



EXPO ZARAGOZA 2008

July 15, h 11:00
ITALIAN PAVILLON

HIGH SPEED SEA CONNECTIONS
FOR SUSTAINABLE METROPOLITAN MOBILITY

Welcome

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Design and evaluation of passenger ferry routes:
general approach and Hong Kong case study

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HIGH SPEED SEA CONNECTIONS
FOR SUSTAINABLE METROPOLITAN MOBILITY

The Campania Region Round Table
at the Saragozza Expo 2008

July 15, h 11:00
ITALIAN PAVILLON

The proposed new Reggio Calabria
Messina Ferry system, seen in an international context

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Water Transport for sustainable urban mobility:
a case study in Cardiff

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Between sea and the city: eight piers for Thessaloniki

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This event has been organized in cooperation with
Consorzio Metrò del Mare



**"High Speed Sea
Connections for
Sustainable
Metropolitan Mobility"**

**The Campania Region
Round Table at the
Saragossa Expo 2008,
July 15**

"The proposed new Reggio Calabria – Messina Ferry system", seen in an International Context"

by Pierre Laconte President, International Society of City and Regional Planners, Honorary SG of UITP, European Environment Agency's Scientific Committee member in charge of land use and transport,

in collaboration with

Domenico Gattuso, professore di Trasporti urbani e metropolitani presso la Facoltà di Ingegneria dell'Università degli Studi Mediterranea di Reggio Calabria, Presidente del Consorzio Istituto Superiore Trasporti (C.I.Su.T.).

ABSTRACT

The contribution analyses the Reggio Calabria-Messina ferry system to be called "Metro dello Stretto"– and puts it in an international perspective (cases of Istanbul, Vancouver and Hong Kong).

It starts with the present passenger demand and analyses three scenarios (increased frequency of present connections, new connections and complementary feeder tourist coastal lines).

It attempts a comparison of improved ferries with the proposed bridge, taking into account that ferries would in any case keep their present interurban patronage.

**The proposed new Metro dello Stretto
(Reggio Calabria – Messina Ferry system),
seen in an International Context**

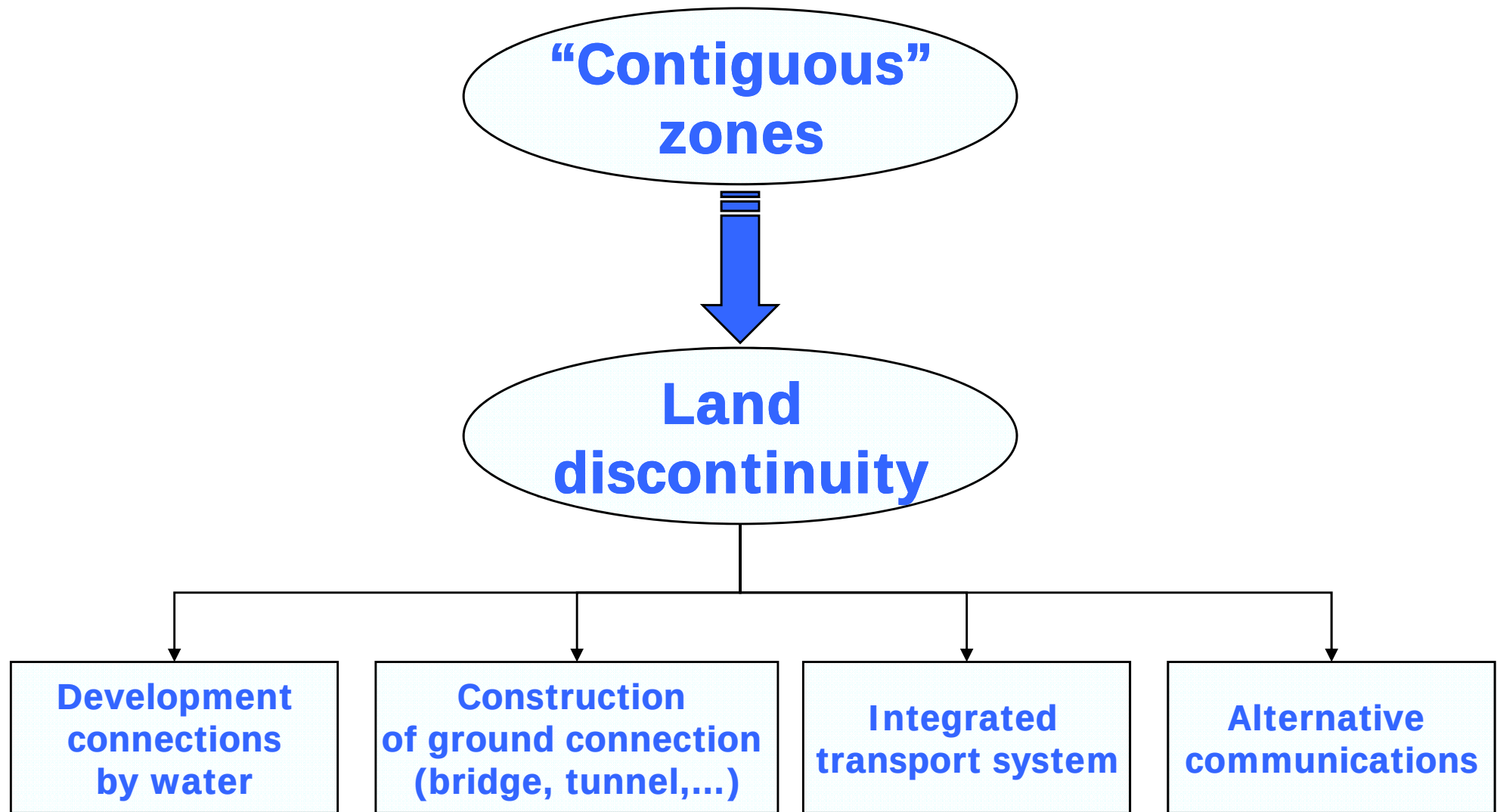
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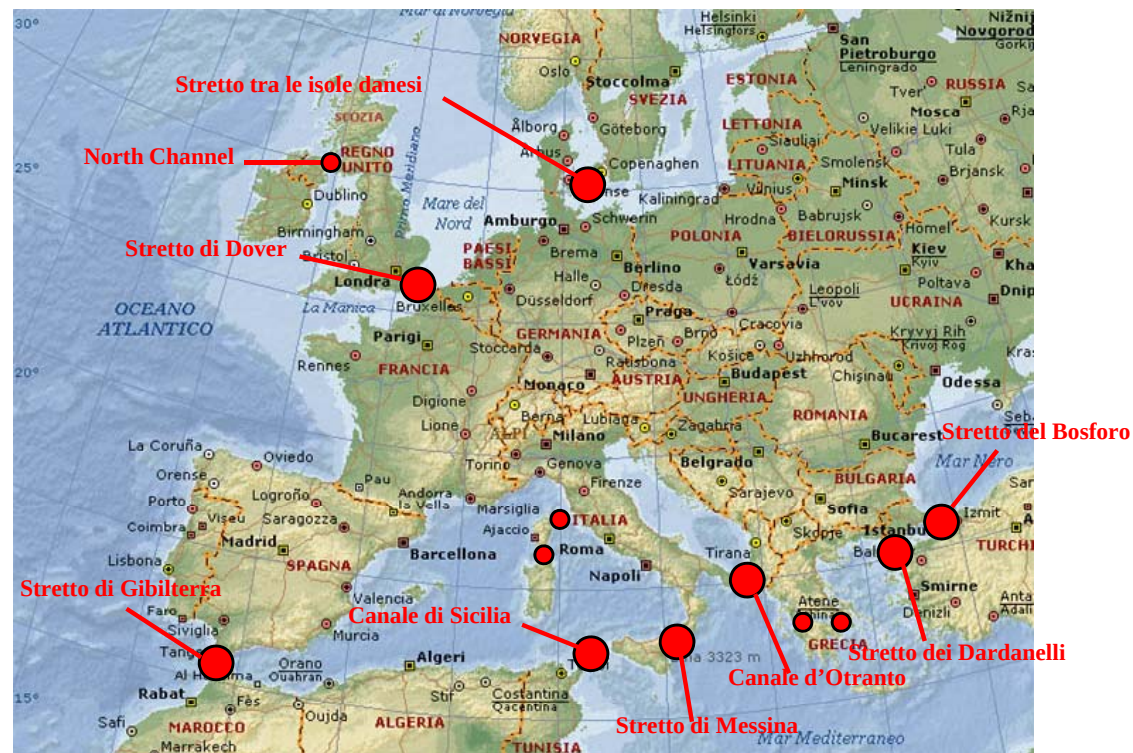
A new “Reggio Calabria – Messina Ferry system”



Roundtable on “High-Speed Sea Connections for Sustainable Transport”

Saragossa 2008 Expo, July 15th 2008

“Contiguous” zones



P.LACONTE, D.GATTUSO

INTERNATIONAL STUDY CASES

<i>Denomination</i>	<i>Involved countries</i>	<i>Distances</i>	<i>Connection</i>	<i>Feasibility studies</i>
<i>Straits of Dardanelles</i>	<i>Turkey</i>	<i>1 ÷ 6 km</i>	<i>Maritime</i>	<i>-</i>
<i>Straits of Bosphorus</i>	<i>Turkey</i>	<i>1 km</i>	<i>Bridge</i>	<i>-</i>
<i>Otranto Channel</i>	<i>Italy/Albany</i>	<i>70 km</i>	<i>Maritime</i>	<i>-</i>
<i>Hong Kong</i>	<i>Hong Kong</i>	<i>n.d.</i>	<i>Maritime</i>	<i>-</i>
<i>Straits of Palk</i>	<i>India/Sri Lanka</i>	<i>50 km</i>	<i>Maritime</i>	<i>-</i>
<i>Vancouver-Seattle</i>	<i>Canada-USA</i>	<i>n.d.</i>	<i>Maritime</i>	<i>-</i>
<i>Manhattan</i>	<i>USA</i>	<i>n.d.</i>	<i>Maritime</i>	<i>-</i>
<i>Straits of Dover (Manica)</i>	<i>France/England</i>	<i>34 km</i>	<i>Tunnel</i>	<i>-</i>
<i>Oresund</i>	<i>Denmark</i>	<i>21 km</i>	<i>Bridge/Tunnel</i>	<i>-</i>
<i>Campania</i>	<i>Italy</i>	<i>240 km</i>	<i>Maritime</i>	<i>-</i>
<i>Straits of Messina</i>	<i>Italy</i>	<i>3-10 km</i>	<i>Maritime</i>	<i>Bridge</i>
<i>Straits of Gibraltar</i>	<i>Espania/Marocco</i>	<i>13 km</i>	<i>Maritime</i>	<i>Tunnel</i>
<i>Straits of Bering</i>	<i>Alaska/Siberia</i>	<i>90 km</i>	<i>Maritime</i>	<i>Tunnel</i>
<i>Straits of Taiwan</i>	<i>Taiwan/China</i>	<i>120 km</i>	<i>Maritime</i>	<i>Tunnel</i>
<i>Sicily Channel</i>	<i>Italy/Tunisia</i>	<i>144 km</i>	<i>Maritime</i>	<i>Tunnel/Bridge</i>

INTERNATIONAL STUDY CASES

Hong Kong

Over 260 small islands

Maritime operators:

■ New World First Ferry

- ✓ 15 ferries
- ✓ 26-42 knots
- ✓ 200-400 pass/ferry

■ Hong Kong & Kowloon Ferry

- ✓ 15 ferries

■ Minor companies

- ✓ Lemma - Aberdeen
- ✓ 3 ferries
- ✓ 12 knots
- ✓ 0,75-1,25 runs/hour



INTERNATIONAL STUDY CASES

Vancouver-Seattle

Compagnie maritime:

■ BC Ferries

- ✓ 47 porti
- ✓ 25 collegamenti marittimi

■ Washington State Ferries

- ✓ 20 porti
- ✓ 10 collegamenti marittimi
- ✓ 28 navi



INTERNATIONAL STUDY CASES

Manhattan

Maritime companies:

■ Water Taxi di New York

- ✓ East coast
- ✓ 74-149 pass/ferry
- ✓ Services for customers (every day – only at peak hours)
- ✓ Services for tourists (hop-on hop-off) (10.00-16.00; 10.00-20.00 week end)
frequency=1 run/hour

■ NY Waterway

- ✓ West coast
- ✓ 14 lines
- ✓ 3 runs/hour (6.00-21.00)



INTERNATIONAL STUDY CASES

Istanbul

Inner - City Sea Bus Lines

Sariyer

Istanbul Fast Ferry Lines

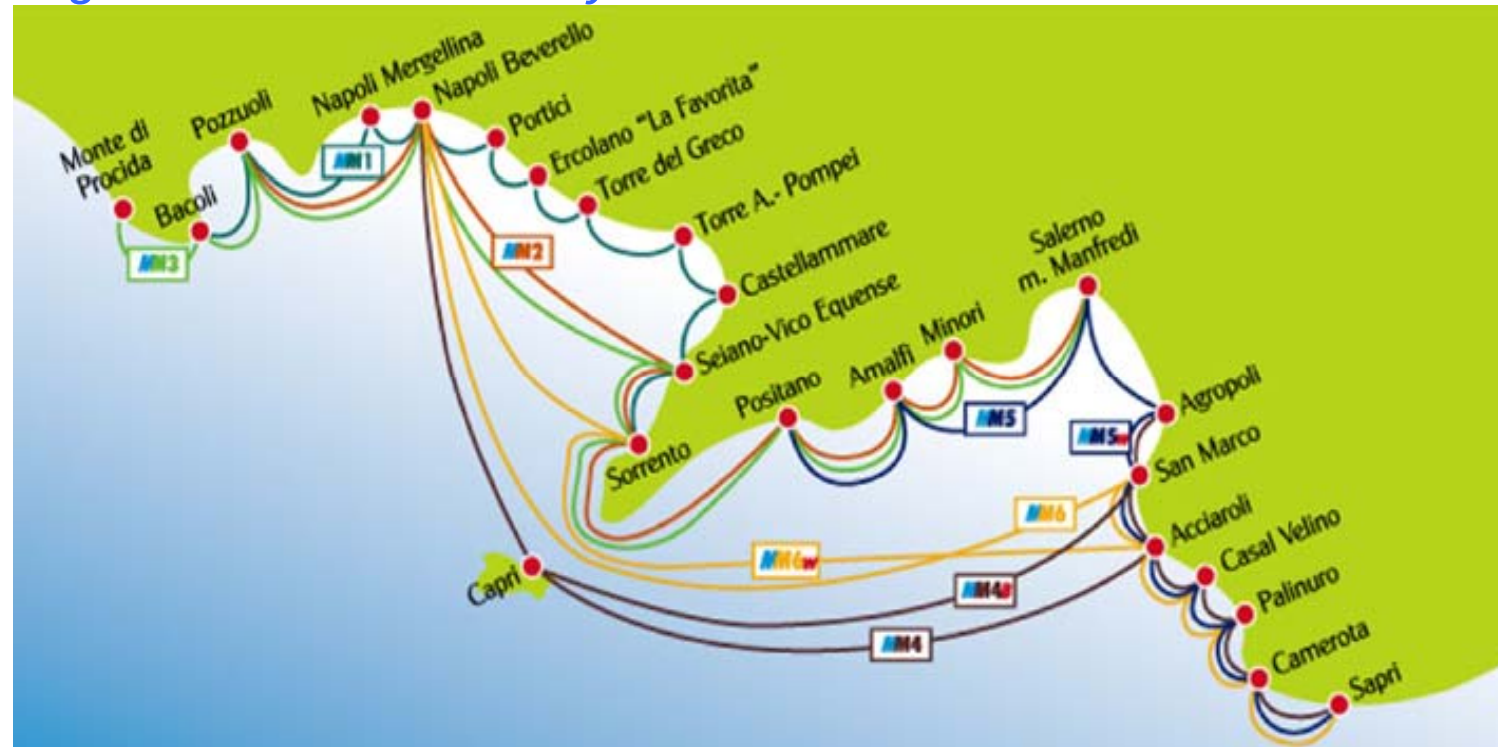


Saragossa 2008 Expo, July 15th 2008

INTERNATIONAL STUDY CASES

Campania Metro del Mare
Integrated service – No integrated fare collection system

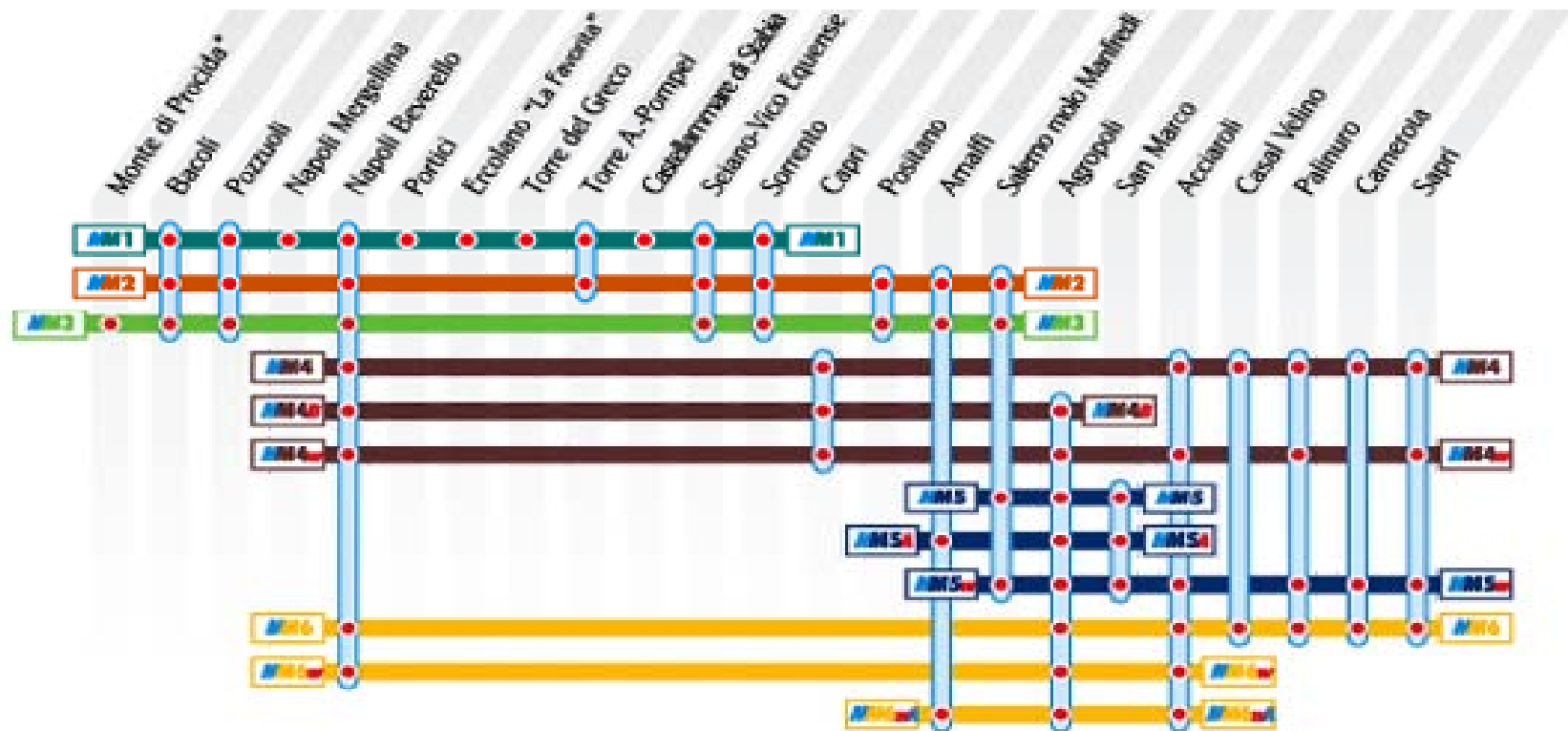
- 24 ports
- max 5 runs/day
- 9 lines (summer)
- 2 lines (spring-autumn)



🌐 400.000 passengers / year

INTERNATIONAL STUDY CASES

Campania Metro del Mare



INTERNATIONAL STUDY CASES

River or fluvial connections

<i>Area</i>	<i>Service</i>	<i>Frequency (runs/h)</i>	<i>Capacity vehicles (pass)</i>
Paris	Seasonal	2-3	100 ÷ 200
Amsterdam	Annual	3	100 ÷ 200
Venice	Annual	-	160 ÷ 230
Hamburg	Annual	2-3	100 ÷ 150
London	Annual	3	62 ÷ 220

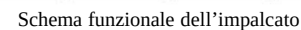
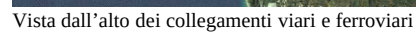
THE CASE OF “AREA DELLO STRETTO”

	<i>Italian Cities</i>	<i>Inhabitans</i>
1	Rome	2.450.000
2	Milan	1.180.000
3	Naples	1.000.000
4	Turin	860.000
5	Palermo	650.000
6	Genoa	600.000
7	Bologna	370.000

**Reggio Calabria
+ Messina
+ Villa San Giovanni
430.000**



Stretto di Messina S.p.A. Copyright 2001 - All rights reserved



Costs and benefits considerations

Bridge estimated cost: 5 billion €.

Duration: 5 years (same as A3 Salerno-Reggio Calabria 1996 estimate, now 2012).

Both Reggio and Messina cities would be bypassed.

Intercity ferries competitiveness would remain intact.

Studies on investment financial returns are unfavorable (Politecnico di Milano, Prof. Brambilla).

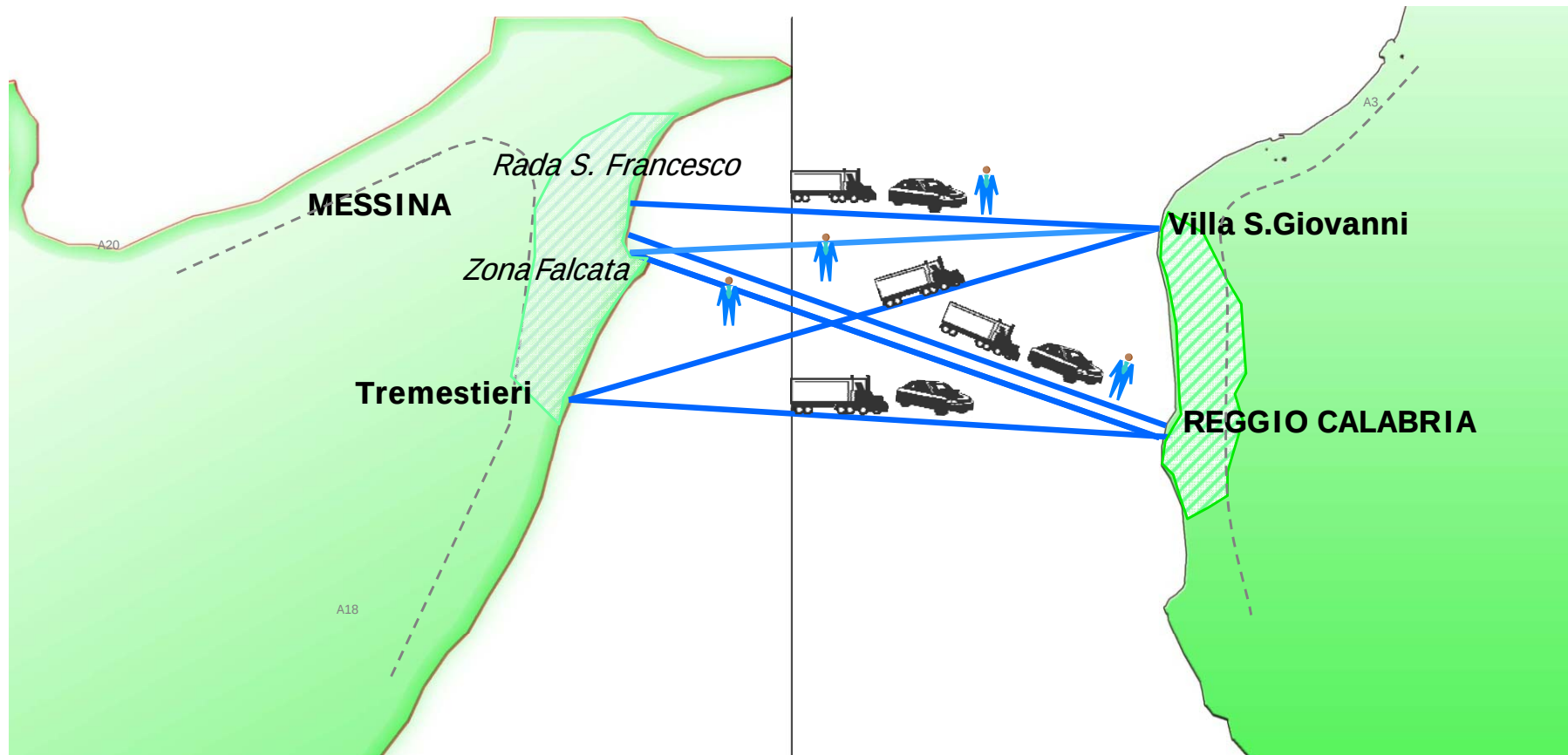
THE CASE OF “AREA DELLO STRETTO”

REALIZATION OF AN INTEGRATED PUBLIC TRANSPORT SYSTEM IN THE MARITIME AREA OF THE STRAITS OF MESSINA



THE CASE OF “AREA DELLO STRETTO”

Maritime transport connections



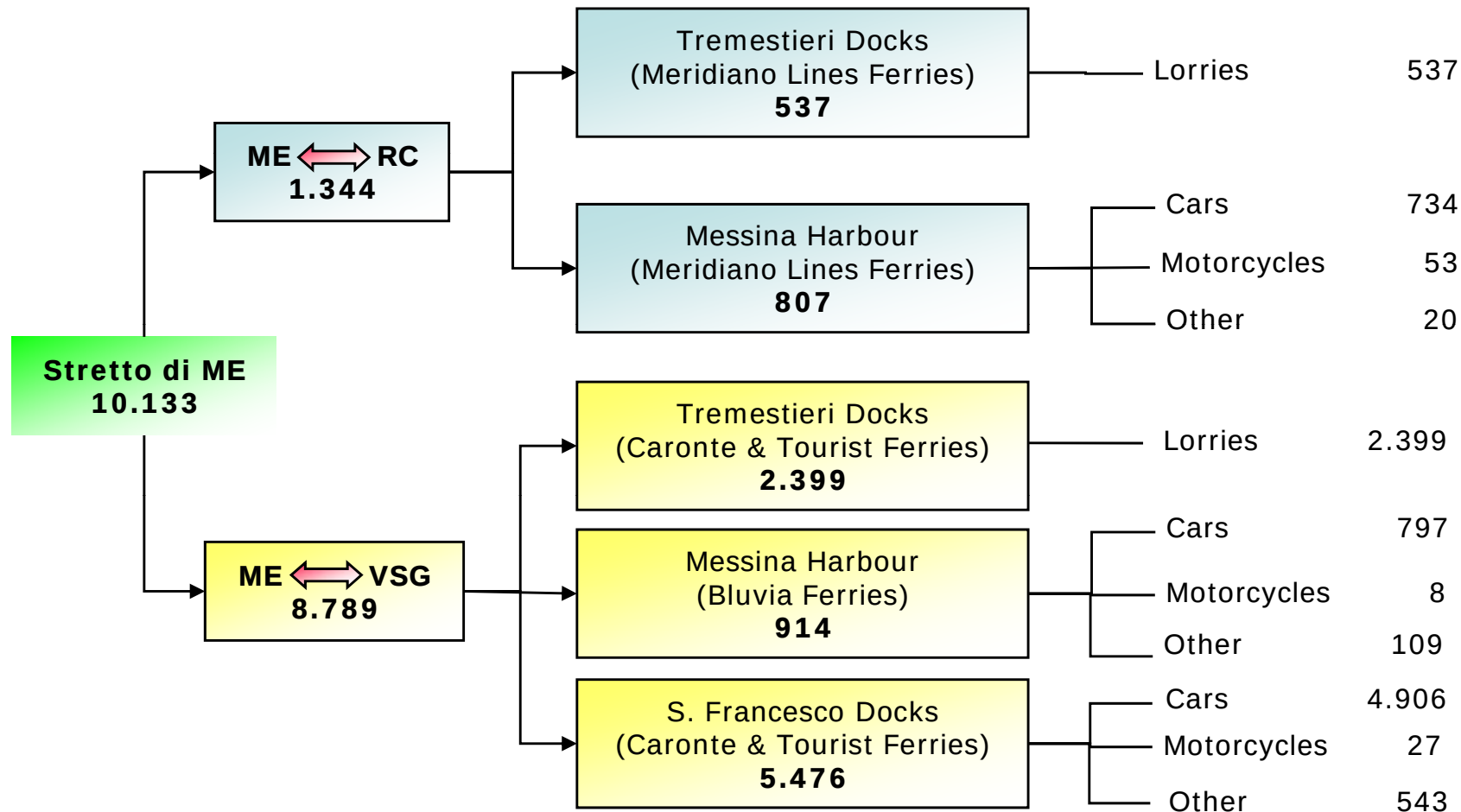
THE CASE OF “AREA DELLO STRETTO”

Ports



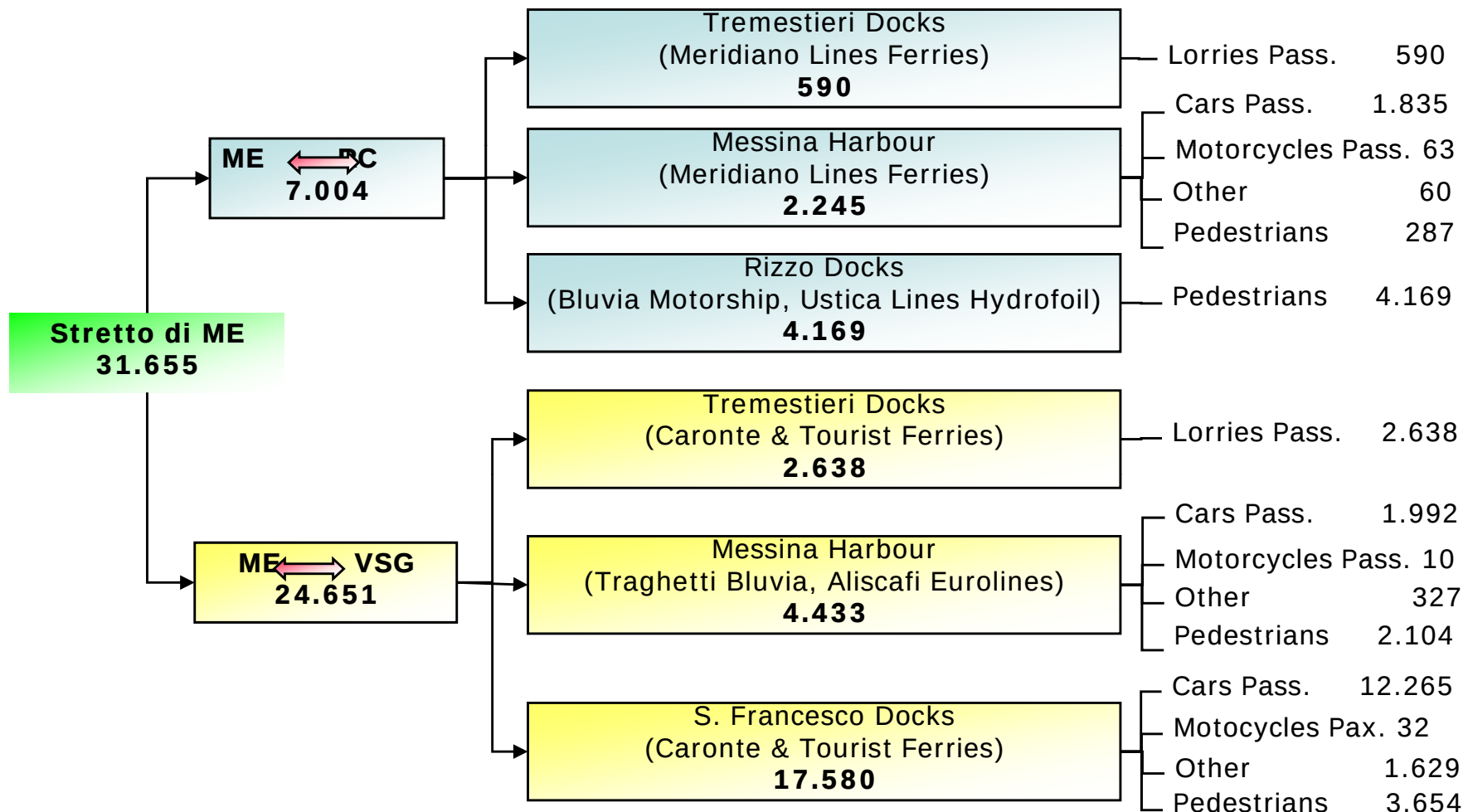
THE CASE OF “AREA DELLO STRETTO”

Transport demand - Vehicles (estimation year 2006)



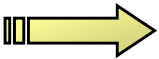
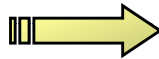
THE CASE OF “AREA DELLO STRETTO”

Transport demand - Passengers (estimation year 2006)



THE CASE OF “AREA DELLO STRETTO”

SCENARIO 1  **Line L1**  Increase frequency of the actual connections between RC and ME

SCENARIO 2  **Line L2**  New connections:

- VSG - ME
- RC Airport - ME
- VSG - Ganzirri

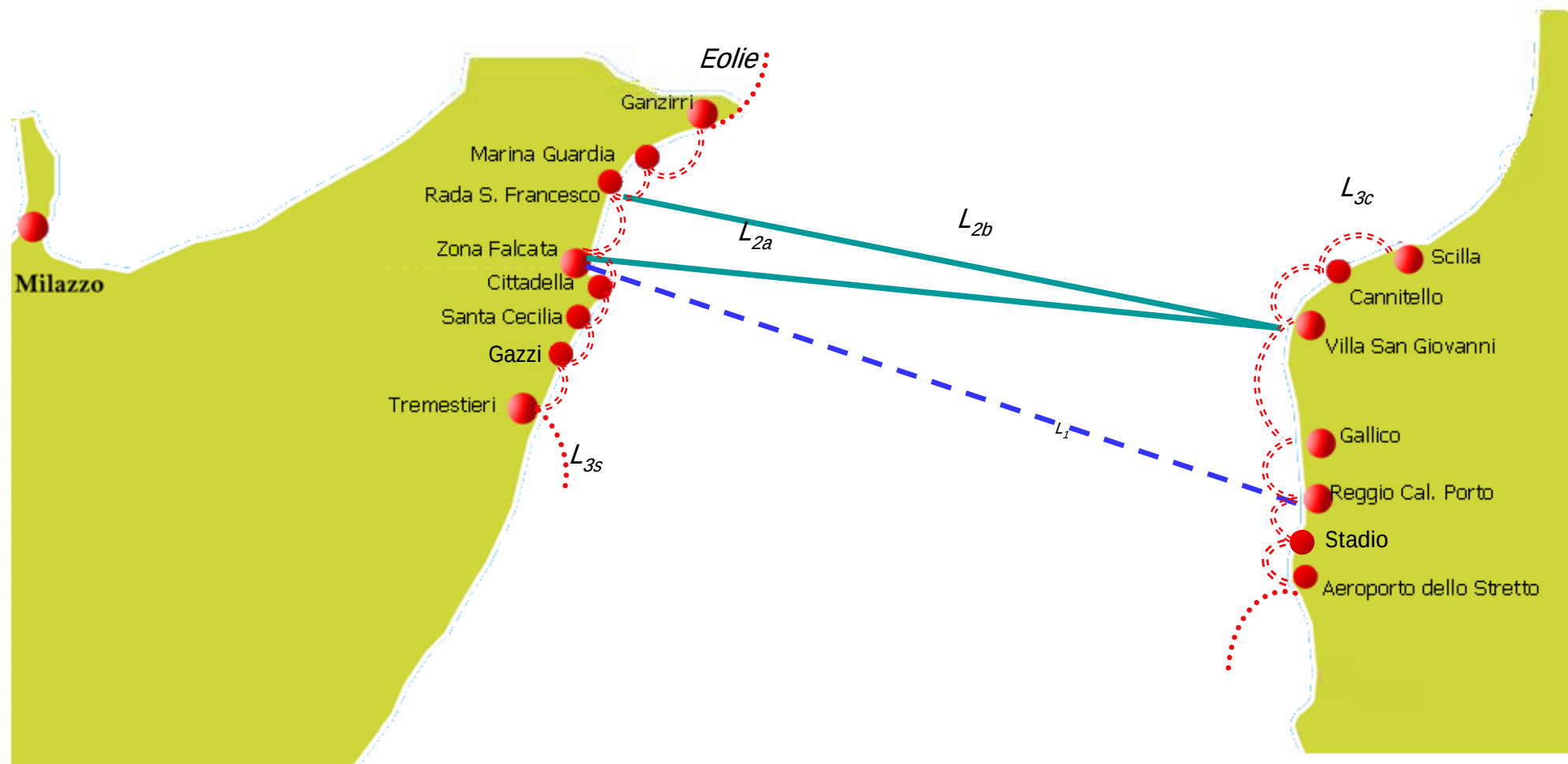
SCENARIO 3  **Line L3**  Tourist coastal lines

Line L3s *Eolie Islands, Milazzo, Villafranca, port of Messina, Alì Terme, Tremestieri, Taormina*

Line L3c *Scilla, Bagnara, VSG, Gallico, port of RC, S. Gregorio, Saline Joniche*

THE CASE OF “AREA DELLO STRETTO”

Scenarios



THE CASE OF “AREA DELLO STRETTO”

A Snapshot of the US Ferry Market

National Ferry Database (USDOT)

- 224 Operators
- 352 Routes
- 487 Route segments
- 677 Vessels
- 66 Fast vessels (>25 kts)
- 113 Million passengers/year



Monohull



Air Cushion



Foil-Assisted
Catamaran



Catamaran



Trimaran



Multihull



Fully
Submerged
Hydrofoil

THE CASE OF “AREA DELLO STRETTO”

Vehicles technologies



THE CASE OF “AREA DELLO STRETTO”

Catamarans



Particulars

Length Overall:	16.75 m	Shaft Power :	2 x 390 kW
Beam Overall:	5.3 m	Main Engines:	2 x Isotta Fraschini IF V1308
Draft (maximum) :	0.8 m	Propulsion:	2 x Arneson 12 surface drives
Deadweight (normal):	10 tonnes	Speed (Full load):	28 Knots
Capacity :	80 passengers	Speed (Maximum):	30 Knots

THE CASE OF “AREA DELLO STRETTO”

Catamarans

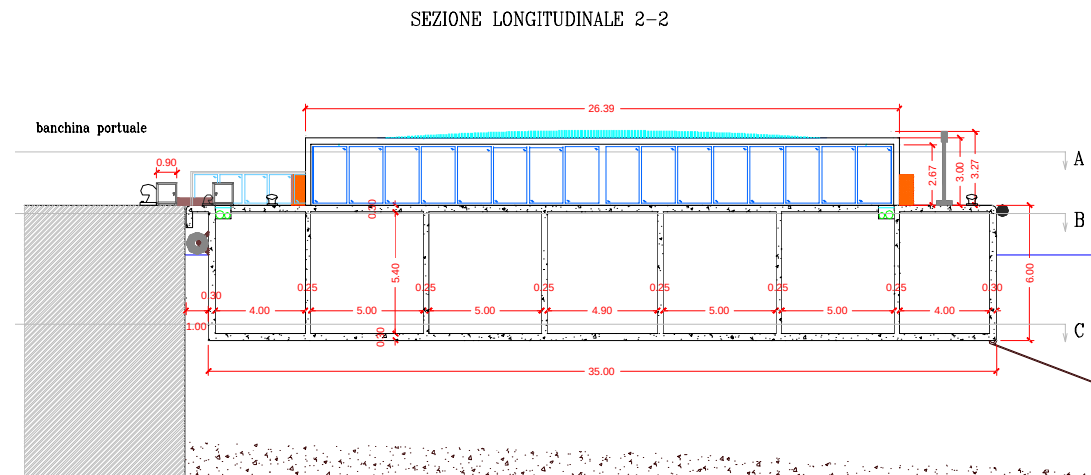
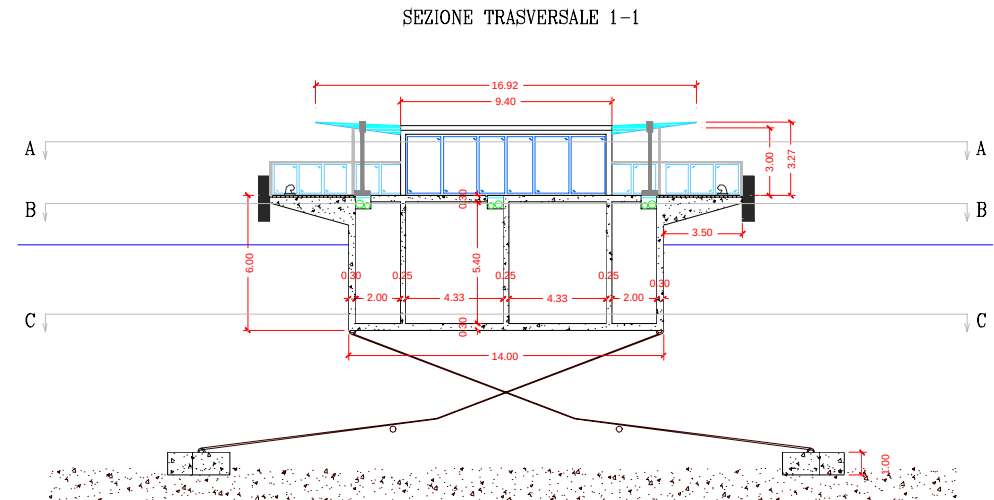
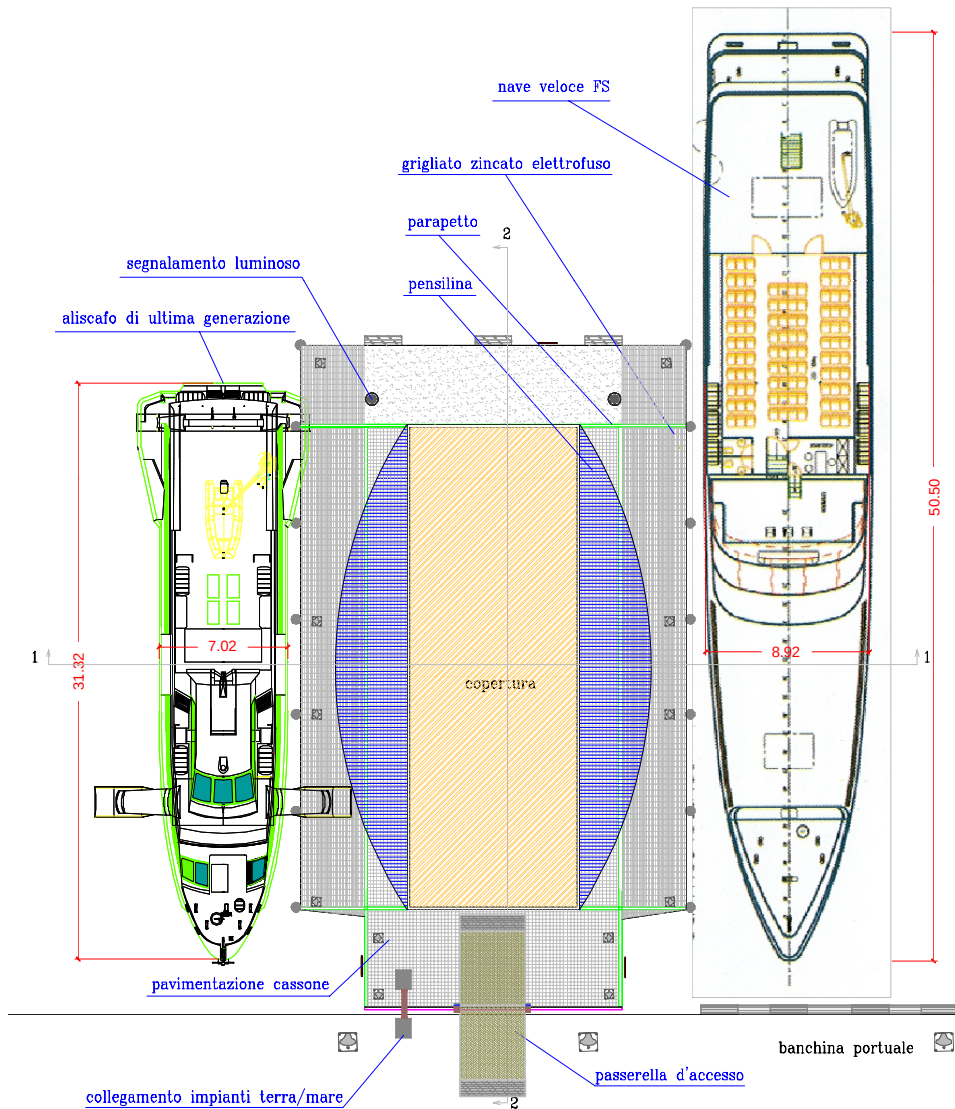


Particulars

Length Overall:	25 m	Shaft Power :	2 x 839 kW
Beam Overall:	9.57 m	Main Engines:	2 x MWM TBD 616 V12
Draft (maximum) :	1.8 m	Propulsion:	2 x Fixed pitch propellers
Deadweight (normal):	21 tonnes	Speed (Full load):	28 Knots
Capacity :	180 passengers	Speed (Maximum):	31 Knots

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THE CASE OF “AREA DELLO STRETTO”

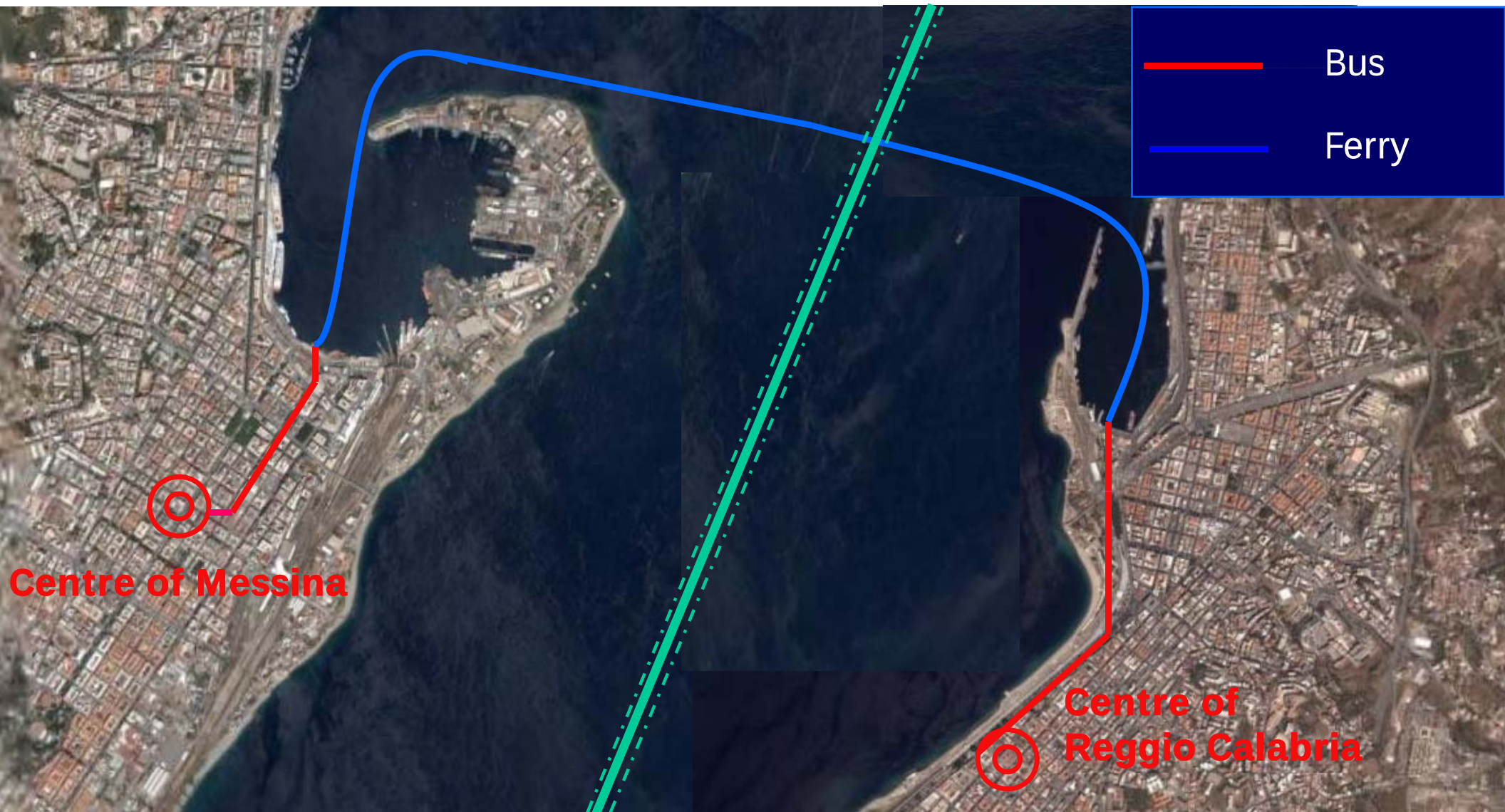


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THE CASE OF “AREA DELLO STRETTO”



THE CASE OF “AREA DELLO STRETTO”



THE CASE OF “AREA DELLO STRETTO”



THE CASE OF “AREA DELLO STRETTO”

Integrated ticket maritime-land transit services



- It allows the use of land public transport services in the urban centres of Reggio and Messina, within 60 minutes before and after the maritime link

Hypotesis of Consortium:

ATAM Reggio Calabria, ATM Messina, Maritime companies

THE CASE OF “AREA DELLO STRETTO”

FERRY *Ettore M.* 250 passengers - 34 knots

Link	Line	L [km]	T _{nav} [hh:mm]	T _{round-trip} [hh:mm]	φ peak hour [runs/h]	N. veh. peak hour	V _c peak hour [veh/h]
Me - RC	L1	12	0.25	0.50	4	4	1000
Villa S.G.- Messina	L2a	8	0.15	0.30	2	1	500
Villa S.G. - S.Francesco	L2b	6	0.15	0.30	2	1	500
Ganzirri - Tremestieri	L3S	17	1.10	2.20	1	3	80
Scilla - Pellaro	L3C	30	1.25	2.50	1	3	80

Link	Line	L [km]	T _{nav} [hh:mm]	T _{round-trip} [hh:mm]	φ soft hour [runs/h]	N. veh. soft hour	V _c soft hour [veh/h]
Me - RC	L1	12	0.25	0.50	2	2	500
Villa S.G.- Messina	L2a	8	0.15	0.30	1	1	250
Villa S.G. - S.Francesco	L2b	6	0.15	0.30	1	1	250
Ganzirri - Tremestieri	L3S	17	1.10	2.20	0,5	2	40
Scilla - Pellaro	L3C	30	1.25	2.50	0,5	2	40

THE CASE OF “AREA DELLO STRETTO”

Investment costs

	<i>Number</i>	<i>Unitary cost (€)</i>
Purchase big ships	5	8.000.000
Purchase small ships	6	3.000.000
Pontoon	10	3.000.000
<i>Totale</i>		<i>88.000.000</i>

Operating costs

<i>Line</i>	<i>Terminals</i>		<i>Miles/day</i>	<i>C_G (€/day)</i>	<i>C_A (€/day)</i>
	<i>A</i>	<i>B</i>			
L1	Messina	Reggio Calabria	336,93	10.108	3.689.416
L2a	Villa S.G.	Messina	112,31	3.369	1.229.805
L2b	Villa S.G.	S.Francesco	84,23	2527.00	922.354
L3S	Ganzirri	Tremestieri	119,33	3.579	1.306.668
L3C	Scilla	Pellaro	210,58	6.317	2.305.885
			863,39	25.901	9.454.130

THE CASE OF “AREA DELLO STRETTO”

VAN and SIR

$C_{\text{operating}} = 60 \text{ €/mile}$

<i>Connection</i>	<i>Complete service (crossing + coastal)</i>		<i>Inter-urban service (only crossing)</i>	
	<i>Present demand</i>	<i>Future demand</i>	<i>Present demand</i>	<i>Future demand</i>
VAN (M.ni €)	-185,29	-1,27	-47,56	119,69
SIR (%)	-	2,8	-	26,1

 $R/C = 0,65$  $R/C = 1,31$

CONCLUSIONS:

The proposed new Metro dello Stretto seems economically preferable to the construction of a bridge in general and in particular for the development of the Reggio Calabria – Messina – San Giovanni conurbation. Key is: integrated service. Integrated fare collection by chip-card would help.