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|--|
| 1. AMP |
| 2. Initial Plan |
| 3. Changes to Initial Plan |
| 4. Current state / Perspectives |
| 5. Interfaces |
| 6. Future Extensions |
| 7. Conclusion |

Current state of the Oporto Light Rail System

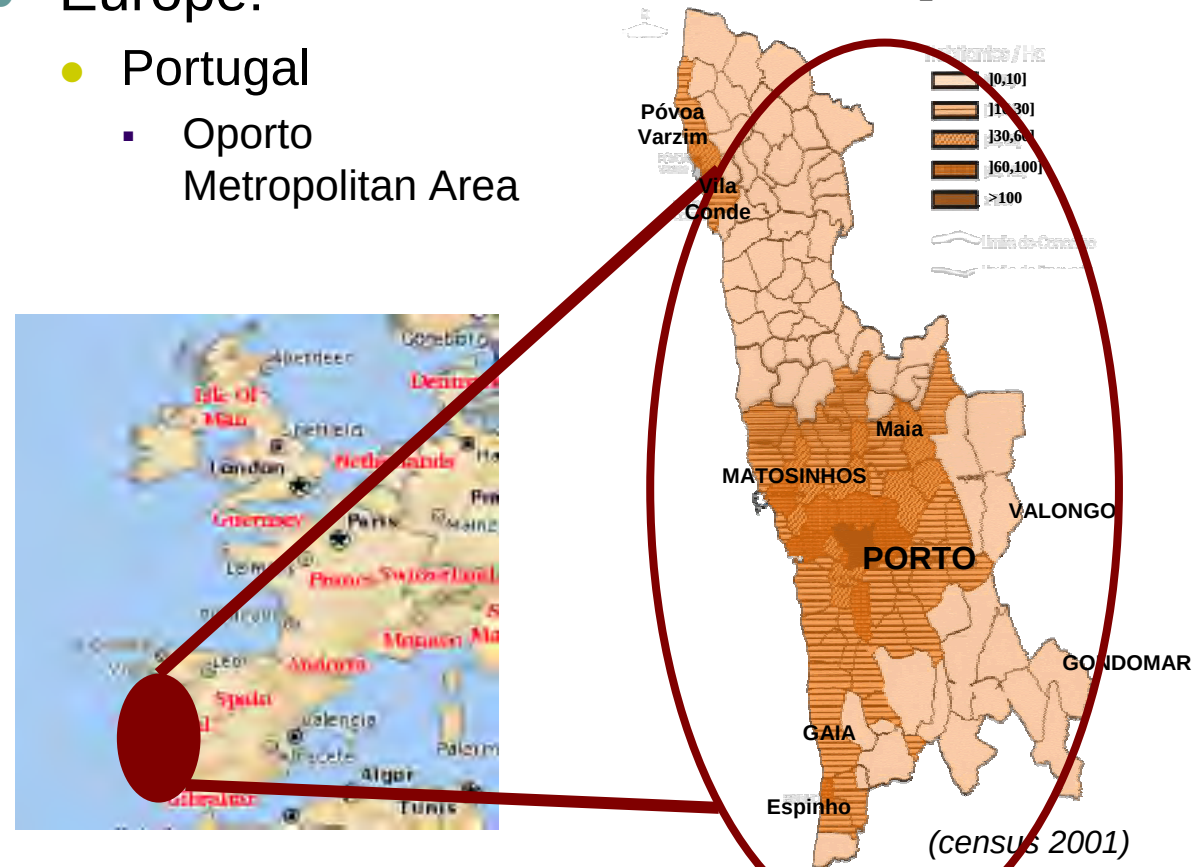
June 10th 2002



1. Oporto Metropolitan Area

- Location :
 - Europe:
 - Portugal
 - Oporto Metropolitan Area

OPORTO Metropolitan area



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1. Oporto Metropolitan Area

• Demography

1. AMP

2. Initial Plan

3. Changes to Initial Plan

4. Current state / Perspectives

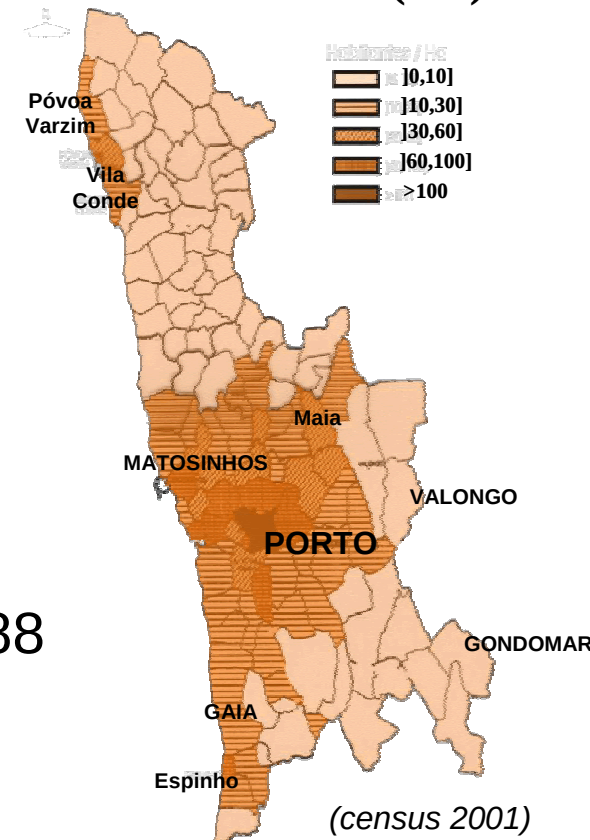
5. Interfaces

6. Future Extensions

7. Conclusion

- Porto: 262.928
- Gaia: 287.597
- Matosinhos: 166.275
- Maia: 119.718
- Gondomar: 163.462
- Valongo: 85.895
- Vila do Conde: 74.118
- Póvoa do Varzim: 63.188
- Espinho: 33.452

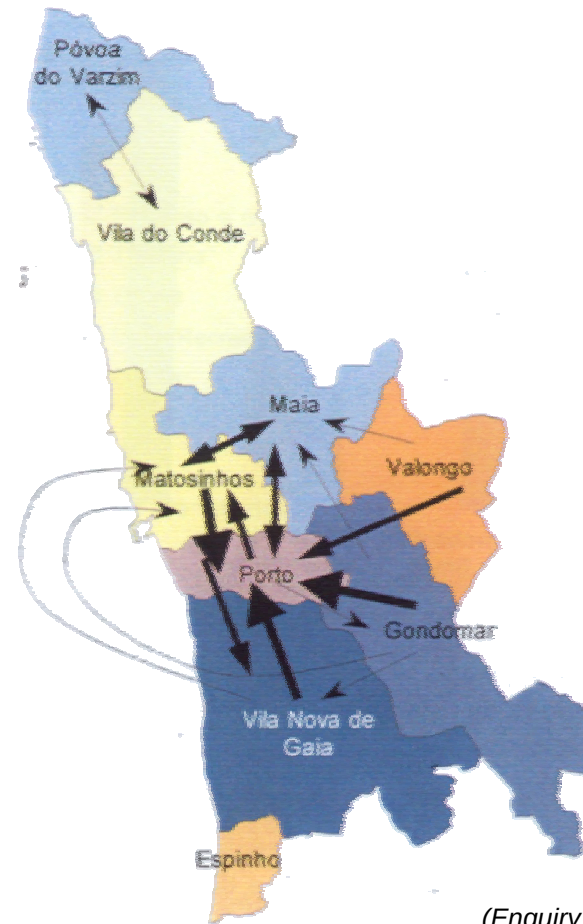
Total Population
1.256 (10³)



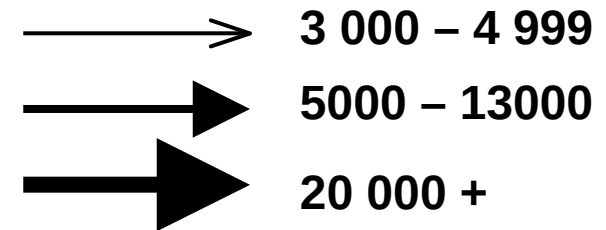
1. Oporto Metropolitan Area

• Mobility

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Main home-work flows



Daily displacement

inter and intra-council in:

1) Individual transport: 2.357.484

2) Collective transport : 886.713

(Enquiry on the mobility of AMP's resident population, 2000)



1. Oporto Metropolitan Area

- Mobility
 - Public Transport System

1. AMP

2. Initial Plan

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Bus



Tramway



Commuter Train



1. Oporto Metropolitan Area

- Mobility

- Urban Bus: STCP (2001)

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Passangers/year:
243 M

Revenue:
48.944 m€

468,9 km network
81 lines
2.596 stops
611 buses
16 trams

Net Profit:
-27,1 M€

Subsidies: 6,9 M€



Source: STCP Annual Report 2001



1. Oporto Metropolitan Area

● Mobility

● Rail Road: CP

Passangers/year :
15 M

60 km network

4 lines:

• **Norte**, between Porto and Aveiro;

• **Douro**, between Porto and Marco de Canaveses;

• **Minho**, between Porto and Nine, and Braga branch-line, between Nine and Braga;

• **Guimarães**, between Porto, Lousado and Santo Tirso, foreseeing that the service may be extended to Guimarães in the future.

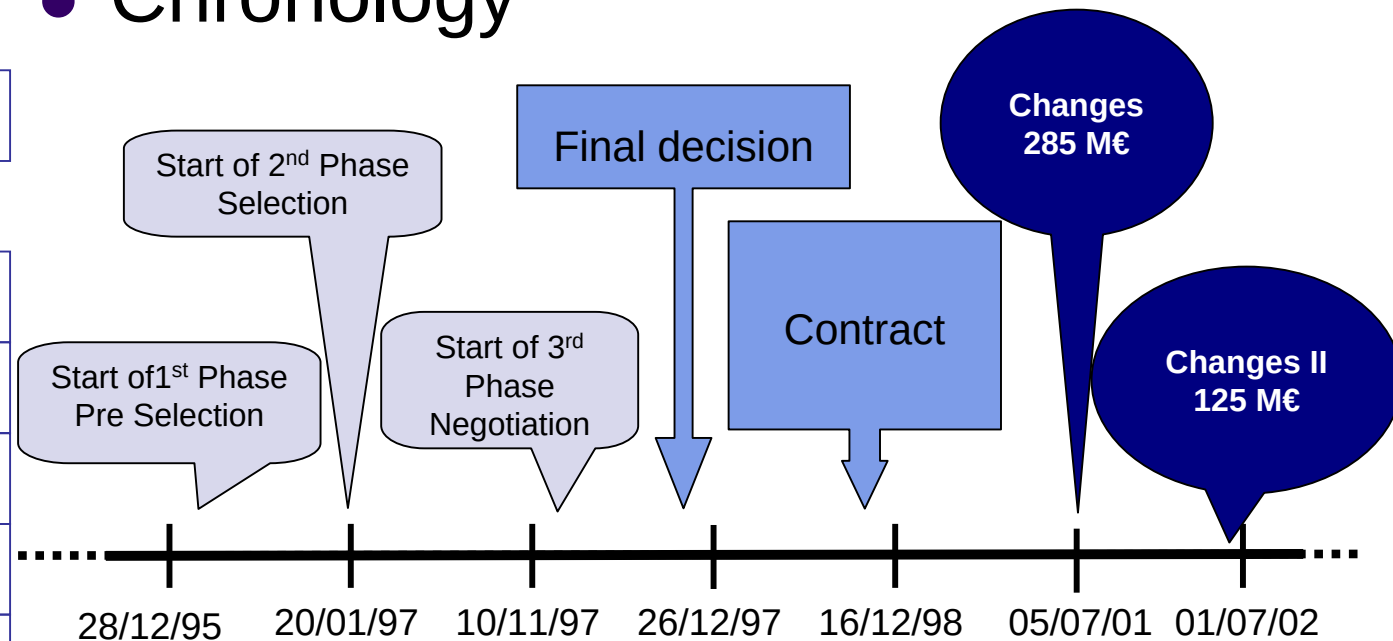


Source: CP Annual Report 1999



• Chronology

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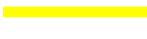
● Oporto Light Rail System

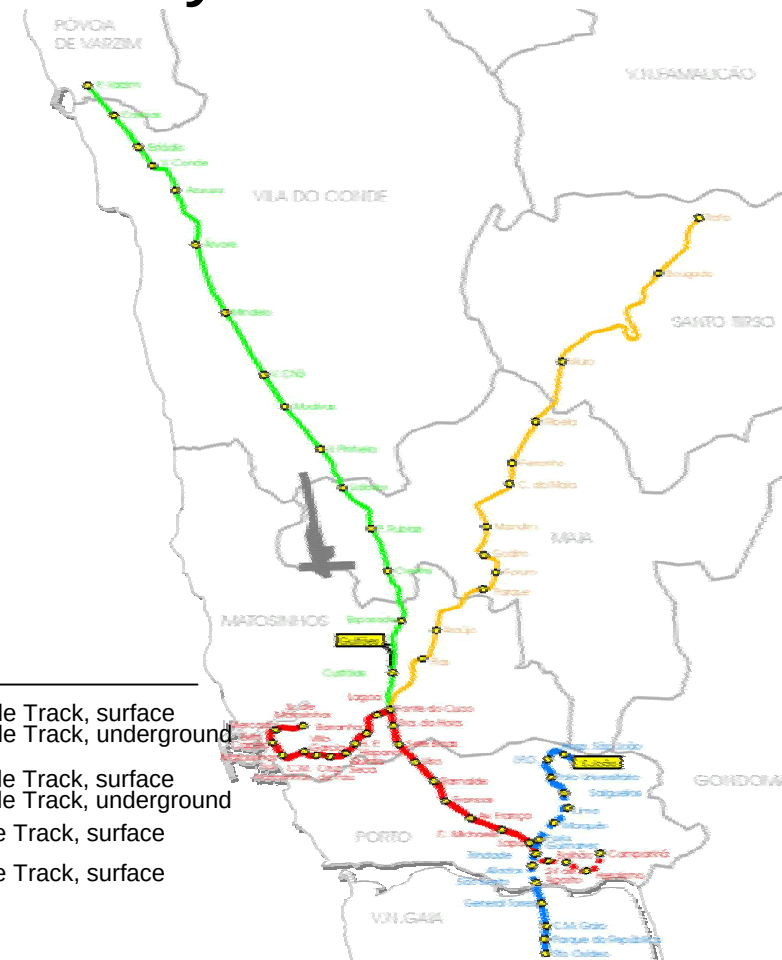
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Passangers/year
(forecast):
60 M

7 Councils
70 km network
4 lines
66 stations

LINES

North / South		Double Track, surface Double Track, underground
East / West		Double Track, surface Double Track, underground
Póvoa Line		Single Track, surface
Trofa Line		Single Track, surface
Stations		



- Oporto Light Rail System

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Line	km	Stations
C - Campanhã – Sr. Matosinhos	14.2	24
P – Campanhã – Póvoa Varzim	32,0	29
T – Campanhã - Trofa	31,1	26
S – Qta. Cedro – H. S. João	9,1	16
Total	70,2	66



● Rolling Stock

1. AMP

2. Initial Plan

3. Changes to Initial Plan

4. Current state / Perspectives

5. Interfaces

6. Future Extensions

7. Conclusion

Model: EUROTRAM

Manufacturer: Adtranz

Production: Italy, U.K., Portugal

Dimensions: L.: 34,7m; W.: 2,65m; H.: 3,10m

100% Low floor (35cm high)

291 Passangers

80 seats

Air Conditioned

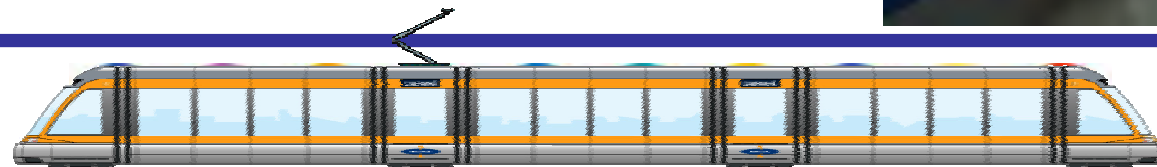
6 doors each side(1,35m)

Pneumatic suspension

4 Bogies: 3 motorised and 1 towed

Equipment: 233 M €

Individualised 4 wheel traction



2. Initial Plan

- Infante D. Henrique Bridge

1. AMP

Project and construction: Edifer / Necso

2. Initial Plan

Total length: 371m

3. Changes to Initial Plan

Arch: 280m span

Arch chamber: 25m

4. Current state / Perspectives

Total width: 20m, composed of two lanes each side, central separator and lateral sidewalks.

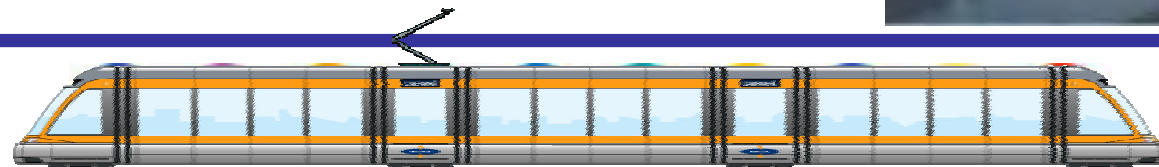
5. Interfaces

6. Future Extensions

Adjudication value: 14,17 M €

7. Conclusion

Conclusion: September 2002



● Tunneling Machine

1. AMP

MARK: Herrenknecht

2. Initial Plan

TYPE: Earth Pressure Balance (EPB)

3. Changes to Initial Plan

MAIN CHARACTERISTICS:

Length: 70 metres

4. Current state / Perspectives

Cutting nominal diameter: 8,74 metres

Articulated shield (9 metres)

5. Interfaces

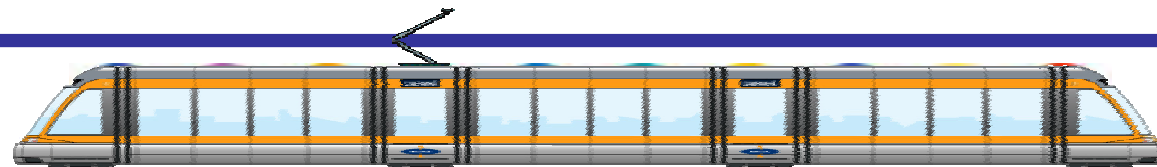
Mixed cutting wheel: rock and soil

Modes of operation: open and closed

6. Future Extensions

Tunnels: 64 M €

7. Conclusion



● Telecom System

1. AMP

2. Initial Plan

3. Changes to Initial Plan

4. Current state / Perspectives

5. Interfaces

6. Future Extensions

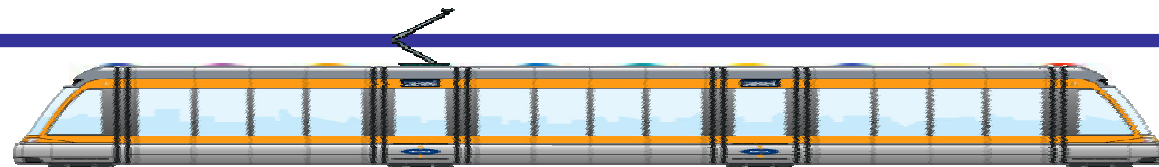
7. Conclusion

OPERATION AND MAINTENANCE:

- Radio communication between Central command room (CCR), trams and line agents
- Operation telecommunication
- Tele-control of:
 - Energy
 - Traffic
 - Technical facilities
- Supervision systems
- Operation Teleprocessing

Company Management:

- Company telecommunications
- Teleprocessing of management information
- Ticketing control



2. Initial Plan

● Telecom System

1. AMP

2. Initial Plan

3. Changes to Initial Plan

4. Current state / Perspectives

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7. Conclusion

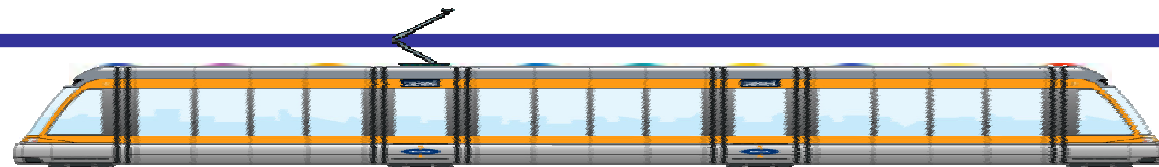
PASSENGER INFORMATION

- Tele-information in platforms and vehicles
- Indication of schedules
- Sound equipment

PASSENGERS AND TECHNICAL FACILITIES SECURITY

- Video-surveillance system
- Detection of intruders and access control system
- Anti- fire system in connection with the sound equipment

All the services work by local control - stations
- or remote control - Central command room (CRR). Equipment connected by optical cable.



● Line Power Supply

1. AMP

LINE VOLTAGE: 750 Direct current voltage

2. Initial Plan

CATENARY:

- Urban surface sections: light aerial line, with two contact wires suspended in cables fixed to the building façades or to pillars in harmony with public lighting.
- Exclusive Suburban surface sections: aerial, conventional train line, with two contact wires, cable and pillars.
- Tunnel sections: two contact wires, cable and support arm fixed to the tunnel ceiling.

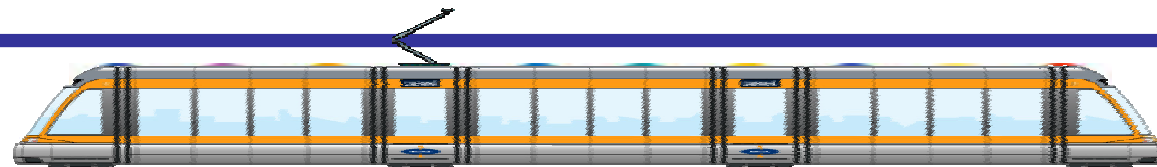
3. Changes to Initial Plan

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● Main Changes

1. AMP
2. Initial Plan
3. Changes to Initial Plan
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7. Conclusion

- 1 - Av. França
- 2- 24 de Agosto
- 3- Sete Bicas - F. Cuco
- 4- T6 - Matosinhos
- 5- Salgueiros - P. Universitário



3. Changes to Initial Plan

• New Planning

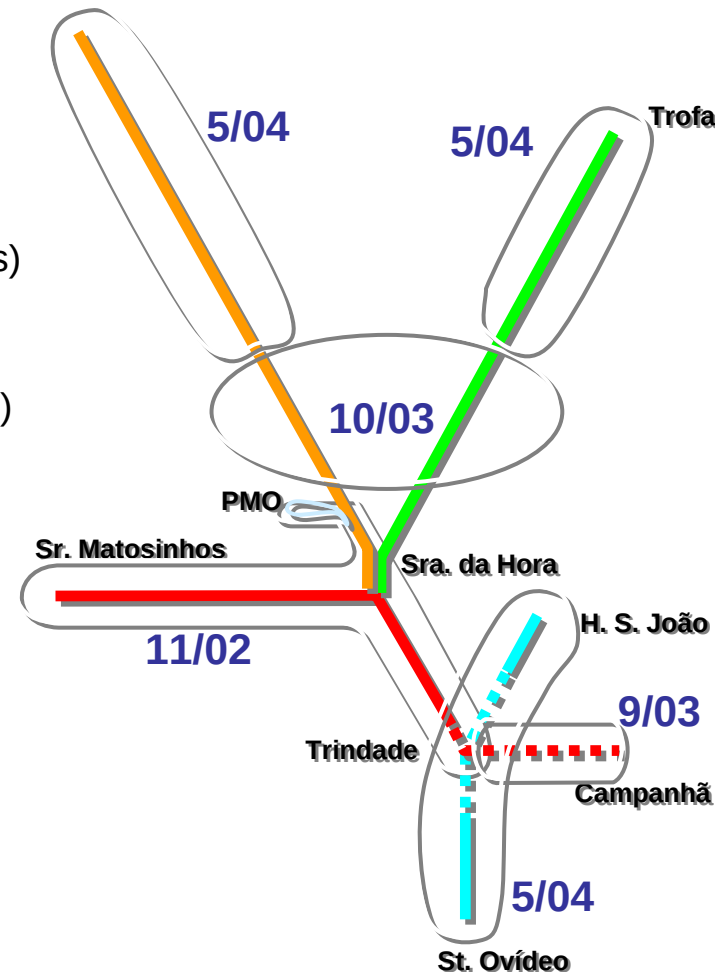
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Stage W Nov. 2002
Line C (Trindade / Matosinhos)

Stage X Set. 2003
Line C (Campanhã / Trindade)

Stage Y Out. 2003
Line P (Pedras Rubras)
and T (Godim)

Stage Z Mai. 2004
Line S,
P (Póvoa) e T (Trofa)



3. Changes to Initial Plan

- Investment

1. AMP
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(10³ euros)

Initial Plan	1.100.269
Changes	284.942
Changes II	125.000
TOTAL	1. 510.211



3. Changes to Initial Plan

- Financing

1. AMP
2. Initial Plan
3. Changes to Initial Plan
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	(10 ³ euros)
Share Capital	4.988
Called Up Share Capital	104.122
Feder - QCA II e III	369.110
B.E.I.	668.690
PIDDAC	122.774 ★
Rolling Stock Leasing	217.444
Others	23.083
TOTAL	1.510.211

★ contract formalisation foreseen for September 2002



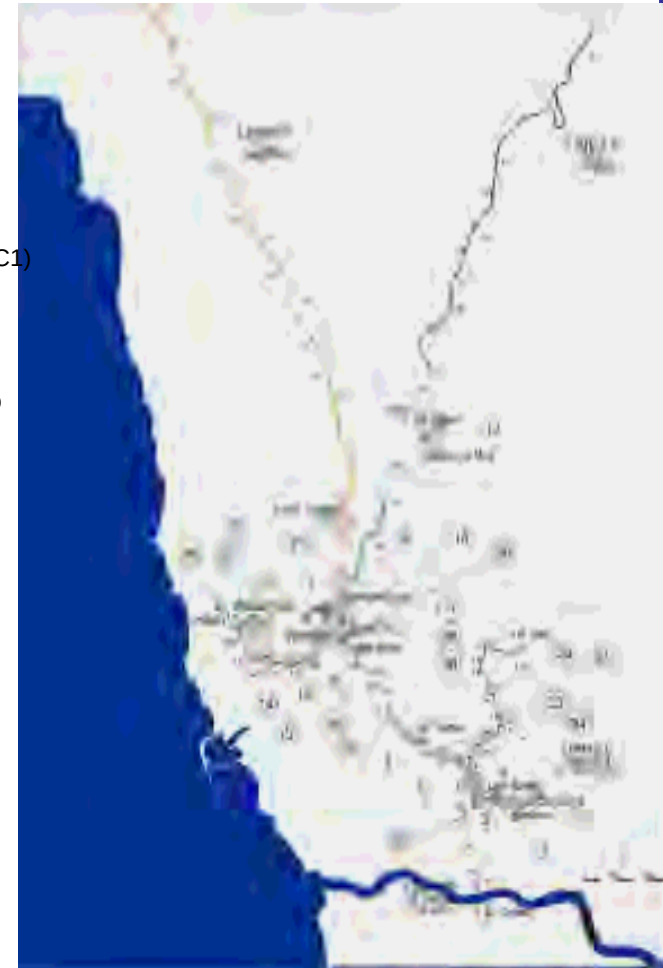
4. Existing State / Perspectives

● Work Fronts

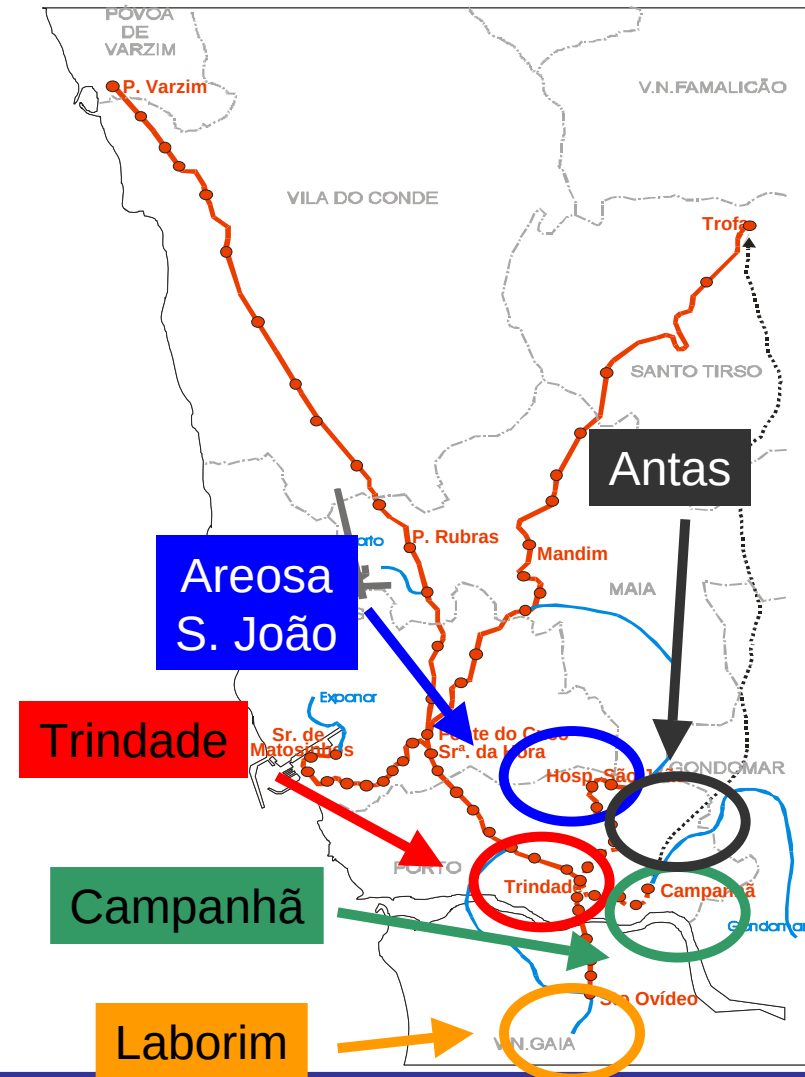
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1 Campanhã
 3 24 Agosto
 5 Trindade
 7 Rua da Lagoa
 9 Av. C. Gulbenkian
 10 Da PI à Estação P.Hispano
 11 Mercado - Sr. Matosinhos
 13 PMO de Guifões
 15 P.Hispano/Cruz de Pau
 17 Sete Bicas/Shª da Hora
 19 Fonte do Cuco
 22 Av. da República
 24 Trindade / Av. França
 26 Estação da Barranha
 28 R. Brito Capelo - Av. República
 29 Estação Sete Bicas
 31 T6 (lotes 6.01 a 6.04)
 32 Estação de S. Bento
 34 Estação da Lapa

2 Heroísmo
 4 Bolhão
 6 Bom Sucesso
 8 Av. D. Vasco da Gama
 10 P.I. - Passagem inferior (IC1)
 10 Barranha/P.Hispano
 12 Maia
 14 Av. Vila Garcia Arosa
 16 Av. de França
 18 Shª da Hora / F. do Cuco
 21 R. D. Nuno A Pereira
 22 Carolina Michaelis
 25 Av. França/Sete Bicas
 27 Plat. F. Cuco/Custóias
 a R. Tomás Ribeiro
 30 Trincheira de Salgueiros
 (Lagoa / Barranha)
 33 Estação de Lima
 35 Estação de Francos



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1. AMP

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3. Changes to Initial Plan

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7. Conclusion

Interface	Destination	Capacity	Preliminary Budget (10 ³ euros)	Conclusion
Antas	IT	1.050	18.722	2004/05
Campanhã	IT + CT	1.300	39.136	2004/05
Laborim	IT + CT	2.000	41.921	2004/05
Areosa	IT + CT	1.000/1.500		2005/2006
S. João	IT + CT	1.000/1.500		2005/2006
Trindade	IT			2003

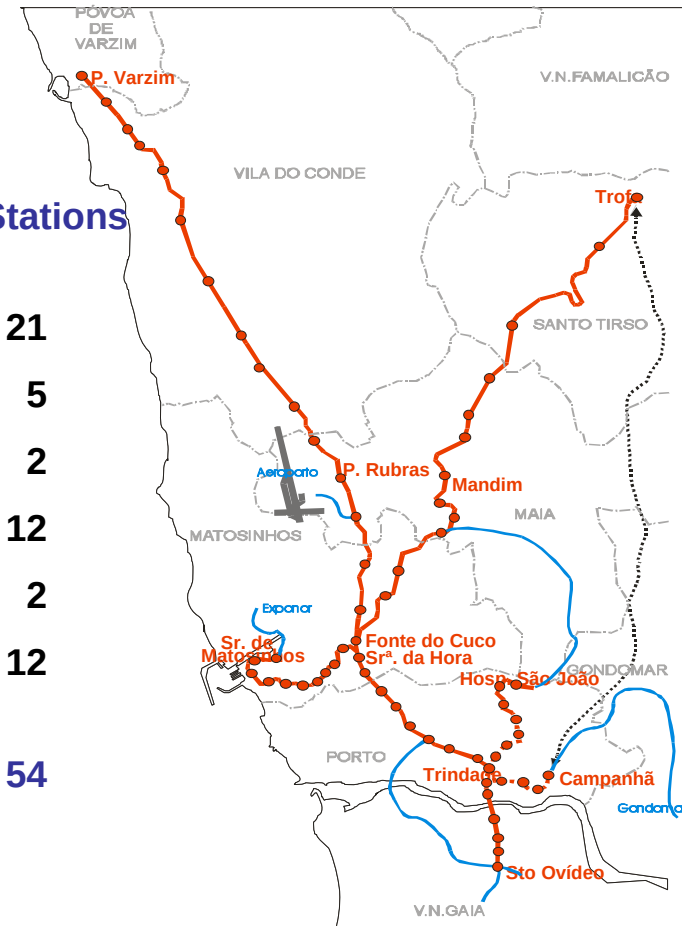


6. Future Extensions

● Network Extensions

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Line	km	Stations
Campanhã – Gondomar	12.73	21
Matosinhos - Exponor	3.74	5
Aeroporto	1.50	2
Boavista – Sto. Ovídeo	6.80	12
Extension Linha S to South	1.00	2
Hosp. S. João – Maia	8.85	12
Total	34.62	54



- Investment

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Lines	(10 ³ euros)
Campanha - Gondomar	180.540
H.S. Joao - Maia	129.950
Av. França - St Ovidio	239.300
Aeroporto	22.480
Exponor	53.500
Extension Linha S	36.703
TOTAL	662.474



- Financing

- *Project Finance:*

- Competitive selection of a consortium to construct 2nd phase, financing it; exclusive right to exploit the system for a defined period keeping fare revenues.
- Given fare control practices in place, fare revenues not expected to be sufficient to interest candidates; some form of investment subsidies and/or annual subsidies may be required.
- The higher the amount of financing to be arranged by consortium, the higher the annual subsidies

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