



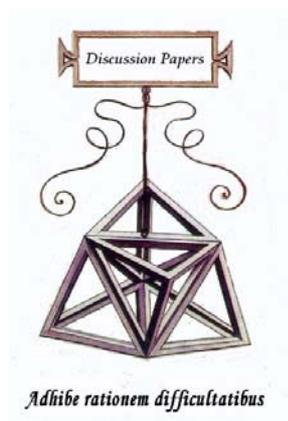
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**Inter –island Links in  
Mediterranean Short Sea  
Shipping Networks**

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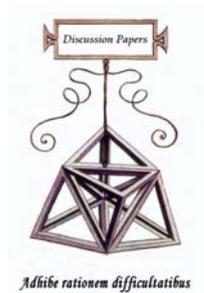
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Alga D. Foschi – Xavier Peraldi – Michel Rombaldi

## **Inter – island Links in Mediterranean Short Sea Shipping Networks**

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### **Abstract**

Inter – island Links in Mediterranean Short Sea Shipping Networks

- The paper deals with maritime transport systems between the European islands and the continental mainland according to the concepts of Short Sea Shipping, SSS, and Sea Motorways, SM, in Europe.
- It is pointed out that the European Commission explicitly took these connections into consideration at the beginning of the 1990s in the Maastricht Treaty and in 2003 on the occasion of expansion of TEN – T (Trans European Networks – Transport).
- However, it is also noted that during implementation of procedures concerning choice of ports of origin and destination in the SM context - a phase necessary to obtain public start-up funding – there is a strong requirement for SM to be credible substitutes with terrestrial motorways. This automatically excludes the islands from the main transport circuits, thereby also contravening the cohesion principle which is the basis for European economic policy, including transport policy.
- This paper presents two case studies on the possibility of incorporating Western Mediterranean inter-island maritime connections into Mediterranean road and SM networks.

**Classificazione JEL:** L 920

**Keywords:** Short Sea Shipping, Sea Motorways, transportation policy, cohesion policy, Mediterranean, inter – island routes

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### ***1. Introduction***

As an instrument of environmental policy and European regional cohesion, maritime transport in the form of SSS, SM and feeder routes, has been attracting growing interest in Europe over the last decade, both at public institutional level and also among companies and private associations of varying size and goals. This increasing attention may translate into public action in support of the SSS concept and may also prompt the establishment of projects to reinforce and expand SSS.

The islands, however, have not received sufficient attention. The islands have always had poor connections with the mainland, and existing links basically offer connections of a purely domestic nature apart from special cases of geographic proximity, such as between Corsica (France) and Tuscany (Italy), or Sicily (Italy) and Tunisia, and a few others. In the majority of cases, there are no international inter-island links.

The EU interest in expanding SSS was heralded at first as promising an improvement in inter-island links. It now appears that this is unlikely to occur in the near future. The islands are only briefly mentioned in no more than a very few definitions of SSS, and they are given no attention at all in SM designs, despite the fact that many of the proposed SM pass just a few miles from important Mediterranean islands. With a minimum variation in routes and timetables, and with some additional costs, the liner shipping companies could include the islands in their legs, if necessary making use of public financial support. This would be justified by the fact that delivering a transport service should not be based exclusively on economic criteria: certainly, it must be profitable from the economic point of view but it should also be acceptable in an ecological perspective and socially fair. It must reconcile the developmental strategy devised for a given area with overall economic development, lasting growth and a quality public service for the entire population.

If the islands were considered within a network linked to SMs, then they could play an active role to help reduce the incremental costs incurred by the liner shipping companies and by the other players involved. For example, the islands could rearrange their ports as, for instance, “one-stop shops” for supply of traditional and advanced services.

Coordinated action by the islands, based on geographic areas, is desirable. A good example is the IMEDOC working group which was set up in 1995 for the Western Mediterranean islands.

Feasibility studies have already been carried out in the framework of IMEDOC to investigate the possibility of setting up of inter-island services and designing SMs calling at island ports. The results were positive.

The paper is composed fundamentally of two parts, one general, from § 2. to § 4., and one more specific describing the two case studies for the MEDOC islands, consisting of §.5 and § 6. The conclusions are presented in § 7., which also offers operational proposals and outlines future research lines.

## ***2. Weakness of the islands in general and of the Mediterranean in particular.***

It is calculated that the 21 regional island authorities within the European Union number roughly 14 million inhabitants. The four largest islands of the Western Mediterranean (Corsica, Sardinia, Sicily and the Balearic Isles) together with Crete represent 85% of Europe’s island population. When Malta, Cyprus and the Aegean islands are also taken into consideration, almost the entire island population is accounted for. Within this population of the

European islands, whose demographic weight is far from negligible, a number of similarities but also distinctions can be observed. Among the shared features one may cite: - a lower level of development than the European average, substantially attributable to the handicaps of insularity; - the inadequacy of Community regional policies. This weakness of the islands risks being further aggravated by the following factors: - the enlargement of the EU and, for those islands that are situated in the Mediterranean, i.e. for the majority of the islands, by the creation of a Euro-Mediterranean free trade area within 2010. In the latter case, it is likely that competition (especially for some economic sectors such as tourism and local food products) will heighten the handicaps that already affect the islands. In this context, it is important to keep in mind that the problems facing the island are both economic and demographic as well as geographic, with reference to the size of markets, the imbalance of their production structures, their demographic weakness or their distance from continental economic centres.

As indicated in a recent Report on economic and social cohesion in Europe (Commission des Communautés Européennes, 2003), natural or geographic handicaps can aggravate developmental problems, especially in the case of islands. These constraints place a structural limit on economic progress and limit strategic choices. Such a realization can be addressed from the point of view rigorously defended by the Conference of Maritime Peripheral Regions (CMPR, 2003), which states that “insularity is a permanent phenomenon of physical discontinuity” that hinders economic and social development. Consequently, if European regional policy is truly to be developed in such a manner as to favour the development of island territories, then this policy (or policies) must genuinely take into account the “permanent constraints”<sup>1</sup> that hamper island development, and such constraints must be allowed for in each and every measure that is undertaken.

Over recent decades, Europe has paid scant attention to the island question at an institutional level. This has made it far more difficult to devise appropriate policies for the islands. But in 1997 the Treaty of Amsterdam conceded that “the island regions suffer from structural handicaps linked to their island nature, the permanent nature of which had severe adverse effects on their economic and social development”. In particular, Article 158 of the

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<sup>1</sup>The problem of the remoteness of the islands from the great outlet markets constitutes a serious impediment. The island economies are dependent on multiple and often weak relations with the large mainland production and distribution centers. The comparative drawbacks of discontinuity, in a world that is increasingly dominated by fast-paced exchange, obliges the islands to make a particularly burdensome financial effort. This is partly because it may at times be necessary for commercial enterprises on the islands to maintain stocks at artificially high levels; alternatively, they may face delays in deliveries for critically prolonged periods. Quite frequently the overall result of these circumstances has knock-on effects on prices of goods and fuels the high cost of living that is observed on most of the island territories. A further adverse effect is that island products encounter great difficulty in seeking to be competitive on external markets.

Treaty states that “The Community is committed to reducing the disparity in levels of development of the different regions and the backwardness of the less favoured regions and islands, including the rural regions”.

It would be implausible to consider the Treaty of Amsterdam as totally breaking with the policies Europe has heretofore adopted towards the islands. The force of economic and political constraints that influence the definition of Community actions is such that a reversal cannot be contemplated.

However, *institutional recognition of the problem of the islands is important because it opens up the possibility of establishing new European programmes centring on the reduction of “permanent structural handicaps” and suggests that a special effort may be directed towards areas suffering from such structural handicaps linked to natural or geographic factors* (Commission des Communautés Européennes, 2001 a.).

It is clear that in the context described above, the organisation of island transport towards the outside is of crucial importance. The Planistat (2003) report emphasises that “the efficacy and density of secondary networks is decisive for the integration of regional economies and also for their competitiveness”. The report also points out that for the moment the proposals concerning European transport systems are likely to eliminate bottlenecks only in the central zone of the EU, and are designed more to encourage wide-ranging high impact projects on the continental mainland than to unite the island regions to the mainland or to one another. Thus one may express the hope that in future the European transport policies “will incorporate the island territories” and favour “the development of intermodal transport which is especially suited to the specific needs of the islands”.

### ***3. Minimal references to the islands in the definitions of sss and in European policy measures.***

A concise and unambiguous definition of SSS does not exist<sup>2</sup>. The concept has been defined in various different ways. What can easily be noted is that there are only scant references to the islands, and in any case only in the perspective of territorial continuity with the State to which the given island belongs.

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<sup>2</sup> The question of the number and lack of agreement among the definitions of SSS is dealt with extensively by Marchese and Musso in *Maritime Economics and Business Handbook* (2001) and subsequently summarised by Chernyavs’ka (2004), Musso (2004) and Lombardo (2004), who analyses the position of numerous scholars and lists the most recent European Community provisions that mention SSS, and also list on-going research projects. To contribute to the circulation of information on these issues and to facilitate a better understanding of the questions later discussed in the texts, these definitions and programmes are indicated here.

### 3.1. The definition of SSS formulated by maritime economists and by Community organisations

The origin of SSS, from a conceptual point of view, can be traced to short-range coastal maritime transport. More recent definitions have devoted considerable attention to creating a distinction between these two forms: for example, as early as the 1969 Øvrebø definition an attempt was made to identify the essential aspects that distinguish SSS from coastal navigation. The author underlines the absence of technical constraints and the need to search for a solution in limitations of an economic nature.

In 1982, Balduini provided a definition that focused on traffic flows originating from or destined to ports of one and the same nation; Williamson argued that one can speak of SSS only when there exists a terrestrial alternative to the maritime leg (this characteristic is taken up again today in the definition of “SM”), while Riche defines SSS as any service that is not Deep Sea Shipping. In 1988 the UK Department of Transport declared that the fleet of SSS ships includes all ships destined to European and coastal short sea traffic either entirely or for a substantial (the major) part of the time.

In 1992 the European community, with reference to each member State, declared that “maritime service in a member State is understood as services normally provided upon payment and including in particular: - mainland cabotage, that is to say sea transport of passengers and freight between ports situated on the mainland or on the main territory of one and the same member State without calls at islands; - off-shore supply services, i.e. sea transport of passengers and freight between ports of a member State, as well as the equipment situated on the territorial platform of such a state; - cabotage with the islands, namely sea transport of passengers or freight between ports situated on the mainland and on one or more islands of one and the same member State, as well as between ports situated on islands of one and the same member State; Linde regarded SSS as transport carried out by European liner shipping companies in seas that range from Northern Europe to the Mediterranean and the Black Sea.

In 1993 Crilley and Dean decided that the difference lay in the technical characteristics of the ship, defining SS ships as those that transport freight and passengers below 5,000 gt and excluding those below 100 gt, without propulsion, that carry out services in ports or internal waters, Bagchus and Khuipers included all forms of maritime transport in Europe and between Europe and the adjacent regions without taking into account whether such transport concerns small or large ocean-going ships or coastal ships; Bjorland reposed the rather vague definition of “transport of freight that does not cross the oceans”.

In 1994, Wijnolst stated that the term refers to relatively short distances and that one of its general characteristics is that the ships often follow the coastline and call at a greater number of ports compared to Deep Sea Shipping.

In 1995, Peeters et al. defined SSS as intra-European traffic, that is to say flows of freight whose origin and destination lie within Europe; he also introduced the concept of a maximum load limit between 10.000 and 6.000 gt;

Van de Vorde and Viegas pointed out that it is easier to define SSS on the basis of commercial routes rather than by referring to characteristics of the ships utilised.

In 1997 Stopford asserted that SSS supplies transport among regions, distributing freight transported by ocean-going ships (DSS) to ports located in regional centres (such as Hong Kong or Rotterdam). According to his definition, SSS is a port-to-port service that is often in direct competition with terrestrial transport (here too, the quality to be *succedaneum* between transport modalities begins to be underlined, as would later be emphasised in the 2003 definition of SM).

In 1999 the European Community (COM, 1999, 317) stated that short-range maritime transport, or SSS, was to be understood as the movement of cargo and passengers by sea between ports situated in geographical Europe or between those ports and the ports situated in non-European countries having a coastline on the enclosed seas bordering Europe (Baltic, Mediterranean and Black Sea).

Short-range maritime transport covers national and international maritime transport, as well as feeder services, along the coast and from/towards the islands, rivers and lakes. The concept of short range maritime transport also concerns maritime transport between member States of the Union and Norway and Iceland, and additionally includes other countries other countries bordering on the Baltic Sea, the Black Sea and the Mediterranean.

In 2001, and therefore in parallel with the work conducted at the European Commission, the results of which were published in the White Paper, the ECMT – *European Commission for Maritime Transportation* declared that the following types of traffic form part of SSS: - national cabotage between two ports of one and the same nation; international intra-European traffic with origin and destination in European ports; European traffic forming part of inter-oceanic journeys. (Chernyavs'ka, 2004).

The above definitions bear witness to an evolutionary process in the definition of SSS. This evolution corresponds in some sense to the changing awareness of the existence of Europe as a political and socio-economic entity, so that a transition can be perceived: there is a move away from emphasis on the more technical aspects and a move towards a quest for the legal parameters capable of expressing the new geographic-political entity for which rules need to be established. In this perspective, the definition becomes important when it begins to play a role in economic policy manoeuvres, as in the case of financial support for liner shipping companies willing to undertake SSS, or the case of terrestrial transport companies willing to assume the management of the entire transport chain.

Therefore there is no general consensus on the definitions. This is not merely a question of semantic confusion: rather, it results in the impossibility of analysing SSS universally so that public policy measures can be devised, and it hampers a proper understanding of the market characteristics required for the undertaking to be commercially successful.

Within these various definitions, references to the islands are very scanty.

When there is a mention of islands, it is specified that the leg must be between “ - ports situated on the mainland and on one or more islands of one

and the same member state and – ports situated on the islands of one and the member state”. *Such a definition excludes possible legs between ports situated on islands of different member states.*

This failure to take such a circumstance into consideration, together with the difficulties described earlier, can translate into a further element of weakness in the position of the islands and affecting their ability to benefit from Community policies designed to support the transport system in general and maritime transport in particular.

What needs to be underlined is that in any measure enacted, the weak elements must be listed as specific points for which regulations must be specified, precisely because if they are left implicit, their very weakness may cause them to be underestimated and abandoned.

### 3.2. Environment and cohesion: the determinants of EC interest in SSS

The 1992 Goteburg European Council recommended that the saturation of the European transport network should be reduced by adopted a twofold strategy: by expanding important communication corridors, as expressed in the 1990 TEN (whose principal mission, at least for transport-related networks, was precisely to alleviate congestion on the major roads), and by making use of more environment-friendly modes of transport. Following this recommendation, the maritime transport mode, in the form of SSS, began to undergo a revival.

But it was not until the 2001 White Paper on “European transport policy until 2010: the time for choices” that the need to re-establish a balance in transport modes by means of SSS became explicit. The aim was to contribute to reducing motorway congestion, thereby obtaining a pronounced reduction in negative externalities.

On the subject of negative externalities resulting from the various different modes of transport (Lombard and Maiocchi, 1998, Foschi and Cazzaniga Francesetti, 2002), maritime transport appears to be the least damaging, although even in this case dangerous risks of pollution can arise unless proper monitoring is carried out<sup>3</sup>. The different modes of transport can be placed in the following ascending order with regard to the potential for pollution<sup>4</sup>: maritime transport, rail transport, road transport and air transport.

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<sup>3</sup> Among the main causes of pollution, the following should be mentioned: - smoke emissions into the atmosphere, deriving from ship’s motors; - deliberate discharge of polluting and hazardous substances into the sea; - accidents; - anti-mould coatings; - introduction of animals and plants alien to a given habitat, discharged into the ecosystem from bilge-water.

<sup>4</sup> “On the purely theoretical plane, the external costs of transport can be distinguished into four general categories of externalities deriving from: - construction of the infrastructures necessary for the functioning of means of transport; - the existence and management of transport infrastructures; -

SSS is unfortunately associated with a greater quantity of negative externalities as compared to long-range maritime transport (DSS – Deep Sea Shipping) on account of the need to use a greater number of small ships and the greater number of ports called at. But even in this case SSS is less polluting (0.25 as against 1.00 for air transport) than terrestrial and air transport<sup>5</sup>.

While this environmental advantage is crucial in EU support for SSS, it is not sufficient to modify the market. That is to say, it is unable either to shift demand (forwarders, shippers, enterprises etc.) from the road to the sea, or to induce a sufficiently increased supply by liner shipping companies or by intermodal companies that could be interested in engaging in this form of transport. Forwarders, shippers and enterprises are sensitive to the defects of SSS, while the liner shipping companies or intermodal companies fear the market risks.

However, despite these fears, the potential strong points of SSS are likely to be attractive in two different ways (Lucas, 2004, Marchese and Musso, 2002). First, there are several aspects that may be of interest to concerned citizens, namely:

- reducing road congestion and eliminating some of the worst bottlenecks,
- showing a better safety record than other types of transport
- allowing better integration of the islands in the EU

Secondly, the liner shipping companies may be attracted by the incentives to port improvement and the possible relaunching of shipyards.

The weak points of SSS, on the other hand, are likely to have adverse effects directly on private enterprise. The following weak points can be listed:

- excessive burden of binding administrative and customs regulations
- uncertain returns for investments in this sector due to lack of a sufficiently long observation period
- excessively long transport times
- difficulty in achieving full loads in ships
- uncertainty with regard to duration and regularity of the lines throughout the year

The above weak points constitute a strong deterrent for the market.

It is therefore hardly surprising that SSS is considered to be poorly competitive as compared to road transport both in terms of time and cost (Foschi, 2004). On the question of cost, the 2001 White Paper clearly identified the existence of unfair competition linked to production of the road transport

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production and disposal/recycling of materials and means of transport; - use of means of transport (so-called mobility), including inputs of materials and energy necessary for this use (eg. fuel, oil, batteries, etc.) (Lombardi and Maiocchi, 2002)

<sup>5</sup> With reference to total transport costs, as defined in the previous note, and positing 100 as the cost of air transport, which is the highest, one finds the following percentages for the other modes: 0.89 for the cost of road transport; 0.34 for the cost of rail transport; 0.25 for the cost of SSS as against the average cost of maritime transport, which is 0.06 (Source: Authors' elaboration on data provided by Friends of the Earth).

service, and undertook to modify it through a more correct calculation of road transport tariffs so that amortization costs as well as wear and tear on the infrastructures utilized could also be taken into account. In addition, the White Paper indicated that relief on fuel costs would no longer be allowed (2001 White Paper, 1998 White Paper).

Thus if the EU's objective is to move towards a reduction in road traffic, it can readily be understood that at Community level the attention focuses predominantly on supporting the creation of new maritime routes, alternative to terrestrial routes<sup>6</sup> (White Paper, 2001), rather than on developing inter-island routes.

Clearly, inter-island links are not a strategic component of the stated objective.

However, it should be borne in mind that the EU also recognizes that other significant functions are fulfilled by transport systems: cohesion, consolidation of growth and improvement of the European economy. In fact, the designing of the TEN-T itself is seen as a logical and substantive complement of the processes of building up a single market, and is in harmony with policies for integration of regions that show different levels of economic development, within the overall framework of achieving a more balanced developmental model<sup>7</sup>.

The projected TEN-T system involves the creation of 10 "intermodal corridors" (Viesti and Prota, 2004) which are intended to forge a connection that will link the infrastructures of central European countries to the weaker peripheries and to the surrounding areas bordering on the European countries. However, since these corridors will be major fast connection lines, in which speed is awarded priority over adaptability of the service (Blauwens, De Baere e Van de Vorde, 2002), serious doubts arise as to whether, given the way TEN-T programmes have been designed so far, they will genuinely be capable of reducing the disparity among European regions. For example, the European

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<sup>6</sup> To promote maritime and river transport. Short range maritime and river transport are two ways of coping with the congestion of certain road infrastructures..... In order to relaunch short range maritime transport over short distances it is necessary to create veritable "sea motorways".... Some maritime connections (in particular those that make it possible to avoid current bottlenecks like the Alps, the Pyrenees and Benelux.....) will be integrated into the trans-European network on the same level as road and rail connections (2001 White Paper).

<sup>7</sup> Networks can contribute to job creation, both through construction of the actual infrastructures and also, above all, on account of their further role in economic development. The Union's task would consist in integrating national operations within a broader framework of community interest. To this end, the Commission should identify strategic projects jointly with all the parties involved. This is naturally very important in order to favour regional cohesion. Moreover, even though the reduction of transport and communication costs cannot always and comprehensively be stated to be positive for the weaker regions, in the long run a reduction in physical and virtual distances from the great outlet markets represents a crucial condition to favour development. In general, it should be kept in mind that in order to support the growth of weaker regions, considerable importance attaches not merely to what is achieved within their boundaries but also what takes place beyond their boundaries: and this is precisely the case of the great communication networks (Viesti and Prota, 2004).

high speed rail networks could aggravate rather than reduce the difference in accessibility between central and peripheral regions.

A European transport policy whose main objective is to enhance cohesion (Commission des Communautés Européennes, 1999; Di Pace, 2004) should concentrate on improving connections within and among peripheral regions, avoiding the risk of channelling funds exclusively projects towards the heart of the Union. The peripheral regions of the East and the southern mainland and island regions of the Mediterranean are definitely weak regions.

These doubts about the capacity of terrestrial TEN-T systems can also be expressed with regard to the manner in which the extension and integration of such systems in the maritime legs has been interpreted. We refer here to the crucial question of SM, a concept that involves the establishment of important fast corridors.

#### ***4. SSS, SM and TEN-T: from a broad definition to a restrictive implementation***

Since 1990, many different measures have been introduced to modify the policies devised to set up Trans-European Networks. The number of projects regarded as being of priority importance has been raised from 11 to 14, and certain types of priority have been emphasised. The 2001 White Paper considers the following as primary priorities of TEN-T:

- alleviating traffic congestion on the busiest roads (motorways);
- recognising SSS as a suitable tool to achieve this aim.

In April 2003, the European Commission entrusted a panel of experts with the task of carrying out a general revision of TEN-T, with special consideration of the enlargement of the EU.

The panel was asked to devote particular attention to the maritime legs.

The maritime legs were now defined as Sea Motorways, SM, partly to give short range maritime transport a new image of modernity, speed and efficiency (an image which previously had perhaps not been thought to characterise SSS, the latter being associated in popular imagination with slow cabotage, unreliable journey time and lack of security), and partly also to make it explicit that their function would basically be to compete with terrestrial motorways. Thus the Working Group entrusted with revision of TEN-T (Van Miert, 2003), argued that “*genuine motorways of the sea are therefore aimed at acting as a substitute for motorways on land, either to avoid saturated land corridors, or to give access to countries separated from the rest of the European Union by seas*”. The Group specified that this concept was to be applicable both to passenger transport and freight transport in the four maritime areas of Europe (the Atlantic, the Baltic, the Western Mediterranean and the Eastern Mediterranean), particularly with the use of Ro-Ro ships but not explicitly excluding other typologies.

Naturally, success in launching SMs depends on a number of elements, prerequisites and actions:

- of an organisational nature (such as: cargo concentration, elimination of customs barriers, increased utilisation of electronic reporting by port authorities and supply of suitable equipment for loading and unloading operations, and so forth)
- of a financial nature. This aspect is particularly important, as the question of whether SSS can survive without an extensive policy of government subsidies is a highly relevant issue. It would indeed be rather naïve to assume that the players who are involved in managing the supply of sea and terrestrial transport will spontaneously take on the burden of this important intermodal innovation, especially since it is likely to have a massive structural impact on their companies, from capital investment to the organisation of labour.

Thus the overall opinion of the experts is that, first, it is necessary to promote an updated approach with regard to the demand and supply of SSS, by enacting a policy of fairness that aims to increase the competitiveness of maritime transport (but also river transport whenever this is necessary). To achieve this new approach, according to the experts it is indispensable to have recourse to public aid, especially during the start-up phase. Furthermore, in order to avert the risk that this may lead to a distortion of competition by individual Member States, the panel suggested that the Member States should select ports situated on their territory “that are located on the main Trans-European routes”, focusing above all on routes affected by road traffic saturation<sup>8</sup>. Since this involved complex decisions, in October 2003 the European Commission announced new guidelines for TEN-T, including SMs and introducing state and Community support mechanisms for their development in the form of “*packages*” composed of infrastructures, logistic systems and aid for the start-up phase.

The Commission’s indication with regard to ports located along the main Trans-European routes is, in effect, very limiting – much more so than the initial statement concerning the enhancement of SSS. *In the light of these limitations, it is evident that the destiny of the islands is likely to be that of increasing exclusion from the relevant maritime routes, even though some of the SM will pass quite close to a number of the important islands.*

In fact, in the Mediterranean there are several SM that are of notable significance: Gioia Tauro – Genoa, Brindisi – Patraso, Genoa – Barcellona,

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<sup>8</sup> The individual Member States should: - select their ports (this is certainly the most difficult step for the various different States, on account of the possible domestic political repercussions of particular choices); - reach an agreement on the portion of cost to be borne by public funding; - organise a public specification to assign a public service contract and then specify the timeline and deliver the aid within a pre-determined time-frame. As an alternative to choice of port by individual States, another proposal is to arrange a sort of global call for tenders, giving both ports and also the liner shipping companies the possibility of bidding, and then leaving the choice of ports to the candidate consortiums. This project could assume the form of a public-private partnership with financial aid from the European Union and national budgets assigned jointly through public procurement procedures. These projects should be given the status of priority projects, on an equal level with terrestrial infrastructures.

Naples – Marseille-Fos, Naples – Barcellona, Valencia – Livorno, Athens – Trieste, Athens – Taranto, Athens – Marseille , Salerno – Sete, etc. These routes pass very close to important islands, yet the island ports are not included in the routes.

## **CASE STUDIES FOR THE ESTABLISHMENT OF A NETWORK OF INTER-ISLAND LINKS FOR THE AREA OF THE NORTH-WESTERN MEDITERRANEAN**

### **5. *Cagliari, as a hub of the MEDOC islands.***

#### **5.1. The organisational principles to which priority should be awarded**

The opening up of new maritime connections among the islands should be based on an approach that combines motivations with tools to implement provisions. More specifically, such a project can be considered rational only if it takes into consideration passenger and freight transport at the same time, and it requires both private (revenue deriving from the actual operation of the service) and public (subsidies) sources of revenue.

On the question of the public-private mix, it must be underlined that it is essential for island maritime transport to provide services both for passengers and freight. If these two aspects are considered separately, neither of the two sources of demand appears to be large enough to support a satisfactory maritime transport service. But if they are considered jointly, they can give rise to a more substantial volume of traffic, which thus becomes more attractive from an economic point of view. It can be noted, for example, that certain continental freight transport flows may find it advantageous to have recourse to island maritime connections on their way to their final continental destination. In such cases, calling at the island does not represent an insurmountable handicap in the competitiveness of the maritime route. The loss of time thereby incurred need not be decisive when the freight in question is not subject to economic constraints relating to “just in time” or “continuous flows”. What is important, in this scenario, is that the maritime service should be in a position to commit itself to providing the service while remaining under the symbolic threshold of 1 Euro per km.

As far as the technical organisational aspects of this maritime transport are concerned, it appears that the chosen mode should involve cargo transport on lorries, on board the ships. This not only reduces the loss of time resulting from freight transfer but it also represents a transport mode that is currently used extensively for delivery of freight within a given island. Therefore

considerable expertise is already available among operators in the island maritime transport sector. The aim of combining freight transport with passenger transport means that attention must focus first and foremost on the mixed ship formula (passengers + vehicles), which can be summarised with the well-known abbreviation Ro-Pax (as opposed to the “vehicle only” solution represented by the abbreviation Ro-Ro). Naturally, however, this implies forgoing container traffic, which represents an important part of the activity of the large ports around the Mediterranean.

The organisation of an inter-island maritime transport system also faces serious difficulty in obtaining funding. Clearly, the objective of enhancing the accessibility of island territories is not a priority for transport companies, which are concerned primarily with achieving their profit targets. Ensuring territorial accessibility is thus the responsibility of the political authorities. In the case of transport activities, this responsibility must be expressed in the form of measures based on the rationale of a public service<sup>9</sup>. Within the European context, the principle of public services has been re-examined in depth over the last few years. However, the European Commission appears to have become aware that the market cannot always be expected to operate in favour of the general interest and that its action sometimes has to be completed by means of public measures. Therefore, the Commission is of the opinion that the reference to the principle of free competition would not impede the application of some restrictive clauses by member States<sup>10</sup>.

## 5.2. The two possible patterns of integration

Integration of the islands into the Mediterranean transport networks can, in our view, be considered according to two different patterns of organisation. In both cases, the basic idea is to establish an island port as the main node from which inter-island links can be organised. For evident geographic reasons, this role should be assigned to a city on the coast of Sardinia. The two options we

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<sup>9</sup> The appropriate Community terminology is that of Service of General Economic Interest (SGEI)

<sup>10</sup> Within the transport sector, participation by the public authorities must have the aim of permitting the existence of a supply of services for certain connections even when the market conditions are insufficient to induce the transport companies to offer the service under their own initiative. More concretely, participation by the public authorities should be expressed with the definition of public service obligation (PSO) and with a specific manner of funding. The definition of PSOs aims to establish a rule of service assessed as adequate in terms of tariffs, frequency, regularity or seating capacity. The actual funding measure aims to complete the management resources when these are considered to be insufficient to cover the entire production cost associated with the transport services. This public support must correspond exclusively to a refund of obligations intrinsic to the concept of a public service, and must not generate a slide towards unfair competition. Taking into account the insufficient demand for transport to the islands, the supply must also rest on a system of mixed private/public funding, directly inspired by a public service type of organisation. .

propose to evaluate here attribute the role of central port to Olbia or Cagliari. The other ports considered in order to complete the island maritime system are Bastia (Corsica), Palma (Balearic Isles) and Trapani or Palermo (Sicily). Each of these choices has advantages and disadvantages from the economic, geographic or ecological point of view.

In the first option, the port of Olbia, situated in the North-East of Sardinia, represents the port platform from which inter-island links would be organised. The Bastia-Olbia crossing is a distance of about 115 miles, which can be covered by a mixed ship at the speed of 24 knots in about 5 hours. This connection should be the object of a public service contract. The Palma-Olbia crossing is a journey of about 370 miles, which takes about 15 hours with a latest-generation mixed ship. Here too, a public service contract would be necessary in order to launch the service.

The reasons why the port of Olbia should be the port of choice, playing a fundamental role in the inter-island maritime transport system, are primarily of a geographic nature. The port of Olbia occupies a fairly central position within the overall cluster of Mediterranean islands. It is also situated at a medium distance from the port of Bastia and is fairly close to the mainland Italian ports of central Italy. Its candidacy is however weakened by economic, geographic and ecological considerations. It is a small-sized port, its yearly traffic is rather low and its equipment (number of docks, area of the embankments, etc.) is scanty. Thus its characteristics do not seem appropriate to take on the task of acting as a nodal port. Moreover, the port of Olbia has no connections with the northern shore of the African continent, nor does it offer regular maritime services with the Sicilian ports (Trapani or Palermo). The absence of regular connections with Sicily is a serious drawback because it would imply the need to open up a new supplementary route.

Finally, the opening of a new maritime connection between the port of Olbia and that of Palma could create rather difficult conditions from the point of view of commercial management of the service, leading to the need for substantial public financial support. It should also not be overlooked that if such a connection were established, ships travelling on this route would necessarily have to pass through the Strait of Bonifacio, an area of the Mediterranean which in recent years has been the subject of considerable attention by public authorities and organisms in charge of environmental issues. The risk of an ecological catastrophe in the Strait of Bonifacio cannot be ruled out, as this portion of the Mediterranean sea is considered to be particularly dangerous on account of its peculiar characteristics. Faced with this grave risk, the Corsican and Sardinian regional authorities wish to ban the passage of ships transporting hazardous merchandise through the Strait of Bonifacio. Some restrictive measures have already been enacted by the French and Italian authorities, and European organisms have also considerably reinforced safety and surveillance measures. However, the inapplicability of certain specific aspects weakens the overall legal provision: enforcement of restrictive measures is difficult and at times impossible because verification of compliance is the responsibility of the State under whose flag the ship is sailing. Yet despite these practical problems, the public intent and the desire of concerned citizens in favour of limiting transport activities in the Strait of

Bonifacio casts serious doubt on the idea of setting up a connection between Palma and Olbia.

The second option considers the port of Cagliari as an island “hub”. This port, located in the southern part of Sardinia, stands both at the junction of the North-South and West-East axes of circulation and also at the centre of the network of maritime connections among the islands. The Bastia-Cagliari crossing is a distance of about 245 miles, which can be covered by a modern mixed ship in little more than 10 hours. The opening of this maritime line should be in the form of a public service contract. The Cagliari- Palma crossing represents a distance of about 320 miles, which would take a mixed ship about 13 hours. Management of this connection would require the establishment of a public service contract. The rationale for choice of Cagliari as the nodal port is both of an economic and geographic nature, as described in the following three points:

The port of Cagliari has many of the characteristics of a real “hub”, since it has a large volume of traffic and is called at by large tonnage ships whose load can subsequently be redistributed towards smaller ports. The quality of its equipment, which could support its function as a hub, constitutes an important advantage in prospect of maritime connections with docking facilities, allowing freight to be transferred from one ship to another. The port of Cagliari has regular maritime connections with Sicily (Trapani and Palermo) and with various ports situated along the western coastline of the Italian peninsula (Naples, Civitavecchia, Livorno); this confirms that it is a potential launch pad of the European Union towards the African continent.

The disadvantages of the port of Cagliari are mainly of a geographic nature. Its position in the far south of Sardinia means that it is by no means a central point of the overall cluster of IMEDOC islands. Its distance from the port of Bastia could represent a problem in terms of management of a regular maritime line. Furthermore, the connection between Cagliari and Tunis run by the Tirrenia company is under threat of being eliminated. If this link were abandoned, Cagliari would be connected only indirectly to Tunisia, via Trapani.

These various elements for assessment of the proposals of Olbia and Cagliari are summarised in the following table.

Table 1. Criteria for selecting the port of Olbia or Caglia as the IMEDOC hub

CRITERIA	OLBIA					CAGLIARI				
	Evaluation indices					Evaluation indices				
	1	2	3	4	5	1	2	3	4	5
Port capacity					X	X				
North-south circulation				X				X		
West-East circulation				X			X			
Inter-island links			X				X			
Environment-friendly				X			X			
Cost of the publicly funded action				X				X		

5 = poor; 4 = bare pass; 3 = pass; 2 = good; 1 = excellent

Source: Authors' elaboration

It is immediately clear that the Cagliari option receives a more favourable assessment than the Olbia option, whatever the criterion chosen. The choice of Cagliari as a nodal port seems likely to incentivate better maritime accessibility to the islands. Not only does it appear to be easier to set up an appropriate network of maritime connections focusing on this port, but such a project also seems to correspond to a more limited burden of public cost, as the number of public service inter-island lines that would have to be opened is fairly restricted. Finally, the maritime activities of the port of Cagliari would have no a priori impact on traffic passing through the Strait of Bonifacio, and this port situated at the centre of the island system would thus also present ecological advantages.

In the medium term, it is possible to consider the creation of an island transport system integrated with the extensive system of Mediterranean connections. Such a system would have to be organised with transport systems that carry both freight and passengers, and would necessarily have to receive support from public funding. In a configuration of this type the port of Cagliari could be assigned the nodal role of concentration and distribution of island flows. However, in order to be able to proceed concretely towards this maritime system, two major economic and institutional conditions must be satisfied. The first concerns the ability of maritime transport to attract freight that would otherwise travel by road. The second concerns the installation of a “transnational” public service common to all the IMEDOC islands. The IMEDOC partners are thus facing a great challenge and a unique opportunity to concretely express their desire to build up closer links, making their own contribution to shaping European cooperation practices. Finally, in order to formulate the practical aspects of this inter-island maritime transport system and the associated public service system, a thorough economic and legal analysis of all related aspects should be carried out.

## **6. *The Toulon – Bastia – Livorno connection***

The Toulon-Bastia-Livorno connection already exists, in the form of the two components of which it is made up. The Corsica Ferries company runs the Toulon-Bastia and Livorno –Bastia connections throughout the year, but so far the management of these two connections has not been considered in a framework of continuity.

To define the economic-technical context of this connection, it must first of all be noted that journey by road between Toulon and Livorno (510 km) usually takes between 5 and 6 hours of driving time. If the journey involves freight transport by lorry, then travel time is likely to be longer, partly on account of speed limits imposed on heavy vehicles and partly also due to the regulations that forbid more than a certain number of consecutive hours at the wheel. Therefore, the time against which other proposals should be compared is, realistically, closer to 7 - 8 hours.

For hauliers, the triangular connection Toulon-Bastia-Livorno becomes interesting only if, in comparison to road transport, it is demonstrated to be considerably cheaper. To analyse the cost, two components must be considered: first, expenses incurred as part of the actual journey, and second, the monetary value of time.

### 6.1. Comments based on the time criterion

The programme of connections between the port of Bastia on the one hand, and the ports of Toulon and Livorno on the other, does not spring from a constant and regular organisational pattern. The programme changes according to the period of the year, depending on the intensity of demand. Demand is low in winter, which is low season, but increases considerably during the intermediate period and even more so during the summer. But the programme also has different timetables within each of these periods: the number of crossings as well as ship departure times may vary from one week to another. Therefore it is difficult to outline a fixed model of the organisation of connections between the ports of Livorno and Toulon via Bastia, even allowing for seasonal differentiation. However, for each of these periods, we present the pattern that seems to be the most characteristic. Overall, analysis of the current programme of Corsica Ferries connections shows that the conditions for maritime travel between the ports of Toulon and Livorno, via Bastia, are not very satisfactory. Overall transport times range from 13 h & 45' to 22 h & 45'. The shortest journeys are those available during the tourist period, when the transport system between the port of Bastia and the two continental ports runs more frequent services.

This disparity of global travel times obviously results from a disparity of stop-over time at the port of Bastia. Stop-over time ranges between 1 hr & 15' and 8 h & 45'. The more frequent crossings during the summer period naturally result in an improvement in the Bastia – Toulon connection as well as the Bastia – Livorno connection. Crossing times thus become 1 h & 45' or 3 h & 30' depending on the direction of the crossing. During low and mid season, the time lag between the arrival of a ship on one line and the departure of another on the other line often ranges between 5 and 9 hours.

Maritime transport involves a time consideration which, for the haulier, is more important than actual circulation time. Namely, the time required for completion of port procedures must be taken into consideration, i.e. the time required for formalities and for boarding and disembarking operations. The overall time for port procedures can be estimated as 1 hr & 30'.

In order to estimate the value of these various estimates, it is first necessary to compare them to road travel time, which, as mentioned above, ranges between 7 to 8 hours on the road. But it is important also to perform the appropriate estimates taking into account the regulations imposed on road hauliers, which limit their actual hours of driving and specify that daily driving time should not be longer than 9 hours, or 10 hours in the case of a derogation.

Therefore the sea crossing between the ports of Toulon and Bastia could be considered, at least in part, as rest time. Naturally, compliance with this behavioural rule for road traffic cannot be taken for granted, and it may realistically be presumed that hauliers often cut down on the length of vehicle and personnel stoppage time required by the regulations. Therefore, as in the 2003 “Intervenance” study, we may base our estimate of the concrete possibility of setting up a Toulon-Livorno maritime connection on the assumption that maritime transport is attractive as compared to road transport when the additional travel time involved remains below 60%. Adopting this evaluation criterion, the journey by sea between Toulon and Livorno should not exceed 13 hours. But the evaluations provided in this study clearly show that this reference time is indeed exceeded: since the Toulon-Livorno journey takes about 15 hours, while the opposite direction Livorno-Toulon takes about 19 hours, the overall transport time by sea exceeds the critical threshold by 2 and 6 hours.

## 6.2. Comments based on the cost criterion

From the point of view of the haulier, the price of transport by sea naturally has to be compared to the cost of road transport between Toulon and Livorno. The road transport costs include the direct cost of fuel and motorway tolls but also the costs involved in wear and tear and maintenance of the vehicle (tyres, oil etc.). It is likely that in comparing costs the haulier will tend to consider the “visible” secondary costs and may somewhat neglect the wear and tear costs. Thus the reference cost by road will be around 155 €, divided into 128 € for fuel costs and 27 € for motorway tolls.

However, in a particularly competitive sector, and taking into account the high cost of vehicle replacement, it cannot be assumed that the haulier will totally neglect the savings obtained by decreasing the length of the stretch travelled by road. This point of view is shared by the experts who conducted the “Intervenance” study which examined the possibility of setting up the maritime connection between Toulon and Livorno. In their study, the savings are estimated at 1 € /vehicle x km. If one accepts this study hypothesis, and taking into account that the Toulon-Bastia-Livorno maritime link allows a saving stretch the road journey in the order of 500 km, the advantage of maritime transport can be evaluated by comparing its cost with the saving obtained by reduction of road travel, amounting to a saving of about 500 €.

The maritime tariff that should be taken as the basis for cost comparison is not the sum of Toulon-Bastia and Bastia-Livorno transport tariffs. It is important to note that the Corsica Ferries company offers a special reduced rate for hauliers wishing to combine the two crossings. The driver is transported free of charge by the company, so the cost of maritime transport between Toulon and Livorno when the two journeys are combined via Bastia is just 33 € per linear metre. This corresponds to a discount (depending on the direction of the journey) of 8 € and 20 € compared to the sum of the two journeys made

separately. As a rough overall indication, it can be stated that the cost of maritime transport on this route, regardless of the direction of travel, is 330 € (+ taxes) if the vehicle is 10 metres long, and 495 € (+ taxes) if the vehicle is 15 metres long. In comparison to the cost of road transport, the maritime tariff seems particularly competitive. Thus the choice of the maritime route does not involve any serious disadvantages for the haulier.

### 6.3. Plan to reorganise the Toulon-Bastia-Livorno connection

These observations on the condition of maritime transport between Toulon and Livorno via the port of Bastia have highlighted the acute problem of journey times. Since we have no reliable data concerning the potential increase in traffic that would derive from using the maritime service between Toulon and Livorno, it is unrealistic to expect major changes in the supply of services. Therefore this study has focused on suggesting some developments which would require only fairly slight changes in the supply of maritime transport.

#### *Adequate change in timetables*

The timetable changes which, in our view, would be genuinely advantageous are, at least in their formulation, relatively simple. They aim to base the organisation of the Toulon-Livorno link via Bastia along the lines of the timetable that is adopted during the tourist season.

In the direction from Toulon to Livorno, the changes would be limited to changing the departure time of ships on the Bastia-Livorno line. More specifically, what would be required is for the Corsica Ferries company to arrange the low and mid season departure times on the three days in question (Wednesday, Friday and Saturday) at 8 h & 15' instead of 13 h & 30'. Thus the crossing from mainland to mainland would have the following timetable:

Departure from Toulon <i>Day G</i>	Arrival at Bastia <i>Day G + 1</i>	Departure from Bastia <i>Day G + 1</i>	Arrival in Livorno <i>Day G + 1</i>
20 h or 22 h 30'	7 h	8 h 15'	12 h 15'

*Day G = Tuesday, Thursday, Friday*

In the direction from Livorno to Toulon, the changes would be limited to a change in departure time of ships on the Livorno-Bastia route. Thus during the low and mid season, on the three days of the week in question, the Corsica Ferries company would have to arrange ship departure time for 13 h & 30' instead of 8 h and 15'. To limit time spent waiting for the connection in the port of Bastia, it would be preferable for departure time from Livorno to be set back by two hours, i.e. arranging departure time at 15 h & 30. This would

mean that waiting time between arrival of the ship from Livorno and departure of the ship for Toulon would be just 1 h & 30'. But this time gap between the connections seems to be a fixed constraint for Corsica Ferries. The most rational organisation of the route would seem to be the following:

Departure from Livorno <i>Day G</i>	Arrival in Bastia <i>Day G</i>	Departure from Bastia <i>Day G</i>	Arrival in Toulon <i>Day G + 1</i>
13 h 30'	17 h 30'	21 h	7 h

*Day G = Monday, Wednesday, Friday*

#### *The possibility of concretely implementing the changes*

In comparison to the current service operated by Corsica Ferries, the establishment of a Toulon-Bastia-Livorno connection throughout the year, as proposed (in both directions, with the service operated three times a week) could require the addition of an extra ship. However, in the majority of cases the implementation of the planned service would merely require a reorganisation of Corsica Ferries' timetables. That is to say, it would be a question of shifting the departure of a ship from the morning to the afternoon or viceversa. On the basis of these rather generic observations, it seems tempting to conclude that the obstacles to establishment of the maritime highway between Toulon and Livorno via Bastia are relatively slight. Indeed, in terms of secondary management costs, such a modification seems to have very few disadvantages.

Unfortunately, this is not the case. Like the addition of extra ships, changes in the timetable of currently operating services can lead to non negligible management costs. To understand why this is so, two complementary economic phenomena must be explained. The first concerns the interdependence of the conditions of management of the various connections operated by the ferry company (a change in the timetable of a given connection has repercussions on the conditions of management of the other connections). The second concerns the compatibility of these changes with the commercial strategy adopted by the company (choice of departure time is made as a function of the characteristics of the demand. By deciding to change the timetable, Corsica Ferries would implicitly accept the concept of adapting its services to the requirements of road transporters rather than of passengers).

In effect, the idea of setting up a maritime highway between Toulon and Livorno via Bastia can be considered as a pertinent project, modest but risky. Its pertinence can be justified in the light of the economic-ecological context in which freight transport currently operates. Its modest nature derives from the fact that the project does not require the setting up of a new line. Finally, its risk is associated with the fact that the ability of this route to attract terrestrial freight flows is very uncertain. Naturally, the maritime solution still suffers from a marked competitive disadvantage as compared to the road solution.

On the basis of this three-fold observation, it can be stated that the principle of maritime highways or motorways represents a very interesting transport formula that should be strongly incentivated in the future. But at

present it seems that the economic-institutional context of the transport sector does not sufficiently facilitate this type of development.

## ***7. Conclusions: inter – island cooperation. A working proposal***

### **7.1. Overview of the paper**

The findings presented in this paper clearly show that economists and politicians entrusted with the subject of maritime transport within the European Union have devoted little attention to the possible inclusion of Mediterranean island systems in plans for encouraging SSS in Europe. Thus no plans have been drawn up for the creation of island routes and for appropriate funding of such routes. Furthermore, as far as the implementation of SMs is concerned, the concept of inclusion of the islands is completely absent. SMs represent a recent expansion of the systems considered in the TEN- Trans- European Networks. Thus while maritime transport networks are considered fully on a par with other networks and are incorporated in the part of TEN that is devoted to transport, with the specific objective of launching SSS, the fundamental aim is to reduce congestion and to boost intermodality. Maritime transport networks are seen as a strong alternative to terrestrial motorways and are conceived above all for cargo transport, although passenger transport is also expected to play a small part.

At the outset of the debate on enhancing maritime transport the islands received only scant attention. Now, a decade later, in the wake of pressure deriving from the above mentioned congestion problems, they are totally neglected, and are affected by even worse problems of isolation: given the overall advancement of European economies and of the Mediterranean economies in general, this could lead to a devastating demographic and socio-economic regression.

Such a circumstance would be in contradiction with one of the fundamental objectives of any European policy, namely, cohesion.

We believe that it is imperative to insert an explicit focus on islands in Community policy. This means a special mention of the islands within SSS maritime systems, as a specific reference is essential in order for the islands to be inserted within appropriate funding plans and actions.

The volume of island traffic (between islands and the mainland and inter-island traffic) is not sufficient to cover the cost of dedicated lines, and probably not even to cover deviations from the most efficient SM route. For these secondary routes, sea highways, it is necessary to consider a public financing project, which however can be partly attenuated by co-response of the traditional and advanced island maritime services in the island ports.

## 5.2. Feasibility studies

It is necessary to start out from the realisation that short-range intra-European maritime transport can take on a variety of different aspects, including highways and SM, either built autonomously or corresponding to feeder legs of oceanic transport routes, and it may feature specialised full-container ships, but above all Ro-ro, Lo-Lo or Ro-Pax ships, exploiting both routes organised as hub and spokes and also more traditional multi-port systems. Therefore we performed a feasibility study simulating the establishment of a hub and spokes network for a cluster of Western Mediterranean islands, in particular the IMEDOC islands (Corsica, Sardinia, Sicily and the Balearic Isles).

The solution proposed is the creation of a network of mainland and island ports whose reference hub is Cagliari, in Sardinia, which presents the characteristics of a genuine hub as it has a large volume of traffic and has docking facilities for large tonnage ships, whose cargo can subsequently be redistributed towards smaller ports.

A second feasibility study was also performed, again in the IMEDOC framework, to assess the possibility of including the port of Bastia on the Livorno-Toulon route, which in effect already exists. The study showed that although some risks would be involved, the project could be achieved.

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