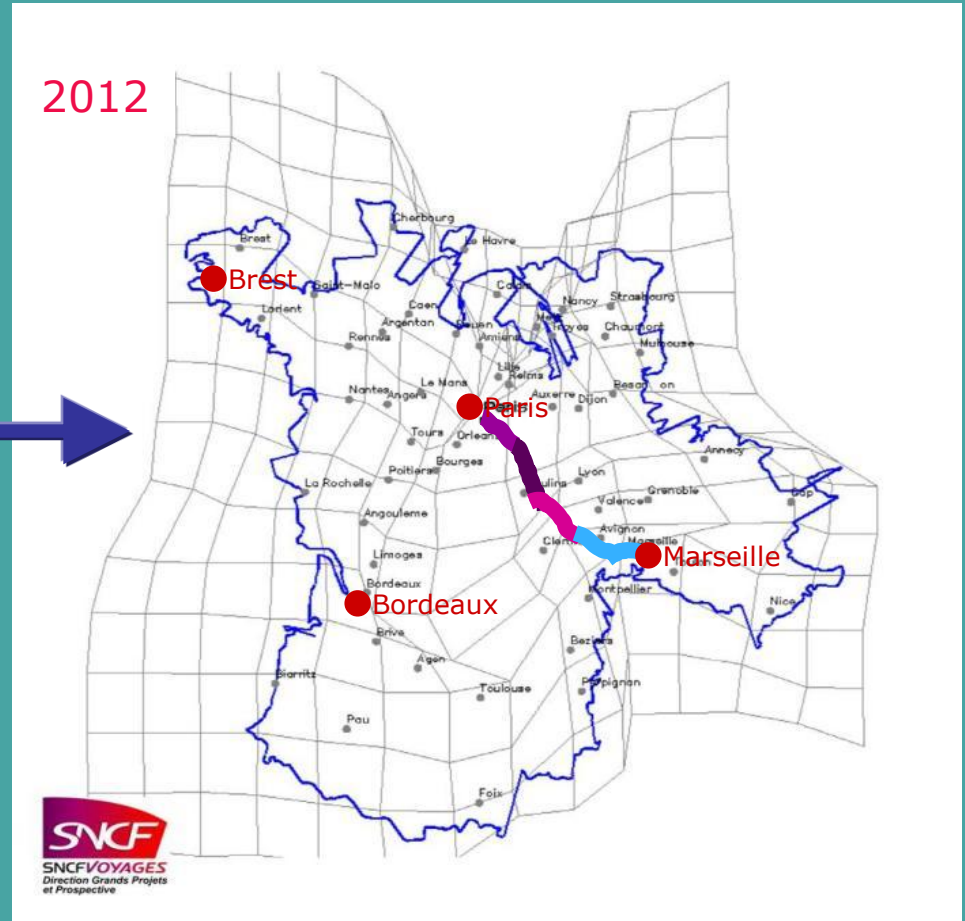
Trainsets	Capacity
TGV SE	342 seats
TGV R	377 seats
TGV Duplex (planned)	547 seats
TGV Duplex (actual)	510 seats

RAIL SYSTEM TRANSPORT TIMES

1981



2012



High speed rail has significantly altered French geography:
Marseille is now "closer" to Paris than Brest or Bordeaux

SYSTEM PLANNING OVERVIEW

LOCAL COMMITMENT

- Finance:** total cost 4,202 M€, of which
- SNCF integrated financing 3,739 M€ (2003)
 - State subsidies: 417 M€ (2003)
 - Other subsidies: 46 M€ (2003)

	M€ 2003
Conseil régional Rhône Alpes	22,6
Conseil régional PACA	13,0
Conseil général Bouches du Rhône	8,7
Conseil général Drôme	1,7
Total	46,1

Transport time gains:

- Paris-Avignon: 30 mn
- Paris-Marseille*, Toulon, Nice: 1 h
- Paris-Nîmes, Montpellier, Béziers: 1h
- Paris-Narbonne, Perpignan: 1h15

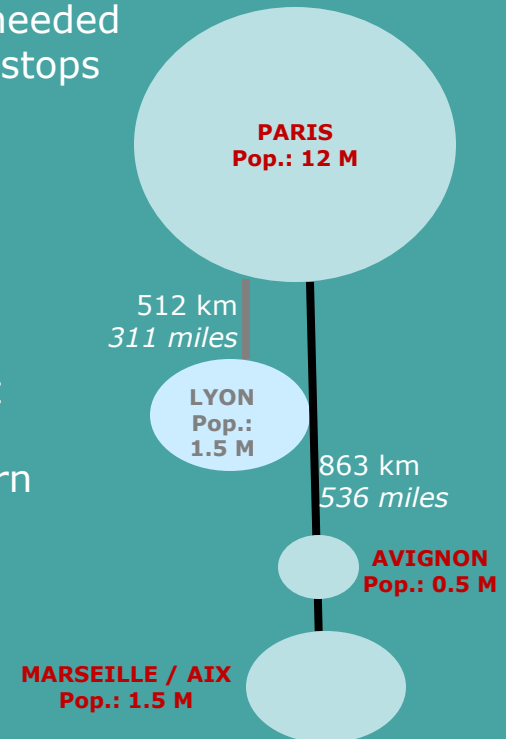
*Paris-Marseille: 1h10 (3h vs 4h10)

First HSL project > 500 km from Paris

- No connections needed
- No intermediate stops

Socio-economic benefits:

- Impact on economical results of other players (infrastructure managers, rail operators...)
- Passenger increase, environmental and safety impact
- Impact on company strategies and tourism
- European presence : transit position between Northern and Southern Europe
- Interregional connexions



SYSTEM PLANNING OVERVIEW

THREE NEW STATIONS

Valence TGV: multimodal station, 10 km (6 miles) to city center

- Rail connections with conventional network.
- Finance : construction split 34,6 M€₂₀₀₃ SNCF and 39,6 M€₂₀₀₃ RFF. State, *Conseil Régional* and *Département* subsidies. Total cost 74,2 M€₂₀₀₃

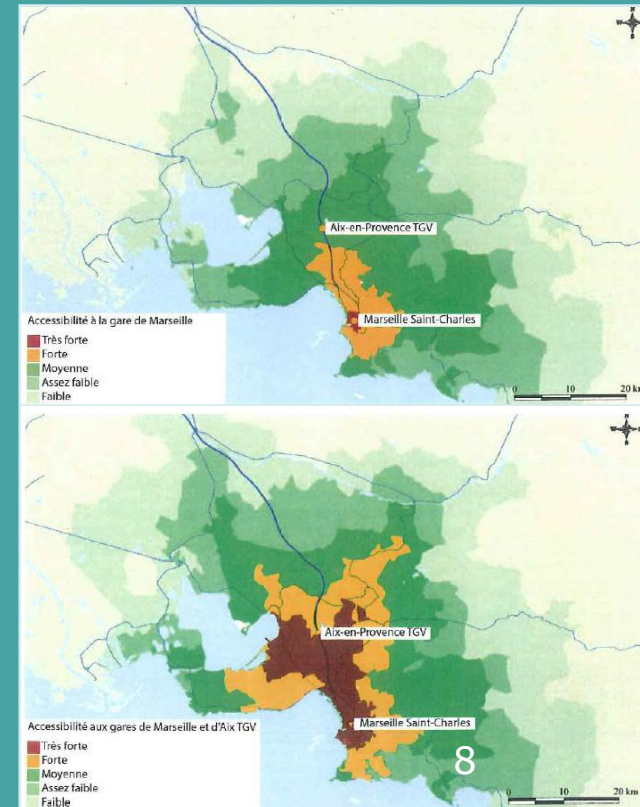
Avignon TGV: between Avignon and the river Durance.

- Connection to be built between HSL and conventional line in order to reach the city center.
- Finance : construction split 28 M€₂₀₀₃ SNCF and 25,5 M€₂₀₀₃ RFF. *Conseil Régional* subsidies. Total cost 52,6 M€₂₀₀₃

Aix en Provence TGV: serves several mid-sized cities (Aix en Provence, Marignane, Vitrolles and Rognac).

- connections with road infrastructure
- designed for future urbanisation
- finance : construction split 21,6 M€₂₀₀₃ SNCF and 38,8 M€₂₀₀₃ RFF. *Conseil Régional* subsidies. Total cost 60,4 M€₂₀₀₃

Quite close to Marseille St-Charles end station (15 miles) but massively improves access to high-speed rail within a large, heavily urbanized area



DEFINING SUCCESS

PROJECT VALUATION

POSITIVE FEATURES:

- Some **investments** avoided (infrastructure and rolling stock)
- Average **revenue** planned stable, decreased by 1% between 1992 and 2000, then increased by 17% between 2000 and 2004
- 80% of **environmental care** promises delivered by the French State
- **Construction costs** close to initial plan (4,512 vs. 4,334 M€₂₀₀₃)
- **Traffic** close to forecasts (20.4 M Passengers vs 22.2 M)

DEFINING SUCCESS

PROJECT GLOBAL VALUATION

NEUTRAL IMPACT:

- **Improved access, image and reputation** of the area's destinations, but no impressive effect on **economy and development** (new businesses, culture...)
- **Socio-economic ROI** (State, highway concessions, air companies...) below forecasts (8,1% vs 11%) but still solid

DEFINING SUCCESS

PROJECT GLOBAL VALUATION

NEGATIVE ASPECTS:

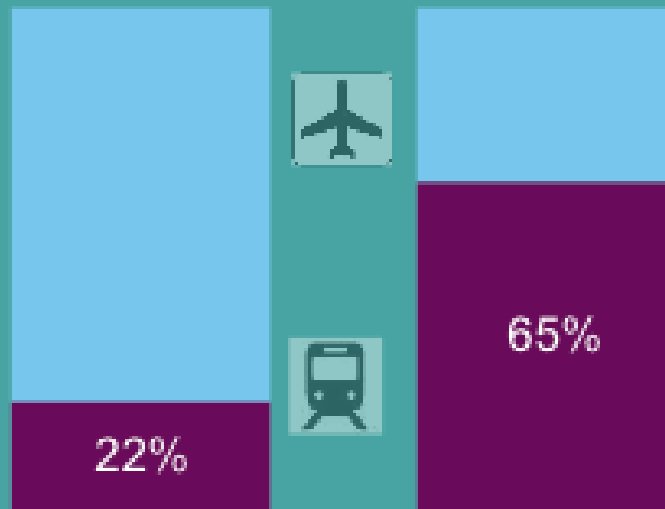
- Excess project **delays** (opening in 2001 vs. 1998 expected), especially decision process before construction
- Cost of Duplex **trainsets** x2 (491 M€₂₀₀₃ vs 221 M€₂₀₀₃)
- **Quality** objectives compliance below plan (frequencies)
- **Operating costs** above plan (38,7 M€₂₀₀₃ vs 15,0 M€₂₀₀₃)
- Additional **operating revenue** below plan until 2009

DEFINING SUCCESS

MODAL TRANSFERS

PARIS – MARSEILLE*

X3.0



Before TGV (1999)

After TGV (2005)

*regardless of road market share

AIR

RAIL

CLOSING COMMENTS

IF WE COULD DO IT ALL OVER AGAIN...

We would have been even more ambitious, with a line specified for commercial speeds of 350 km/h (220 m/h) instead of 300:

- lower construction costs
- better balance in CO₂ emissions
- even higher market share gains vs. air