StratMoS
Final Report

StratMoS

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Summary:

The StratMoS project (Strategic Demonstration Project for Motorways of the Sea) is an EU Interreg North Sea Region Programme project, started in 2008 and finished in 2011. As the title indicates, the project shall contribute to materializing the Motorways of the Sea objectives, i.e. to shift cargo from road to sea and to improve accessibility to peripheral regions.

The project has 29 partners, both form public sector and from private sector. The work is carried out by four work packages and five demonstration projects, and the key results from the project are the following topics, also presented in 10 separate leaflets:

- Toolbox for MOS funding applications to assist applicants in preparing their proposals
- Northern Maritime Corridor – Extending Motorways of the Sea to the High North
- Accessibility to peripheral areas – A need for targeted Motorways of the Sea funding
- Dry ports as an integral part of the logistics hub structure
- Floating container storage and transshipment terminal
- Establishing new sea services
- Regional hubs
- The use of security devices in container transportation

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PREAMBLE

The StratMoS project (Motorways of the Seas Strategic Demonstration Project) was one of the first projects to be approved in the new Interreg IVB programme 2007-2013. The project was approved within Priority 3, “Improving the accessibility of places in North Sea Region”, and within Intervention 3.2, “To promote the development of intermodal transport corridors”.

The initiative to develop StratMoS was taken by some of the partners who had previously been involved in the “Northern Maritime Corridor” (NMC) initiative; a project in the Interreg IIIB programme. Their interest was to bring forward and further develop the results from the NMC project. The visions and goals in StratMoS are the same as in NMC, but StratMoS has had a wider focus and partnership. The focus is no longer only on the sea leg of the whole transportation chain, but covers the whole logistics chain through the sea leg, the port and logistics hub, and the hinterland connections. The partnership now consists of 29 partners in 6 North Sea countries as well as associated partners in the Murmansk, Archangel and Nenets regions of North West Russia.

This Final Report summarises the main activities and results from the StratMoS project. In addition to this summary report, 10 project leaflets have been developed to detail the main achievements and results from the project. Those leaflets as well as the Final Report and all other reports can be found on the StratMoS website www.stratmos.com.

This report is structured as follows:

- Chapter 1, Introduction, sets out the vision and objectives of the project as well as the partnership and organisation.
- Chapter 2, Transnational Approach and Achievements, discusses how the overall objectives of the Interreg programmes were pursued by the StratMoS project.
- Chapter 3, Work Packages and Demonstration Projects, gives details about the background, objectives, activities and results of each of the work packages and demonstration projects.
- Chapter 4, Taking the Results Forward, outlines how good results from the project have, and will be, utilised and pursued.
- Chapter 5, Lessons Learned, summarises some of the key lesson learned in taking forward this project with respect to both intermodal transport and project management.

Stavanger, 5th November 2011

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1 INTRODUCTION

1.1 Vision and Objectives

The primary rationale for the StratMoS project was the establishment of Motorways of the Sea (MoS) as part of the TEN-T network. In this context the MoS concept is not just limited to the sea leg of the transport chain, but comprises the logistic chain as a whole, taking both hubs and hinterland connections as crucial elements in order to make sea services competitive with road transport in the overall door-to-door logistics chain.

A number of similarly styled projects to StratMoS have, to a great extent, concentrated on a particular corridor or transport axis. However, corridors and transport axes do not work in isolation but have to be connected to the overall transportation network. One strategic element in the StratMoS project was therefore introduced to ensure that a sea corridor, such as the Northern Maritime Corridor, could be connected to other transport corridors and transport axes within the North Sea region as well as other regions such as the Baltic Sea Region, Northern Periphery Region, and Barents Region thereby ensuring links between North West Russia and North West Europe.

The starting point vision for the StratMoS project was developed as follows:

> *Efficient, safe and sustainable transportation, connecting coastal areas and enhancing regional development in the North Sea Region, extending to the Barents region.*

A more detailed aim was then also formulated:

> *Promote and facilitate the shift of cargo from road to seabased intermodal transport and improve accessibility within the North Sea Region by supporting the implementation of MoS and related transport networks in integrated logistical chains.*

These aims reflect both the strategic and implementation levels of the project. At the strategic level the project intended to provide input and recommendations to the EU Commission as well as to national level transport policies, including recommendations to the North Sea Region MoS Task Force. The project also aimed to provide recommendations to the private sector, industry associations, NGOs, Short Sea Promotion Centres etc.

At the implementation level the project's aim has been to define the actions required by public and private organisations in order to improve the effectiveness of intermodal transport, particularly hub and hinterland connections. The aim is to make the different legs of the intermodal chain "invisible" to the market, so that the market is only aware of the door-to-door delivery.

1.2 The StratMoS Partnership

The StratMoS partnership is a large partnership when compared to most Interreg projects, having amassed 29 formal partners by the end of the project period (see the list of partners in Appendix). A number of the formal partners have a subset of other local partners that they have involved in the project implementation; hence the number of organisations directly involved in the project stands at more than 100.

As can be seen from the partnership list StratMoS comprises partners from 6 out of 7 North Sea Region countries. Sweden also has a connection to the project through links with the Dryport and TransBaltic projects. The partnership has had both vertical and horizontal influence since partners represent ministerial/national, regional and local levels and come from a range of backgrounds including the public and private sectors as well as universities and research institutions.

1.3 Project Organisation

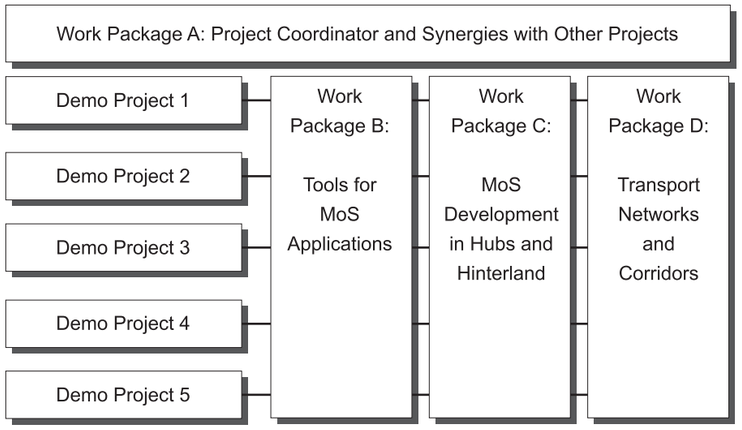
The project was structured into four main work packages and a set of demonstration projects.

The figure below illustrates that Work Package A (WPA) is an overall work package which supervises the work in the thematic work packages and demonstration projects, and then disseminates the results from these. The figure also illustrates that WPA functions to extract the lessons learned and results from each thematic work package in order to create synergies between them and with other related projects.

Each of the Work Packages/Demonstration Projects has had a Work Package or Demonstration Project Coordinator. These constitute, together with the Chairs, the Work Package A group which in reality has been the Management Team for the Project.

The objectives of the various work packages and demonstrations projects have been as follows:

- Work Package A: Project Coordination and Synergies with Other Projects: To co-ordinate the project activities and outputs, to identify and create synergies with other projects and to disseminate the results of the project.



The figure illustrates the interdependencies between the demonstration projects and the work packages. The work and results from the demonstration projects feed into the various work packages, and vice versa, in a matrix structure. The various demonstration projects, to some extent, relate to and impact on all three thematic work packages, even though, more often than not, they have been more closely related to one of them. The matrix above shows the main relationships between the various demonstration projects and work packages. The project has been managed by Rogaland County Council as the Lead Partner with the role of Chair in the International Management Meeting (IMG). Two Deputy Chairs were elected by the partnership and came from Aberdeenshire Council and Hamburg. Together with Rogaland they have constituted the Chair Meeting.

- Work Package B: Tools for MoS Applications: To provide a toolkit that can assist public and private organisations in preparing successful MoS-applications for the TEN-T, the Marco Polo Programme and other funding mechanisms, and provide indicators for achievement by the demonstration projects.

- Work Package C: MoS Development in Hubs and Hinterland: To strengthen the role of ports and hinterland facilities in door-to-door transport chains with a view of improving the effectiveness of the intermodal transport chain.

- Work Package D: Transport Networks and Corridors: To develop a systems model for MoS and intermodal transport chains, supporting and improving decision making, planning and implementation of MoS projects, and to develop strategies for connecting transport networks and develop multimodal transnational transport corridors.

- Demonstration Project 1: Northern Maritime Corridor – Barents Sea Intermodal Service: To enhance the network with North West Russia entities and to pursue the Barents Sea Intermodal Service with test sailings and a Marco Polo application.

- Demonstration Project 2: NORSHUKON: To contribute to and to learn from the planning, tendering and implementation of a new short sea shipping service (NORSHUKON) between Mid-Norway, Shetland and the UK, with links to the Continent.

- Demonstration Project 3: Development of the Port into an Intermodal Hub: To improve port regions as intermodal hubs by developing a blueprint for a model of strategic intermodal action plans.

- Demonstration Project 4: Secured Trade Lanes in the North Continent – Russia Corridor: To integrate an end-to-end transport chain management platform and demonstrate a proof-of-concept implementation.

- Demonstration Project 5: Offshore Hubs and MoS Linkages: To contribute to and to learn from the development of concepts for offshore hubs and the MoS linkages, with the Scapa Flow Container Terminal in Orkney as a case study.

2 TRANSNATIONAL APPROACH AND ACHIEVEMENTS

2.1 Transnational Approach and Achievements

The project covers a wide range of regions and partners throughout the North Sea area, comprising small as well as large regions, densely and sparsely populated regions, and areas experiencing both increasing and decreasing population numbers. The project has also been seeking synergy effects with, and knowledge transfer from, projects in other programme areas.

The main focus of the StratMoS project is on intermodal transport chains and MoS. Because MOS comprise transport corridors and axes that run primarily between two or more countries. StratMoS-implementation has been transnational, particularly in respect of the demonstration projects. The transnational nature of the project thus demands cooperation between regions across borders around the North Sea.

Transfer of knowledge has occurred between partner regions involved in the various work packages and demonstration projects. This has taken place through conferences and project wide workshops. The project has provided an arena for transnational networking, also in respect of networking with Russia, and the demonstration projects have all actively involved private sector organisations.

Partners in the project comprise each of the countries in the North Sea region except Sweden, although a close relationship with the Swedish led Dryport project and the TransBaltic organisation has been established, particularly through those StratMoS partners who are also involved in those projects. Similar relationships have been established with the Interreg projects Food Port, NS FRITS and Care North. Partners have brought knowledge and experiences from these projects to StratMoS workshops and meetings, and vice versa. StratMoS partners have made presentations at conferences run by both the Dryport and TransBaltic projects and at several conferences and workshops in Russia related to Demonstration Project 1. A transnational profile is also apparent in the open StratMoS conferences and dissemination events.

The implementation of the work packages and demonstration projects has been transnational, with members from at least three countries involved in discussing research and draft reports in most meetings and workshops. The IMG and WPA meetings (common meetings for the partners) have always been combined with professional sessions, to discuss work and results from the various work packages and demonstration projects. In addition, several workshops have been organised for specific topics where several work packages/demonstration projects have been represented.

2.2 Cross-cutting Achievements

The StratMoS project has achieved a number of significant results, largely due to the transnational approach to the project. These are some of the highlights:

- The “Floating Container Storage and Transhipment Terminal” is a new, cheap and innovative concept for transferring containers from one ship to another. Barges or an old ship will serve as the quay, and the barge/ship can be anchored away from the shore, requiring no land area for the transhipment and storage. This concept has largely been developed by one of the partners (Transport Institute at Napier University) in Scotland and a German crane company (Gottwald Port Technologies). But the assessment and modification of the idea has been done through iterative processes together with logistics experts in different countries and in a transnational partner workshop.

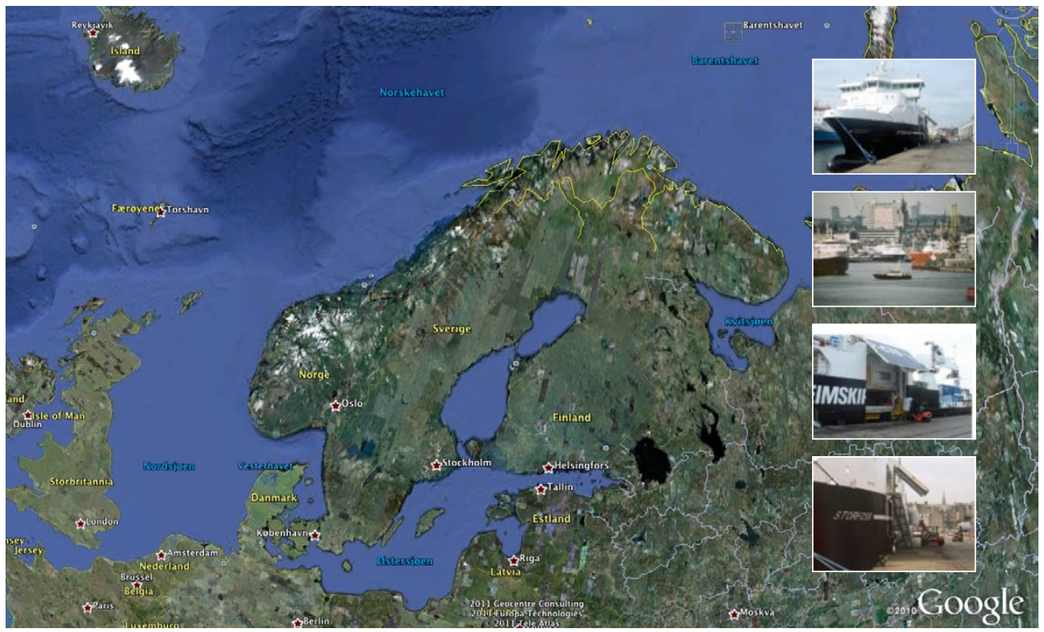
- Hamburg Technical University (TUHH) has been the driving force to develop a System Model for intermodal transport, a model that analyses the effect of various factors with respect to the development of transport strategies and projects. The development of the model has used two of the demonstration projects and thus involved several other partners. The concept of the model has been discussed at two transnational workshops.

- The “Northern Maritime Corridor” (NMC) was initially a sea transport corridor concept which gave name to an Interreg project. This sea transport corridor is linked to MoS corridors in Europe and, in reality, is an additional MoS in Europe, extending the MoS for Western Europe from the North Sea to the Barents Sea. The efforts to promote the NMC as a MoS have involved partners in Norway, the UK and the Continent, and the concept has been presented at a number of transnational conferences to the North Sea Commission and to the European Commission.

- Partners from the previous NMC projects have been working for several years on establishing a new sea service from Mid-Norway to the UK and the Continent. Subsequently, to support this it was decided to make an application to the Marco Polo programme. This work comprised partners in Norway and Scotland, and a previous NMC partner in Flanders. Although the application was unsuccessful, cooperation between the partners has been maintained in the belief that the project is viable even without Marco Polo funding.

- Demonstration Project 1 has been working to further develop the relationships between public and private organisations in Europe and Russia with a focus on the development of logistics services in the High North, partly due to the offshore petroleum exploration and partly due to initiatives to open the Northern Sea Route (North East Passage) for international shipping. The network is transnational, and has involved partners from the Netherlands, Scotland, Denmark and Norway amongst others. The relationships developed have helped Demonstration Project 4 to access port and customs organisations in St. Petersburg and Moscow.

- When the NSRP launched the concept of “Cluster Projects”, some of the StratMoS partners took the initiative to develop the “Maritime Transport Cluster”. They approached other similar projects and have prepared an application which has been approved. Its core objective is to enhance and spread good experience and practice both within and outside the partnership, and provided recommendations for new policies at the EU and national levels.



3 WORK PACKAGE AND DEMONSTRATION PROJECT RESULTS

3.1 Work Package A Project Coordination

3.1.1 Background and Challenges

The three thematic work packages and the five demonstration projects provided the substance of the StratMoS project. However, there was a need for tying the work, outcomes and results of the thematic work packages and demonstration projects together. This also implied a need for guidance of the work in these work packages and demonstration projects as well as bringing the results of the work into a consistent and uniform framework.

3.1.2 Objectives

The main objectives of Work Package A has been to tie the work of the thematic work packages and demonstration projects together so that the results can be reported in a consistent and uniform manner. The objective was also to develop a structured approach to disseminating the outcomes and results from the project.

The function of this work package was therefore largely managerial and supportive to the “real” work of the project that has been carried out by the work packages and demonstration projects. However, in addition to this managerial role, Work Package A has adopted responsibility for coordinating and cooperating with other projects as well as the overall dissemination of results.

3.1.3 Key Activities

- Work Package A has been lead by the Lead Partner, Rogaland County Council. The key activities in Work Package A have included:

- Project management meetings have been held on a regular basis. The International Management Group (IMG) comprises all of the partners and met on an annual basis. Inbetween the IMG meetings, Work Package A meetings were arranged, comprising the Chair and Deputy Chairs of the project and the project coordinators for the individual work package and demonstration projects. To intensify the activities in the last year two Chair Meetings and one Coordinator meeting were added to the programme.

- Between the meetings the Lead Partner has had contact with the work package and demonstration project coordinators to support their implementation. In particular Lead Partner assistance and influence has been focussed on bottlenecks and shortcomings.

- In conjunction with the IMG and WP A meetings, workshops have been organised to focus on the actual project work and research. The Lead Partner has also taken initiative for some work packages and demonstration projects to work on specific issues together.

- The Lead Partner together with the partners concerned has arranged conferences and dissemination events.

- The Lead Partner has been the contact point for cooperation with other similar projects.

- Common conferences with other similar projects have been organised.

- Dissemination of outcomes and results has been a continuous issue in the IMG/WP A meetings. This activity has been particularly intensive during the last year and has included improvements to the website and the preparation of individual leaflets to disseminate key results from the project.

3.1.4 Key Results

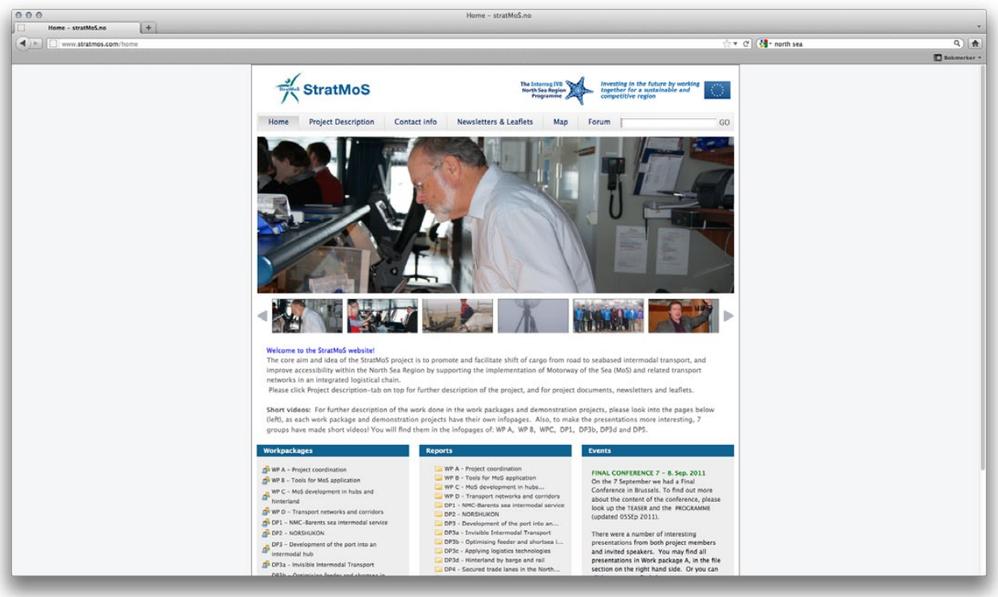
The main means of communication, both internally and externally, has been through the StratMoS website. Each work package and demonstration project had their own page to download reports, making them easily available to the partners. In the last year of the project, the IMG upgraded the website to improve access to the reports produced and event information. The presentations from conferences and workshops are also readily accessible on the website. The website will be kept open following closure of the project, for at least three years.

The website also provides 3 to 5 minute long videos about many of the work packages and demonstration projects. The videos explain about the activities in the work package/demonstration projects and the main results achieved.

A key aspect of the Interreg programme is to work transnationally. This has been one of the main achievements of this project as demonstrated in a number of ways. Firstly, each work package and demonstration project has members from several countries. Secondly, work has been distributed among the partners, and transnational meetings and workshops have been held. All partners have benefited from this transnational approach and the project results have been enhanced by it.

StratMoS has been in close contact with a number of other projects that have considered similar topics. The cooperation has been through the StratMoS partners who are also partners in other projects, but also through participating in partner project events. The main projects in question have been Dry Ports, NS FRITS, TransBaltic and Food Port.

Two different groups of StratMoS partners have prepared project ideas for cluster projects. One project proposal, Maritime Transport Cluster, was submitted and approved in June 2011, while the other initiative has been postponed until a later call for proposals.



3.2 Work Package B: Toolbox for MoS funding applications

3.2.1 Background and Challenges

Due to the importance of the MoS concept for achieving common goals in economic development and sustainability terms, it is important that the funding proposals submitted for approval are of the highest possible quality. The conditions that need to be fulfilled by those who submit a MoS proposal clearly go beyond the type of information normally required for planning a new enterprise such as a short sea shipping service. They include providing information on the modal shift generated, on socio-economic, employment, and environmental impacts and on the effects on competition.

It has been the experience in several research projects dealing with MoS related issues that such information is not easy to obtain and/or that there are various ways of achieving this task, not all of them being of equal value. It can be difficult, particularly for smaller companies, to gain an overview of the information sources and tools available to them. Judging their appropriateness for the task at hand can also be a challenge.

There are currently two funding mechanisms available, with which the European Union supports MoS projects: the Marco Polo programme and specific MoS funding, which is part of the Trans-European-Network Transport (TEN-T) programme.

However, the procedures for applying for this type of funding can be quite demanding and several core aspects need to be covered in addition to showing that the proposed MoS project will become economically viable over time.

Therefore, guidelines and tools are available to support the application process. As part of the StratMoS project, the Institute for Transport Planning and Logistics at the Hamburg University of Technology created an on-line Toolbox, which documents these. The Toolbox can be found at www.vsl.tu-harburg.de/stratmos.

This work package has also developed a set of indicators to help evaluate the outputs and results for the demonstration projects.

3.2.2 Objectives

The main objective of developing the StratMoS Toolbox was to support (potential) MoS funding applicants in fulfilling certain requirements of the application to the EU. The Toolbox documents approaches for assessing modal shift as well as for assessing the environmental and socio-economic impact of proposed MoS measures.

3.2.3 Key Activities

Different activities were used to create the Toolbox. In order to incorporate the experiences that applicants and public administrations on all levels have made in drawing up/evaluating applications, a questionnaire study was conducted. Parallel to this, a literature review was carried out to find out what tools and information are available and those that applicants should be aware about in order to undertake the kinds of assessments required for the application. Other projects and studies with similar goals were also reviewed.

To finalise the thoughts and findings of these two steps, some comparative calculations were made (where possible) to test the selected tools.
All results were compiled into a report, which can also be downloaded from the Toolbox website.
Finally the results were transferred into the Toolbox.

The work on indicators has essentially been carried out in transnational workshops, including one workshop at which all the demonstration project partners were present.

3.2.4 Key Results

The Toolbox provides support for people wishing to submit TEN-T and Marco Polo funding applications for MoS projects. Such applications have to provide information on the nature of the proposed project and its economic viability. Amongst others the following three issues need to be covered:

- the modal shift (from road to sea), that is expected as a consequence of the project;
- the environmental impacts; and
- the socio-economic impacts of the project.

For all three aspects, relevant information and data are summarised on the website and are briefly set out in the following.

The Toolbox has been developed as a website to achieve a greater user orientation by providing ease of access and the possibility of interconnecting all the data and information sources essential

for clarifying the application requirements as well as for assessing the selected issues.

A separate leaflet has been produced, “Toolbox for MoS funding applications”, see www.stratmos.com

Modal Shift

The application guidelines for both TEN-T and Marco Polo (MP) funding require applicants to use the Marco Polo Modal Shift Calculator. This is a Microsoft Excel based tool, which can be downloaded from the MP programme‘s homepage. For better understanding and for guidance while calculating the modal shift, the Marco Polo Call for Proposals comprises calculation examples and useful hints on how to carry out the calculations correctly.

Environmental Impact

Regarding the assessment of environmental impact, the requirements are not (yet) strictly defined, for example regarding the types of emissions that need to be documented. Therefore, the website provides an overview and comparison of tools for assessing fuel consumption, greenhouse gas as well as air pollutant emissions. It comprises information on how the tools work, which transport modes they cover, what input data is needed, what type of information is generated – and of course also, where to find the tools.

It is recommended to make the decision for one tool and one tool only - depending on the required/ preferred data output and/or the available input data. For this purpose, a decision diagram is provided on the website. For further information some comparative calculations are also provided to illustrate the tools’ differences.

Socio-Economic Impact

Regarding the socio-economic impact, the Toolbox provides an introduction to the so-called HEATCO guide on carrying out cost-benefit analyses for transport projects. The TEN-T application guidelines recommend that the demonstration of a project’s socio-economic impact is carried out in accordance with this guide. There are also some useful hints on how to carry out such an analysis for a maritime transport project on the website.

3.3 StratMoS Work Package C: Motorways of the Sea Development in Hubs and Hinterland

3.3.1 Background and Challenges

An important part of developing the MoS is developing the hubs and hinterland logistics facilities. MoS should be an integral part of door-to-door logistics chains and should offer efficient, regular, reliable and frequent services that can compete with road only transport.
The ports connected to the MoS should have efficient hinterland connections, rapid administrative procedures and a high level of service necessary for the success of short sea operations. The efficiency of MoS can be stimulated through: organisation, cooperation, networking and integration between the hubs and hinterland logistics facilitators.
Work Package C has, sought to address these challenges, and others, in order to strengthen the whole supply chain.

Under each of the respective Work Package C activities a number of reports, papers, meetings, workshops, conferences and information bulletins have been developed, each reflecting key issues necessary to achieve the positive and innovative results of StratMoS.

3.3.2 Objectives

The objectives of Work Package C have been:

- To strengthen the role of ports and hinterland facilities in door-to-door transport chains with a view of improving the effectiveness of the intermodal transport chain

- To strengthen both the primary and secondary hubs and logistics facilities by analysing opportunities, constraints and challenges for inland transport operators and associated facilities in the form of Transport and Logistics Centres, dry ports, transport infrastructure, etc. in order to stimulate MoS development.

- The main challenge is to stimulate the cooperation between ports and hinterland terminals through enhanced organisation, cooperation, networking and integration between the actors along the whole supply chain.

3.3.3 Key Activities

The overall work in Work Package C has been conducted as six key activities, which are categorised as follows:

1. Identifying and Analysing the Characteristics of Complementary Ports;
2. Development of a MoS Integrated Dry Port Concept;
3. Development of the Hub Concept;
4. Analysis of Horizontal, Organisational and Administrative Issues in relation to MoS and Short Sea Shipping;
5. Bridge-building to the North Sea Region MoS Task Force; and
6. Inputs to the StratMoS Demonstration Projects.

3.3.4 Key Results

The strategic results of Work Package C have supported the work undertaken in the StratMoS Demonstration Projects while some of the findings have also been used during lectures and by students at Universities around the North Sea and in North West Russia.

Furthermore findings from StratMoS Work Package C have found their way to the European Association of Transport and Logistics Centre – EURO PLATFORMS – EEIG, while presentations on findings from the Work Package have been given at meetings of the North Sea Motorways of the Sea Task Force.

The research in Work Package C has shown that:

- Cooperation between ports can ease congestion, increase storage capacity, contribute to a modal shift, improve logistics and, as a whole, create added value for the cooperating partners.

- The quality of MoS services can be improved by developing the physical and administrative connections between ports and hinterland terminals.

- The Dry Port concept has found its way into European transport policy, plans and programs and awareness about the concept has been raised amongst stakeholders across Europe.

- There is indeed some appeal in using the cluster theory to make the MoS concept more dynamic, more efficient and more of a partnership initiative by key stakeholders.

- The peripheral regions of the North Sea Region have so far been unsuccessful in submitting an approved Marco Polo or TEN-T MoS application, which could imply a bias in the programs.

- Some confusion between the opportunities under the Marco Polo II programme and the TEN-T program still exists. The recent idea from the European Commission regarding a single window for MoS applications is a possible way forward.

- Results from Work Package C have provided background information for developing Transport and Logistics in North West Russia and Eastern Scotland.

All findings from StratMoS Work Package C can be downloaded from the StratMoS homepage: www.stratmos.com

Accessibility to Peripheral Areas

In respect to MoS support to applications related to peripheral regions, a separate leaflet has been produced, “Accessibility to Peripheral Areas – A need for targeted Motorways of the Sea funding mechanisms”, available at www.stratmos.com.

Improving accessibility to peripheral areas is one of the key objectives of the MoS funding instrument, and is also linked to the Commission’s overarching aims of territorial and socio-economic cohesion which were formally adopted as EU objectives stipulated by the Lisbon Treaty. The need for territorial and socio-economic cohesion is further reflected in the EU’s inclusive growth strategy Europe 2020.

Despite the opportunity for peripheral areas to submit applications for funding under both previous and current MoS calls, no such applications have been submitted to date. In practice there is a perceived bias towards MoS funded projects promoting modal shift.

The short term recommendation from this work is that there is a need for a more targeted funding mechanism, with revised criteria aimed at facilitating and encouraging peripheral based MoS TEN-T applications.

The long term recommendation is that greater coordination of EU funding instruments for transport and infrastructure (such as TEN-T MoS and Marco Polo) could contribute to strengthening territorial cohesion and the accessibility of peripheral areas.

3.4 Work Package D: Transport Networks and Corridors

3.4.1 Background and Challenges

Several networks and corridors for freight transport currently exist in the North Sea Region, and extend into neighbouring regions such as the Baltic Sea and North West Europe. These corridors are not always precisely defined, and to some extent have also been developed independently of each other. They are also characterised by missing links, suboptimal interoperability and various administrative bottlenecks.

Therefore, there is a need to develop functional concepts for connecting such networks and corridors in terms of requirements for infrastructure, facilities, and organisational arrangements etc. Such connecting concepts would contribute to a more coherent and efficient freight transport network in the North Sea Region and beyond, thus improving the overall multimodal accessibility in the region.

The EU concept of MoS is similar yet different from the existing short sea shipping lines operating in European waters. This presents challenges in several respects. Firstly, in some instances it is still difficult to communicate to those who might potentially foster, implement, operate or benefit from MoS what these differences actually are and why they are important.

Secondly, it is not always easy for those involved with MoS to be definitive themselves as to what activities or elements are part of or connected to MoS and which are not. Therefore, it is not always easy to have a clear overview of the MoS system, what is needed to make it work and how this could best be achieved.

3.4.2 Objectives

The overall goal of Work Package D (WP D) is to develop functional concepts for connecting transport networks (comprising hubs and transport axes/corridors) by defining requirements for investments in infrastructure and facilities, as well as organisational arrangements and cooperation mechanisms.

3.4.3 Key Activities

To reach this overall goal there are two main activities which have been taken forward:

1. Developing a **Systems Model** for MoS to help clarify the definition, activities and actors relevant to MoS, in order to improve decision making, planning and implementation of MoS projects.

2. Developing functional concepts for connecting transport networks, comprising hubs and corridors by the help of a **SWOT-analysis.**

Systems Analysis

The specific objective for constructing a MoS systems model in WPD was to help clarify the definition, (necessary) activities and actors relevant to MoS in order to help make decision making on the planning and implementation of MoS projects more focused, efficient and effective. The ‘systems analysis’ approach helps to identify all the relevant variables and the dynamics of their interactions, which together comprise the system ‘MoS’.
The systems analysis also helps clarify the purpose of MoS in a transport network.

SWOT-analysis

The following hypothesis has been tested as part of the SWOT-analysis:

“Knowledge about the transportation system as a network with a number of routing options will lead to increased use of intermodal transport”

The results of the SWOT-analysis provided a basis for testing this hypothesis and assessing the importance of a transportation network perspective.

SWOT-analyses have been carried out for each of the demonstration projects which in one way or another relate to transport networks and corridors. Factors defined as strengths, weaknesses, opportunities and threats from a network perspective have been categorised as either physical/infrastructure issues or organisational issues(including market issues).

3.4.4 Key Results

The main result of this Work Package is a set of strategies for the coherent connection of freight corridors into networks. These results are based on the specific results on the preceding steps: the Systems Model and the SWOT-analysis.

Using the systems analysis a static system model of MoS has been created. Therein, a set of variables has been developed comprising all of the factors which are relevant for this system. These were grouped into five sub-systems (see figure below). Furthermore, analysis was undertaken to examine if and in what way the different factors are crucial for the regulation of the system.

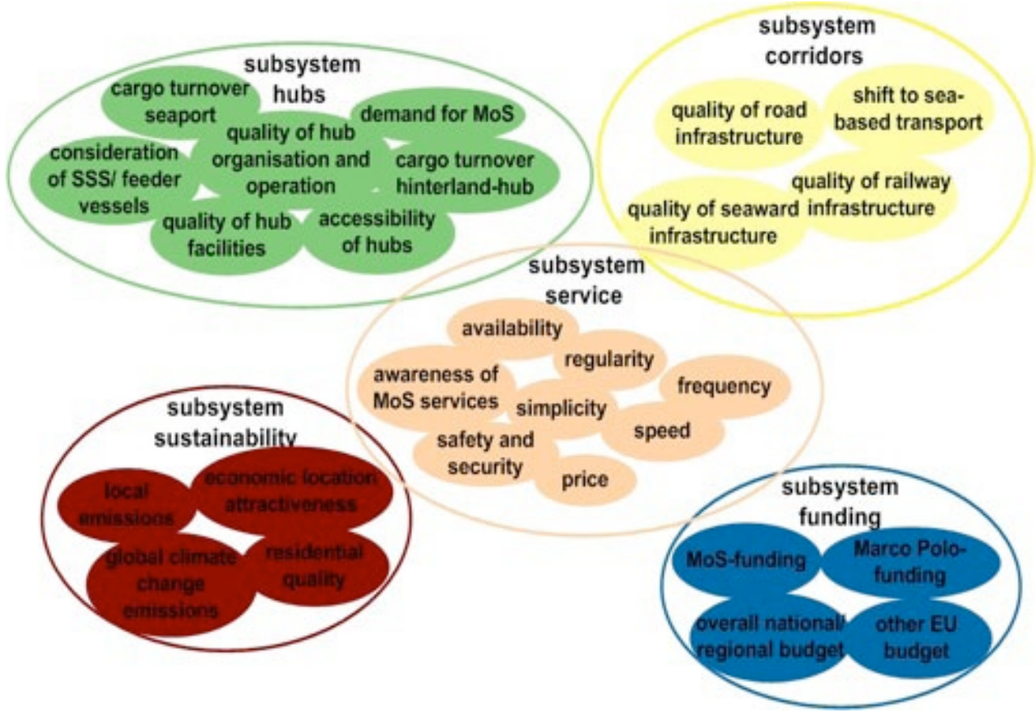
The results from the SWOT-analyses have triggered some conceptual observations:

- A number of factors are relevant for the knowledge of alternative routings and choice of transport mode for shipping cargo.

- The majority of factors are related to organisational issues, comprising market and service factor issues. Hence, in order to obtain increased use of intermodal transport chains, focus should be given to streamlining organisational aspects and improving market communication. Physical infrastructure within hubs and hinterlands is of course a pre-requisite, but without proper organisational arrangements and market communication, the availability of good infrastructure alone may not provide sufficient incentives for choosing intermodal transport options.

- A main challenge in intermodal transport is for the market players (e.g. cargo owners and forwarders) to have easy access to the data and information that is necessary to allow them to choose an optimal transport solution.

- The key conceptual finding from the analysis is that there is a need for a common “platform” for access to and sharing of data and information, that would provide much more information about alternative routings for shipping cargo, than is currently available.



System Motorways-of-the-Sea with elements and subsystems

3.5 Demonstration Project 1: NMC- Barents Sea Intermodal Service (BASIS)

3.5.1 Background and Challenges

The increasing cargo flow between Europe and Russia represents positive economic development, but also increasing challenges related to congestion, both along roads and in important ports. The NMC proposal is for an alternative maritime corridor for cargo between UK/Continental Europe and Russia. The upcoming development in offshore oil and gas production in the Barents Sea implies infrastructure development in the Barents region.

Recent developments related to Russian offshore activities in the Barents Sea suggest a start will soon be made in 2012 with the operation of the Priraslomnoye platform. In the next few years it is expected that the Shtokman field will be developed. Modern infrastructure related to ports and road systems and a growing demand for supplies and cargo going north facilitates and demand a cost efficient transport corridor via the Barents region. This corridor (the Northern Maritime Corridor) will contribute to shifting cargo from congested European roads to ships. The EU strategy for enhancing maritime transport has not as yet defined a MoS all the way to the High North.

3.5.2 Objectives

The objective for the NMC-BASIS project was to enhance the network with North-western Russian organisations and European organisations, and pursue the Barents Sea Intermodal Service with test sailings and a Marco Polo application.

The more detailed objectives were:

- Draw experience about cargo transport by test consignments between the UK/EU Continent and Russia through ports in the Barents Region;
- Facilitate business agreements and agreements between regional authorities to enhance cooperation and exchange of knowledge;
- Provide advice and suggestions to governments related to border crossing and infrastructure development;
- Submit a proposal for the Marco Polo II Program and/or the Northern Dimension; and
- Improve international and regional port cooperation.

3.5.3 Key Activities

Demonstration Project 1 (DP 1) has frequently arranged workshops and conferences, both in Russia and in Norway. DP1 has participated and contributed on important transport/logistic/ infrastructure conferences in Russia, especially at events dealing with maritime issues.

Cooperation with the Non-Commercial Partnership for using the Northern Sea Route (NSR) has also gained momentum. The Lead Partner of StratMoS, Rogaland, has attended meetings and conferences organized by the partnership on a regular basis.

The NSR Partnership has provided input to a new project idea developed by the DP 1 called, “Logistic Hubs of the High North”. The project brief is developed in draft form, and part of this project could be financed through the Northern Dimension Partnership for Transport and Logistics. This initiative has been supported by the Norwegian Ministry of Local Government and Regional Development and the Ministry of Foreign Affairs. For instance, the Norwegian Ministry of Foreign Affairs had to approve the efforts of establishing a common NSR-NMC working group to the NSR Partnership in Moscow.

Through The Norwegian Barents Secretariat, DP 1 has become a member of the associations dealing with the oil and gas supply industry and transportation in the High North. For example, Norwegian Petro Arctic, Murmanshelf (Russian) and Sozvesdye (Russian).

3.5.4 Key Results

Test Sailings

Eimskip CTG, an Icelandic Shipping Company, has been the main partner for the NMC project. At the outset of the project they serviced Russian ports relatively infrequently though they now sail regularly to Murmansk. They transport different kinds of fish into the Russian market as well as fish as return cargo to the European Continent. They also carry mechanical equipment to the construction industry in Murmansk and also take back similar products from the Murmansk area.

As part of the DP 1 work Eimskip services have been monitored over the past three years, while workshops, meetings and “Port events”, often in connection with their calls in Murmansk, have been organised. By gathering Port, County, Customs, and Veterinary Authorities, an arena has been created for constructive discussion on the challenges and bottlenecks associated with maritime transport and logistics in the North-western Russian ports.

Eimskip CTG was also the first western company to deliver goods in the Pechenga Bay, a restricted area close to the Norwegian border. This territory is a part of the militarized Russian border zone, and has business restrictions. As the project has developed, Eimskip CTG has gone on to do several more calls in this area.

In 2010 Eimskip doubled their turnover in the Murmansk Fishery Port. Opportunities to increase cargo flow still exist but a lack of warehousing space currently acts as a limitation to this. Improvements in the port area are also required.

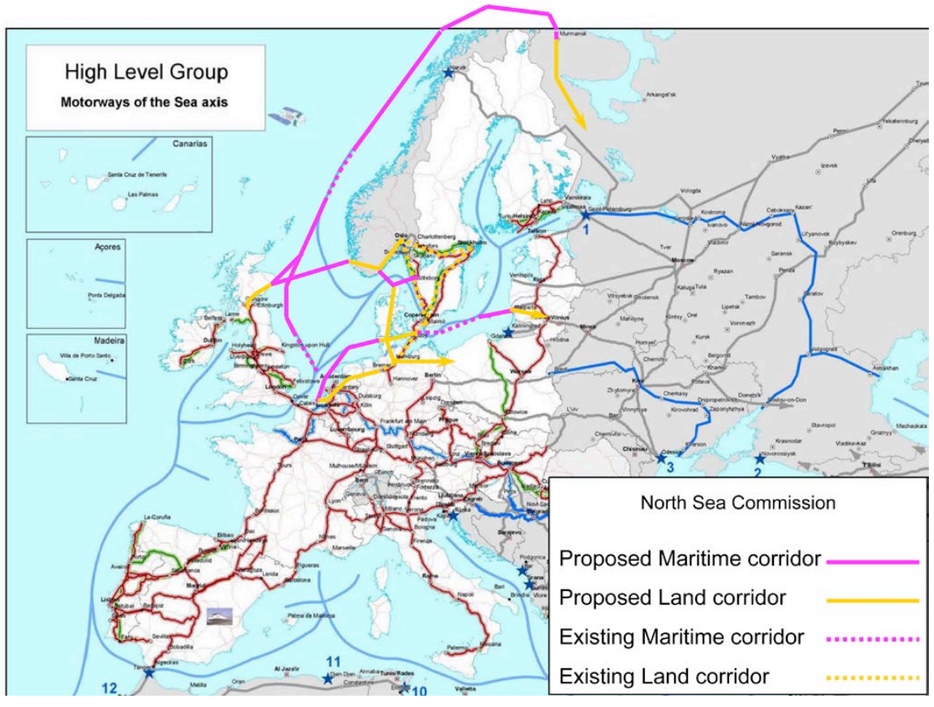
Recently one of the Eimskip ships, “Holmfoss”, was monitored along the NMC all the way from Velsen in Netherland, through Grimsby in the UK, along the Norwegian coast to the destination point, Murmansk. The ship made a total of 19 port calls after leaving Velsen. The aim of the monitoring was to see what kind of challenges and bottlenecks the ship met when transporting and loading/unloading cargo.

The monitoring report concluded that the Murmansk (and Archangel) areas are, even with a recently reduced population, attractive destinations for the types of cargo that Holmfoss is carrying. The same holds true also for other forms of unitised cargo.

However, before new shipping services can be attracted a number of changes need to be made in order to develop services consistent with it being an efficient Motorway of the Sea from the European Continent and UK to North Western Russia:

- Administrative procedures need to be streamlined. The example of the Holmfoss captain having to countersign 500 documents is completely unacceptable in Motorways of the Sea operations.
- The port infrastructure in North Western Russia needs improvements in cargo handling capacity and logistics capabilities to offer shorter times in port and higher frequency of service.
- In order to facilitate higher frequency of service (to complete with rail and road) there need to be increased cooperation between cargo owners.

The NMC project has also played a role in activities by shipping companies in the Northern Sea Route. Last autumn, “MV Nordic Barents”, an ice-classed bulk carrier, used the Northern Sea Route as a transit lane when transporting iron ore from Northern Norway to China via Arctic and Russian waters; the first such trip ever made by a non-Russian flag vessel. Tschudi Shipping Company, a partner to the NMC, organised this and using the NMC network in Russia for some of the preparation work.



Reports and Analyses

The Association of Danish Transport Networks (FDT) undertook an analysis of the "Organizational and Cooperative Challenges and Opportunities of Logistic Center Development in Archangel and Murmansk". In this report FDT collected information using surveys and interviews of the key bodies responsible for transport, infrastructure and logistics in Murmansk and Archangel. The main conclusions were as follows:

> "The most important challenge in both regions is that the concept of a Logistics Centre is still not present. There is not an open and integrated center containing all necessary facilities and providing high quality of services with intermodal solutions. The actors do not seem to realize the necessity for unifying their activities and taking an active role in creating a Logistic Centre".

Based on a similar report produced in 2007, it is suggested that there have been no improvements within the last three years in these two regions.

The NMC-BASIS has also collected valuable information from the NMC partners. By interviewing 4 of the NMC partners, 2 Western and 2 Russian, it concluded that:

> "there are several insufficiencies regarding facilitation in NW-Russian ports, even Russians are more positive. There is a need to reduce the most time consuming activities concerning calling ports in the Barents Region. But, most of all, all said that a lack of cargo volumes is the most important reason for not calling into ports in NW-Russia regularly".

Consulting company and StratMoS partner "Marlo" has prepared a report on cargo flow in the Northern Maritime Corridor. One main conclusion is that huge scale transport between Asia and Europa/USA is not likely to happen in the High North due to the strong position of Rotterdam and the East Coast of the USA. However, there are possibilities for increasing maritime transport, both for consumer goods and for cargo to support the forthcoming oil and gas activities in the Barents Sea. However in order to realise this greater cooperation between cargo owners is required.

One proposal is to establish a Northern Maritime Corridor Logistics Operation (NMC-LO) using information and communication systems similar to those used for managing passenger air travel. The NMC-LO could easily be located in Northern Norway or in any other region around the NMC.
It would rely heavily on the use of ICT, so it would be a prerequisite that the information technology infrastructure becomes well developed.

Northern Maritime Corridor – Extending Motorways of the Seas to the High North

The increased petroleum activities in the Barents Sea some ten years ago triggered a need to look at logistics in this region. One initiative started in 2002 was the EU funded Interreg project "Northern Maritime Corridor" (NMC). The NMC concept was continued as an element of the current StratMoS project.

Since the NMC idea was launched, the new concept of "Motorways of the Sea" (MoS) was introduced by the EU. This concept promotes the use of sea transport to reduce trucking on the road network and also aims to better serve peripheral areas.

Four MoS were defined. The so-called "High Level Group on Transport Axes to Neighbouring Countries" extended the Western Europe MoS northwards, implying that the MoS system should also have a connection to the north. The European Commission has extended the Western Europe MoS to half way up the Norwegian choast.

The StratMoS project has promoted the extension of NMC as the fifth MoS in Europe. The initiative has been presented to the North Sea Commission which has strongly supported the initiative. It has also been discussed with the European Commission and presented at several conferences with EC staff present. The initiative has been welcomed.

In recent years, Russian authorities and international logistics player have started to look again at the Northern Sea Route as an alternative sailing route during the summer between Asia and Europe, reducing the sailing time by almost half.

Hence, the Northern Maritime Corridor as a MoS will serve both the internal European logistics need as well as being the link between the Northern Sea Route and Europe. The StratMoS project has therefore proposed the extension of the Western Europe MoS up to the Barents region to the European Commission and the North Sea Commission in particular.

A separate leaflet has been produced for "Northern Maritime Corridor – Extending Motorways of the Seas to the High North". The leaflet can be found on StratMoS website, www.stratmos.com.

3.6 Demonstration Project 2: NORSHUKON – Establishing a new short sea shipping service from Norway to Belgium

3.6.1 Background and Challenges

Accessing continental markets from Norway is often done by road and typically involves very long journeys through a number of EU countries, most notably Denmark, Sweden, Germany, the Netherlands and Belgium. Given the length of travel and mode used, this is not considered a sustainable transport solution for Mid-Norway. Accordingly, the Mid-Norway freight and passenger market has been actively seeking a competitive and environmentally friendly alternative to this established practice dependent on road transport. This issue is especially important for freight traffic nowadays given that:

- Many of the existing ferry ports used are difficult to reach from remote areas within the legal driving day;
- Road traffic congestion is worsening all the time;
- Driver shortages are negatively affecting the supply chain;
- There is now a marked shift towards unaccompanied trailers on ferry services, which favours long-distance ferry routes as opposed to very short sea crossings.

The NORSHUKON LINK MoS initiative was initially developed through the work of regional agencies in Mid-Norway, the Highlands & Islands of Scotland and other transnational partners during two EU-Interreg IIIB North Sea Programme funded projects. One of these was the first NMC project (2003-2006) . NORSHUKON LINK was derived initially through combining two specific NMC short sea shipping actions, namely MINORO (Mid-Norway–Rosyth) and RoRo-Relay, the latter envisaging serving markets in Norway, Denmark, Scotland/UK, Faroe and Iceland, in addition to the Continent via transhipment connections in both Shetland and at a UK mainland port.

For the past two years, More and Romsdal County Council (MRCC) has coordinated the activities in Demonstration Project 2 (DP2) – NORSHUKON. Prior to this, Moregruppen was the coordinator but as the project developed MRCC has taken over this task. The regional working group today consists of the MRCC and the Port of Kristiansund and Nordmore, along with the project working group which includes the University of Napier, as well as interested parties outside the project.

3.6.2 Objectives

The objective of DP2 – NORSHUKON was to establish a new short sea shipping service (SSS) between Mid-Norway and the UK/Continent (Norway – Shetland – UK – Continent) with funding form Marco Polo. The anticipated outcome of the project was to understand from the process of establishing and running a private public partnership (PPP), through tendering and implementing a SSS.

As the project progressed the main objective has been redefined to the following: To establish a SSS through a PPP on a purely commercial basis.

3.6.3 Key Activities

- The work in DP2 has been split into 4 key activities:
- Planning and conducting market analysis of the potential end users.
- Tendering and selecting an international operator.
- Applying for Marco Polo funding (in 2008 and 2009).
- Pursuing the project on a purely commercial basis through a series of meetings and dissemination events with operators, logistics companies, end users and public authorities.

[1] Shorter ferry routes have historically tended to handle mainly accompanied trailers, however, with the driver shortage and new regulations, there has been a marked shift and now certain short range ports such as Fredrikshavn are handling large volumes of unaccompanied trailers.
[2] www.northern.maritime.corridor.no

3.6.4 Key Results

During the project period some very important lessons have been learnt, and a procedure for successfully establishing a commercial SSS at this level has been identified. As a result of the project a number of reports have been developed, including a case study/report on the Nor-Trex experience (including the operator's view), a MoS policy report (publication) and the Kontali reports on the potential market (fish farming).

Through experience of developing a project using public co-funding, a vast amount of market research, with a broad network of interested stakeholders was undertaken. These stakeholders included potential users of the route, the operators and the logistics companies, as well as national and regional authorities.

The first phase of the project showed that Marco Polo funding was not accessible for this project. As this made it impossible for the tendered operator to continue the project, their attention turned to the introduction of a service on a purely commercial basis with other operators. The interest in the latter showed that establishing such a route can be done on a purely commercial basis. Another finding was that along with frequency and reliabillity the direct or indirect financial benefits have proven to be of most interest for end users and operators. It will be important to disseminate this result.

A further result is the planned development of a food hub in the region. This innovative idea has been incorporated into the regional planning for the county council. The possible return cargo through the newly started Food Port Project (Interreg B) represents another opportunity for the start-up. As a result of combining the two projects, a PhD student at the University of Chalmers undertook research on a possible Food Port (including the fish export through DP2) in the area – with fish going south and fruits/vegetables going north.

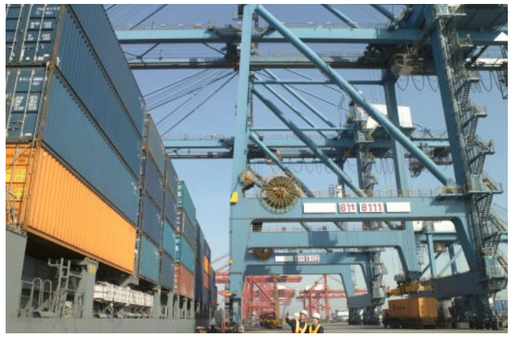
Another result from the project is the attempt to redefine the maritime infrastructure. This relates to defining the actual ship structure as part of a mobile motorway on the sea.

A key result from the project activities has been the identification of the key partners in such a PPP. The ports' ownership of the project is crucial. In this case, the Port of Nordmore and Kristiansund, along with the Port of Zeebrugge have been strong forces in driving the project forward.

Work has also shown that a hands-on approach from the regional authorities is important for the viability of the project. Direct contact with operators and end users has, according to these parties, given the project credibility. Including the route in the regional and national transport plans set the stage for continued efforts beyond the project period.

A separate leaflet, "Establishing new sea services", has been produced and can be accessed from the StratMoS homepage www.stratmos.com.

All findings from StratMoS DP2 can be downloaded from the StratMoS homepage.



3.7 Demonstration Project 3a: Invisible Intermodal Transport

3.7.1 Background and Challenges

As with other ports around the North Sea region, ports in North East Scotland and Norway handle a wide range of commodities, from fish to specialist oil infrastructure. For the majority of these cargos the port is not the final destination for the goods, and the customer's real priority is ensuring that goods reach the final destination and the complexities of the transport chain are not their concern.

In both the Aberdeen City and Aberdeenshire Region and the various Norwegian partner regions there are specific challenges to achieving this invisible transfer between transport platforms, specifically arising from the relative positions of the ports and the links to the main road and rail corridors.

3.7.2 Objectives

The objective was to study the appropriate location, flow, and connectivity issues in the various regions and to look to apply these in other regions whilst also giving a platform to apply the more theoretical work being done under WPC Hubs and Hinterlands. It was hoped that this would result in creating an efficient regional freight hub complex that spanned several locations to create a multimodal system.

In respect to Aberdeen City and Aberdeenshire, this sub-project aimed to look at the possibility of establishing a regional freight hub and the possibility of improving the connectivity between port and railway terminals. This could then lead to a test on the improving connectivity on a selected pilot based on studies of the regional traffic flows.

In Stavanger, Bergen and Kristiansand, this sub-project aimed to look at the possibility of linking the maritime corridor by making a transfer to the dry port using either road or rail, in respect to both organisational and physical aspects.

3.7.3 Key Activities

All sub-project members conducted a SWOT-analysis on their position as a regional freight hub. This exercise also encompassed the other StratMoS Demonstration Project 3b, c and d members to widen the transnational focus.

Studies were undertaken on traffic flows in North East Scotland and a traffic flow project was launched in Rogaland. In Scotland specific flows were selected for further analysis as to the ability to aggregate into suitable volumes for multimodal transport.

In Scotland a link was made with the regional transport authority and an industry forum was supported to provide input and a route for results dissemination to industry. The mechanisms for the forum were also shared with the Norwegian Partners. Materials such as traffic flow and constraint maps along with studies on current HGV stationing and flow patterns were disseminated using this route.

Specific studies on various options for improving road links for intermodal traffic between remote port and rail terminals were investigated in partner regions. In Scotland a specific investment was made in pilot prioritising traffic signals for these flows which was then tested and measured.

As a result of the initial studies in Scotland a specific proposal to create a new multimodal terminal was undertaken with sub-studies on prospective locations under differing scenarios and their respective rail connectivity.

Finally the results of Work Package C (Motorways of the Sea Development in Hubs and Hinterland) "WP C" work under StratMoS were overlaid onto the proposal for a new terminal along with best practice from the WPC Lead Partner region of Denmark under the WPC-6 report.

3.7.4 Key Results

The freight forum in North East Scotland supported in partnership with the Regional Transport Authority has had great success in involving the private sector and has grown over the course of the project both in attendance and level of influence. The forum structure has been promoted to several regions both within and outside the project. The specific business need led to multi-agency support for the freight sector which has been widely appreciated.

In all regions a review of the local transport hub, the port and terminal locations and their links was undertaken. Associated inputs have been made to Regional and National Transport Plans for Road and Rail links in both Scotland and Norway. This work has also been linked to the current wider European Transport Network issues to show how the regional hub provides MoS freight link opportunities. These ideas formed some of the practical input to the WPC4a StratMoS package on peripherality. Some of these routing ideas have also since been adopted as policy by the North Sea Commission and CPMR.

A number of possible aides to improving the connectivity on routes between ports and terminals in various partner areas were surveyed. The pilot infrastructure project to adapt traffic signals in Aberdeen was undertaken and proved beneficial.

A study of an example traffic flow into recyclate products has shown some potential and is being investigated further by industry partners. Previous Interreg project outcomes were updated to take account of the new economic conditions and provide a linkage to the regional plans. The updating and review process led to new opportunities of cooperation with projects working on low emissions zones. This cooperation identified the possibility of adding additional benefits to the regional freight hub idea from break-bulk and delivery activities.

The best practice input from Work Package C has been used to help as a tool to structure planning and convince industry of both the theoretical and practical potential of a number of prospective terminal sites developed under this project.

The project has developed interest in new ways of presenting the concept of a regional freight hub especially as regards a hub of disaggregated locations with constituent terminals separated by necessity but linked into a common logistics system. These ideas have attracted significant interest into future project ideas under the Interreg programme which are currently under development.

The SWOT-analysis process has triggered discussion with local logistics players. This has in turn resulted in the decision to run a physical test of trucks using public transport lanes on the upgraded

road serving Risavika Port near Stavanger. This idea has also been modelled using computer simulation in Aberdeen. In Norway a test with long vehicles on public roads has shown satisfactory performance and a dispensation for long vehicles between Risavika Port and the local rail terminal is being considered to improve the efficiency of the connection with the rail terminal hub.

A separate leaflet has been produced giving further information on the above issues and is available under DP3a "Regional Freight Hub", from the StratMoS homepage www.stratmos.com.

3.8 Demonstration Project 3b: Optimising Feeder and Shortsea in Ports

3.8.1 Background and Challenges

Growing feeder volumes in the stable North Sea Region and the growing Baltic Sea Region traffic have been recognised in the Port of Hamburg. Most of the port calls in 2007 were done by ships in the range of 500 to 1,000 TEU capacities, representing the classic feeder and short sea vessel. The largest container handling volume per ship class also came from this sector.

The relation between the number of ship calls and handling volume in comparison to larger vessels is however quite low though. From the point of view of a container terminal, operator feeder or shortsea ship show a much higher share in calls than in the handled container volume. Operating parties, terminals and ship operators, therefore have potential for optimisation if the port and handling procedures could be enhanced. Moreover, MoS as a transport concept could be further stimulated.

3.8.2 Objectives

The aim of Demonstration Project 3b (DP 3b) was to identify ways to optimize feeder and shortsea operations in hub ports. Thereby, the attractiveness of this transport mode for both the port operators and the customers could be increased and modal shift within the concept of MoS could be supported.

3.8.3 Key Activities

DP 3b's tasks included an assessment of feeder and shortsea operator's requirements concerning the hub concept. Therefore, interviews were carried out, asking experts from both sides about their views on proposed measures to optimise the feeder handling procedure in hub ports. In another task, the influence of mainline shipping industry on feeder traffic was examined. Mergers and takeovers among mainline carriers affect the common feeder operator such that the new company may achieve a size that could lead to the introduction or to an increase in its own dedicated feeder. Carrier consolidation could also induce concentration of trans-shipment activities on a port or terminal level. An investigation on intra port traffic has also been carried out. Dissemination activities have also been carried out, by organising a feeder conference (160 participants) in August 2009 and the "Messages from StratMoS" information event in Brussels in November 2010.

3.8.4 Key Results

A survey on feeder and shortsea operator's requirements concerning the hub concept showed that representatives from different business sectors evaluated proposed optimisation measures very similarly. As "target oriented", 100% of the participants named "Increase ship's turnover per terminal call" and "Working hours adjustment within European Ports". Other possible answers such as "larger vessels" or "Binding schedules" were preferred by terminals over ship owners. On the other hand, ship owners stated measures such as "Increase of waiting berths" or "Terminal comprehensive preplanning" as more target oriented than the terminal operators did.

Research has further confirmed that mainline carriers focus on the following aspects when selecting which of their European main ports (terminals) should be preferred as a transhipment hub. In order of priority:

- Customs procedures, rules and regulations.
- Terminal organization, production and reliability.
- Priority (given by the port authority and terminal operator for transhipment).
- Costs (container handling; port fees etc.).
- Service aspects of the mainline carrier (schedule, rotation, organization).
- Transit times to/from the feeder ports.

Regarding market behaviour, it has been found that during the economic crisis the market was tripartite into dedicated, common mid-sized and niche feeder operators. The deep sea market was characterized

by decreasing cargo volumes, increasing and larger ship capacity, high costs and low revenues.

New opportunities for feeder and short sea traffic were also examined by the project. By the current draught limitation of 9.5m in the Kiel Canal, a strong influence on shipbuilding is expected. With this limitation, a maximum ship size of around only 1,500 TEU in feeder and short sea traffic is only possible. It is planned to lower the draught to 10,5 metres but this will not be completed before 2018. The hard barrier of 1,500 TEU might lead to a combination of container and Ro/Ro ships.

A separate leaflet has been produced, "Smooth Operations – Optimising and Shortsea Operations in Ports", and is available from the StratMoS homepage, www.stratmos.com.

3.9 Demonstration Project 3c: Applying Logistics Technologies

3.9.1 Background and Challenges

Seaports should function as hubs in intermodal networks. Therefore accessibility with a focus on intermodal accessibility by short sea, inland waterways and rail is of strategic importance. With the growth of general cargo and container flows on the deep-sea side in port regions, new possibilities for the development of intermodal service by short sea, inland waterways and rail will become feasible. The challenge of this demonstration project has been to examine the feasibility of using modern logistics technologies, with an emphasis on Identification, Location and Communication (ILC), to improve the efficiency of supply chains which use seaports and thereby illustrate the feasibility of improvements to the efficiency and accessibility of the seaports themselves.

3.9.2 Objectives

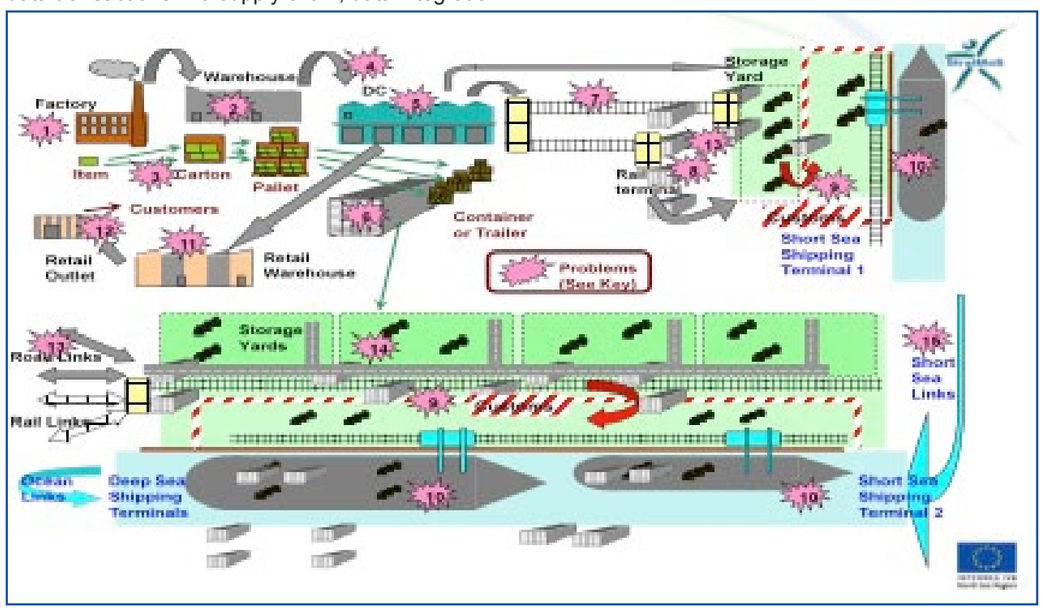
The overall objectives for the DP3 demonstration project include improvement of port regions as intermodal hubs and improvement in connection transparency in the corridor. Within this context the objectives for this sub-project Demonstration Project 3C (DP3C) are to examine the available technologies and their regions of applicability, the data transactions in a supply chain, data integration and standardisation and implementation issues, including technology related change management, leading to improvements in the efficiency of port and terminal operations.

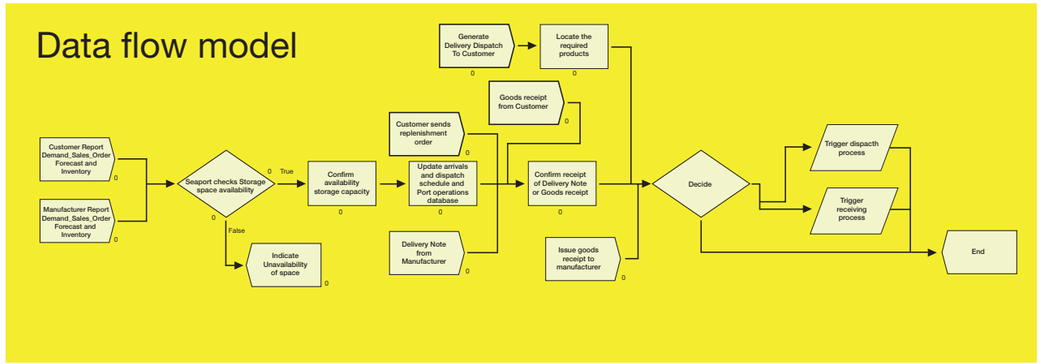
3.9.3 Key Activities

The key activities that have been undertaken are as follows:

- Development of a generic port-based supply chain model;
- Review of logistics-related ILC technologies and their limitations and regions of applicability;
- Development of a data-flow model for a specific example of port terminal operation;
- Development of an associated goods flow model;
- Investigation of the theoretical impact of using radio frequency identification (RFID) on the above goods flow;
- Testing of an appropriate technology in the real-world environment.

The generic supply chain model, as per the illustration above, was developed early in the project to provide a demonstration as to the complexity of a typical port-based supply chain. The model was based on a series of ”critical points” where data is





transferred between links of the supply chain. The model could be used to illustrate how automation of data transfer could improve the efficiency of the supply chain. The model was also used as a framework for the review of ILC technologies. The technologies of interest are categorised into three functional areas: ***Identification*** (including barcoding, RFID and other radio-based technologies such as RuBee), ***Location*** (including global positioning satellite system (GPS), wireless LAN access-point systems, ultrasound and infra-red) and ***Communication*** (including cellular radio data (GPRS and 3G), WiFi, WiMax, BlueTooth, ZigBee, Xbee).

Arrangements were made to visit the DFDS steel terminal at Immingham and to develop data-flow and goods-flow models based on this real-world example. The example was chosen partly because of accessibility and partly because the goods concerned (reels of steel weighing around 15 tonnes each) present a real challenge to technology implementation. Supply chain models were programmed using ARENA system modelling software including data flows (see example below) and goods flows for both the methods currently in use and for a hypothetical case using appropriate RFID technology.

The final practical study was again based on the DFDS steel terminal at Immingham and involved testing an identification technology (RuBee) which had been assessed and was chosen for the suitability of use in a highly cluttered and conducting environment. Tests were undertaken using two different types of identification tags and two different reader antennas. In each case measurements of the achieved range were noted for propagation along and across the rows of reels at various heights

3.9.4 Key Results

The supply chain model for steel reels based on the DFDS Immingham steel terminal has been modelled using real-world data and a hypothetical modelling of advantages, related to the implementation of appropriate RFID technology, has been carried out. Improvements in handling time have implementation assumptions.

The practical feasibility of technology implementation in this scenario has been assessed by carrying out tests (see illustration) on RuBee tags and readers in the steel terminal, where it has been found that read ranges of up to 17m can be achieved. This is in excess of previous results attained with UHF or LF RFID systems.

The sub-project has achieved its aim of understanding the technical issues associated with technology implementation to improve port-based supply chain efficiency.

3.10 Demonstration Project 3d: Hinterland by Barge and Rail

3.10.1 Background and Challenges

The worldwide container transport networks comprise three elements:

1. Shipping,

2. Container transfer in seaports, and

3. Inland transport.

Over the past few years, significant progress in the shipping and container transfer system has been made. Transport capacity, quality and reliability for these two systems have increased enormously and costs per unit have dropped considerably. The changeover towards a system approach has also had an extremely positive effect on personnel. Quality assurance systems have also been implemented. Sustainability is now the leading principle in these two elements.

One important changeover does still need to be made with regard to the use of low sulphur fuel. ICT has proved essential as an ancillary management system.

Inland transport continues to be the same fragmented market as it has been for centuries: a multitude of market players with contracts only entered into with trusted personal contacts. This is delaying the breakthrough to a system approach and sustainable goods transport. Although initial steps towards a system approach have been taken, as is evident from the other two elements, they are structurally limited, certainly in the Netherlands, and have not actually resulted in sustainable goods transport

3.10.2 Objectives

This demonstration project is aimed at creating sustainable goods transport in the Netherlands, particularly in the Randstad. Sustainable in this context means at a reduced cost, with less impact on the environment and resulting in intercompany and intergovernmental collaboration in the transport chains, as well as between government bodies and companies. This should also lead to education and training, as a result of which working towards sustainable goods transport is further professionalised and internationalised.

3.10.3 Key Activities

The work in Demonstration Project 3d (DP 3d) has covered the following activities:

- Inventory of industrial sites near inland waterways including business cases and regulatory conditions.
- Test sailings to measure reliability.
- Research on business models and economic viability.
- Setting up a monitoring system with Port Community System, Portbase, and Management information system for inland shipping, MIS-cobiva.
- Communication and dissemination activities by road shows, presentations and business fairs.

3.10.4 Key Results

Quantum Leap

DP3d has developed a system and network approach by and for companies to make inland transport sustainable entitled “Circle Lines”. These are daily shipping routes that are interconnected and in which the loading and unloading with trucks has been integrated into a single transport system. The services are seamlessly integrated with container terminals at seaports and with shipping lines. Circle Lines can be divided into three types: national, regional and port region lines. The latter ensures interconnectedness by sea between container terminals, transit warehouses and manufacturers. Although this is an innovative system, it is based on proven practical experience. This is essential if companies are to be persuaded to start using the system.

Circle Lines enables business parks throughout the Netherlands to maintain daily connections with Dutch seaports and with locations in surrounding countries. Quality is high: delivery dates can be assured up to 98%. Plans have also been developed and investor groups formed within the project for the construction and exploitation of transit points at companies and business parks.

The AMS-barge is a barge that has its own crane to load and discharge containers on any site near water.

The most critical success factor of Circle Lines is the way in which it is organized.
To this end, a number of management tools have been developed, including ICT systems for the digitalization of transport documents.

In practical terms, Circle Lines significantly lowers transport costs (up to 50%) as well as environmental costs (up to 80% CO2 reduction per container) and a permanent education system has been introduced.

Proven Practical Experiences

The system is built up from innovative solutions for elements of the sustainable transport chain that have demonstrated their success in practice. These solutions have recently been tested in the Netherlands, Belgium, France and England and have since been partially introduced. One important example is the ECT extended gate approach.

Circle Lines was developed from a Port of Amsterdam-based initiative with the cooperation of a large number of companies. In addition, ICT support organizations provided concrete contributions, from Portbase and MISCobiva.

In 2011 a collaborative venture was also formed between DP3d and the Dutch Inland Shipping Information Agency, whose team is currently approaching manufacturers and shippers throughout the Netherlands to invite them to use the newly developed sustainable goods transport system. This is being achieved by making a precise cost calculation for each company to demonstrate that the system approach is far more advantageous than the traditional approach. This has since led to interest from more companies to participate.

System roll out: Start-up costs solution absent but necessary

The practical implementation of a new concept or system involves substantial costs for all participants involved. The rewards of utilising a quantum leap in the system will not be reaped until later years. Some companies will have to modify their operating processes: this is a radical, time-consuming and expensive measure as it also involves changes in personnel.
For example, new ICT systems will be introduced for which personnel will need to be trained and modifications to internal logistics and individual responsibilities will be required. In view of the fact that goods transport is already in operation, and thus personnel are already working with existing systems, the two systems will need to be used in parallel for some time. Only those companies that have a primary objective to lead

Schematic outline of the Circle line idea

the way in innovation are prepared to invest funds and personnel for long term. The majority of companies seek results within a year and tend to pull out if this is not achieved. Opportunities for subsidies have been found within the Netherlands for limiting the operational costs for participants during the start-up phase. This is hampering the large-scale roll out of the system.

Although subsidies are available for studies, there is little or no requirement for such funding.

A separate leaflet has been produced, “Sustainable Hinterland Connections by Barge”, and is available from the StratMoS homepage, www.stratmos.com.

3.11 Demonstration Project 4: Secured Trade Lanes in the North Continent – Russia Corridor

3.11.1 Background and Challenges

This demonstration project addresses a number of issues related to logistics tendencies nowadays, and how integrated MoS corridors can be used to address them:

- The complex criss-cross flows of goods around the globe, caused by the global economy bring more and more participants into the supply chain;
- Reduced inventories and an increased velocity of inventory presses hard to accelerate the cash-to-cash transport chain, causing such chains to become significantly more sensitive to disruption and interruption;
- This and other market tendencies require reduced lead time and lead time variability, reduced total landed costs, increased speed of trade/security compliance and administrative procedures on EU/Russian borders, end-to-end transport chain visibility, and rerouting of goods in transit.
- The baseline is formed by the components that are to be integrated into a soft infrastructure:
- EDC (European Datacomm) container security devices that are used to monitor location and security status of individual containers;
- Descartes container status & tracking server, which provides a neutral platform for monitoring the security status of individual containers;
- Logit 4SEE® intermodal logistics execution platform, which enables a collaborative environment for transport operators, forwarders, and shippers to share information on intermodal shipments as well as shipment management tools.

3.11.2 Objectives

This work package has a range of different objectives. At a general level, the aim is to:

- Demonstrate how a private sector initiative can develop a corridor using a bottom-up approach;
- Interconnection of the North Sea region with the Baltic Sea region and Russia;
- Avoid inefficiencies in transit times arising from security requirements;
- Improve collaboration as well as performance, flexibility and agility of logistics;
- Avoid multiple entry of identical data and further the single-window concept;
- Contribute to visibility and dynamic logistics chains.

3.11.3 Key Activities

The project began by identifying and implementing a demonstration service from Antwerp to St. Petersburg based on a tobacco cargo flow from Tabaknatie and handled by Mediterranean Shipping Company (MSC). A second demonstration service, identified with industrial partners, was based on an animal feed cargo flow by Transexpedia and handled by MSC, from Ghent via Antwerp to Riga by short sea and subsequently by rail to the Skopf (on the Russian border). During stripping and storage, the cargo gets declared to customs for import, as it is already on Russian territory.

The Russian Customs authorities were engaged in order to agree on:

- Applying the Convention of Istanbul to the CSD: Allow CSD to enter and exit;
- Developing a public-private initiative to provide pre-announcement of cargo import;
- Defining a maximum delay for control decisions to be taken.

Although this dialogue was initiated and has been increased as the project progressed, on the whole it has been found to be a long process and one which cannot be completed within the life of this individual project. However, ongoing communications to Russian Customs will be taken on by some project partners following the end of the project.

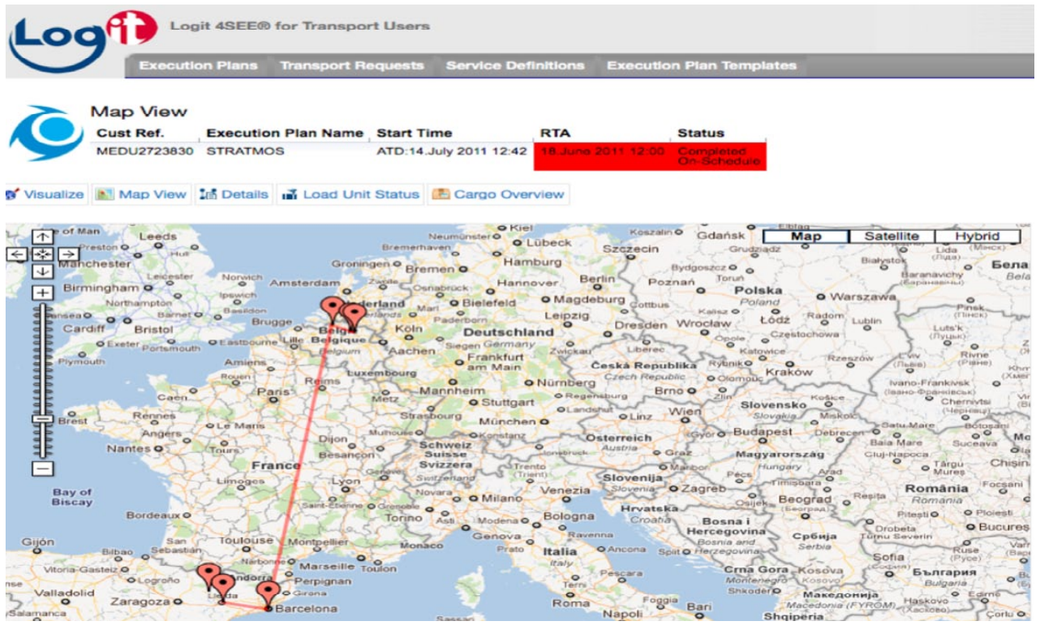
Focus was then given to a demonstrator service that would allow actual exhibition of the integrated solutions. For this purpose, a third demonstration identified with industrial partners was based on a chemical cargo flow from BP handled by MSC with destinations in Klaipeda and Spain (inland from Barcelona). This demonstration was executed, as shown in the figure below.

3.11.4 Key Results

Key results of the project have included:

- Technical integration of ICT components to provide visibility in the logistics chain;
- Dialogue with institutional partners in Russia on customs matters and control procedures;
- Dialogue with industrial companies to develop cooperation aimed at transparency in execution.

A separate leaflet has been produced and can be downloaded from the StratMoS Website www.stratMoS.com.



3.12 Demonstration Project 5: Offshore Hub and Motor-ways of the Sea Linkages

3.12.1 Background and Challenges

Hub and spoke container transport networks have rapidly developed throughout the world. The shift towards offshore (e.g. remote peninsula) or island transhipment terminals is relatively recent, however. Over the past 10 to 15 years or so, more than 20 new offshore container transhipment terminals have been developed around the world.

One of the last geographic areas to develop such facilities is the North Sea Region. Hence this particular MoS Demonstration project is highly significant and strategic in nature, with the aim of supporting development of offshore transhipment terminals in the North Sea Region, and generating economic as well as environmental benefits for the region as a whole. The main background and challenges related to this demonstration project are as follows:

- The dramatic growth in unitised freight transport coupled with introduction of much larger ships;
- Forecast traffic growth, with a further doubling of hub port volumes expected between 2007-2017;
- Conceptually developed during NMC I, the Scapa Flow Container Terminal (SFCT) and other initiatives highlighted the potential to create offshore/island container transhipment terminals in Northern Europe;
- However, experience in developing similar offshore hubs in Southern Europe suggests that considerable supplementary activities are necessary to ensure the successful development of any offshore hub.

3.12.2 Objectives

The Offshore Hub MoS Demonstration project envisaged delivering a number of major benefits for economies throughout the North Sea Region as well as neighbouring sea areas.

In particular, the Offshore Hub MoS Demonstration project should offer common learning benefits for other regions, in particular with regard to the processes involved in developing similar transport improvements, and linkages with other port clusters. Support for the port cluster analysis would include focus on specific important regional port locations including Aberdeen, Shetland, Orkney, Scrabster, Stavanger and Narvik, emphasising the wider geographic impact of this initiative.

3.12.3 Key Activities

Within the StratMoS project, Demonstration Project 5 (DP 5) extracts learning from development of an offshore container transhipment terminal in the North Sea Region, based on the case of Scapa Flow in the Orkney Islands. DP5 has investigated transport network/port clusters for offshore hubs, evaluation of impacts, prepared informational material/ dissemination, presents a new logistics services/ infrastructure concept, and is now developing a future research agenda.

In close cooperation with the private sector, DP5 has developed a new crane-barge based concept which can be used as an offshore storage and transhipment terminal. StratMoS project partners' research activity in DP5 (Offshore Hub for the North Sea Region) undertaken in collaboration with Gottwald Port Technology GmbH has produced what are considered to be highly positive results.

Led by Transport Research Institute (TRI) at Edinburgh Napier University, the research collaboration has resulted in development of a new and innovative maritime logistics concept, known as the Floating Container Storage & Transhipment Terminal (FCSTT).

The FCSTT offers a low-cost environmentally friendly solution to help overcome the challenge of providing additional port capacity intended to handle container transhipment traffic in the North Sea Region. The concept also has wider applicability and is expected to become attractive in other regions as well, able to overcome the cost and environmental challenges faced by terminal developers and shipping operators when seeking to provide new port capacity.

The FCSTT design concept is based either on a bespoke barge type structure, or using a converted container ship as the crane and storage platform. In either case container handling would be undertaken by slewing stevedoring cranes fitted to the FCSTT. Cranes would be either fixed/pedestal type, or running on rails. Deep-sea and/or feeder ships can be handled simultaneously on both sides of the FCSTT.

3.12.4 Key Results

The Floating Container Storage and Transhipment Concept

The results from the StratMoS DP5 research demonstrate that a 4-crane FCSTT costing around €40 million (based on converting a used container ship as the storage platform) offers at least a two-thirds capital cost saving compared with any similar capacity land-based container terminal. The FCSTT benefits from much lower operating costs estimated at around one-third that of a land-based terminal.

The cash flow analysis undertaken assumes a 100% transhipment scenario, which is not unlike a number of hubs elsewhere such as Freeport (Bahamas) and Salalah (Oman). Based on current container handling rates/prices at existing hubs in the North Sea Region, the financial outcome appears most positive for a 4-crane FCSTT offering up to 600m of berthing space (i.e. 300m on each side of the FCSTT) which is estimated to have a maximum annual throughput capacity in excess of 500,000 TEU.

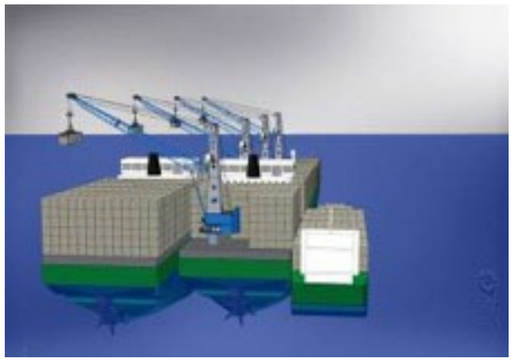
The FCSTT concept has wide general applicability and can be used wherever there is demand, in any situation where 100% transhipment is both acceptable and practical. A further advantage of the FCSTT is that it can be put in place relatively quickly, overcoming many of the planning constraints faced by conventional seaport infrastructure developments.

The FCSTT is considered to be ideal for a pure transhipment terminal scenario, but could also be positioned within existing ports, to supplement capacity, as required. The provision of future additional capacity is also greatly simplified and much faster compared with building a concrete land-based terminal.

MoS Linkages

The economic ship cost modelling exercise undertaken by StratMoS partners was based on using Scapa Flow in Orkney as a possible hub location for an FCSTT serving the North Sea Region, as well as offering linkages with neighbouring feeder/transhipment markets throughout Northern Europe including the Baltic Sea, NW Russia, and Iberia.

FCSTT with portal cranes travelling on rails



FCSTT with fixed pedestal cranes

Scapa Flow offers 50 square miles of sheltered deep-water anchorage (over 20m depth), has a low-wave height, and also benefits from the availability of Single Point Moorings (SPM's) to which an FCSTT would be attached. Geographically, Scapa Flow is considered to be an ideal location for transhipment, situated at the crossroads between the North Sea and Atlantic Ocean thereby minimising mainline ship deviation time, and is well within feeder ship range of most of the main transhipment markets.

The location also avoids the added Kiel Canal expense when serving Baltic/Scandinavian transhipment markets. The research highlighted the significant number of both deep-sea and intra-European container liner shipping services (more than twenty) frequently passing through the Pentland Firth Channel adjacent to Scapa Flow as the northern entrance to the North Sea Region. For these regular (i.e. mostly weekly) liner services, the deviation time involved in using the new terminal location to transfer containers would be minimal, and in all cases is considerably lower than calling at existing hub ports in the North Sea Region. These lines represent the main potential customers for a FCSTT located at Scapa Flow.

Reduced Sailing Distance and Emissions

Previous NMC research demonstrated that the much reduced deep-sea ship deviation distance plus mostly shorter average feeder distances involved for this location (i.e. compared with feedering via existing North Sea Region hubs located in the North Sea Basin) would result in significant liner shipping cost savings of up to US$100 per TEU, as well as large reductions in ship C02 emissions. Shipping cost and C02 reductions of more than 30% are achievable for liner services connecting established transhipment markets in Northern Europe via Scapa Flow as opposed to transfer of containers at existing hub ports.Other liner service advantages from using this location include reduced transit times serving transhipment markets, plus avoiding the need for costly multi-terminal calls by feeder ships. In addition, Scapa Flow and Orkney is at the centre of Scotland's rapidly developing marine renewable industry, and a FCSTT would be expected to therefore benefit from direct access to low cost marine renewable energy sources. This could potentially make a FCSTT at Scapa Flow the ultimate Green Port due to:

- Virtually zero impacts on the landside;
- Use of marine renewable energy;
- Reductions in deep-sea and feeder ship fuel consumption and emissions.

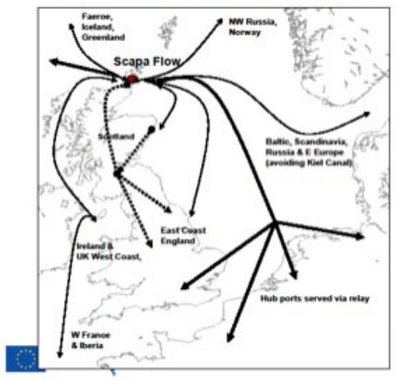
Further Refinement of the Concept

Work is ongoing to further refine the design of the FCSTT, involving continued collaboration between Gottwald Port Technology and StratMoS partners. The next stage of the work will involve promotion of the FCSTT for the North Sea Region, including drafting an EU grant application aimed at helping to support investment costs of an FCSTT. Private liner and terminal operators are invited to inform the StratMoS Project partners of their interest in this opportunity.

It should be noted that the Scottish Government has included development of a container transhipment terminal at Scapa Flow as a strategic project of national importance within its National Planning Framework. It is anticipated that the Scottish Government will work closely with the project partners in the next stage of the work, possibly including implementing a tender process to secure investment in a FCSTT.
As well as offering global low-cost transport and market connectivity for the host nation economy, the potential rapid increase in trade value represents a major incentive for relatively small economies to develop low cost transhipment handling capacity. The FCSTT concept developed by TRI, Gottwald and StratMoS Project partners through the Interreg IVB StratMoS Project now makes such a positive outcome that much easier to achieve.

A separate leaflet has been produced, "Floating Container Storage and Transhipment Terminal – An innovative and low-cost solution", and is available from the StratMoS homepage, www.stratmos.com.

Scapa Flow could offer Transhipment, intra-Europe and Relay Connections



4. TAKING THE RESULTS FORWARD

4.1 Good Results to be Utilised

A major concern of the StratMoS project, as for all projects that come to an end, is how to ensure that the good results are utilised and provide benefits beyond the end of the project period. The first step is to make the results known and the StratMoS project and individual partners have taken the following actions to support this:

- The StratMoS website has been upgraded and updated with a focus on disseminating results, and includes short videos for all the work packages and demonstration projects. The website will be maintained by the Lead Partner, Rogaland County Council, for at least three years after the project has ended.
- Partners are, and will continue to be available to participate in external workshops and conferences to promote the work and results of the StratMoS project.
- Articles about the project's work have been developed for use in academic journals and other relevant forums.
- Partners participate in new projects within the Interreg programmes, framework programmes etc. as well as initiating research.
- Results from the project are presented to policy makers at the regional, national and EU levels.

In respect to pursuing and enhancing results through new projects, some of the StratMoS partners have already been successful in starting a new Interreg IV North Sea Region project, a cluster project called Maritime Transport Cluster (MTC). MTC will build a network for exchanging latest knowledge and experience with regard to maritime transport issues by:

- Linking NSRP projects results with current maritime industry trends and developments.
- Contributing to the discussions on the future Interreg V operational programmes by identifying research gaps and 'hot topics' in maritime transport.
- Taking results from the Interreg programme, which consist mainly of regional actors, to the discussions facilitated by DG MOVE at the national level.

4.2 Good Results conveyed by StratMoS Leaflets

The StratMoS project has selected 10 issues and developed these into leaflets to outline the project results. The leaflets promote results that should either be taken forward to regional, national and/or EU level for policy enhancement or should be taken forward to the private/commercial sector for them to benefit from the good results.

4.2.1 Toolbox for MoS Funding Applications to Assist Applicants in Preparing their Proposal

Three information events were organised for the dissemination of results. The first one took place in Hull (November 2009), the second one in Hamburg (April 2010) and the final one in Brussels (November 2010).

The first two events addressed potential applicants, such as those working for shipping lines, port and terminal operators or from local authorities. The aim was to motivate and support potential applicants from both the public and private sectors to prepare and submit MoS project proposals to existing funding programmes. Participants received information on current MoS funding opportunities and about the StratMoS Toolbox. In addition, experiences from the applicants' point of view were discussed at these events.

The event in Brussels, on the other hand, sought to address all politicians, stakeholders and organisations interested and involved in policy-making in the maritime transport sector. The intention was to motivate them to consider and discuss several perspectives of the MoS concept such as from the North Sea MoS Task Force, from the funding applicants and from the StratMoS project partners.

4.2.2 Northern Maritime Corridor – Extending Motorways of the Seas to the High North

The Northern Maritime Corridor concept has been promoted through a series of workshops and conferences both in Russia and in StratMoS partner countries. Some of these events have been arranged by StratMoS, while a number of events have been external events arranged by either the Russian Government at the national and regional level, other Interreg projects, the North Sea Commission or CPMR.

The proposal to define the Northern Maritime Corridor as an extension of MoS for Western Europe has been presented to the North Sea Commission and they support the proposal. The proposal has also been presented to the CPMR TEN-T Group, and again received a positive response.

The project proposal for a “Logistics Hubs in the High North” has been presented to the Ministry of Transport in Russia and to the Ministry of Foreign Affairs (the Russian organisations that are dealing with Northern Dimension” at national level). The project initiative is also being discussed with Murmansk, Archangel and Nenets regional authorities in Russia as well as the Port of Kirkenes. At the end of the StratMoS project, Norwegian partners will take necessary actions to maintain the contact with Russia for the benefit of interested StratMoS partners.

It is the intention to pursue a formalisation of an extension of the MoS for Western Europe to the Barents Region in line with the thoughts of the Northern Maritime Corridor connecting Europe’s MoS network to the High North and to the Northern Sea Route.

4.2.3 Accessibility to Peripheral Areas – A Need for Targeted Motorways of the Sea Funding

The WP C-4a paper was submitted and presented initially to the North Sea MoS Task Force at their meeting in Bruges on 8th December 2010. This lead to discussion between the Member State representatives, EC officials and the project representatives. A final input from StratMoS on the issue of peripherality will be submitted for consideration to the next meeting of the North Sea MoS Task Force.

The paper will be presented to the European Commission DG MOVE and EACI, the Agency dealing with Marco Polo. Recommendations could also be disseminated to industry associations and Member State representatives.

Wider application of the recommendations proposed for any future MoS calls under the North Sea programme might be possible but would require closer scrutiny of the existing application procedural requirements concerning accessibility and cohesion.

4.2.4 Dry Ports as an Integral Part of the Logistics Hub Structure

The Dry Port studies conducted as part of the StratMoS project have shown that Dry Ports in connection to the North Sea Ports could prove to be vital nodal points for further MoS development. Special attention has been given to the testing the Work Package C work in studies related to a new Dry Port around Aberdeen in Scotland, which is a further achievement of StratMoS.

To develop the Dry Port concept further in the North Sea Region a series of planning and administrative issues should be taken into consideration:

- Reduce administrative barriers by developing the single window/one stop shop concept, where ports and Dry Ports are organised as one administrative entity.
- Improve logistics capacity in ports through development of corridor infrastructure, shared IT supporting systems, co-modality and cooperation along the supply chain.
- Plan for open and integrated logistics solutions which should be made available to all users of the Logistics Centres and their associated Dry Ports.
- Generate logistics synergies based on the local capacities and focus on the commodities that can create added value to the local area, thus playing the right role in the overall hub and spoke system.

4.2.5 Floating Container Storage and Transhipment Terminal

Work is ongoing to further refine the design of the FCSTT, involving continued collaboration between Gottwald Port Technology and StratMoS partners. The next stage of the work will involve promotion of the FCSTT for the North Sea Region, including drafting an EU project application aimed at helping to take forward the development of a FCSTT.

The Scottish Government has included development of a container transhipment terminal at Scapa Flow as a strategic project of national importance within its National Planning Framework. A FCSTT has the potential to substantially increase Scotland’s international trade, largely through interception of third-country trade as well as helping further develop existing trade. It is anticipated that the Scottish Government will work closely with the project partners in the next stage of the work.

4.2.6 Sustainable Hinterland Connections by Barge

The practical implementation of a new concept or system involves substantial costs for all participants involved. The rewards of utilizing a quantum leap in the system will not be reaped until later years. Some companies will have to modify their operating processes: this is a radical, time-consuming and expensive measure as it involves changes in the personnel situation.

For example, new ICT systems will be introduced for which personnel will need to be trained and modifications to internal logistics and individual responsibilities will be required. In view of the fact that goods transport is already in operation, personnel are already working and systems are already in use, both new and existing systems will need to be used in parallel for some time.

Only those companies whose primary objective is to lead the way in innovation are prepared to invest funds and personnel in the long term. The majority of companies seek results within a year and tend to pull out if this is not the case.

Opportunities for subsidies have been found within the Netherlands for limiting operational costs for participants during the start-up phase. This is hampering the large-scale roll out of the system. Although subsidies are available for studies, there is little or no requirement for such funding.

4.2.7 Smooth Operations – Optimising Feeder and Shortsea Operations in Ports

Over 160 representatives from business and politics attended the conference headed “Feeder Services Today and Tomorrow” on 27 August 2009, at the invitation of Port of Hamburg Marketing and the Hamburg Chamber of Commerce. The event programme consisted of a number of specialist presentations and a panel discussion. Sebastian Doderer from Port of Hamburg Marketing reported on “StratMoS”, which had provided the framework for the event.

Under the umbrella of this EU project, a total of 27 partners from 11 countries are investigating ways to shift cargo traffic from road to sea. Bernd Bertram, Managing Director of Unifeeder Germany, the leading feeder and short sea shipping company at the Port of Hamburg, informed the audience of the current situation in the feeder shipping sector.

4.2.8 Establishing New Sea Services

A key result from the project is the identification of the key actors in a PPP to create a new service. The ports’ ownership of the project is crucial. In this study’s case the Port of Kristiansund and Nordmøre, along with the Port of Zeebrugge have been key to driving the project forward.

The work has also shown that a hands-on approach from the regional authorities is important to the viability of the project and to maintain overall management of activities. In this study direct contact with operators and end users, according to these parties, has given the project credibility. Including the route in the regional and national transport plans has set provided a solid foundation for continuing efforts in this area beyond the project period.

Another outcome from StratMoS DP2 has been in redefining the term ‘maritime transport infrastructure’. Where the actual ship structure is considered as a mobile motorway of the sea (MoS). This, in effect is providing a floating transport infrastructure platform. This new definition could have significant policy implications.

4.2.9 Regional Hubs

The Regional Hub Demonstration Project 3a has established a mechanism for cross-agency working with public and private sector industry which has proved a model useable in many forums. This has in turn developed the idea of a multimodal regional hub covering disaggregated terminal locations whose internal linkages are focused to deliver as seamless a transfer as possible. The idea of this cooperative model is being tested at locations in the North East of Scotland identified by the StratMoS studies. The regional hub concept, as developed under StratMoS, can be a key enabling idea to support the modal shift targets proposed by the recent European White Paper on transport, particularly in peripheral areas and areas with lower cargo volumes while making best use of existing facilities.

4.2.10 The Use of Security Devices in Container Transportation

The results of DP4 will be taken forward in the FP7 project COMCIS (”Collaborative Information Services for Container Management”), started September 2011.

This project is about interoperability between e-freight systems that have been developed in previous projects. Based on this interoperable set of e-freight systems, shippers, beneficial cargo owners, LSPs as well as customs authorities will be offered information that will provide logistics chains with shorter lead times and higher reliability. This will identify valuable information that is available throughout the logistics chain. There are many data sources available which will be aggregated: data from container security devices, port communities, logistics network, terminal operators, etc.

In order to support decision processes in the logistics chain, data sources will be combined and consolidated into valuable information. Interoperability between systems is only useful if it leads to improved processes. COMCIS will therefore focus on better integration of customs processes, better interfaces between sea and hinterland, as well as better control over the hinterland part of the logistics chain which is often the largest cause of variability.

For electronic data exchange between the aforementioned e-freight systems, a Common Framework will be used that is emerging as a result of cooperation between EU projects and industry driven initiatives like GS-1, UBL and UN/CEFACT. Demonstrations will take place in three business cases through the ports of Antwerp and Rotterdam.

5 LESSON LEARNED

A summary of the lesson learned in the project can be categorised into either technical and project management areas. Because the StratMoS project has been focusing on the whole transportation chain, the technical lessons learned are almost all relating to the concept of intermodal transport.

5.1 Intermodal Transport

- Tool box - a set of tools in order to respond to and properly document the quality of MoS/ Marco Polo applications was produced, this is particularly targeted at helping SMEs. The tool box makes it more feasible to comply with the documentation requirements.

- “Dryport” is a concept that enhances the activities and efficiencies of cargo handling transfer from sea to rail/road. There is a need for flexibility in developing port – dryport relations. There is a need to think in terms of an “extended logistics hub”.

- The Systems Model demonstrated the complexity of factors influencing the choices to be made in developing intermodal transport strategies and projects. Interdependencies between these factors are demonstrated, as to both negative and positive effects.

- Russian practice in respect to port handling, customs, veterinary control etc. is not streamlined and is to a certain degree unpredictable. A long term perspective, accumulated experience and the development of good relations are essential prerequisites for sea transport operations to Russia.

- Marco Polo applications are demanding. There are limited funds and hence great competition for these funds. Smaller projects seem to have a lesser chance of success than large projects. The requirement for certain viability is so high that it may only attract cases where the project is viable without funding from Marco Polo. Also in some cases applications are not submitted because the funding regime is seen to be too cumbersome.

- The development of efficient logistics hubs is essential in order to make the market shift from trucking to intermodal transport. In this regard a programme of incremental development is just as important as new large schemes.

- As the main transhipment ports in the future will have land and land use constraints, the new and innovative Floating Container Storage and Transhipment Terminal is a cheap response to these constraints. The FCSTT does not require direct linkage to the shore. Depending on the location, the emissions from ships may also be substantially reduced.

5.2 Project Management

The StratMoS project has had a very successful outcome. However in the process of project managing these outcomes the key lessons were learnt and adapted to along the way:

- There needs to be a project management team around the lead partner, i.e. work package leaders, in order to ensure a more common responsibility amongst the partners.

- An uneven budget spread between the partners can result in very uneven input to the project. The workload on the larger partner can be much more than would be predictable from the relative budget sizes.

- The Letter of Intent is the legally binding document however if a number of the partners do not feel a commitment to fulfil the budget it could still impact on the final outcomes of the project. The project management can be hampered by a Management Statement (or agreement) that does not have much in the way of enforceability.

- Work plans must have detailed task responsibilities and deadlines and need to be to be rigidly followed-up. This is because the normal structure of the project contractual arrangements does not, in reality, offer much in the way of possible sanctions to impose responsibility.

StratMoS Leaflets

- Toolbox for MoS funding applications to assist applicants in preparing their proposal
- Dry ports as an integral part of the Logistics Hub structure
- Accessibility to Peripheral Areas - A need for targeted MoSea funding mechanism
- Northern Maritime Corridor - Extending MoS to the High North
- Establishing a new short sea shipping between Norway and Belgium
- Sustainable Hinterland connections by barge
- Regional freight hubs – Design and Connectivity
- Smooth operations - Optimising Feeder and Shortsea Operations in Ports
- The use of security devices in container transportation
- Floating Containter Storage and Transhipment Terminal – An innovative and low-cost port solution

All leaflets can be downloaded from the StratMoS website www.stratmos.com

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Investing in the Future by working together for a sustainable and competitive region

The Interreg IVB North Sea Region Programme
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