WiderMoS, A NEW WAY TO MAKE BETTER BUSINESS BY USING THE EU CORE NETWORK CORRIDORS AND SMART LOGISTICS

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Abstract

In December 2013, the new European transport infrastructure policy has been launched through the adoption of the new TEN-T (Trans European Transport Network) guidelines, and throughout to the "Connecting Europe Facility" as the related funding instruments. The previous TEN-T regulation achieved certain successes in cross border infrastructure. However, the revision is necessary for the development of the internal market and to allow the achievement of the Europe 2020 objectives (reduction of CO_2, removing bottlenecks from transport chains that limit the smooth functioning of the European internal market and the regular flows of passengers and goods, etc.), translated as a more sustainable, green, efficient energy, safe and secure EU Transport. In order to support the implementation of the Core network Corridors, the new Regulation contains specific tools: Corridors and Coordinators. The corridors will allow bringing together all relevant stakeholders (such as Member States, regions, local authorities, infrastructure managers, port authorities, and users) under the leadership of a European coordinator and concentrate on cross border sections, intermodality and interoperability. The TEN-T revision aims to establish and develop an integrated trans-European transport network which covers the infrastructure for all transport modes, ensures the functioning of the internal market and strengthens economic and social cohesion. This paper introduces the WiderMoS project, an initiative promoted by the TEN-T program through the INEA "Innovation and Network Executive Agency", and developed by 5 EU countries and 16 institutions leaded by La Spezia Port Authority, which will meet interoperability among some of the nine Priority Core Network Corridors, from west Mediterranean countries to central – north Europe, promoting the integration of transport infrastructures (port, road and rail), information structures (info-structures: Port Community Systems and Single Window Services) and transport actors, from a Business to Business (B2B) point of view, in a private – public action. The main outcomes of the project are to efficiently and commercially exploit the corridors drawn by the TEN-T making European economy more competitive, efficient and smart.

Keywords

Motorways of the Sea, Core Network Corridors, logistics, door to door transport, multimodal transport, single window, Corridor Management Platform, EU TEN-T (INEA).

1. INTRODUCTION

The <u>WiderMoS</u> project, acronym selected for the <u>"Wide Interoperability and new governance moDels for freight Exchange linking Regions through Multimodal maritime based cOrridorS"</u> project's name, is an initiative engaged to the purposes of the Trans European Transport Network promoting and strengthening seamless transport chains for passenger and freight, while keeping up with future technological trends.

Some introductory definitions must be clarified in order to clearly understand what <u>WiderMoS</u> is going to be.

The European Union has a new transport infrastructure policy that connects the continent between East and West, North and South. The new regulation contains a new approach within all the transport infrastructure is designed with two layers:

- the "comprehensive network", a general network reaching all regions and ensuring that all citizens and businesses have easy access to European transport;
- the "core network", covering the main transport streams between capitals, large urban nodes, major ports and border crossing points, identified with an objective methodology.

Figure 1. The 9 TEN-T Core Network Corridors
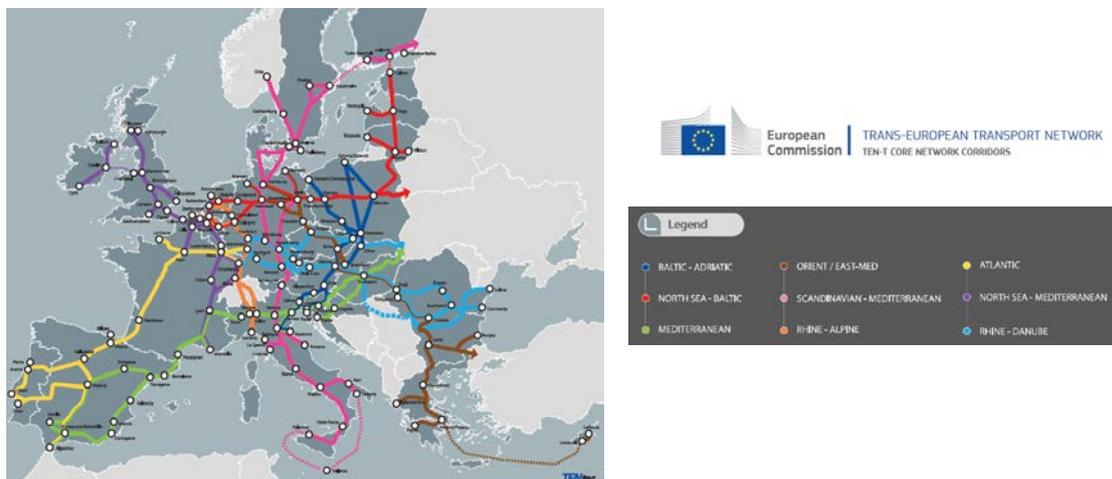
Source: European Transport and Mobility General Directorate

<u>The Core Network</u> is the backbone of the multi-modal mobility network. To ensure its realization and implementation, the Commission developed the concept of multimodal core network corridors. In terms of scope, the Commission proposed 9 core network corridors, covering the 27 Member States. Each corridor shall cover at least 3 transport modes, cross at least 3 Member States and include 2 cross border sections. The core network corridors shall be based on modal integration, interoperability, as well as on a coordinated development and management of infrastructure.

Motorways of the Sea are the maritime dimension of the TEN-T network. By improving Maritime and Ports operations, MoS will allow the development of the underlying skeleton of the new multimodal core network corridors. It is the Priority Project 21 for INEA.

As stated of the actual TEN-T regulation, *"The trans-European network of motorways of the sea is intended to concentrate flows of freight on sea-based logistical routes in such a way as to improve existing maritime links which are viable, regular and frequent, or to establish new such links for the transport of goods between Member States so as to reduce road congestion and/or improve access to peripheral and island regions and States […]and may also include activities which have wider benefits and are not linked to specific ports, such as making available facilities for ice-breaking and dredging operations, as well as information systems, including traffic management and electronic reporting systems"*.

"Moreover the new TEN-T regulation adds that Motorways of the sea represent the maritime dimension of the trans-European transport network. They shall consist of short-sea routes, ports, associated maritime infrastructure and equipment, and facilities enabling short-sea shipping […], including hinterland connections, [..] and includes information and communication technologies (ICT) such as electronic logistics management systems". [1]

Figure 2. Motorways of the Sea (MoS) map.

Source: Innovation and Networks Executive Agency (INEA)

Motorways of the Sea and TEN-T corridors

The main objective of the Global project is to contribute to the promotion of the Motorways of the Sea (MoS) priority project in EU fostering its effective and sustainable connection with core TEN-T network corridors. In any way, all of the actors involved in transport chains are invited to find out the way to make better business taking advantage

of this initiative, the corridors and MoS shall not exist if EU economy "drivers" do not use these initiatives.

Directive 2010/65/EU

One of the main objectives to reach in terms of the multimodal transport, is the harmonization of reporting formalities applied to the maritime sector. The sea leg in a combined freight transport has been maybe the oldest when we talk about the international movement of goods. Nowadays, it represents almost the 90% of the total freight moved around the world, nevertheless, many procedures related with the administrative steps when arriving or leaving international ports, continue being the cause of bottlenecks on the goods flow. The complexity of maritime transport require an in deep analysis when a transport contract must be drawn. These facts conducted to the European Commission to work on the development and introduction of the Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on *"reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC."* This directive applies to the reporting formalities applicable to maritime transport for ships arriving in and ships departing from ports in European Union (EU) countries. Every EU country must ensure that the reporting formalities at their ports are requested in a harmonised and coordinated manner. The master, or any other person duly authorised by the operator of the ship, must provide the competent national authority with notification, prior to arriving in an EU port, of the information required under the reporting formalities.

Electronic transmission of data

EU countries shall accept electronic reports via a <u>single window</u> as soon as possible and, at the latest, by 1 June 2015. The single window will be the place where all information is reported once and made available to various competent authorities and the EU countries. EU countries must ensure that information received in accordance with reporting formalities is made available in their national SafeSeaNet systems and make available parts of such information to other EU countries via the SafeSeaNet system.

EU countries shall accept FAL forms for the fulfilment of reporting formalities and they may still accept information provided in a paper format until 1 June 2015. [3]

2. WiderMoS

As an operative and policy supporting test bed and pilot project, <u>WiderMoS</u> is being developed and implemented to improve the interface between maritime transport and other modes (mainly rail), implementing new port/ship/train interfaces and efficient port-hinterland connections, connecting ports and integrating freight "origins" and "destinations", and bridging gaps in and between different trade corridors.

In other words, <u>WiderMoS</u> aims at facilitating the homogeneous connection between Motorways of the Sea and the TEN-T core network corridors throughout several activities:

- A MoS prospective study facing the transport challenges in 2020 and beyond, setting options and opportunities for the future deployment of MoS;

- an in-depth analysis of some key topics (including customs procedures and logistic processes) linked to the deployment of the future governance model of the core network corridors;
- a number of 5 pilot projects in the Mediterranean, Atlantic and the Baltic sea focused in the development of an IT Corridor Management Platform (CMP) acting as a Logistic Single Window for the integration of sea – based transport services in the logistic chain, with a focus on paperless logistics / e-customs processes and with priority for the integration of inland terminals and rail.

As a key success factor, WiderMos is supported by a large stakeholder network working as a think tank for the actual and future MoS in terms of performance, capacity and requirements, market studies, implementation and investment plans. The platform is composed by institutional entities, regional and local authorities and other relevant public and private stakeholders including chambers of commerce, port authorities, shipping lines, shippers, infrastructure managers, and transport and logistics operators.

In order address those issues WiderMoS is implementing 3 main strands of activities:

2.1. *5 Corridor Management Platforms* (CMP) Pilot Projects under the Activity 1, demonstrating the effectiveness of a better structured interoperability between modes realized via the implementation and demonstration of Corridor Management Platforms; linking MoS and inland core priority corridors the CMPs are focused in ports; the pilots will be realized in:
- La Spezia (Italy)
- Barcelona (Spain)
- Rostock (Germany)
- Kiel (Germany)
- Leixoes (Portugal)
-
2.2. A policy supporting activity defining the medium term prospective options for MoS in 2020 under the Activity 2, and
2.3. A deeper analysis of 4 very specific topics linked to the realization of the TEN-T corridors governance model under the Activity 2.

WiderMoS is taking place in 5 Member States from September 2013 to November 2015 with an overall eligible costs of around 5 million euro.

The consortium is composed by relevant actors in the maritime and logistic field such as:

- the port communities of the port of La Spezia (second port in Italy) and Barcelona
- the national Customs Agencies of Italy and Spain
- worldwide shipping lines such as MSC
- worldwide relevant shippers like Ikea
- other relevant ports in north and south of Europe
- relevant logistic player such as ASTA logistik and Kombiverkher (Multimodal Transport Operators)
- important logistic nodes such the inland terminal of Zaragoza, Mezzo and Padua
- other significant actors such as regional entities, chamber of commerce, shipping agents and forwarders associations, innovative IT system integrators.

3. CORRIDOR MANAGEMENT PLATFORM [2]

The Corridor Management Platform (CMP) is a network of business interoperating platforms where shippers and other logistic actors could control their operations throughout the formalised supply chain. The CMP supports ***Business-to-Business (B2B)*** processes, with a concept of one-stop-shop for logistics services, involving private clients and service providers.

The CMP will interconnect systems of different actors: carriers, logistics integrators, ports and other logistics platforms.

The CMP will interconnect intermodal transport networks which include maritime, road and rail related information systems. On one hand it will increase the visibility of all stakeholders involved in a commercial transaction (mainly businesses) requiring transport and logistics services: freight owners, train traders, railway companies, railway infrastructure managers, shipping companies, port infrastructure administrator, short and long distance transport companies and in the other hand it will allow the collaboration among them by the use of collaborative tools and shared decision making processes.

The key factors of information flow and exchange between "machines" and stakeholders are the actual interfaces, message formats and information exchange protocols utilised. Different standards exist and there is a need to link them with an agreed framework covering aspects such as semantics (meaning of information elements and the relationship among them), vocabularies, etc., to ensure that the information is understood in the same way by the different organizations or stakeholders.

It is essential that new information systems have the capability to operate with legacy systems which will be retained by many stakeholders.

Another important point is the fact that the transport and logistics domain is still a highly-based paper sector. There is a need of ICT solutions adoption. WiderMoS CMPs will be an affordable, reliable and trusted option for SMEs (Small and Medium Enterprises) to take part in international trade and commerce flows at a very competitive cost.

3.1. CORRIDOR MANAGEMENT PLATFORM SPECIFIC BENEFITS

- Improve the efficiency and flexibility of processes, the quality of real-time information and traceability of cargo, reducing administrative costs and procedural errors.
- Improve the integration and sharing of information between different actors in the logistics chain.
- Increase visibility and predictability throughout the transport chain - Boosting reducing costs of production / stock, as well as the logistics costs, offering multimodal optimized transport solutions.
- Improve security transparency and reliability, offering standardized and qualified services.
- Provide IT support services to ensure interoperability and implement standard procedures and mechanisms for data exchange

In addition to the general benefits described above, here are included some of the WiderMoS system benefits for companies:

- Offers new and better services to companies, in order to help them use economies of scale to be more competitive operationally and financially
- Increased visibility to other business models in the logistics nodes
- Promoting door-to-door services to companies in logistics nodes
- Increasing use of multimodal transports, to take advantage of its benefits such as high volume-low unit cost transportation.
- Address reverse logistics issues, such as returning empty back hauls, through the consolidation of freight demand by the logistic single windows
- Better utilization of vehicles and Increased load factor
- Better quality data and less administrative costs for SMEs.
- Better synchronization of freight traffic through ports, road and rail infrastructure (synchro-modality).
- Increase the speed at which goods can move, reduce costs and improve business efficiency.
- Simplify information flows.
- Cutting costs through reducing delays.
- Faster clearance and release.
- More effective and efficient deployment of resources.
- Create incentives for innovation, recognising the specific role of ICT in this context.
- Improve skills related the implementation of innovative technologies.

Figure 3. The WiderMoS CMP legs.
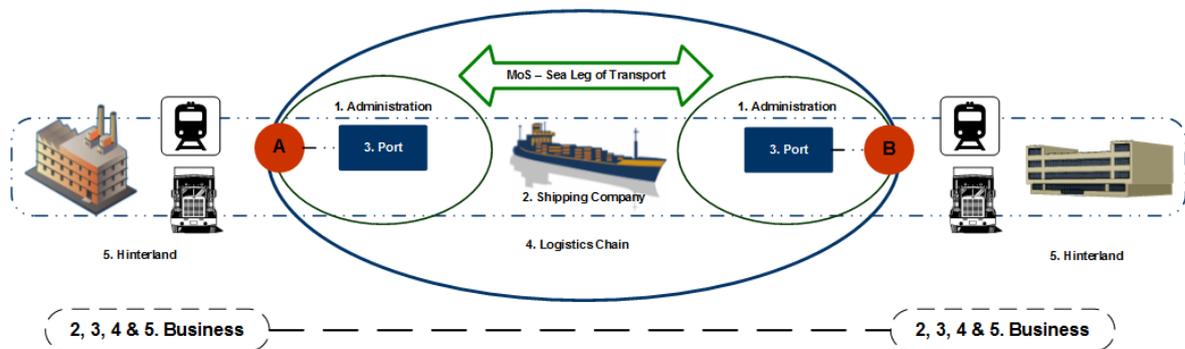
Source: own elaboration

The aim of the CMP Pilot is to let the user and supply chain agents access to a middleware as a web services platform at different levels. The middleware will be independent of operating systems since it will be developed as a web application; updating and maintaining the CMP platform without distributing and installing software will increase the facility of use. The CMP solution will let active communication among and the users, **B2B**, this communication will be carried out through forms, and documents download, and access to database agents with validated permissions.

The information and goods must flow in a synchronized way, even information may arrive first to each agent or actor within the chain.

Figure 4. The Information and Freight Flows within the Multimodal Transport Chain.
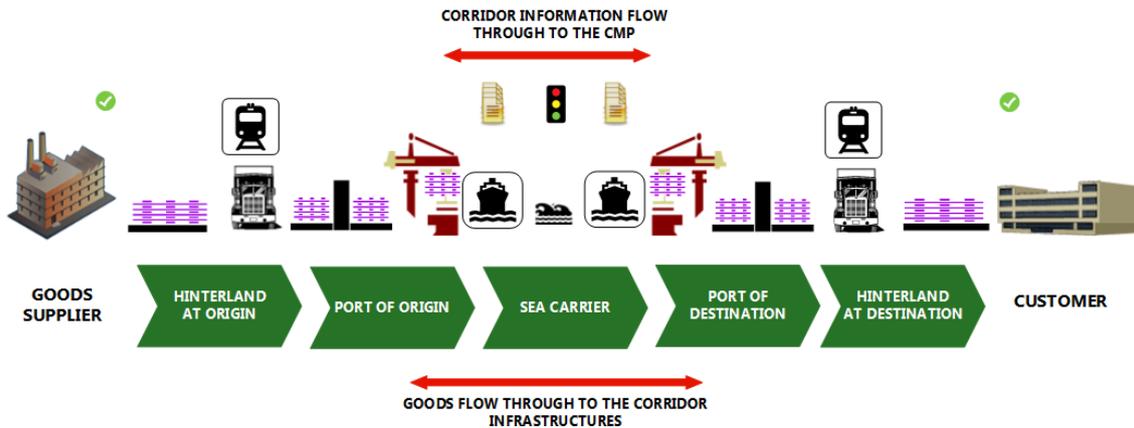
Source: own elaboration

It is expected that anticipating any bottleneck in information flow, the physical flow of goods will be always constant, diminishing transport change operations and the delivery delays and improving efficiency. This may be translated in better service offers by the transport agents increasing benefits and competitiveness.

3.2. THE CMP PILOT APPROACH

The basic message exchanges are more or less the same and there is no obvious technical reason why these exchanges could not be standardised within Europe and among the different actors on the transport chain, and in our case, the "Corridor" actors. Nevertheless, some differences in documents and timing related to local port regulations and national transport laws have been a bottle neck to be solved.

The proposed ICT tool (CMP) is being implemented in a server offering a web service. This tool provides an efficient solution to increase the organization and access to the transport information from origin to destination in a collaborative way. Its database will be stored in a centralized server containing an existing database, using access permission protocols and secure connections over Internet: HTTPS (Hyper Text Transfer Protocol Secure). At the same time, the own agent databases and information are maintained restricted for the rest of the actors using the CMP.

Protocol based in HTTP protocol oriented to encrypted communication and secure identification of a network web server. HTTPS system uses encryption based on SSL/TLS (Secure Sockets Layer/Transport Layer Security) in order to establish an encrypted communication channel.

The levels of access to the CMP are defined according to the following main roles:

> User1: user authorised to edit, modify and manage all the application (Corridor Manager)

> User2: user authorised to edit and modify only forms related to the origin nodes (local freight forwarder at origin)

> User3: user authorised to edit and modify only forms related to the destination nodes (local freight forwarder at destination).

Figure 5. The CMP concept applied to the Mediterranean and Central Europe Corridors.
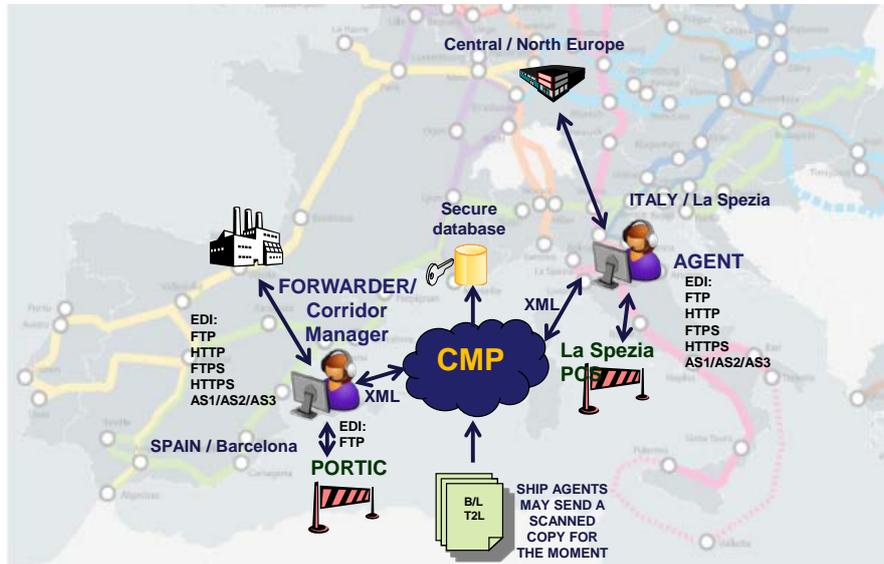
Source: own elaboration

The information availability and exchange will take advantage of the capacity of the transport operators to facilitate the integration to the CMP through middleware protocols. The access to the Port Community Systems by these agents is also required in order to reach the desired results.

As part of the Electronic Commerce (EC), the CMP is thought as a sophisticated service which improves the container's transport performance, increasing the efficiency of the multimodal transport providers and their turnovers. Some examples of international trade support platforms are: (1) Tradelink which is used to complete the customs declaration in Hong Kong. To improve operational efficiency and reduce transaction cost, many traders use Tradelink as a platform to complete their customs declaration; and (2) INTTRA that is the platform that shipping lines work with other actors such as logistic service providers in the container transport chain, and what is also a single-source Internet portal through which shippers can access services offered by a community of liner shipping companies (source: www.inttra.com). Services offered by INTTRA include checking the sailing schedule, booking shipping space, and tracing container status. The use of EC suggests that operators in container transport chains are making use of EC to develop their networks and connect with shippers and their suppliers to improve productivity and the service provided. [4]

## 4. MoS PROSPECTIVE STUDY & CORRIDORS GOVERNANCE DIMENSIONS

"Motorways of the Sea (MoS) are the framework for the development of actions covering maritime transport/ports and favouring their integration in the global transport chain. In the new TEN-T Guidelines, MoS are part of the Core Network and link into the Comprehensive Network. They constitute an invisible but fully available transport corridor covering all of the EU's coastal areas and will therefore be a key infrastructure

implementation tool in the deployment and operation of the Comprehensive and Core Networks". [5]

The aim of this project activity is to deliver a MoS Prospective Study setting up the main strategic line of directions for MoS in between 2015 and 2020, linked to the new governance corridors dimensions and assessing the potential of MoS as the 10 Corridors and the maritime dimension of TEN-T.

It will specifically cover some MoS deployment issues as underlined in the 2012 EU Coordinator report on MoS: application of ICT, clustering of ports and development of corridors paying attention to the regional aspect, European internal market and logistic chains, as well as external trade.

Figure 6. The Corridor Governance Approach.
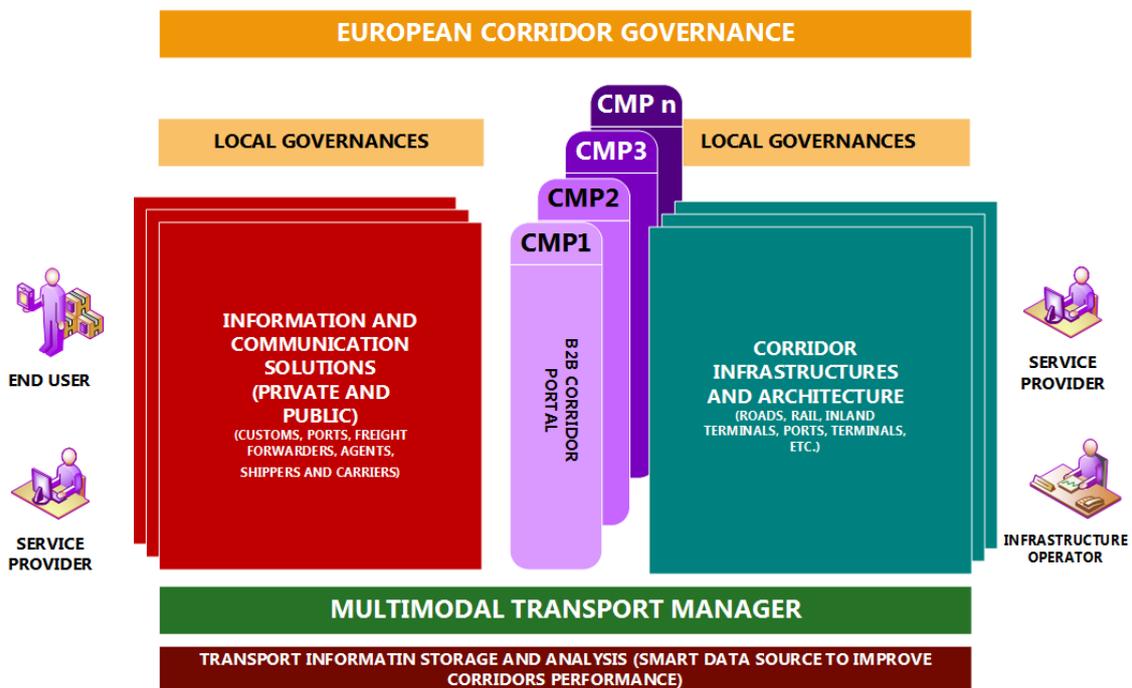
Source: own elaboration

Private initiatives must drive the EU Policy Makers to the adoption of agile Directives and Governance Models with the aim of improving the efficiency, trust, profitability and competitiveness of transport sector in Europe. The implication of relevant stakeholders in Spain, Italy, Germany, Portugal and Poland at administrative level will provide to **WiderMoS** the arguments to develop and implement the right solutions, solving the most difficult part: the A2A procedures across Europe. Customs, Maritime and Rail Authorities, and regional Authorities involved in the development and investments in the maintenance and construction of Transport Infrastructures are required to be part of the third party partners of the project, in fact they take part of the project and have consolidated a powerful Administration Stakeholders Network.

5. Conclusions

Up to know, the <u>WiderMoS</u> project has collected some stakeholders and user needs regarding the complexity of the management of the whole Transport Chain. The Corridors are the physical way but they require a huge work to demonstrate Governmental Interoperability applying A2A policies. One ongoing initiative supported by the TEN-T program under the INEA supervision is the <u>ANNA</u> project. AnNa supports (system) integration of national Maritime Single Window development (ship-to-shore and between the various services/administrations) also to allow for effective and sustainable communication between the national systems, including SafeSeaNet (SSN). Rationalisation, Standardisation and Interoperability are key. [6]

At private level, the institutions involved need to demonstrate that new or improved corridors based on the Core Network corridors are feasible in terms of the amount of freight, the turnovers, the profits, the connections availability and the most important, the movement of transport means must be occupied in both directions. Empty containers is a gap that any transport operator does not want to pay for. The success of the Core Network corridors depend on the way multimodal transport operators find the balance between the goods moved from origin to destination and vice versa.

The limitations for the use of trains for cargo and freight of goods in combination with other modes, are complex because of the management of empty containers, frequency of trains and offer availability. The frequency and the possibilities to have the trains with full containers loaded is another limiting factor.

Figure 7. The Final Goal of WiderMoS.
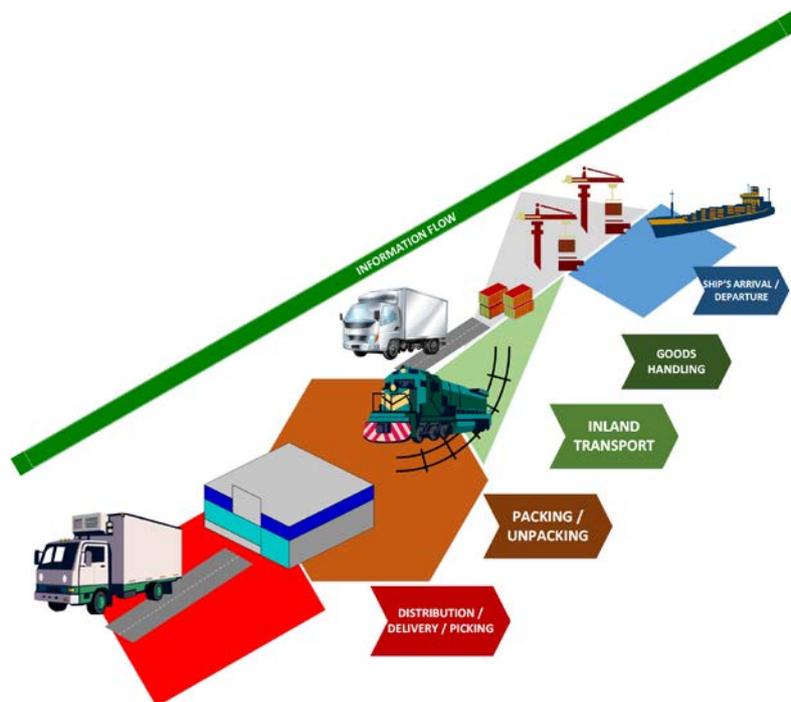
Source: own elaboration

An interoperable, profitable and efficient transport chain is desired in terms of the infra and info structures capacities. The technology is sufficiently mature and the corridors are available. The end users are required to take the challenge to change the way to make business by using smarter and optimal solutions applied to the multimodal transport.

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