



LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

NETLIPSE Study Report: Lisbon-Oporto High Speed Line

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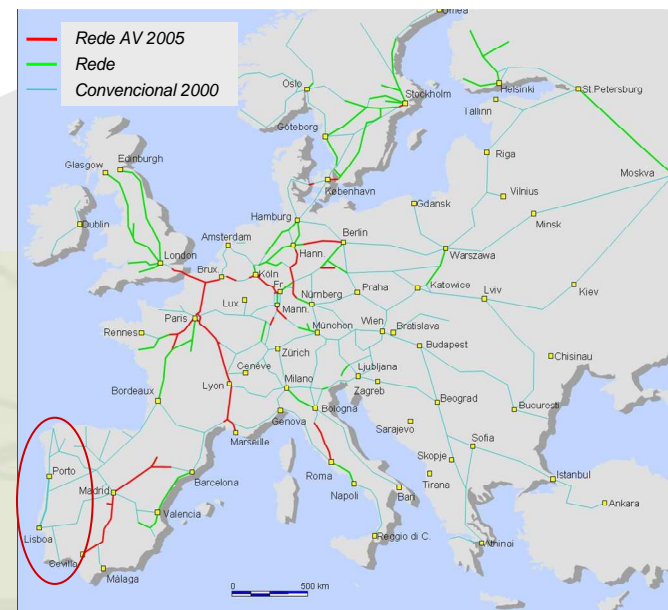
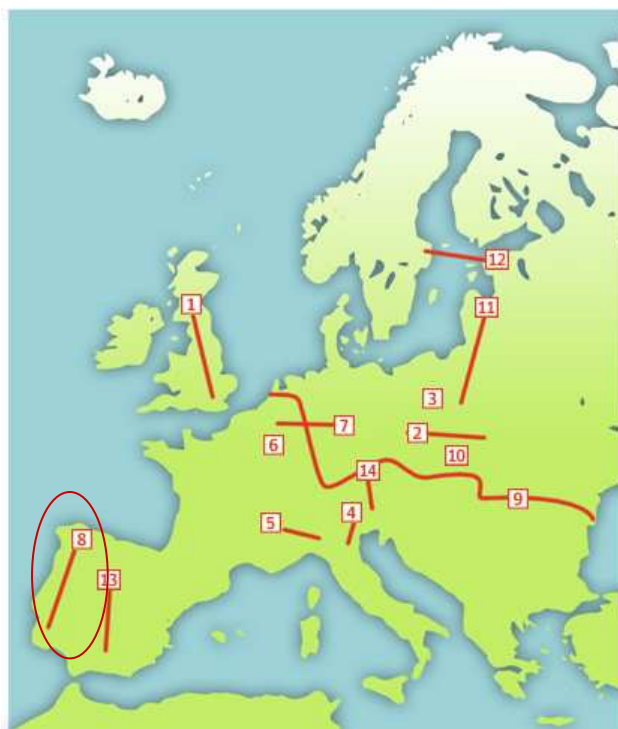
Presentation Structure

- > Overview of the project
- > Interviews set up
- > Questionnaire
 - best practices
 - lessons learned
- > Reflecting on the applied knowledge protocol



Overview of the project

> Project Facts & Figures



Trans-European Transport Networks (TEN-T)

Overview of the project

> Project Facts & Figures

HSL – Benefits for the country & objectives

Create a successful and competitive infrastructure

- Connect the major Portuguese and Spanish cities
- Reduce travel times
- Improve capacity and quality of transportation

Align national initiatives with EU policies

- Increase railway market share
- Achieve appropriate levels of interoperability
- Promote sustainable development models
- Reduce environmental costs

Increase regional competitiveness & development

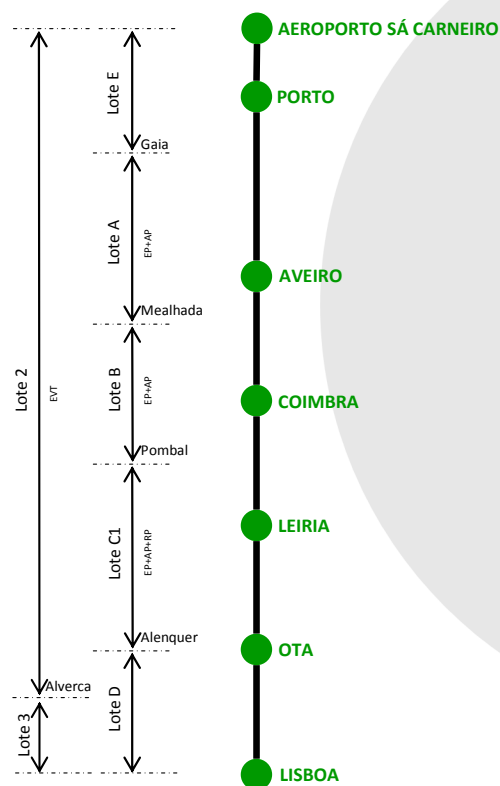
- Stimulate economy, by direct and indirect effects on the GDP by contributing for the development of internal capabilities
- Work as a catalyst factor for regional development
- Enhance economical as well as territorial cohesion

Strengthen Portugal integration within Europe

- Integrate Portugal in the European HSR Network
- Link Portuguese ports to Spain and the rest of Europe

Overview of the project

> Project Facts & Figures



- LEGENDA:**
 •EVT – Technical Viability Studies
 •EP – Preliminary Studies
 •AP – Draft Plans

	Main Link
Characteristics	Lisbon-Oporto
Travel Time	1h15m
Type	Passengers
Length	300 km
Stations	Oporto, Aveiro, Coimbra, Leiria, Ota e Lisbon
Investment	4 700 M€
Beginning of Operation	2015
Speed	300 km/h
Search	12,2 M passengers
Observations	It frees capacity in the conventional track for regional and suburban passengers and goods traffic. It serves the Sá Carneiro International Airport, in Oporto.

Overview of the project

> Project Facts & Figures

General Project scope

The decision to build an entirely new line for the Lisbon-Oporto link, instead of up-grading the existing conventional line, was based on the following reasons:

- The intent to provide a faster (halving the present travel times), safer, and more comfortable service, capable of raising the attractiveness of this mode in the country's most densely populated corridor;
- The unequivocal and irreversible belief in the strong advantages of change, and, above all, of obtaining the direct, indirect and induced benefits, shown by the High Speed experiences in Europe;
- To guarantee that the patterns of the service provided are compatible with those required by the high speed levels;

Overview of the project

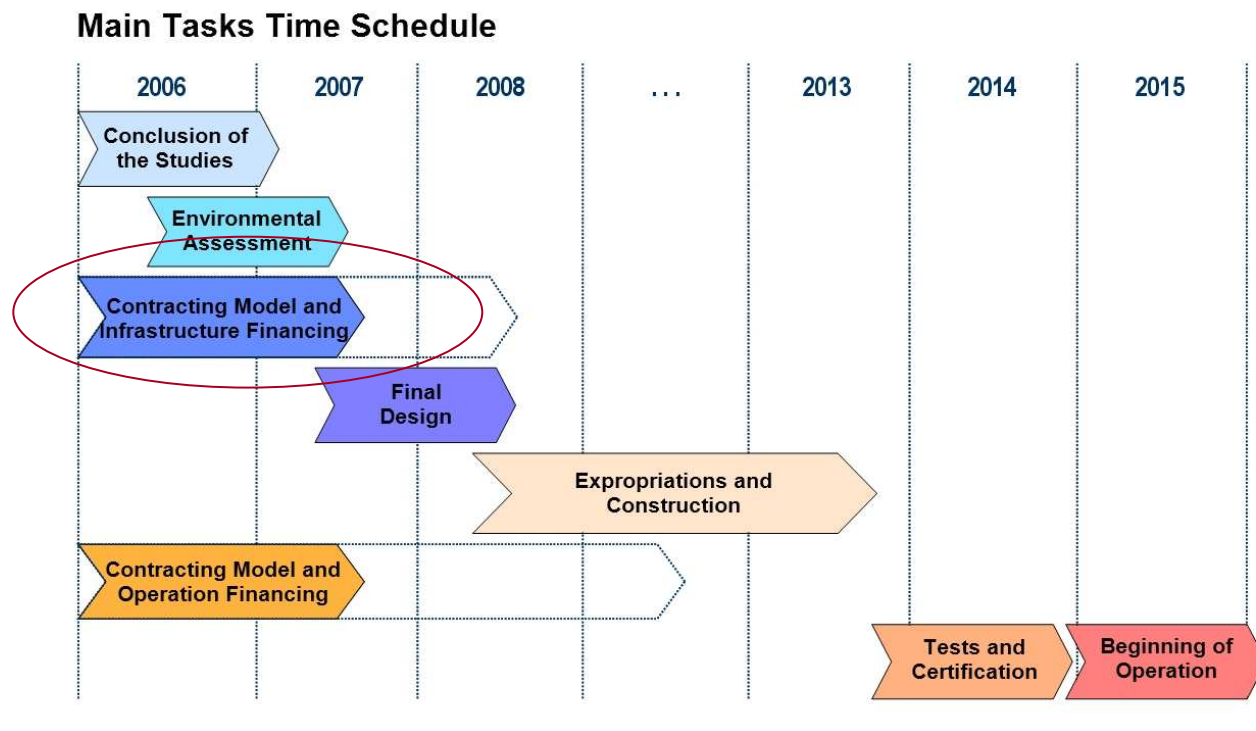
> Project Facts & Figures

General Project scope (cont.)

- To guarantee full interoperability with the European and Iberian High Speed Railway Network;
- To achieve capacity gains in the existing conventional rail network, allowing for the increase of the suburban and freight services;
- The non compliance, in terms of reliability, productivity and safety restraints, to the infrastructure and services of the existing Northern Line;
- To reduce constraints to the final conception of the Project, due to investments already made, namely in the conventional line;
- The non-existence of risks and over-costs associated to a transition phase.

Overview of the project

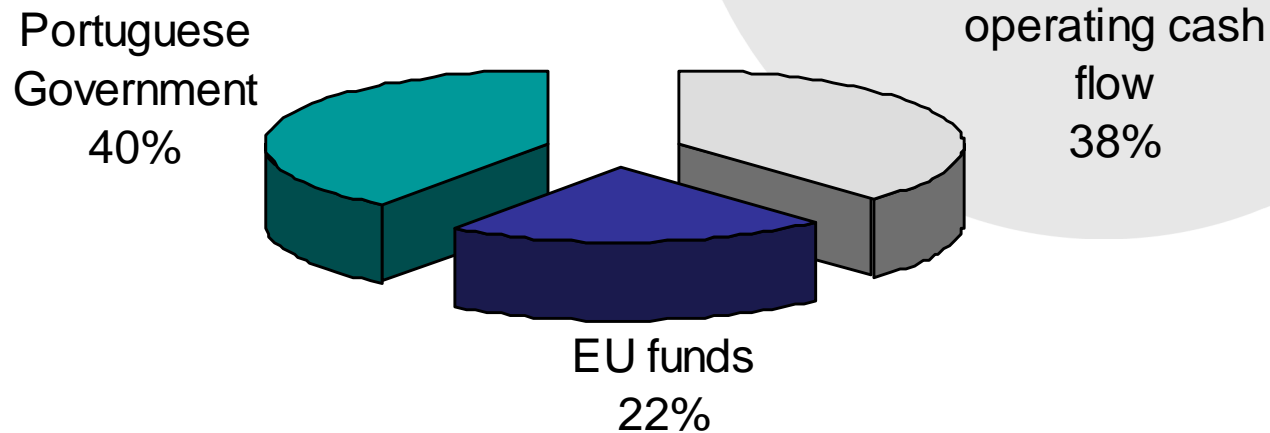
> Project Facts & Figures



Overview of the project

> Contract and financing

- The Business/Contracting Model is not yet defined (foreseen June 2007)
- Costs: 4 700 million euros
- Total cost of infrastructure will be financed:



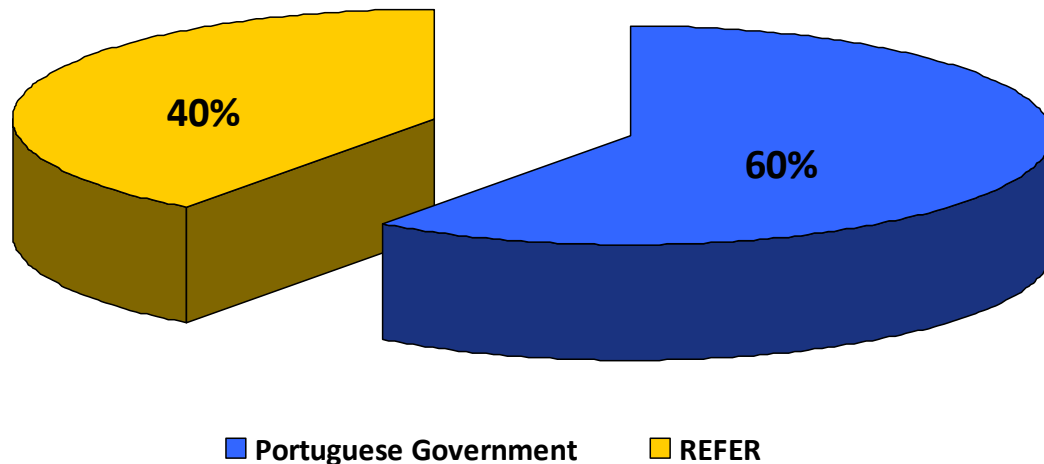
Overview of the project

> Project Facts & Figures

Rede Ferroviária de Alta Velocidade, S.A. (RAVE)
High Speed Railway Network

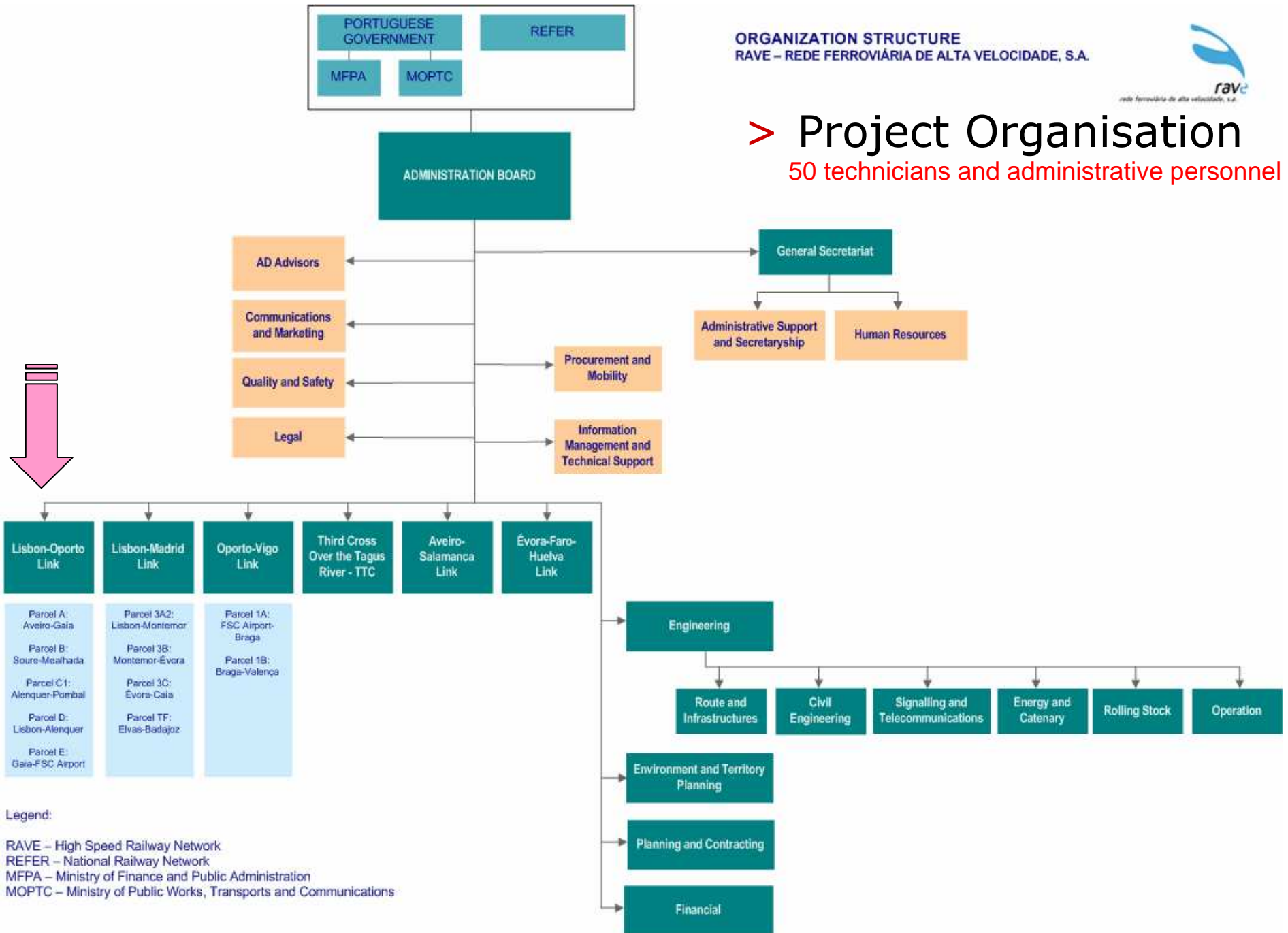
Shareholders

RAVE's Shareholders



> Project Organisation

50 technicians and administrative personnel



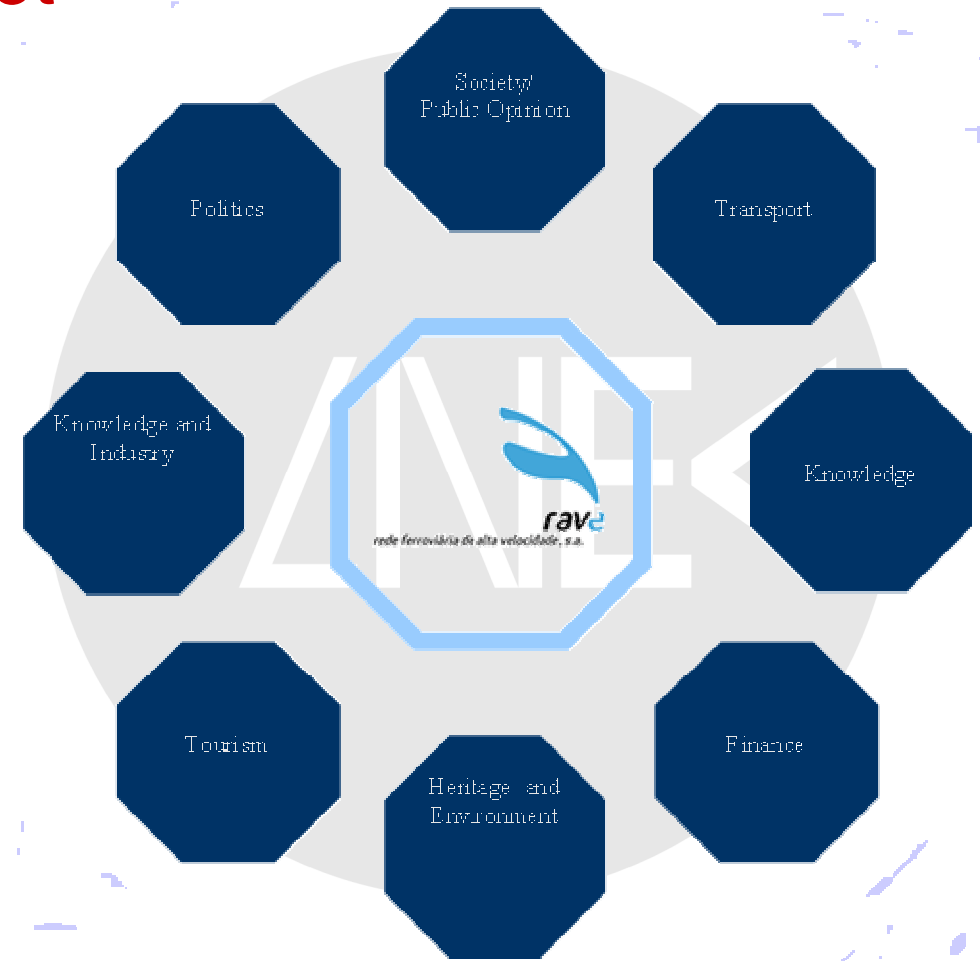
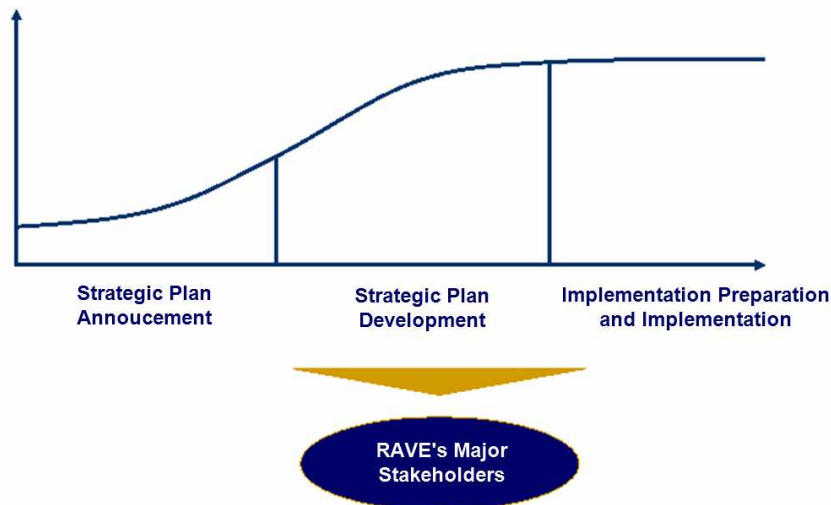
Legend:

RAVE – High Speed Railway Network
 REFER – National Railway Network
 MFPA – Ministry of Finance and Public Administration
 MOPTC – Ministry of Public Works, Transports and Communications

Overview of the project

> Project Stakeholders

- definition of communication
 - for each stakeholder
 - in each one of the stages



- Identified and divided in 8 specific groups of interest

Overview of the project

> Project History

December 2000

Establishment of **RAVE S.A.** - Portuguese state owned company, created for the development of the High Speed Railway Network (HSL Project) in Portugal

November 2003

XIX IBERIAN SUMMIT (Figueira da Foz)
Memorandum of Understanding was signed defining 4 cross border high speed railway lines:
Porto - Vigo / Lisboa - Madrid / Aveiro - Salamanca / Faro - Huelva

April 2004

The European Parliament approved the **TRANS-EUROPEAN TRANSPORT NETWORK** projects as of “**europaean interest**”

November 2005

XXI IBERIAN SUMMIT (Évora)
Memorandum of Understanding was signed defining the schedule for the starting of the operation in the Lisboa-Madrid Line

December 2005

Public Presentation of the **Portuguese High Speed Railway Project**

October 2006

Strategic Orientations for the **Portuguese Railway Network**

December 2006

The European Parliament approves the new regulation for the use of funds planned for the **Trans-European Networks.**

January 2007

Public Presentation of the new **Frame of National Strategy Reference** for the management and implementation of Structural Funds for 2007-2013.

Overview of the project

> Historical analysis

1. The HS Network Project is not consensual in the Portuguese society, neither regarding the need of its existence nor the choices made for its trajectories and priorities.
2. Political changes have brought significant changes to the Project, **solution of an interconnected line RAVE/REFER, (January of 2005) became a solution with a totally new dedicated High Speed Line (April of 2005)**
3. Between 2004 and March of 2007, an integrated management was performed by an external consultant.
4. First study, corresponding to Alenquer-Pombal stretch (~ 120 km), was submitted in September of 2006 to the Environmental Impact Assessment.
5. Presently, studies for the definition of the Business Model for the construction and operation of the new HSLs are performed by RAVE and it is being undertaken also the process of the “Reservation of Corridors”.

Interviews set up

> Preliminary actions

- Translation of the Background document (to English)
- Translation of questions (to Portuguese)
- Analysis of examples to backup the questions
 - *West Coast Main Line (U.K.)*
 - *Betuweroute (NL)*

> Team

- Eduardo Fortunato (LNEC) - interviewer
- Simona Fontul (LNEC) - interviewer
- Luis Marques (RAVE)- contact person
- António LEMONDE de Macedo (LNEC)

Interviews set up

> Interviews schedule

- 2 interviewers (LNEC)
- 8 interviewed (RAVE)
- 21, 22 and 23 of March 2007
- RAVE headquarter
- 90' per interview
- language: Portuguese



Interviews set up

> Interviewees

- | | |
|---------------------|------------------------------------|
| 1. Carlos Fernandes | Administration Board |
| 2. Luis Marques | Planning and Contracting |
| 3. Socha Pereira | Quality and Safety |
| 4. Andrade Gil | Civil Engineering |
| 5. Isabel Campos | Legal Department |
| 6. Adília Lopes | Legal Department |
| 7. Graça Jorge | Environment and Territory Planning |
| 8. Tiago Rodrigues | Financial Department |

Interviews set up

> Interviews schedule

Location: RAVE headquarters

Date: 21, 22 and 23 of March 2007

Date	Time	Interviewed	Job Title	Interview topics
2007-03-21	10:00	Luis Marques	Head of Planning and Contracting Department	1. Objectives and Scope
	11:30	Socha Pereira	Head of Quality and Safety Department	4. Organisation and management processes
	15:00	Andrade Gil	Head of Civil Engineering Division	8. Knowledge and technology
	16:30	Luis Marques	Head of Planning and Contracting Department	5. Risks (threats and opportunities)
2007-03-22	10:00	Isabel Campos	Head of Legal Department	6. Contracting
		Adília Lopes	Member of the board of Legal Department	
	11:30	Isabel Campos	Head of Legal Department	7. Legal procedures
		Adília Lopes	Member of the board of Legal Department	
15:00	Graça Jorge	Head of Environment and Territory Planning Department	2. Stakeholders	
16:30	Tiago Rodrigues	Head of Financial Department	3. Finance	
2007-03-23	15:00	Carlos Fernandes	Member of Administration Board	Overview

Questionnaire

1. Objectives and Scope

Best practice

- **The scope and objectives have to be evaluated, reinforced and transmitted in a correct way in order to properly achieve the results.**

Ministry for Public Works,
Transports and
Communications (MOPTC)

milestones

work packages



collaborators of
the Project

Questionnaire

2. Stakeholders

Best practice

- **A good knowledge of the stakeholders and of their possibilities to interfere with the Project.**

Permanent identification
and evaluation of the main
stakeholders

+

Structured
contacts

=>

Participation in
the planning
process

Questionnaire

2. Stakeholders (cont.)

Best practice

- **Dynamic action and constant interaction.**

Examples:

- ✓ The initial approach and the consequential interactions with the local authorities, in order to evaluate their expectations, the interest for the Project and the local restrictions that can affect the Project's implementation.
- ✓ Proactive relations established with the authorities that are responsible for other infrastructures with which the layout of the HSL will interfere.

Questionnaire

2. Stakeholders (cont.)

Best practice

- **To act properly, in an open approach and in order to obtain credibility.**
 - ✓ Coherent information, objective, clear and of easy understanding communicated only when it has been confirmed and is in accordance with the development of the Project.
 - ✓ The extra information (not useful) can complicate the evolution of the Project and create additional doubts if presented.
 - ✓ Approach has to be direct, through private meetings.

Questionnaire

2. Stakeholders (cont.)

Lesson learnt

- **Some stakeholders can supply very useful information.**

Examples:

- ✓ Environmental non-governmental organizations (ENGOS) sometimes supply useful information for the development of the Project.
- ✓ The fact that RAVE is being represented in all the commissions that follow the development of the regional and territorial plans is important for the management of the information useful to the Project.

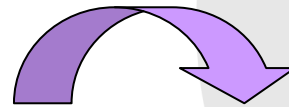
Questionnaire

2. Stakeholders (cont.)

Lesson learnt

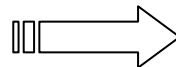
- **The stakeholder's management should be centered.**

Quite distributed during
the development of
studies



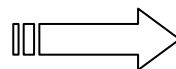
Concentrate more the
relationship task with the
stakeholders

Administration



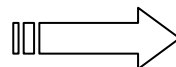
Political stakeholders

Engineering Department



Designers and consultants

Environment Department



Institutional stakeholders
(industry, tourism, etc.)

Questionnaire

3. Finance

- > Not applicable at the present stage of the Project.
- The interview with the Head of Financial Department was undertaken but it was considered to be irrelevant for this case study, due to the specificity of the questions, given that the Business/Contracting Model is not yet defined (foreseen June 2007).

Questionnaire

4. Project Organisation and Management Processes

Best practice

- **The organisation must be adapted to the objectives.**
 - ✓ Tasks divided per areas in order to support the achievement of the objectives.
 - ✓ The communication process is very efficient and quick and the information transfer is fluent.

Questionnaire

4. Project Organisation and Management Processes

Best practice

- **Have a Member of the Administration Board dedicated to the Project.**
 - ✓ Strong involvement of the top management.
 - ✓ Studies that can induce significant changes to the Project are under the close monitoring of the top management.

Questionnaire

4. Project Organisation and Management Processes

Best practice

- **The use of Value Engineering for critical areas.**

Big Project => great number of processes that can be analysed
in order to be improved

Value Engineering – systematic method to improve the "Value" of goods and services that allows optimising costs without decreasing the quality of the Project.

Questionnaire

4. Project Organisation and Management Processes

Lesson learnt

- **The Engineering Area is very important and must have the capability to make technical decisions.**
 - ✓ In several situations RAVE was very dependent on the consulting engineering and, consequently, the consulting had an important technical part on the process.

Questionnaire

4. Project Organisation and Management Processes

Lesson learnt

- **Avoid imposing strict time restrictions in this stage of the Project, in the attempt to obtain the Environmental Impact Assessments quicker.**
- ✓ Some of the studies were developed in a period of time shorter than suitable.

Questionnaire

4. Project Organisation and Management Processes

Lesson learnt

- **It is necessary to invest time and resources in the strategy in order to avoid problems during its execution.**

Questionnaire

5. Risks (Threats and Opportunities)

Best practice

- **Risk identification and mitigation through insurance contracts.**

- ✓ Insurance contract involves studies and works needed to the decision making in the fields of planning and construction, financing, supply and operation of a High Speed Network.

Questionnaire

5. Risks (Threats and Opportunities)

Lesson learnt

- **It is impossible to “survive” without a Risk Analysis.**

Qualified team supported
by proper tools



Identification, analysis and
classification of risks



Detailed risk report
produced for each risk



Periodic meetings



Questionnaire

5. Risks (Threats and Opportunities)

Lesson learnt

- **Risk management has to be promoted by the top management during all the phases of the Project**
- ✓ Top management should be deeply involved in this process since the beginning of the Project

Questionnaire

6. Contracting

Best practice

- **The contracting models have to be based on studies that indicate the more appropriate model.**

First contracts were made based on REFER documentation



The responsibility of contracting was transferred to RAVE



In the last contracts of studies performed, two phases were specified, the first one corresponding to the preliminary study and the second one corresponding to the draft plans or detailed design project

Questionnaire

6. Contracting

Best practice

- **An adequate legal support is needed.**
- ✓ Solid knowledge of the European Directives and national laws
- ✓ Knowledge of the legal regimes of the Audit Department of Exchequer

Questionnaire

6. Contracting

Best practice

- **Good coordination for preparing the tendering processes and technical consistency.**
 - ✓ Timing and rules for the tendering process
 - ✓ Information system

Questionnaire

6. Contracting

Best practice

- **To involve, since the beginning, the future responsible for the contract management in the tendering process.**
 - ✓ Deeper involvement of the responsible during its execution

Questionnaire

6. Contracting

Lesson learnt

- **It is important to have contracting documents that allow the control of cost, time and quality of the studies.**
- ✓ The Standard Building Contract has to be adapted to the objectives and modified in accordance with the specificity of the contracts.

Questionnaire

6. Contracting

Lesson learnt

- **In the process of contracting of studies, low prices and restricted time, without the possibility of quality control, is not the best criteria to contract, as they lead to significant increase of the risk of the Project.**
- ✓ In the beginning the contracting policy was guided by the time criteria and cost

Questionnaire

6. Contracting

Lesson learnt

- This is a process that is continuously changing, therefore it can be improved.

INEC

Questionnaire

7. Legal Procedures

Best practice

- **To have a multidisciplinary and all-purpose team, working permanently at the information updating.**

- ✓ Anticipate the changes in rules and legislation

- ✓ Survey all the new projects that are in public debate, in order to evaluate their probability to influence the development of the Project

Questionnaire

7. Legal Procedures

Lesson learnt

- **The processes of environmental impact evaluation should be facilitated.**
 - ✓ The same evaluation commission during the project.
 - ✓ Promote the possibility for the environmental authorities to supervise the processes of carrying out the studies.

Questionnaire

7. Legal Procedures

Lesson learnt

- A deep commitment in the environmental area is required.

INEC

Questionnaire

8. Knowledge and Technology

Best practice

- **A good practice is to use powerful computation tools during the viability and preliminary studies.**

Example:

- ✓ during the studies RAVE has used software tools, such as QUANTM

Questionnaire

8. Knowledge and Technology

Best practice

- **Management tools adapted to the Project should be used**
 - ✓ The objectives must be continuously controlled.
 - ✓ Periodically, RAVE has performed presentations of the Project to the MOPTC and to the EU.
 - ✓ Audits are performed by the Audit Department of Exchequer.

Questionnaire

8. Knowledge and Technology

Best practice

- **To promote the discussion of issues.**
 - ✓ Research, Development and Dissemination of knowledge.

Questionnaire

8. Knowledge and Technology

Best practice

- **The compulsory requirement, specified in the Building Contract, of having partners with recognised knowledge on the high speed domain.**

Questionnaire

8. Knowledge and Technology

Lesson learnt

- **Tools should be created for continuous training of the personnel of the engineering department.**
- ✓ Promote the training of new technicians and to encourage the improvement of knowledge already existent

Questionnaire

8. Knowledge and Technology

Lesson learnt

- **It is needed to change mentalities**

- ✓ The international knowledge exchange in this area should be increased

Questionnaire

8. Knowledge and Technology

Lesson learnt

- **It is necessary to invest plenty of knowledge in the phase of studies**
 - ✓ Involvement of the research institutions and universities
 - ✓ To deal with the knowledge related with the cost and time management

Questionnaire

8. Knowledge and Technology

Lesson learnt

- ❗ **It is compulsory to ensure that know-how and knowledge remain into the organisation**
- ✓ The transfer of know-how has to be guaranteed.

Reflecting on the applied knowledge protocol

> Aspects related with the background document.

- ✓ It is a good starting point document for the interviews.
- ✓ It focus on the main aspects that have to be known before the interviews.
- ✓ After producing the background document it was not very difficult to write the report.

Reflecting on the applied knowledge protocol

● The interviews and the questionnaire

- ✓ The “contact person” in the RAVE has had a very important role.
- ✓ The questionnaire was given to the interviewees in advance.
- ✓ The interviewees were aware of the issues contained on the questionnaires.
- ✓ The interviews should be carried out with two interviewers.
- ✓ It is a good procedure to interview the person in charge of the project in a final interview session.

Reflecting on the applied knowledge protocol

> What was special in studying the project.

- The incipient phase of the project
(less participants in the process)
- The fact that the Business Model was not yet defined
(financial theme not ready to be discussed)
- The language
(time consuming due to translations)