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Further information on EXTR@Web's editorial team for Thematic Research Summaries can be obtained from Annex III.

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Abbreviations and Acronyms Used

AG	High level Advisory Group (to the EXTR@Web project)
BG	Benchmark Group (associated with the EXTR@Web project)
CEEC	Central and Eastern European Country
DG TREN	EC Directorate-General for Energy and Transport
EC	European Commission
EFTA	European Free Trade Association (Norway, Iceland, Switzerland, Liechtenstein)
ERA	European Research Area (EU, EFTA and CEECs)
EXTR@Web	Exploitation of Transport Research Results via the Web (DG TREN FP 5 Accompanying Measure project)
EU	European Union
FP 4 (5, etc)	EC Fourth (Fifth, etc) Framework Programme
PAG	Programme Analysis Group (part of EXTR@Web project)
RTD	Research and Technical Development
TRKC	Transport Research Knowledge Centre; TRKC website at ec.europa.eu/transport/extra

Table of Contents

1. Introduction

This paper provides a structured guide to the results of Research and Technical Development (RTD) projects relating to **Waterborne Transport**, carried out in transport research programmes throughout the European Research Area (ERA).
It is one of a series of 28 papers. Two further from an original set of 30 transport themes – i.e. Long-distance Transport and Financing Tools – have been discontinued as separate reports, though all related projects will be covered elsewhere in Thematic Research Summaries.

	Paper no.	Transport theme
Dimension 1	1.1	Passenger Transport
	1.2	Freight Transport
	1.3	Urban Transport
	1.4	Rural Transport
	1.5	Regional Transport
	1.6	EU Accession Issues
Dimension 2	2.1	Air Transport
	2.2	Rail Transport
	2.3	Road Transport
	2.4	**Waterborne Transport**
	2.5	Other Modes
	2.6	Intermodal Transport
Dimension 3	3.1	Economic Aspects
	3.2	Efficiency
	3.3	Equity and Accessibility
	3.4	Environmental Aspects
	3.5	User Aspects (incl. ergonomics, quality, choice and rights)
	3.6	Safety and Security
Dimension 4	4.1	Decision-support Tools
	4.2	Information and Awareness
	4.3	Infrastructure Provision (incl. TENs)
	4.4	Integration
	4.5	Intelligent Transport Systems
	4.6	Regulation / Deregulation
	4.7	Land Use Planning
	4.8	Transport Management
	4.9	Pricing, Taxation and Financing Tools
	4.10	Vehicle Technology

Of the more than 5600 projects from research programmes the Transport Research Knowledge Centre (TRKC) ultimately has considered, a total of **214** projects deal partly or fully with the issues of **Waterborne Transport**.

1.1 How to use this paper

It is recommended that you use this paper to locate RTD (Research and Technical Development) results on sub-themes where you have a particular interest, rather than reading the paper from start to finish:

- Start in Section 2 to get an overview of the scope of the particular theme.
- Read Section 4 that summarises the findings for each sub-theme of interest to you.
- Consult Annex I to identify the individual projects, be they of European or national origin, relating to a particular sub-theme.
- If this is the first time you have used one of the series of thematic research summaries, it is strongly recommended that you read Annex II. This explains the background and purpose of the EXTR@Web project, and the basis upon which information in this document was selected and analysed.

The other sections of this paper can help you to gain an overall picture of the **Waterborne Transport** theme, associated policy issues and the background of project EXTR@Web.

The analysis in this paper is the responsibility of the EXTR@Web project team, and does not represent the official viewpoint of the European Commission.

1.2 The link to the Transport Research Knowledge Centre website

Further details on individual projects can be obtained from the Transport Research Knowledge Centre (TRKC) website at: **ec.europa.eu/transport/extra**

The TRKC website includes summaries and full final reports of individual projects, as well as a variety of analyses, and publications prepared by the EXTR@Web project.

How to best use the online resource:

- The 'Projects & Analysis' section allows the user to specify a project-wide search on 'Publication date', 'Origin', 'Document type', 'Mode', 'Sector', 'Geographic area', 'Policy objective' and 'Tool', or any combination of these criteria.
- This may be complemented, or superseded, by the flexible 'Free text search'.
- On the query result screen, free text search criteria may be refined, as appropriate. Further tick boxes here allow limiting query results according to 'Project status' (five levels).
- Query results are presented in a table, which allows for sorting by column (click on relevant column header for alphanumerical sorting).
- Project-specific summaries may include links to project websites, or provide contact details for the project, where available.

It should be noted that the online Transport Research Knowledge Centre will be updated frequently, though dependent on input from project co-ordinators.
Other parts of the TRKC website cover transport research at Programme level, and expand on transport related issues, e.g. in the 'Links', 'Events', 'Glossary' and 'FAQs' sections.

2. Scope of theme

2.1 Definition of theme

Waterborne transport consists of maritime transportation, short-sea shipping, inland navigation, sea-river going shipping, and a certain part of land operations, which consists in cargo handlings/transferring between the waterborne transport and the other modes. In the transportation domain, waterborne refers to the waterway arteries relative transport activities, vehicles/handlings technologies, and operational/organizational management.

Characterized by (1) less pollution, (2) less energy consumption, (3) lower transport cost, and (4) higher free capacity, waterborne transportation is a well promoted transport modes for cargo transport in EU, in conforming to the current European transport policy (white paper), to contribute to a balanced development of the transport system. Specially, the promotion of waterborne transportation is regarded as an effective measure to reduce the environmental impacts while keeping the mobility, which is considered as the natural consequence of economic growth.

Recent statistics indicate the significant development of waterborne transportation in the global transport market shares as the effects of promotion and intermodal transportation. The most remarkable growth in waterborne transport is found in short-sea shipping, which is the only mode that can catch up the growth rhythm with the road transport mode. Technical revolutions had changed the images of waterborne transportation from the traditional service systems (bulk freight, low speed, etc.) to the modern intelligent systems (telecommunications, JIT and optimisations, etc.). The future waterborne transportation service will become more and more flexible, intelligent, transparent, and easy to use. It will play an important role in modern (transport) economics.

2.2 Topics included in theme

To promote waterborne transport, it is felt that the highest priority has to be given to the following topics:

- Short-sea shipping;
- inland waterway transport; and
- maritime safety.

According to the definition by the European Union[1], **short-sea shipping** means the movement of cargo and passengers by sea between ports situated in geographical Europe or between those ports and ports situated in non European countries having a coastline on the enclosed seas bordering Europe. Short-sea shipping includes domestic and international maritime transport, including feeder services, along the coast, to and from the islands, rivers and lakes. The concept of short sea shipping also extends to maritime trans-

[1] Definition on short-sea shipping by the European Union. The European Short-sea Network at http://www.shortsea.info

port between the Member States of the Union and Norway and Iceland and other States on the Baltic Sea, the Black Sea and the Mediterranean.

Intra-community maritime transport and inland waterway transport are certainly the two key components of intermodality which could provide a means of coping with the congestion of certain road infrastructure, the lack of railway infrastructure and of tackling air pollution. Both these modes remain underused even though the Community has huge potential (35,000 km of coastline and hundred of sea and river ports).

The way to revive short-sea shipping is to build veritable **sea motorways** and to offer efficient, simplified services. To reinforce the position of inland waterway transport, which by nature is intermodal, 'waterway branches' must be established and efficient transhipment facilities must be installed to allow a continuous service.

2.3 Significance of theme

There is a growing imbalance between modes of transport in the European Union. The increasing success of road and air transport is resulting in ever worsening congestion. Nowadays, despite a slight revival, waterborne transport is the poor relation even though it is a mode which is not expensive and does less damage to the environment than road transport.

Short-sea shipping carries 41% of goods traffic within the Community. The percentage for 2010 is estimated at 40% (inland waterway transport which was 5% in 1990 will drop to 3% in 1990). It is the only mode of goods with a growth rate between 1990 and 1998 (+27%) approaching that of road transport (+35%). It is a real competitive alternative to land transport. For this reason, certain shipping links, particularly those providing a way around the bottlenecks should be made part of the Trans-European Network, just like motorways or railways (‘motorways of the sea’).

Inland waterway transport complements short-sea shipping perfectly. It is energy-efficient, quiet, and a very safe mode. Vessels can travel from Duisburg to Rotterdam for instance, a distance of 225 km in half a day, regardless of conditions which affect other modes. This makes inland waterway transport a very competitive alternative to road and rail transport.

After recent maritime disasters such as the Erika (December 1999), the Levoli Sun (October 2000) and the Prestige (November 2002) it became urgent for the European Union to adopt measures to minimise the risks of accidents, particularly those caused by ships carrying dangerous or polluting goods. It must be remembered that 90% of oil trade with the European union is sea borne and that almost 70% of imports pass through the English Channel.

3. Policy context

European policy objectives related to theme

The Treaty of Rome already reflected the concern of the European Community with transports, but only in December 1992 was published the Commission's first White Paper on the future development of the common transport policy [14].

The importance of transports to European economy was recognized in [17] referring that, in this area, the "aim is to develop a truly multimodal strategy, which is essential in order to improve economic performance and the quality of life".

In the early stages, the main concern was the opening-up of the transport market, but following the 2001 White Paper "European transport policy for 2010: time to decide" [7] the purpose of the European policies is to achieve a European transport system clean, safe and efficient.

The waterborne transport has already a great importance in European trade, in particular, external trade where it represents 90%. The increasing demands of enlargement and the need for a sustainable and efficient transport system are a challenge for the next years, where waterborne transport, in particular short-sea shipping, will have an important role.

Europe is facing unequal growth in different modes of transport that causes saturation is major routes due to the high percent of goods being transported in trucks. This transport mode makes up to 44% of goods transport, and in passenger transport it goes up to 79%. Taking in consideration only goods transport, according to the "EU Energy and Transport in Figures" the modes distribution is the following:

- 44% road;
- 41% short-sea shipping;
- 8% rail; and
- 4% inland waterways.

The communication from the European Commission (Gothenburg European Council) "A sustainable Europe for a better World: a European Union Strategy for sustainable Development" [15] presented two policy objectives regarding improvements in transport systems:

- Disconnect the relation between transports and economic growth; and
- Promote the growth in alternative transports (waterborne included) in order to substitute road transport.

Following this communication, in the above-mentioned 2001 White Paper "European transport policy for 2010: time to decide" [7] several policy objectives and measures have been defined aiming to achieve higher levels of efficiency in transport, and among them is the increase of short-sea shipping and inland waterways in the transport system. These measures are, according to this White Paper, a "first essential step towards a sustainable transport system that will ideally be in place in 30 years time" (op. cit, p. 10).

Although short-sea shipping has increased almost 30% between 1990 and 1999 there are conditions for further growth and, for this purpose, increased intermodality and the "motorways of the seas" are key elements for this strategy.

Short-sea shipping is, in [7], stressed as being crucial for an efficient transport system in Europe. For this purpose, short-sea shipping will have to overcome some obstacles.

The lack of public and private capital needs to overcome by innovative policies an infra-structure charging and the public funding must be more selective and focus on the major projects.

To change the under use of waterborne transport, according to [7], the following areas should be improved, namely thru the mentioned measures:

- The short-sea shipping and inland waterway transport are the two modes that remain underused, them the way to revive short-sea shipping is to build veritable sea motor-ways, as part of the trans-European transport network, within the framework of the master plan. This will require better connections between ports and inland waterway networks together with improvements in the quality of port service.
- To reinforce the position of inland waterway transport, which, by nature, is intermodal, waterway branches must be established and transhipment facilities must be installed to allow a continuous service all year round.
- Greater, fuller harmonisation of the technical requirements for inland waterway vessels.
- Adopting a policy of effective charging for transport by short-sea shipping and inland waterways transport, because the situation differs enormously from on member state and mode to another, with implications on dysfunction of the internal market and dis-torts competition within transport system. In this situations is relevant the analysis of associated costs.
- Analyse the different operators that take part in the efficiency of short-sea shipping and inland waterway transport due to the interconnection with other modes and it's neces-sary to establish intermodality.
- Evaluate the ports infra-structures implications on short-sea shipping and inland water-way transport, due to the diversity of ports structures in several states, in particular, At-lantic and Mediterranean coasts.
- Evaluate the competitiveness of short-sea shipping and inland waterway transport in alternative to other modes and identify the advantages and disadvantages, the bottle-necks that have effects on efficiency and efficacy of waterborne transport.

These measures, in particular, the effort of improvement in intermodality that allows com-petitive alternatives to road transport, are critical to the efficient transport chain. In this field, the priorities are the technical harmonisation and interoperability between systems, namely, using containers. The effort of improvement in intermodality is a policy option avoiding the unsustainable growth in road transport and allows the better use of the al-ready existing infra-structure.

Another point of interest, refers to the port services that are essential for the success of short-sea shipping. In this field, as mentioned in [7], the Commission proposed new legis-lation for the access to the port services and also aims to simplify the rules for operation of ports.

All of these measures must consider that there are other concerns, such as pollution, where the less polluting waterborne transport (and yet to be improved) has great advan-tages when compared with other modes. In the field of safety, besides the training of ship-ping officers and sailors, some legislation tighten-up, application of technologies monitor-ing and managing the transport flows, a special reference must be made to the creation of the European Maritime Safety Agency that will "contribute to the enhancement of the over-all maritime safety system in the Community" and "Its goals are, through its tasks, to re-

duce the risk of maritime accidents, marine pollution from ships and the loss of human lives at sea"[2].

The European Union is toughening rules on maritime safety going beyond those proposed in the aftermath of the Erika disaster. To reduce risks, major measures include:

- Besides technical requirements regarding ship's structure and maintenance, incorporating minimum social standards – in collaboration with the IMO and the ILO – to be observed in ships inspection;
- reinforce Port State Control; and
- develop a genuine European maritime traffic management system.

Other topics of waterborne transport policies are:

- Policies and market space (balance development between transport modes especially between waterborne transport and land transportation, promotions, orientations, etc.);
- integration of waterborne transportation into logistic chains (roles in intermodal and multimodal transportation); and
- technical innovations (naval architecture, handling technologies, standardizations, and optimal organizations).

Meanwhile, a new programme is proposed for the period (2007-2013). This "Marco Polo II" takes further actions in order to achieve the policy objectives, concretely thru two new proposed actions: Motorways of the Sea and Traffic Avoidance actions.

As already mentioned, the Motorways of the Sea were first mentioned in the 2001 Transport White Paper [7] but, thru "Marco Polo II", the Commission proposes several goals, among them, the set up of Motorways of the Sea between France and Spain, and Italy and Spain [16].

More recently, in a mid-term review of the 2001 Transport White Paper [2], the Commission stresses out the economic and social importance and impact of transport systems. In order to achieve the overall transport policy objectives, waterborne transport is expected to take advantage of the existing potential, long coast-line and number of ports, to be an alternative to land transport and highlights two key challenges for the development of waterborne transport: the absence of an seamless internal shipping market and lack of ports capacity to face the expected growth of sea transport.

Finally, the document summarizes (op. cit., p. 12) the following actions concerning waterborne transport:

- Build up on a broad public consultation of stakeholders to develop a comprehensive strategy for a "common European space" (following the Green Paper on a future EU maritime policy);
- develop a comprehensive European ports policy;
- action to reduce pollutant emissions from waterborne transport;
- continue to promote short sea shipping and motorways of the sea; and
- implement the NAIADES action plan for river transport.

[2] European Maritime Safety Agency website: www.emsa.eu.int/end173d001.html

4. Synthesis of findings from completed projects

Research projects contributing to the theme of **Waterborne Transport** can be broken down to the following sub-themes:

- Short-sea shipping;
- inland waterways;
- maritime safety; and
- ports and port operations.

You may wish to further consult the following Thematic Research Summaries that present research findings which are complementary to those covered in this paper:

- D2.E-1.1 Passenger transport;
- D2.E-1.2 Freight transport;
- D2.E-2.6 Intermodal transport;
- D2.E-4.5 Intelligent Transport Systems; and
- D2.E-4.8 Transport management.

Results from the following **23** projects have been included in this Thematic Research Summary:

Research sub-theme	Contributing projects
Short-sea shipping	B8; EMBARC; EROCAV; HYTECH; REALISE; REMARCC II; UK Marine Motorways Study
Inland waterways	ALSO DANUBE; INDRIS; MD/DD/17; PACSCAT; RISVD
Maritime safety	ADVANCES; ATOMOS II; NAUPLIOS; PODS IN SERVICE; ROROPROB; SANDWICH; SEAM; THEMES
Ports and port operations	S-CBB; TRAPIST; WATERMAN-TS

Detailed findings and policy implications for individual projects can be found in Annex I. Please refer to acronyms and project titles, respectively, listed above.

4.1 Short-sea shipping

4.1.1 Research objectives

The research objectives related to short-sea shipping reflect several levels of concerns and approaches to accomplish the European policy objectives related to this sub-theme. We can identify three main areas of research projects objectives dealing to short-sea shipping.

In first place, there are projects that aim to study the economic impact of the of short-sea shipping as an alternative to road transport and measures to increase its importance. But, to increase short sea shipping, it is necessary is to identify the success factors and the solutions to overcome obstacles in a cost effective perspective.

So, some of the projects try to find new strategic approaches that could help to transform the short-sea shipping in a real alternative to land transport (namely thru the development of the motorways of the seas), and enhancing the role in a logistic chain thru intermodality.

There are also projects aiming to study the impacts of different financing and charging principles on the European ports and the expected effects in the short-sea shipping.

In second place, there are projects that focus on the development of new technologies that will allow faster short-sea shipping at lower costs and greater safety. These projects include the development of new and more energy efficient propulsion systems, improved ship design (using 3D ship modelling), new hulls and the adoption of new building technologies (and standards).

The principal objectives of adopting these measures are to allow lower costs of building and operating freight ships turning, this way, this transport mode more attractive (and comfortable in what concerns to passenger transport) and give answer to the strict requirements and codes.

Besides the completion of the previous mentioned objectives, it is important to notice that the quality, safety and environmental objectives are also considered in a great number of projects.

In third place, there are technologies and processes that, although are complementary to the maritime transport ship technologies, allow to manage more efficiently the transports and, this way, help to achieve better transport performance. The development of these technologies and processes, are also research objectives.

The information and communication systems (and standards) have a very important role, for their role in an efficient transport system. A contribution to the improvement of the transports systems can be given thru the adoption of decision support systems and intelligent transport systems that, among other aspects, allow speed and accuracy in the process of getting information in order to take decisions and efficient utilization of resources.

The communication and information technologies application to distance learning systems are also being evaluated, aiming to increase crew competences.

Finally, a special note for the networks of similar projects that aim to disseminate of the best practices and help their adoption in order to improve the short-sea shipping.

4.1.2 Main findings

Short-sea shipping, in congested areas, can prove to be an important alternative, helping to decrease traffic in those areas and to achieve positive environmental effects. In order to accomplish this, infra-structures in terms of ports and other transport modes must be available, which requires adequate planning.

Another conclusion taken from the research projects is that the decision making process of the operators must be carefully analysed in terms of prices, costs, distances and other variables, which means that the analysis mustn't take only in consideration the price variable in order to ensure modal shift and intermodality improvement.

The intermodal solutions require not only the optimisation of the waterborne transport but also, as showed thru the research, in terms of logistics and other transport (especially road) modes. Other important conclusion is that, given the costs in modal shifts (in particular related with short distance local road transport), although there are major environmental benefits, it can't be left entirely to market forces or the success of short sea shipping will be compromised.

Concerning a different research objective in this sub-theme, the development of new technologies for short-sea shipping, the research allowed the development of tools to support and assess the design and construction of vessels and their internal arrangements and the study of hydrodynamics. The main components of vessels, such as propellers, rudders and steel panels were analysed, in terms of their problems, in order to improve their design, construction, resistance and maintenance.

4.2 Inland waterways

4.2.1 Research objectives

Although the number of projects that directly define as objectives the development of inland waterways is reduced, we can find different groups of objectives, but the principal objective ends up to be the increase of the inland waterway importance in the intermodal transport chain.

The research objectives, in this sub-theme, include topics such as the progress of the intermodal transport chains management in order to include inland waterways and the development of logistic networks, operational systems and communications and information systems adapted to inland waterways utilization.

There are projects that aim to promote logistic and technological solutions (also in the field of information and communications systems) that could help to improve the use of the inland waterways as an alternative to road transport. In this particular, there are projects that aim to re-establish some of previously used inland waterways.

Another effort is to turn the economic, strategic and logistical conclusions from previous research into practice showing, in the field, the useful contribution of the inland waterways.

As in short-sea shipping, there are some obstacles to the success of the inland waterways. The identification of these obstacles and discovery of solutions to overcome them are also research objectives in this sub-theme.

From the projects objectives, we are able to observe that the main inland waterways focused are the Danube, Deûle and Escaut.

Finally, in this matter, another important objective is the development of new passenger ships for use in inland waterways.

4.2.2 Main findings

Increased competitiveness of inland waterways can be achieve by using IT-solutions for the adequate planning, management, monitoring and administration of intermodal logistics. It was demonstrated that the increased competitiveness has a beneficial impact on society and environment (for example, reduction of noise in congested areas).

Those IT solutions can consist in River Information Services, successfully demonstrated in several European locations, which can help to integrate inland waterways into intermodal transport chains.

New vessel concepts, specially designed for freight transportation on inland waterways, can be an important step for success. These new concepts, although slightly more expensive than the traditional concepts (though much faster) have benefits that range from the environmental aspects, new possible routes, etc, and can compete directly with long distance road or rail modes in some segments.

Another aspect to consider is that the process of implementation of inland waterways can require tests and demonstrations to create real evidence of the importance and feasibility of such transport alternative.

4.3 Maritime Safety

4.3.1 Research objectives

This sub-theme is mentioned as an objective in most of the projects analysed. This shows the importance of maritime safety and the projects concern in taking in consideration this matter when developing new technologies, or even, when analysing the economic viability of short-sea shipping and inland waterways.

Although this general concern with safety, we can recognize some projects that focus almost entirely on the safety issues. Most of them, try to create new technologies, standards and applications for the industry of ship building, systems that help to monitor the sources of possible safety concerns, avoid and repair (when possible) the sources of those concerns, if possible, thru the use of automatic procedures.

To achieve this, several projects aim to improve existing technologies in order to, when applied to the specific conditions of water, can give reliable answers, avoiding the exposure of men to dangerous situations and that can also help in emergency situations, where the human element can fail.

Another application of technologies, also objective of the research projects, is the development of simulators that, before the construction process starts, can appraise the expected level of safety.

Concerning the specific aspect of ships construction, the objectives refer to the utilization of new solutions (such as new steel panels) in order to increase the resistance of the ship structures, improving the safety – in particular, when dealing with hazardous cargo – and increased resistance to difficult weather conditions.

4.3.2 Main findings

Safety in waterborne transport can consider a large set of variables from the design and construction of vessels to their internal arrangements. In the development of vessels, new techniques, such as probabilistic concepts of damage stability or risk scenarios assessment can be used to test which is the best configuration. To achieve this, adequate computer software was developed and, by doing this, a new tool is provided helping to develop cost-effective and safe designs for vessels. This kind of information can also be gathered thru the test of the reliability and integrity of vessel components under severe operational conditions or the identification of maritime hazards.

Another set of results of the research consist on the development of innovative construction techniques, components or materials that enhance the safety standards of vessels, such as:

- Development of conceptual standards for ship control centres design, integrated ship control systems and layout recommendations for ship bridges; and
- new steel structures that enable weight reduction while being as crashworthy as conventional double hull.

As mentioned, the safety of waterborne transport can consider a large set of variables, and these don't resume to construction aspects. The information systems, regulations, safety culture, safety assessment and human factors can also have high importance in a safety framework. In particular, information systems can provide advanced traffic surveillance services which can provide, for example, automatic warning messages and information concerning hazardous cargo description, which can be enhanced with the implementation of the Galileo satellite services.

4.4 Ports and port operations

4.4.1 Research objectives

In this sub-theme the research projects focus different areas that relate to ports and port operations, in particular the port management, port operations, infrastructures and multimodal traffic in ports terminals. In all these areas there is a common objective that is achieving higher levels of efficiency.

Some of the objectives also refer to the port infrastructure, not only in what concerns to the docking facilities (and cost efficient construction), but also to the support infrastructure needed to assure intermodality.

4.4.2 Main findings

Ports, especially those of small to medium size which also have a major importance for the regional communities, deal with the challenge of becoming more efficient in their operations and more competitive. Research as shown the importance of these ports, that a centralised dependency could be damaging for the ports interests, the possible difficulties when dealing with environmental issues, the best suitable transport solutions for those ports and the conditions for improved efficiency on container terminals.

The research addressing the existing chain in port operation provides important information concerning the processes that can be avoided, reduced or improved, thus contributing to improve overall efficiency of ports. Those processes can be improved thru changes in legislative framework or thru the application of new support technologies, such as, the tracing and localization of ships and cargo, or simply in terms of data exchanges.

5. References

[1] EXTR@Web project: ‘Transport Research Knowledge Centre (TRKC) website’ (ec.europa.eu/transport/extra), 2004-2006, Brussels

[2] European Commission: 'Keep Europe moving – Sustainable mobility for our continent. Mid-term review of the European Commission’s 2001 Transport White Paper.'; COM(2006)314, CEC, 2006, Brussels

[3] 'EU Energy and Transport in Figures' – Statistical pocketbook 2005. European Commission, DG TREN in co-operation with Eurostat, 2006, Luxembourg

[4] 'Memorandum to the Commission on the Policy Guidelines of the White Paper on a Common Transport Policy'; 18 July 2001, Brussels

[5] FP4 dissemination project EXTRA ('Exploitation of Transport Research'): nine thematic papers (public); CEC, 1999-2001, Brussels

[6] FP4 dissemination project EXTRA ('Exploitation of Transport Research'): nine policy brochures for the 1st Annual European Transport Conference (public); CEC, 2001, Brussels

[7] 'European transport policy for 2010: time to decide', White Paper; COM(2001)370, CEC, 2001, Brussels

[8] 'General Report 1999'; CEC, 1999, Brussels

[9] 'Energy, environment and sustainable development. Programme for research, technology development and demonstration under the Fifth Framework Programme – Work programme'; CEC, 1999, Brussels

[10] 'The Common Transport Policy. Sustainable Mobility: Perspectives for the Future'; COM(98)716, CEC, 1998, Brussels

[11] 'Cohesion and Transport'; COM(98)806, CEC, 1998, Brussels

[12] 'Towards a New Maritime Strategy', White Paper; COM(96)81, CEC, 1996, Brussels

[13] 'Common Transport Policy Action Programme 1995-2000'; COM(95)302, CEC, 1995, Brussels

[14] 'The future development of the Common Transport Policy', White Paper; COM(92)494, CEC, 1992, Brussels

[15] ‘A sustainable Europe for a better World: a European Union Strategy for sustainable Development’; COM(01)264final, CEC, 2001, Brussels

[16] ‘Proposal for a Regulation of the European Parliament and of the Council establishing the second “Marco Polo” programme for the granting of Community financial assistance to improve the environmental performance of the freight transport system (“Marco Polo II”); COM (04)478final, CEC, 2004, Brussels

[17] ‘Growth, competitiveness, and employment: The challenges and ways forward into the 21st century’; White Paper; Com(93)700final, CEC, 1993, Brussels

Annex I: Contributing projects

Preface This Annex lists all the projects (European and national) which belong to the **Waterborne Transport** theme, in alphabetical order of project acronym (for projects with acronyms), followed by projects without acronyms in alphabetical order of the project's name in English. Where results have been made available to the EXTR@Web project, a summary of key findings and policy implications relevant to this theme are given.

In 'Origin' column, use ISO 3166-1 country designators as follows:

Austria – AT; Belgium – BE; Bulgaria – BG; Cyprus – CY; Czech Republic – CZ; Denmark – DK; Estonia – EE; European – EU; Finland – FI; France – FR; Germany – DE; Greece – GR; Hungary – HU; Iceland – IS; International – INT; Ireland – IE; Italy – IT; Latvia – LV; Lithuania – LT; Luxembourg – LU; Malta – MT; Netherlands – NL; Norway – NO; Poland – PL; Portugal – PT; Romania – RO; Slovakia – SK; Slovenia – SI; Spain – ES; Sweden – SE; Switzerland – CH; United Kingdom – UK; Other countries – Oth

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
305FDM	Testing of cars with control adaptations	UK	
Project website www.rmd.dft.gov.uk/project.asp?intProjectID=11291			
ADVANCES	Thematic Network on an Operational platform for Quality Shipping	EU	Maritime safety

Key findings

As a result of ADVANCES project, the following definition for quality was developed:
Quality maritime operation means the provision of reliable, safe and cost efficient transport of goods and people that satisfies customer requirements and does so with a risk to life, the environment and property that is as low as is reasonably practical. Quality maritime operation must be commercially attractive to ship-owners and other operators in the transport chain in order to attract investment and long-term commitment to the provision of such services and the development / continuation of good customer relations.
The definition, although general in nature, is significant in its scope and applicability. It relates to satisfying customers', society's and the ship-owner's interests; the operation must be "fit for purpose" which is a specific action that varies over different shipping trades.
ADVANCES has analysed different maritime operations, including inter-modal participation and considered the fitness for purpose requirement down to the level of the ship itself.
During the course of the Thematic Network progress was made in developing the debate surrounding quality shipping with important stakeholders in ship owning, ship building, classification, insurance, cargo interests and business analysis. The ship owner and operator are very much at the heart of supplying a quality service and ADVANCES has offered a systematic approach (framework) to achieving that goal. Whether performance improvement is being sought at an overall business level or in relation to a particular business element, the structure of the framework will assist.
Quality framework:

- Specify high-level "quality" goals and constraints;
- determine/review operational performance requirements;
- determine/review options to delivering required performance;
- review and rank risks to achieving required performance;

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- review of ownership strategy;
- consider developing legislation: safety, environmental, navigation/communication;
- consider regulatory opportunities;
- decide on performance measures/metrics to use to manage the operation;
- preview how these measures can help express quality;
- review operational strategy;
- consider through life cost and business implications; and
- choose appropriate in service management tools.

Policy implications

A number of recommendations for further work and initiatives arise as a result of the ADVANCES project:

- The existing level of scrutiny used to establish the Sustainability Index for a maritime industrial transport company is weak. It is recommended that the SI methodology be developed further incorporating to a greater extent existing shipping metrics.
- Using similar considerations to those for SI's, develop with shippers' bodies a strengthened voluntary code for chartering maritime transport. Also develop with BIMCO an additional standard Charter Party formulation that provides for higher guaranteed quality levels and evidence of such.
- Link the formulation of quality used in enhanced SI, voluntary code and Charter Parties to any European proposed Quality Standard.
- General descriptions of good practice can only persuade and encourage to a limited extent. Continue the development of ship-owner business improvement examples. Consider distribution of examples of methods to assess and deliver quality improvements to ship owner associations for promotion to their members.
- Encourage suppliers, including shipbuilders, to develop case studies for "return on investment" for "quality" items, so as to encourage supply chain initiatives from the bottom up. Elements of this nature could be developed in European Commission supported projects for the shipbuilding and supply industries.
- The ADVANCES approach to improving quality could also be applied to the formulation of new maritime regulations. It is therefore encouraged that developers of legislation also use "quality assessment methods" when exploring regulatory options.
- In addition it is suggested that DG TREN's policy making activities could be supported by a small panel, with a range of maritime expertise and experience, providing ongoing review and analysis of issues relating to quality shipping and related legislation and initiatives.

Project website

www.advances-net.org

ALIVE	Autonomous Light Intervention Vehicle	EU	Maritime safety

Project contact

patrick.baraona@cybernetix.fr

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
ALSO DANUBE	Advanced Logistic Solutions for Danube Waterway	EU	Inland waterways

Key findings

An open virtual network, based on a broad European approach, linked actors in logistic chains by interconnecting existing information and communication systems via a Common Source Logistic Database (CSL.DB), interactively related to traffic management systems (e.g. the River Information System DoRIS in Austria). Web based client applications, advanced EDI solutions and innovative telematic technologies were integrated, demonstrated and evaluated within different supply chains (4 real life business demonstration scenarios).
Technical and operational concepts were elaborated, especially addressing the needs of SME's and operators from Eastern Europe creating added value logistic services with superior transport quality. The CSL.DB approach supported this concept with the focus on SME's by offering inexpensive IT-solutions for the:

- Planning;
- management;
- monitoring; and
- administration

of intermodal logistics chains utilising inland navigation as environmentally friendly mode of transport.
Concepts and developed solutions were applied to four Logistic Service Providers, representing different business fields and transport markets as well as one Logistic Information Provider which was set up as a virtually centralised organisation according to the strategic approach of ALSO DANUBE, ensuring the availability of necessary data and acting as an EDI oriented communication platform.

Policy implications

In summary, the implementation of ALSO DANUBE solutions on the European waterway network will improve the competitiveness of inland navigation as a whole. Concerning the transport market, transport demand and the utilisation of the infrastructure, ALSO DANUBE measures:

- increase the share of intermodal transport;
- enable a shift of transport from road to inland navigation;
- thus make a better use of existing infrastructure.

The analysis on society and environment showed that ALSO DANUBE solutions:
Reduce emissions and noise in congested areas;
increase the safety on inland waterways and on roads;
enable inland navigation to cope better with adverse fairway conditions.
ALSO DANUBE measured the contribution to the improved working conditions and education levels for the workforce in inland navigation (crew, operators in follow-up services as well as designers and suppliers of system components). The analysis of the regional economy and employment leads to the conclusion that ALSO DANUBE solutions:

- Strengthen the position of industry;
- strengthen the position of ports;
- contribute to the integration of Europe by connecting the emerging markets with the European core regions; and
- thus enable the Danube Region to cope with the challenges of the future.

Project website

www.alsodanube.at

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
ARCOP	Economical and environmentally safe Arctic marine transportation	EU	Maritime safety
Project website www.arcop.fi			
ARETOPS	A Reference System Architecture and Technology Platform for the Shipping Sector	EU	Maritime safety
Project website (or contact) None			
ARROV	Augmented reality for Remotely Operated Vehicles based on 3D acoustical and optical sensors for underwater inspection and survey	EU	Maritime safety
Project contact rkh@omnitech.no			
ASPIS	Application of Steel Panels into Ship Structural Designs	EU	Maritime safety
Project website www.eureka.be/inaction/portfolio.do			
ATENCO	Analysis of the Cost Structures of the main TEN Ports	EU	Ports and port operations
Project contact jga@technum.be			
ATOMOS II	Advanced technology to optimise maritime operational safety, integration and interface	EU	Maritime safety

Key findings

ATOMOS II produced:

- A conceptual standard for Ship Control Centre (SCC) design, including layout recommendations for future ship bridges, and a so-called 'tactical display' combining anti-grounding and anti-collision information tools;
- a verification of the conceptual standard for SCC design in relation to efficiency and safety, and a risk assessment for collision route and fire ignition scenarios; and
- a conceptual standard for Integrated Ship Control (ISC) systems.

Policy implications

ATOMOS II has made a significant contribution to the development of standards for SCC design and ISC system architecture. This has formed an input to the current IEC (International Electrotechnical Commission) working group on the standardization of ship bridges.

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Key findings / Policy implications / Project website or contact			

Project website

www.atomos.org

B8	European Sea Transport and Intermodalism - Consequences for Switzerland	CH	Shot-sea shipping

Key findings

- Through the changes of the Italian port reform 1994, the Italian ports have reached the necessary conditions to operate efficiently;
- the total port related freight traffic across the Alps is less than 7.425 Million tons (5% of the whole freight traffic across the Alps); and
- the container flows across the Alps might decrease in coming years with some positive environmental effects.

Policy implications

- Bottlenecks in railway infrastructures and, more recently, lacking quality in railway service jeopardise considerably the opportunities for Italian port's further expansion; and
- new railway infrastructures are the backbone for further growth in Italian ports.

Project website

www.nfp41.ch

BALTECOLOGICAL-SHIP	Environment Friendly Ships for Baltic Area	EU	Maritime safety

Project website

www.eureka.be/inaction/portfolio.do

BEZPECVD	Shipping safety of ships in inland waterway transport in connection with the provision of a minimum crew	SK	Maritime safety

Project contact

info@vud.sk

BLUE LINKS	Liens Bleus: Tamise-Deûle-Escaut-Meuse	EU	Inland waterways

Project contact

philippe.rattier@equipement.gouv.fr

CAP-MAR	Conically Adjustable Propulsion System for Marine Applications	EU	Short-sea shipping

Project website

www.eureka.be/inaction/portfolio.do

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
CEMTAR	Competence Centre for Marine Technology Applied Research	EU	Short-sea shipping
Project contact zkarpin@cto.gda.pl			
COMFORT FERRY CRUISE	A cooperative research project to develop a future comfort ship with optimized energy recuperation system, able to sail in bad weather conditions (9Bft), with a revolutionary new single hull with outriggers	EU	Maritime safety
Project contact Leonard Springerlaan 9, 9727 KB Groningen, The Netherlands			
COMPRIS	Consortium Operational Management Platform River Information Services	EU	Inland waterways
Project website www.euro-compris.org			
COPIT	Flexible transport chain: Use of computers for shipping (SME ship owners, "Partikulier") within integrated transport chains (PROJECT CLUSTER)	DE	Short-sea shipping
Project website www.copit.de (Project no. 19G9804A...H)			
D4D	Data Warehouse for Danube Waterway	EU	Inland waterways
Project website www.d4d.info			
DDMBBSPORT	Development of Data base of management of Bulgarian Black sea Ports	BG	Ports and port operations
Project contact portconsult@port-varna.bg			
DISC II	Demonstration of Integrated Ship Control (ISC) by way of Inter-European Implementation	EU	Short-sea shipping
Project contact esp@danmar.dk			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
Distrivaart 1	Distri Ship phase 1	NL	
Project website www.connekt.nl			
Distrivaart 2	Distri Ship phase 2	NL	
Project website www.connekt.nl			
DOLPHIN	Innovative Podded Propulsion by a Dolphin	EU	Short-sea shipping, maritime safety
Project website www.eureka.be/inaction/portfolio.do			
DONUM	Environmental effects of shipping on the Danube with respect to costs and benefits in freight traffic	AT	Inland waterways, maritime safety
Project website www.bmvit.gv.at/innovation/programmedownloads/laplusred_1999_2003.pdf			
DoRIS smms	DoRIS Lock Management – Feasibility Study	AT	
Project website www.bmvit.gv.at/innovation/verkehrstechnologie/i2feplattform/ergeb_ausschr2.html			
EC-DOCK	Easy Controlled Docking	EU	Ports and port operations
Project contact roryd@bmtech.co.uk			
ECOLOGICAL DOCK	Environmentally Friendly Floating Docks	EU	Ports and port operations
Project website www.eureka.be/inaction/portfolio.do			
E-EIS	European Economic Impact Study for the European shipping sector	EU	Short-sea shipping
Project contact policyresearch@innet.be			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
EMBARC	European Maritime study for Baseline and Advanced Regional and Coastal traffic management	EU	Short-sea shipping

Key findings

Following is an overview of the main results leading from the work conducted in the EMBARC project. For more details, and further explanation, the reader is referred to the individual WP reports, see EMBARC website.

Work Package 1: 'Commonalities'

For each area guidelines (Operational Procedures; Technologies; Education and Training; Organisational, Legal and Financial aspects; Formal Safety Assessment; and Human Factors) were written which would guide the Work Packages. The guidelines provided the State-of-the-Art with respect the work being conducted in EMBARC. The guidelines were reviewed at the end of the project and updated where relevant. Whilst the State-of-the-Art remained valid in general, conclusions and recommendations were provided where the State-of-the-Art would require change if the measures coming out of EMBARC were to be implemented.

Work Package 2: 'Vessel traffic, cargo and resource management'

- A tool was developed to determine the relationship between services and stakeholders in a port and thereby indicate the nature of Vessel Traffic Management and Information Services (VTMIS) in a specific port.
- Requirements for the use of AIS through replay and the use of these data for risk assessment were developed; and
- the integration of Cargo Community systems with VTMIS is not promising and this investigation has revealed that many ports are distinguishing between nautical and safety related aspect and commercial aspects.

Work Package 3: 'Tracking, tracing and monitoring'

- The present use and provision of AIS data by ships is not very successful but the situation is improving. The key items for attention were identified.
- A new reporting scheme for vessels in Europe was devised. The master reports only once his intentions to the monitoring authorities along the vessel's route automatically using AIS. Monitoring authorities send reports to SafeSeaNet.
- European waters are proposed as one reporting area. The European waters consist of the Search and Rescue Regions of the Member States.
- SafeSeaNet's infrastructure may be used for Tracking and Tracing of Cargo.

Work Package 4: 'Integration of tools and techniques'

- The integration of AIS and radar in a port environment is possible from an operational point of view, but Vessel Traffic Services (VTS) operators need to be re-educated in the use of the information of AIS in relation to the complete Traffic Image.
- Calculations were provided for determining the capacity of AIS in ports, which demonstrated that the capacity is sufficient even in the largest of the European ports.
- The careless merging of AIS and radar signals/information may lead to 'AIS assisted' collisions.

Work package 5: 'Vessel traffic prediction'

- A large percentage of masters didn't find it essential to change the Estimated Time of Arrival (ETA) and the port of destinations in their AIS. Over time the situation improved but not to an extent that AIS information can yet be considered as a reliable source for ports for use in admission policy and providing permission to enter the port.
- Way time diagrams, provided that they are carefully designed and used, are important supporting tools to manage traffic in restricted water.
- The introduction of the tidal wave in these diagrams is very useful and indicates also the tidal windows

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of a vessel in such a way that a VTS operator can assess traffic issues and grounding issues in one instance.
- It is difficult for masters to determine accurate ETAs in those areas where insufficient long-term weather predictions are available. The availability of updated and precise weather information and the way in which this information affects the speed of a vessel needs to be implemented on board vessels.

Work Package 6: 'VTM in a port Environment'
- The roles of the harbourmaster, master, pilots and VTS operators were defined with respect Vessel Traffic Management (VTM).
- The information that is necessary in the process of entering and leaving a port was collected and has lead to information requirements for the determination of risks of vessels when entering and leaving ports.
- A risk approach to determine the type of navigation support (VTS; VTS and pilotage; VTS and remote pilotage; and VTS and pilot exemptions) in a number of ports was rather successful.
- However, harbourmasters found the approach interesting but not quite to their liking, because of the more general character of the information used. They believe that an individual approach for each vessel is required.

Work Package 7: 'VTM in European waters'
- A risk model with results for the expected number of crew and passengers and expected the number and size of oil spills the North Sea, the Atlantic Approaches and the North- West Mediterranean is made on top of the Electronic Chart Display and Information System (ECDIS) charts.
- A new library for objects for risk analysis in ECDIS has been developed and put on the ECDIS forum.
- The principle of a risk index has been developed. It is shown that 20% of the vessels cause 67% of the risk in monetary terms.
- A VTM system at sea is proposed that combines monitoring of vessels and Search and Rescue (SAR) tasks. The system may also be proactive in the sense that special sea areas are closed for high-risk vessels in order to protect the interests of the coastal state.
- The way in which the intervention convention of IMO is used can be changed, following the precautionary principle and the use of the Rio Declaration, to give more power to the coastal state.
- A Formal Safety Assessment (FSA) of the mitigation effects of oil pollution abatement has shown the importance of the strategy that is used: mechanical clean up or the use of the newest detergents or a combination of both.
- It is possible to reduce the costs of oil pollution and its effects on the coastal resources when a balanced plan is made between mechanical clean up and the use of detergents.
- The response time to use detergents is rather limited. This requires a detailed monitoring of areas regarding oil spills and a quick decision structure in the member States.
- An application of a FSA is difficult in those cases where extreme large consequences are combined with extreme small frequencies.

Work Package 8: 'Simulation of a RTI in the Baltic and German Bight, Western Approaches and Mediterranean'
- The derivation of a Regional Traffic Image is possible and the use of resources for SAR can be easily put on a Geographic Information System (i.e. ECDIS) for fast interpretation.
- Monitoring and SAR functions may be combined in one centre. A number of Member States have implemented this, although an integration of sensor information for both functions is lagging behind.
- In some Member States the way in which SAR is organised by private parties makes it difficult to amalgamate with existing State agencies, although it is not impossible.
- There is great admiration for the voluntary work of the Life Saving Organisations, such as the RNLI and a deep respect for the efforts of the volunteers.
- When SAR is carried out by private organisations with a high efficiency rate it is difficult to merge them with the new monitoring tasks that have to be implemented by the Member States.

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Key findings / Policy implications / Project website or contact			
Policy implications None Project website www.euro-embarc.com			
EMMA	European Marine Motorways: The potential for transferring freight from road to high speed sea transport systems	EU	Short-sea shipping
Project contact s.lindsay@napier.ac.uk			
ENZYME-ANTIFOULING	Enzymes as Antifouling Agents in Marine Coatings for Ships and other Offshore Constructions	EU	
Project contact Estrada Vale de Mulatas, Quinta de S. Francisco, 2910 Setúbal, Portugal			
EPDIS	Electronic Pilot Display and Information System	EU	Short-sea shipping
Project website www.epdis.de			
EPRIS	Evaluation of positioning technologies for generating added-value services associated with River Information Services	AT	Inland waterways
Project website www.bmvit.gv.at/sixcms_upload/media/180/artist.pdf			
EROCAV	Erosion on Ship Propellers and Rudders - the Influence of Cavitation on Material Damages	EU	Short-sea shipping

Key findings

One of the aims of the consortium was to develop guidelines based on the results of the work performed and make them available to others. In these guidelines the accumulated knowledge was applied in a practical way and split into three main parts. The first part is related to the design stage before model test results are available, the second part deals with improvements on designs after model test results are available and the third part is related to improvements of existing hardware when damages have been found after some time of operation of the ship. In all three parts, the problems related to propellers and rudders are treated separately.
The full scale work has been carried out very successfully. The cooperation with the owners was very good. Instead of the planned three ships, four ships have been investigated. The results available are a set of fully documented cavitation observations and erosion data. This is more or less unique. The results show a variety of mechanism causing erosion on propeller and rudder.

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The work on the review and implementation of models concerning the mechanism of cavitation induced erosion covers more than what is traditionally meant by 'mechanism'. Examples of classical hydrodynamical mechanism are the formation of a micro jet at the collapse of a spherical cavity close to a solid body and the formation of a small group or cloud of sub-cavities.
Another main objective of the research work was to develop and improve erosion prediction methods based on model tests. Three different test techniques have been investigated in detail, the work went well for the paint test technique and the High Speed Video observations. The work related to the impact method shows, however, even if the application seems promising, the interpretation of the signals, both in the fluid and/or the material is so complicated that only an initial application could be obtained.

Policy implications

The EROCAV project showed that the research and development work, done by the European Commission, is helpful for the ship yards and ship-owners. Mainly the owners were very much engaged. Through its workshops and open forums the EROCAV consortium succeeded in bringing together a wide range of scientific research units (like model basins, classification societies), ship yards and ship owners and propeller manufacturers. Besides the detailed observation of the cavitation phenomena, high speed video observation and paint tests are the most reliable tools at the moment. Unfortunately the paint test method up to now does not give reliable results for the prediction of cavitation induced rudder cavitation. Further research is needed to develop an adequate paint.

Project website

www.erocav.de

HYBRID	Electric and hybrid chain-driven vehicles: energy and sustainability	FR	Short-sea shipping

Project contact

francois.badin@inrets.fr

HYTECH	Promotion of high-tech in hydrodynamic research	EU	Short-sea shipping

Key findings

The main objectives of the project were: reinforcement of the research capabilities of the Bulgarian Ship Hydrodynamics Centre (BSHC) both in terms of tools and human expertise and a closer integration of the Centre with the international professional community in its field of operation. Among the key results, relevant to the theme, the following can be mentioned:

- Acquisition and implementation of the state-of-the-art CFD solver FLUENT and relevant pre- and post-processing software;
- training of the staff (14 trainees) and young researchers from other related organizations in CFD simulations with Fluent;
- acquisition and installation of the state-of-the-art data acquisition and processing system LabView with training of the staff (19 trainees); and
- acquisition and implementation of advanced measuring devices.

Policy implications

The implementation of the Project created a sound basis for achieving the long-term goal of BSHC to maintain the European level of its research activity, thus assisting the overall economic and social integration of the country in the European Community, in the following directions:

- Improvement of the quality of research results by (1) enhanced capabilities for more thorough investi-

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gation of complex hydrodynamic phenomena, and (2) assisting the generation of better design solutions; and
- assistance in improving the University education in the fields of computational and experimental fluid dynamics and opening new attractive jobs or improving the mobility of young researchers.

Project contact

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INCATS	Inland Navigation Concerted Action Technical Secretariat	EU	Inland waterways

Project contact

Tel: +49 40 69203 428; Fax: +49 40 69203 345

INDRIS	Inland navigation demonstrator of river information services	EU	Inland waterways

Key findings

- The technical realisation of RIS and many of its elements has been demonstrated successfully on several locations in Europe.
- Interconnectivity within RIS and with other systems can be realised by setting and maintaining open data and communications standards, which are now available for operational use.
- Inland ECDIS is a very strong platform as a reference for geographic information and applications using this information, allowing commercial suppliers of various types of systems to design, develop, build and sell their own applications.
- AIS transponders according to the IMO standards can be applied in inland navigation, thus contributing to safe navigation. They are particularly useful in areas of mixed traffic of maritime and inland navigation, areas with high shipping densities and areas with special navigational difficulties.
- Standard IMO AIS transponders are still non-existent: every supplier has its own specific peculiarities.
- INDRIS contributed to the standardisation committee of AIS transponders by upgrading the standard for inland navigation use.

The main benefits for the users are:
- Improved and rationalised voyage planning, allowing Just-in-time transport to be a reality;
- reduction in fuel consumption, as the skipper will have exact information about RTA (Requested Time of Arrival) at locks and terminals;
- waiting times near terminals can be reduced as a result of better information exchange between terminals, barge operators and skippers;
- improved safety for the ships and at RIS Vessel Traffic Management centres because they receive improved and more reliable information; and
- The use of EDI leads to automatic reporting procedures resulting in less work for the navigator of an inland vessel.

Policy implications

INDRIS has clearly shown that the development of a VTM concept, with numerous added value services to improve aspects of Transport Management, is a valuable concept and represents an important step forward. The enhancement of maritime-based standards facilitates the compatibility, extension and linkage to maritime transport, other transport mode and to commercially based systems (linking ports and short sea shipping) and thus leading to a common transport policy. An important start was undertaken concerning the development of Public Private Partnership (PPP), which was characterised by an excellent working co-operation and efforts invested by all parties involved. However, the further development of PPP requires

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careful and meticulous attention because the vested interests and benefits of both sectors are quite different. The public authorities are responsible for safety, environment protection and the maintenance of fairways and its proper use while transport companies require to operate and survive in a highly competitive market place, so their tendency is to look more at commercial issues and competition rather than at cooperation to achieve efficient and cost effective transport. In result, co-operation between industrial partners should be stimulated and co-ordinated by a non-commercial management. There is a need of a permanent European structure, for maintaining, updating and harmonisation of standards, complemented by a European committee to co-ordinate the implementation of a RIS Platform in Europe with representatives of the competent authorities. The co-operation between Rhine and Danube countries will be a stepping-stone for the establishment of the link between the North Sea and the Black Sea and will definitely open new perspectives for developing transport patterns. Project website waterland.net/indris/			
INTRA-SEAS	Integrated Management of Multimodal Traffic in Port Terminals	EU	Ports and port operations
Project contact nec@cit.ie			
ITEA-DS	Intelligent tools for emergency applications & decision support	EU	Short-sea shipping, Maritime safety
Project website www.portauthority.li.it/itea-ds.htm			
MARIDES	Maritime Decision Support	EU	Short-sea shipping
Project website www.telecom.ntua.gr/marides			
MARQUAL	Improving quality of maritime operations through modelling business processes in shipping	EU	Maritime safety
Project website www.logit.as/projects/marqual			
MASIS II	Human Element in Man/Machine Interface and Interaction to Improve Safety and Effectiveness Transport for the European Fleet	EU	Maritime safety
Project contact cetena@mbox.ulisse.it			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
MD/DD/17	Inland navigation and sustainable development: analysis of factors that increase its market	BE	Inland waterways
Key findings The study want's to identify the main barriers hindering a shifting of cargo from road to waterway on the Belgian network and display the requirements to fulfil for a full integration of inland waterways into Inter-modal Transport Chains Policy implications None Project website www.belspo.be/belspo/fedra/proj.asp?l=en&COD=MD/DD/17			
METNET	Thematic Network on maritime education, training and certification	EU	Short-sea shipping
Project contact irene.rosberg@wmu.se			
MISTIC	Maritime Intelligent Systems for Transport and Inter- related Chain	EU	Short-sea shipping
Project website www.ist-mistic.org			
MOBISHIP	Model based initial and basic ship design	EU	Maritime safety
Project contact seppo.kuusimaki@masa-yards.fi			
MONITUS	Integrated Structural and Comfort Monitoring System for High Speed Passenger Ferries	EU	Short-sea shipping; Inland water-ways
Project website www.eureka.be/inaction/portfolio.do			
NAPAN	Northern Adriatic ports area net-work	EU	Ports and port operations
Project website www.ts.camcom.it/ENGLISH/NAPAN/cover.htm			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
NAUPLIOS	Navigation and perilous goods input and output system	EU	Maritime safety

Key findings

NAUPLIOS has evaluated new long range maritime surveillance services that could benefit from the implementation of the Galileo satellite services. It's extensive, six-month demonstration campaign involved six different types of vessel in order to effectively evaluate anticipated new services under various in-service scenarios.
The demonstration fleet comprised:

- The high-speed ferry Condor Express, operating passenger and freight services between the UK, the Channel Islands and the French port of St. Malo;
- the chemical/oil tanker Chassiron, operating mainly off the French Atlantic coast with occasional voyages in the Channel;
- the fishing vessel Villon, operating mainly off the French and Irish Atlantic coasts;
- the container carrier Elisa-B, operating from Barcelona and Valencia through the Mediterranean Sea to Canaries Islands in the Atlantic;
- the standard ferry Pride of Bilbao, operating the Channel service Portsmouth-Le Havre several times a day and a Portsmouth-Bilbao link at least once a week; and
- the patrol vessel Iris, operating on all French coasts.

NAUPLIOS has:

- Specified advanced traffic surveillance services including:
  - global surveillance from open sea up to coastal zones,
  - flexible reporting rates according to navigation zone, from 4 hours in open sea to high rates in TSS navigation zones,
  - active surveillance (officers assisted by new surveillance means, reporting rate modification, on-demand reports, TSS automatic warning messages, and message exchange with vessels),
  - extension of the existing Automatic Identification System (AIS; automatic identification as soon as vessels are in the global surveillance zone),
  - additional data on ship, dangerous goods and voyage (hazardous cargo description, more precise voyage and cargo data),
  - information sharing with harbours and commercial companies (entry and exit of harbours, ship positions, cargo and technical data gathered on-board vessels);
- set up a control centre featuring GNSS-based surveillance and search and rescue (SAR) capabilities, linked to maritime surveillance centres;
- launched a website (www.novacom-services.com), configured with restricted access to guarantee the confidentiality of vessel and voyage data; and
- performed a cost/benefit analysis for the implementation of the NAUPLIOS architecture based on the assumption that by 2008 all vessels in European waters will be equipped with a modified AIS terminal.

Policy implications

An essential conclusion is that a concept like NAUPLIOS, based on satellite communications, should be considered an improved long range Automatic Identification System (AIS), complementing VHF AIS coverage. Satellite and VHF could be associated to provide similar services for short range and long range. Yet, distance is not the only criterion to compare VHF and satellite. Satellite communications, in comparison with VHF will always face two main drawbacks, being costs and time delivery delays, but also provide the main advantage of confidentiality in data exchanges. Thus, under VHF AIS coverage, satellite use is limited but may however be used for redundancy and to provide specific services not available in standard AIS though important in crisis management.

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			

Project website

nauplios.cnes.fr

OPTINAV	The Optimal Navigation Support System	EU	Short-sea shipping, Maritime safety

Project website

www.wondermar.net/optinav.htm

PACSCAT	Development of a partial air cushion support catamaran for freight transportation on inland waterways	EU	Inland waterways

Key findings

- The project has validated a novel vessel concept that is feasible with respect to its engineering and operational requirements. It can carry 2000 tons of freight at speeds up to 37 km/h (equivalent to around 200 TEU in a LoLo version, or 43 trucks in a RoRo version).
- An environmental impact assessment, including consideration of specific sensitivities on the target routes, has indicated that operation of the vessel is unlikely to cause any significant environmental impact which would call its operation into question. Areas of possible risk (which would need to be reviewed when a demonstrator vessel is available) are the height of wake wash and the level of noise emission.
- A wide range of possible European routes for PACSCAT deployment was considered. The greatest potential for profitable operation of PACSCAT River Freighters was identified on the Danube over its whole length between the Black Sea and Passau on the German border; and on the lower part of the Rhine between the Europort and Duisburg. A substantial amount of data on these routes has been generated, including potential logistics markets and specific service opportunities.
- PACSCAT costs per ton-km are slightly higher than for (much slower) conventional barges, but are directly comparable with road and rail freight costs.
- As a result, it is believed that PACSCAT River Freighters will compete effectively with conventional barges and with long-distance road or rail modes, in some segments of the freight logistics market.

Policy implications

- Development of a PACSCAT fleet operating on the Danube could make a significant contribution to expansion of high-value trade within Eastern Europe and across its Eastern border. This would be achieved without causing further congestion of road networks, and without the major investment in additional rail capacity.
- Successful operation of a Danube fleet would provide a foundation for deployment on other routes. As operational experience develops, niche markets are likely to be identified on the Rhine and possibly Rhine-Sea routes.
- Such expanded deployment would help substantially to meet the policy objective of modal shift from road to water.

Project website

www.pacscat.info

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			

PODS IN SERVICE | Safety and reliability of podded propulsors under service conditions | EU | Maritime safety

Key findings

PODS IN SERVICE ran a full scale monitoring campaign, using extensive measuring equipment on-board the following four vessels:

- The supply vessel Botnica, equipped with ABB Azipods, and operating in the North Sea;
- the new, 300m long cruise ship GTV Radiance of the Seas, equipped with ABB Azipods, and operating on the American west coast including Alaska;
- the new, 300m long cruise ship GTS Summit, equipped with Rolls-Royce Mermaid pods, and operating in the Mediterranean, Caribbean and Baltic Seas; and
- the new-built Ropax ferry Nils Holgersson, equipped with Siemens Schottel SSP pods, and operating the TT-line Travemünde-Trelleborg service.

The Joint Industry Project (JIP) has:

- Determined loads of podded drives from strain gauge measurements during dedicated sea trials, and by computational methods;
- found loads during crash stops and during extreme manoeuvres in transit (under full engine power) to be the most extreme; and
- observed a higher than anticipated impact of slamming and whipping of the ship hull in severe weather conditions on pod body dynamics.

Policy implications

Sea trials with pod driven ships are currently conducted according to the IMO requirements for conventional propellers and rudders and in particular the steering trials such as hardover/hardover tests induce severe loads on pods whereas they are not considered as realistic or necessary for this type of ship. Therefore tailored requirements for sea trials of ships using podded propulsors are proposed to IMO for implementation in future regulations.

Project website

www.marin.nl/folder_info.asp?FolderID=64

REALISE | Regional Action for Logistical Integration of Shipping across Europe | EU | Short-sea shipping

Key findings

One of the main conclusion which can be drawn from the 3-year research activities of REALISE is that in order to ensure a real modal shift and hence an improvement of intermodality it is important to analyse in real and practical terms the various elements entering in the decision process of the operators. Prices and costs, distances, time, quality, cultural behaviour, etc are a collection of variables for the modal shift. It would misleading and wrong to stress the importance of price as only one of these elements.

Policy implications

REALISE findings should be accepted as:

- The basis for further EU policy and research development concerned with understanding the performance of the freight carriage transport networks in Europe and ensure optimal and efficient intermodal solutions for the carriage of goods;
- the basis for further EU policy and research development concerned with developing short sea shipping and achieving seamless integration between sea and land and between different transport modes.

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
Project website www.realise-sss.org			
REMARCC II	Network of Regional Maritime Competence Centres - A Regional Maritime Strategy for Promoting Intermodal Transport, ICT and Network Opportunities within the North Sea Region	EU	Short-sea shipping
Key findings The REMARCCC project promotes waterborne transport having a strong impact on future planning and demand for transport infrastructure within and between the regions in the North Sea Region. Policy implications None Project website www.remarcc.net			
RISVD	River information services as part of the pan-European system RIS - test center in the transport ministry	SK	Inland waterways
Key findings The study analysed the situation in the Slovak Republic and proposed the structure of a test centre for RIS in Slovakia. The costs of such a centre were identified as well. The study has taken into account not only the conditions contained in the forthcoming EU RIS Directive and the policies of other multi-national bodies, such as CCNR, DC and PIANC but the geographical and administrative prerequisites in the Slovak Republic too. Policy implications The study provides the base for the implementation of the forthcoming RIS Directive on the inland waterway system in Slovakia. The EU RIS will define the conditions and deadlines for implementation. Project contact zitnansky@vudba.sk			
ROROPROB	Probabilistic rules-based optimal design of RO-RO passenger ships	EU	Maritime safety
Key findings The project ROROPROB developed a formalised design methodology for the optimal compartmentation and internal arrangements of passenger Ro-Ro ships, adopting the probabilistic concept of damage stability to address their survivability after damage. During ROROPROB, the robustness of a probabilistic rules-based design procedure in a range of scenarios and its sensitivity to the main design parameters involved in the assessment process were evaluated and hence, suitable constraints were defined as appropriate. Local and global optimisation techniques for enhanced damage stability characteristics were developed and integrated within the design methodology in order to demonstrate that the developed probabilistic rules-based methodology on Ro-Ro concept de-			

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signs meets specific user-defined criteria and requirements.
The formalised design methodology coupled with the optimisation procedure for addressing optimally one of the absolutely basic needs of a ship (namely her subdivision), in the form of an integrated computer software is the main result of the ROROPROB project. Its use in practical ship design has been successfully demonstrated by the end users of the project and provided (and will further give) a competitive advantage to the project partners in the future, by supporting the development of cost-effective and safe Ro-Ro designs and creating new opportunities of employment.

Policy implications

No policy implications directly related to this theme.

Project contact

seppo.kalske@deltamarin.com

SAFENVSHIP	Safe and Environmentally Friendly Passenger Ships	EU	Maritime safety

Project website

www.eureka.be/inaction/portfolio.do

SAFER EURORO II	Design for safety: An Integrated Approach to Safe European Ro-Ro Ferry Design	EU	Maritime safety

Project contact

48 North Portland Street, Colville Building 8, Glasgow G1 1XM, UK

SANDWICH	Advanced composite sandwich steel structures	EU	Maritime safety

Key findings

Project findings comprise:

- So far up to 35% weight reduction;
- max space reduction of 64% at equal weight;
- improvements not in the range we expected;
- filled SANDWICH panels reach significant better results than empty ones;
- 350 mm wide X type SANDWICH wall is as crashworthy as a conventional 1000 mm wide double hull;
- much better than conventional but yet not satisfactory accuracy; and
- for the crashworthy side structure the improvement is in the order of 50%, for decks in the order of 20%.

Policy implications

Heavily loaded decks and structures: in view of the problems which can not be solved by the SANDWICH project, the application of sandwich panels in these critical areas will be limited and less than expected at the time, when the proposal was written. The development of new structural and functional concepts will be necessary before a breakthrough can be achieved.
Minor components in passenger ships: for minor components, like walls, staircase landings, stairs, etc. sandwich panels are an attractive and cost efficient alternative to conventionally stiffened plates. Main benefits are among others, space saving and increased stiffness. Enhanced properties and design algorithms, developed by the SANDWICH project will lead to increased application. Some of the solutions, e.g.

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aiming at supporting new outfitting techniques (pre-manufactured cabins) have already been developed. It is expected, that the application doubles (i.e. approximately 2,400 m2) during the project and in the first two years after the project finishes.
Application in inland-waterway cruise ships: Inland waterway vessels are a new product line, being produced by a sister company of Meyer Werft. The requirements towards application of sandwich panels in these ships differ significantly from those in large cruise vessels (some requirements are less, others more critical). In the prototype application, sandwich panels have been used in a number of decks in those ships. A number of valuable experiences have been gained from the prototype application, indicating problems in particular in assembly of the ship. Extra investigations have been started as a consequence within the sandwich team and also assembly techniques need further improvements. Up to 3,000 m2 of sandwich panels will be used in decks of inland waterway cruise ships during and immediately after the project terminates. Currently, market forecasts identify a high demand for inland waterway cruise ships, mainly on central European rivers, but also in Russia, where a huge number of similar ships have to be replaced in the next years.

Project contact

sandwich.balport.com

S-CBB Secured Cargo Black Box EU Ports and port operation

Key findings

S-CBB has:

- Analysed the existing chain of information in maritime transport which led to the definition of blocking nodes in the chain and to the identification of all administrative processes that could be avoided, reduced or improved;
- set the legislative framework for the technology developed as well as for the concept it carries, i.e. reducing administrative and customs processes and setting up new customs regulations based on telematics means through
  - analysis of current regulation that defines the administrative processes in door-to-door transport as well as in international transport,
  - elaboration of a homogenous standard of processes, including the technical elements for the various components of the system,
  - definition of legal, normative and responsibility scope,
  - standardisation of the professional equipment to be used; and
- developed the functional architecture of a secured cargo black box application which allows tracking and tracing of vessels at all times, however, not only providing the exact route followed by ships but allowing also to compare their speed with the normal average, thus being able to detect any situation that would not be normal, such as the unloading of cargo at sea; the S-CBB architecture hence comprises:
  - a reliable transmitter to localize ships and supply information on transport of the goods,
  - identification and certification software to confirm goods delivery,
  - a processing centre (or remote data operations centre) for processing data to be send,
  - a platform (S-CBB server) to distribute and exchange data to end-users,
  - a security management entity to cover all security aspects of the system, based on modern satellite, Internet and biometric technologies integrated into a data acquisition chain operating automatically and reliably in near real-time.

Policy implications

The S-CBB system should be made compulsory for all movements of goods within the EU and for exports of goods to third countries when the payment of EU refunds is involved. This would result in an increased

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safety of the vessels. It would also be of great interest to the insurance companies as they would be in a position to monitor cargo and to receive alerts whenever something abnormal occurs at sea. Eventually, the system would be more acceptable to ship captains and crew due to the fact that it would be complying with legislation and not just targeting particular vessels.
Legally such a system is drawing on international initiatives and recommendations from organisations such as IMO, EC, ITU, WTO, etc. In fact, these organisations are in a position to accept suggestions from research projects that would benefit the EU, e.g. in the areas of security, economics and the environment.

Project website

www.cargoblackbox.com

SEAGULL	Seafarers Global Use of Long-distance Learning	EU	Short-sea shipping

Project website

seagull.bit-ic.nl

SEAM	Assessing concepts, systems and tools for a Safer, Efficient and Environmentally Aware and Friendly Maritime Transport	EU	Maritime safety

Key findings

SEAM has:

- Identified maritime hazards and collected related data for three key issues:
  - ballast water management,
  - anti-fouling paints, and
  - quality of fuel and emissions; and
- done a risk assessment for two geographical examples, i.e. the German Bight and the Gulf of Naples, looking at the regulatory influences affecting the level of risk.

Policy implications

No policy implications directly relevant to this theme. However, please note that implications for the project's key theme (Safety and Security) are generically applicable.

Project website

seam.mettle.org

SOUNDBOAT	Sound evaluation and control for recreational marine craft	EU	

Project contact

nparker@britishmarine.co.uk

SPIN-TN	Thematic network on the development of European strategies to promote short sea shipping, sea-river and inland navigation	EU	Shot-sea shipping

Project contact

eric.gellee@fdc.fr

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
SWAN	Standardisation & dissemination support actions for waterborne telematic networks & applications	EU	Short-sea shipping
Project website www.ist-swan.net/swanhtml/			
SYVÄ	Transmitting depth information to nautical charts	FI	Maritime safety
Project contact timo.kaartinen@fma.fi			
TELEMAS	TELE-Maintenance and Support through intelligent resource management for ship Operation	EU	
Project website www.telemas.de			
THEMES	Thematic Network on Safety Assessment of Waterborne Transport	EU	Maritime safety

Key findings

One of the tasks of THEMES has been to develop a 'comprehensive framework of safety assessment and safety management for waterborne transport'. Key questions during the development stages were why and what is a framework? The team arrived at the following key points:

- Purpose is to improve safety performance;
- better performance through a better culture;
- a better culture by practising safety assessment;
- needs of an information system for the stakeholders;
- needs of a non-regulatory encouragement of good safety practice; and
- needs of an industry-wide adoption of best safety culture practices.

In summary the framework comprises 5 components, these are:

- The European Union's maritime safety policies;
- the shipping industry stakeholders;
- a common information system (EMIS);
- a so-called 'dedicated network' representing the industry stakeholders; and
- a body representing the European end-users of shipping services.

Policy implications

Recommendations can be summarised as follows:

- Create a European maritime safety information system;
- create a European Accident database, incorporating information on human factors; and
- enhanced accident investigation, especially when several countries are involved in the accident.

Project website

projects.dnv.com/themes/

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
TRAPIST	Tools and Routines to Assist Ports and Improve Shipping	EU	Ports and port operations

Key findings

The project of TRAPIST results were found to enable ports, primarily small-to-medium ports (SMP), to enhance the efficiency of their operations and to optimise the planning, management and use of their resources to provide cost-effective, safe and high quality services, thereby strengthening their global competitive positions.

I. Importance of small-to-medium ports

It was found that Small-to-Medium Ports (SMPs) are generally regional in nature and they bring considerable benefit to the regional communities that they serve. These benefits can take three forms: employment benefits, social benefits, wealth-generating benefits.

II. Regional ports vis-à-vis central dependency

It was also found that centralised dependency can be damaging to a regional port's interests. The onus is on a regional port to carve out its own solutions for its own benefit and for that of the people within its hinterland.

III. Environmental Issues for Small-to-Medium Ports

The costs and uncertainties of contending with, primarily, the Wild Birds and Habitats directives are beyond the capacity of many SMPs. The directives are used to legitimise the blocking of the socio-economic ambitions of whole communities for often unreasonable motives.

IV. Comparisons between RoRo, Conventional LoLo and Hatchless LoLo.

For short distances (up to approximately 280 nm) Freight RoRo has no competitor. For distances greater than 660 and less than 1,200 nautical miles, Conventional LoLo is the winner. For intermediate distances (280 – 660 nm), the advantage swings between RoRo and Hatchless LoLo, with Conventional LoLo nowhere in the running.

V. Improved efficiency on container terminals in SMPs.

Areas of operation that create considerable difficulty for a SMP are: (i) cooperating with a larger port within the same state in order to increase ship utilisations i.e. participating in multi-port calling and (ii) coordinating container management on the terminal with loading / discharging containers on a ship in order to improve overall efficiency and to reduce ship turnaround times. TRAPIST proposes a solution in these respects based on vertical distribution of container weights, and longitudinal and athwart ships assignments to destination terminals.

Policy implications

European ports are not the subject of a defined and focussed policy. On the contrary, they are submitted to various policy areas such as transport, environmental protection, customs and electronic information. This is particularly true of small and medium sized ports, which are not addressed as such.

This situation results in the 'European ports' policy' having the following general tendencies:

- First this policy favours large hub ports, and does not sufficiently emphasise the need for regional or community optimisation and the role of Small to Medium Ports (SMPs).
- Second, healthy regional competition is not promoted, whereas large, centralised decisions are applied to all types of ports without distinction.
- Third, this policy does not recognise the essential position of ports as the only fixed references in the transport chain, compared to other operators that are highly mobile and relatively unstable.

The project has produced recommendations in relation to the following.

- Implementation of health and safety law; it is recommended that passport training, registration and identification be introduced for all dock workers both casual and permanent. Passport training has been eminently successful in several industries that have similar characteristics to stevedoring / dock working.

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- Accidents in Ports and Terminals; it is recommended that (i) electronic accident reporting forms be designed, tested and distributed with assistance from the Commission as a service to European safety agencies and (ii) a database for recording and reporting first aid accidents be designed, tested and distributed with assistance from the Commission as a service to European small-to-medium ports.
- Innovation in short sea shipping; it is recommended that ports change the method whereby port dues are levied on short sea container vessels, from a gross tonnage based system to one that is fair and that does not damage their own interests by killing off competitive innovations; two such systems that are broadly circulated are (i) TEU throughput per vessel and (ii) Length x Breadth x Design Draft.

Project contact

info@necl.ie

TRASIBI	Cluster project: Basics of logistics and handling at transfer and storage processes of waste products under the consideration of inland shipping (PROJECT CLUSTER)	DE	Inland waterways

Project website

www.kreislaufwirtschaft.net (Project no. 19G2045A...I)

UG538	Review of DPTAC guidance on the design of large passenger ships and passenger infrastructure to meet the needs of disabled people	UK	

Project website

www.rmd.dft.gov.uk/project.asp?intProjectID=11777

USNES	System development for Internet based services in maritime transport	GR	

Project website (or contact)

None

VORTEX	New technologies for Hydrodynamic Optimisation of Transport and Technical Ship Propellers for Improving their Performances and for Observing the European Standards Regarding the Transport Safety and Comfort Aboard	RO	Maritime safety

Project contact

gelu_iorga@icepronav.ro

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
VRSHIPS-ROPAX	Life-cycle virtual reality ship systems	EU	
Project website www.vrsproject.com			
WATERMAN-TS	Waterborne traffic and transport management - Technical secretariat	EU	Ports and port operations

Key findings
The achievement resulting from the activities of Waterman membership, related with the Waterborne theme, is a series of synthesis documents on current trends regarding:
• Hindrances and constraints affecting data exchanges;
• information systems developed for transport logistics;
• the rationale and applicability of the Formal Safety Assessment methodology; and
• the SafeSeaNet network.
Policy implications
The Waterman Thematic Network recommends that:
• In depth analyses be further carried out to promote the concept of a one stop, shop a precondition to the development of short sea shipping;
• any study of maritime traffic and transport information systems be subject to a systematic approach aimed at defining the architecture of these systems at the appropriate levels:
  • the policy level,
  • the business (operator) level, and
  • the manufacturer's levels.
Project website
www.waterman-ts.net			

ΠΟΣΕΙΔΩΝ	Standard operation optimisation integrated system through web applications in waterborne transport	GR	Ports and port operations
Project website (or contact) None			
–	A review of the development plan for the national public ports (OKK) fitted to the new OKK concept	HU	Ports and port operations
Project website www.kti.hu			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	A transz-európai közlekedési hálózathoz csatlakozó hazai Duna-folyosó stratégiai környezeti hatás-vizsgálata	HU	
Project website www.kti.hu			
–	Air quality on board ships	IS	
Project website (or contact) None			
–	Analysis and development of an advanced sensor of surface sound waves in HF wave band, with use for the maritime sector	ES	
Project website (or contact) None			
–	Assessing the economic efficiency of shipping through the Saimaa Canal	FI	Inland waterways
Project contact harry.favorin@mintc.fi			
–	Automatic data processing system for infrastructure management	FI	Ports and port operations
Project contact rolf.backstrom@fma.fi			
–	Automatic follow-up and alarm of remote monitoring equipment	FI	Maritime safety
Project contact timo.kaartinen@fma.fi			
–	Berm breakwaters	IS	
Project website (or contact) None			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Cluster project: Flexible transport chain: Scheduled inland container shipping between the port of Hamburg and inland ports in northern Germany	DE	Inland waterways
Project website (or contact)			
None			
–	Comparison of Competence Levels of Crews on Different Ship Types (Bulk Carriers)	UK	
Project website (or contact)			
None			
–	Comparison study of integrated navigation and propulsion control system designs for marine applications	UK	Short-sea shipping
Project website (or contact)			
None			
–	Design and development of a spillage spreading model with application to the maritime sector	ES	Maritime safety
Project website (or contact)			
None			
–	Design and development of an integration platform for incident prevention and rescue co-ordination systems, applied to the maritime sector	ES	Maritime safety
Project website (or contact)			
None			
–	Design, development and integration of high-resolution algorithms in the Aries sensor to detect small objects, with application to the maritime sector	ES	Maritime safety
Project website (or contact)			
None			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Developing evaluation base and initial data for external costs caused by waterborne transport, international comparison	FI	Short-sea shipping
Project contact risto.lang@fma.fi			
–	Developing impact evaluation of waterway projects	FI	Inland waterways
Project contact risto.lang@fma.fi			
–	Developing of cost and perform-ance follow-up in waterway infra-structure management	FI	Ports and port operations
Project contact risto.lang@fma.fi			
–	Developing of wintertime traffic in Saimaa canal	FI	Inland waterways
Project contact timo.kaartinen@fma.fi			
–	Developing port operations and reforming legislation on ports	FI	Ports and port operations
Project contact jari.grohn@mintc.fi			
–	Development of a system for sup-porting ship servicing procedures by using modern knowledge man-agement technologies	GR	Short-sea shipping
Project website (or contact) None			
–	Development of PACSCAT River Freighter	EU	Inland waterways
Project contact imaa.co@virgin.net			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Development of Performance Standards and Operational Guidance for Transponders and Electronic Chart Systems Suitable for non-Seagoing Vessels and Other Small Seagoing Craft	UK	
Project website (or contact) None			
–	Development of Sea Keeping Performance Criteria for Ships (Trials April 1987-1998)	UK	Short-sea shipping
Project website (or contact) None			
–	Digital Mapping of Gulf of Tallinn for vessel traffic	EE	
Project contact toomas.leetjoe@mkm.ee			
–	Ecological impact on receiving waters of highway surface water run-off	UK	
Project website www.ha-research.co.uk/projects/index.php?id=391			
–	Effective and safe life-saving system for passenger ships. Methodology for development and systematic analysis	SE	Maritime safety
Project contact oller@chl.chalmers.se			
–	Elaboration of methods for optimising parameters of sea and inland waterways transport and their application	PL	Short-sea shipping, inland waterways
Project website (or contact) None			
–	Electronic failures and disturbances in vessels	FI	Maritime safety
Project contact olli.holm@fma.fi			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Energy & Environmental Impacts of using Deep Water container transhipment hubs	UK	Ports and port operations
Project website (or contact) None			
–	Energy efficiency of modes of transport	FR	Short-sea shipping; Inland operations
Project contact predit@equipement.gouv.fr			
–	Enviroaliswath	IT	
Project website (or contact) None			
–	Environmental compatibility and structure and plant reliability of vessels for a competitive and sustainable short-sea shipping	IT	Short-sea shipping
Project website cofin.cineca.it			
–	Environmental impacts of transporting goods in urban areas with port facilities: operational implementation of a geographic information system	FR	
Project contact predit@equipement.gouv.fr			
–	Environmental system of Finnish Maritime Administration	FI	
Project contact olli.holm@fma.fi			
–	Environment-based shipping route fees in water traffic	FI	Short-sea shipping
Project contact mikko.ojajärvi@mintc.fi			
–	Evaluation of logistics system of shipping in Finland	FI	Short-sea shipping
Project contact jouko.vuoristo@fma.fi			

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Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Exhaust emissions: Quantification of regional pollution inputs, Phase 3	UK	
Project website (or contact) None			
–	Expert system with integration of vessels	IT	
Project contact Via di Priscilla, 116, 00199 Roma			
–	Failures of Low Pressure Fuel Systems on Ships' Diesel Engines	UK	Maritime safety
Project website (or contact) None			
–	Feasibility of a system to exchange information between inland waterway ports and their partners	FR	Inland waterways, ports and port operations
Project contact predit@equipement.gouv.fr			
–	Feasibility study about the integration of the national mariner- and shipping training into the higher educational system	HU	
Project contact ugroczky@sze.hu			
–	Ferry Tenders in Norway	NO	
Project contact svein.brathen@himolde.no			
–	Fight against the dumping of hydrocarbon in the sea. Design and operation of a specific ship for the collection of their collection	ES	
Project website (or contact) None			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Flexible transport chain: Scheduled inland container shipping between the port of Hamburg and inland ports in northern Germany	DE	Inland waterways
Project website (or contact)			
None			
–	Flexible transport chain: Seamless transport chain inland ports, sea ports alongside Elbe	DE	Inland waterways
Project website (or contact)			
None			
–	Flexible transport chain: Seamless transport chain inland ports, sea ports alongside Elbe	DE	Inland waterways
Project website (or contact)			
None			
–	Flexible transport chain: Seamless transport chain inland ports, sea ports alongside Elbe, processing and distribution system	DE	Inland waterways
Project website (or contact)			
None			
–	Flow of air to ships' main engines	IS	Short-sea shipping
Project website (or contact)			
None			
–	High Speed Passenger Ships innovative production methods for Hellenic Seas	GR	Short-sea shipping
Project website (or contact)			
None			
–	High-speed vessels: forecast of power and dynamic stability	IT	Short-sea shipping
Project website			
cofin.cineca.it			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Hydrodynamic characteristics of innovative high-speed vessels	IT	Short-sea shipping
Project website cofin.cineca.it			
–	Hydrodynamics performance and propulsion plant of vessel for high-speed transport	IT	Short-sea shipping
Project website cofin.cineca.it			
–	Ice class investigations	FI	
Project contact olli.holm@fma.fi			
–	Ice class regulations for winter navigation	FI	Maritime safety
Project contact harry.favorin@mintc.fi			
–	Identification and location of cooperative vessels with ground-board communication	IT	
Project contact Via Acton, 38, 80133 Napoli			
–	Implementation of the information system of the inland navigation (HIR) with the supply of harbour traffic data	HU	Inland waterways
Project contact ha5abe@hotmail.com			
–	Import of goods in Greek harbours through maritime freight transport and their impacts on local ecosystems	GR	Shot-sea shipping
Project contact anikol@biol.uoa.gr			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Improved satellite services for vessels & shipping companies organisation using satellites	GR	
Project website (or contact) None			
–	Improvement in inland waterway container terminals	FR	Inland waterways, ports and port operations
Project contact predit@equipement.gouv.fr			
–	In the European research area, a thematic network for the shipbuilding technology applied research	EU	Short-sea shipping
Project contact pemar.consulting@wanadoo.fr			
–	Industrial development project to encourage implementation of a logistic system for port traffic	ES	Ports and port operations
Project website (or contact) None			
–	Industrial investigation project for the development of a logical programme of loaded and unloaded containers on ships	ES	Ports and port operations
Project website (or contact) None			
–	Industrial project development to provide the La Coruña port with a central emergency co-ordination centre, for integrated port operations	ES	Ports and port operations
Project website (or contact) None			
–	Information system on weather and sea state	IS	Maritime safety
Project website (or contact) None			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Innovative system of inter-modal transport	IT	Short-sea shipping
Project website (or contact)			
None			
–	Integrated Passenger Vessels Design and implementation in Hellenic Coastal Shipping	GR	Short-sea shipping
Project website (or contact)			
None			
–	Integrated system of the management of merchant ships	ES	Short-sea shipping
Project website (or contact)			
None			
–	Intermodality at seaports (PROJECT CLUSTER)	FR	Ports and port operations
Project contact			
predit@equipement.gouv.fr			
–	Island ferry port at Bakkafjara Coast	IS	Ports and port operations
Project website (or contact)			
None			
–	ITU (intermodal transport unit) tracking (PROJECT CLUSTER)	FR	Short-sea shipping
Project contact			
predit@equipement.gouv.fr			
–	Karvor Project (New concepts of a small self-loader container coasting vessel; promotion of multimodal transports including short-sea and coastal transports)	FR	Short-sea shipping
Project contact			
predit@equipement.gouv.fr			
–	Loading and overloading of small vessels	IS	Ports and port operations
Project website (or contact)			
None			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Local terminal user for the Galileo search and rescue server with application to the maritime sector	ES	Maritime safety
Project website (or contact) None			
–	Maritime safety: implementation of an integral system for the reduction of risks in navigation, optimisation of rescue services and the fight against pollution.	ES	Maritime safety
Project website (or contact) None			
–	Maritime transport and terminal firms: market forms and competition strategies	IT	Short-sea shipping
Project website cofin.cineca.it			
–	Modelling in sea transport for improving safety and efficiency	SI	Maritime safety
Project website (or contact) None			
–	Network on marine systems	UK	
Project website (or contact) None			
–	Noise levels on board ships	IS	
Project website (or contact) None			
–	Optimal sizing of container terminal and fare efficiency	IT	Ports and port operations
Project website cofin.cineca.it			
–	Optimisation of production process of electronic nautical charts	FI	
Project contact timo.kaartinen@fma.fi			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Organisation of port services production and efficiency management - administration of passenger terminals	GR	Ports and port operations
Project contact chlom@unipi.gr			
–	Outlook for development of Baltic Sea shipping	FI	Short-sea shipping
Project contact jouko.vuoristo@fma.fi			
–	Outlook of short-sea shipping in the Mediterranean Sea	IT	Short-sea shipping
Project website cofin.cineca.it			
–	Passenger and Crew Analysis Phase 1	UK	
Project website (or contact) None			
–	Portnet Impact Evaluation	FI	
Project contact pekka.leviakangas@vtt.fi			
–	Ports and local systems in the global economy	IT	Ports and port operations
Project website cofin.cineca.it			
–	Pre- and post-haulage of maritime containers by road or rail to Le Havre and Marseille	FR	
Project contact predit@equipement.gouv.fr			
–	Production and information system management model of military nautical charts	FI	
Project contact timo.kaartinen@fma.fi			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Production proposal of a national plan against hydrocarbon dumping in the sea	ES	
Project website (or contact)			
None			
–	Programme on the safety of sea-farers (PROJECT CLUSTER)	IS	Maritime safety
Project website			
www.sigling.is/Pages/389			
–	Quantifying Waste Generated by all Ships and Platforms Operating in the North Sea	UK	Short-sea shipping
Project website (or contact)			
None			
–	Research and Advice on Risk Management in Relation to the Subsidy of Ferry Services	UK	
Project website (or contact)			
None			
–	Research project for hydrofoils with immersed wing	IT	Short-sea shipping
Project website (or contact)			
None			
–	Safety Assessment: Applicability to Merchant Ships	UK	Maritime safety
Project website (or contact)			
None			
–	Satellite technologies for air and ship navigation in constrained spaces	IT	Short-sea shipping
Project website			
cofin.cineca.it			
–	Saving lives in severe weather	SE	Maritime safety
Project contact			
office@landsort-maritime.com			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Sea bottom changes for dredging needs	IS	
Project website (or contact)			
None			
–	Second International Coastal Symposium in Höfn	IS	
Project website (or contact)			
None			
–	Security assessment of smaller fishing vessels in a dangerous wave environment	IS	
Project website (or contact)			
None			
–	Ships' Wash Impact Management	UK	
Project website (or contact)			
None			
–	Shortsea promotion centre Finland	FI	Short-sea shipping
Project contact			
harry.favorin@mintc.fi			
–	Simulator Training for Handling Escalating Emergencies	UK	
Project website (or contact)			
None			
–	Strategic environmental impact assessment of the Danube-Corridor connected with the Trans-European Transport Network. State of the art.	HU	Inland waterways
Project website			
www.kti.hu			
–	Study, preparatory measures and pilot test for the removal of bottle-necks on the Danube waterway in the section Vienna - Austrian-Slovak border	EU	Inland waterways
Project website (or contact)			
None			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	System architecture for traffic data systems	FI	Short-sea shipping
Project contact rolf.backstrom@fma.fi			
–	Technical safety of sea vessels under vibro-acoustic and fire risks	PL	Maritime safety
Project website (or contact) None			
–	Techno-economic study of the feasibility of a short freight ship with a self-propelled materials handling system	FR	Short-sea shipping
Project contact predit@equipement.gouv.fr			
–	Telematic systems of waterways and water transport	CZ	
Project contact Odború 4, Praha			
–	Traffic information systems: Automatic monitoring system for utilisation of draft in passages	FI	
Project contact rolf.backstrom@fma.fi			
–	Transport of bulk cement over water in urban areas (PROJECT CLUSTER)	FR	
Project contact predit@equipement.gouv.fr			
–	Travelling by sea in modern and contemporary age: economic and social aspects of passenger transport	IT	
Project website cofin.cineca.it			

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	UK marine motorways study	UK	Short-sea shipping

Key findings

This project investigated the potential for developing fast freight ferry services on UK coastal routes as an alternative to long-distance road transport. The study involved application, testing, and further refinement of a research methodology previously used to establish the operational and commercial viability of fast ferry services (e.g. in EMMA, and ZEE-SCOT projects) throughout Europe. The project complies with the waterborne transport theme and in particular contributes to knowledge under the short sea shipping topic. In particular, the sub-theme of short sea shipping is of most relevance to this projects as which especially concerns goods traffic within the EU. For example, the results of the projects have identified key requirements of the road transport logistics sector vis-à-vis any coastal shipping combined transport solution; found out that the high speed Ro-Ro ship type appears to offer best prospects for coastal shipping to develop in the UK; established that, in order to address the requirement for high service frequency and to counteract the market share challenge, moderate rather than large capacity vessels may need to be considered (i.e. capacity under 100 trailers); estimated that the actual cost of the high-speed sea transport leg works out at approximately one half of total door-to-door trailer-slot costs.
By implication, a major portion of door-to-door coastal shipping costs actually relates to road haulage, or the combined transport element of the trip. Compared to the cost of road haulage, sea transport costs (i.e. for the sea leg alone, ignoring combined transport costs) are more competitive per trailer-km for any ship type. An important conclusion to be drawn from this study is that, while there would be considerable environmental benefits to be gained from moving targeted volumes of freight from road to sea, due to proportionally higher financial costs of short-distance local road haulage to/from ports, modal shift in significant measure is unlikely to occur if this is left entirely to market forces.

Policy implications

Based on the findings from this study, as a starting point the government would need to consider the following options:

- Measures to reduce local road haulage costs to/from ports, perhaps combined with measures to increase long-distance road haulage costs;
- measures to assist in provision of adequate port infrastructure; and
- measures to share some of the risk with the private sector for investment in ships, and to assist service start-up costs.

To allow sea transport to compete and overcome market distortions in terms of low land transport costs, this research suggested that the government would need to introduce some form of financial support scheme mainly targeted towards unaccompanied trailers. Such support would appear to conform with EU rules and policy regarding expansion of short sea shipping and road to sea modal shift.

Project website

www.rmd.dft.gov.uk/project.asp?intProjectID=10035

–	User Requirements from Navigation Systems	UK	Short-sea shipping

Project website (or contact)

None

–	Utilisation of anti-rolling tanks	IS	Short-sea shipping

Project website (or contact)

None

Theme: **Waterborne Transport**			Last update: **14 July 2006**
Acronym	Project title (in English)	Origin	Research sub-theme
Key findings / Policy implications / Project website or contact			
–	Vessels' behaviour on waterways	FI	Maritime safety
Project contact risto.lang@fma.fi			
–	Watertight integrity of ships	IS	Maritime safety
Project website (or contact) None			

Annex II: General information on the Transport Research Knowledge Centre and analysis process used

The Knowledge Centre's background

The EXTR@Web project – Exploitation of Transport Research Results via the Web – attempts to collect, structure, analyse and disseminate transport research results, covering not only EU supported but also nationally financed research in the European Research Area (ERA), as well as selected global transport RTD programmes and projects.

The EXTR@Web consortium has brought together eight main contractors to combine strong and in-depth technical knowledge of transport technology and of EU and national transport RTD programmes with solid communication and dissemination experience.

The current project's direct predecessor, EXTRA (a Fourth Framework Programme Transport RTD project), co-ordinated dissemination activities on the European level for the first time. While FP4 addressed transport research on a mode-by-mode basis, the current Fifth Framework Programme (FP5) focuses on generic themes that consequently reflect transport policy objectives.

The EXTR@Web project will provide support to research at European and national levels by building up and promoting an electronic hub. The key objectives are:

- To establish a comprehensive web-based Knowledge Centre, providing structured and timely access to both detailed and user-oriented summary information on transport research programmes and their results across Europe;
- to provide an electronic hub for inter-connecting European and national programmes and individual networks concerned with transport research into an easily navigable European network;
- to establish a common best practice scheme for the structure and content of the reporting of transport research results;
- to provide high-quality analytical outputs that are structured and tailored according to the type of stakeholder and medium; and
- to raise awareness of the new service, the implications of emerging results, and the wider opportunities under national research programmes across Europe as a whole.

EXTR@Web will provide a comprehensive pool of programme, project and results related information to users, principally in electronic format via the Internet. The approach is based on three main strokes of work covering:

- Monitoring, analysis and information preparation;
- website and electronic news service, the principal dissemination channels; and
- management of knowledge transfer, including dissemination by non-electronic means, and also the maintenance of a contact database and e-mail enquiry service and evaluation of the performance of EXTR@Web.

Definition of transport research

For inclusion into the Transport Research Knowledge Centre, Transport research programmes and projects have to be within the definition of research and transport simultaneously. This will define the eligibility of projects.

Definition of research

General OECD definition:
"Creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications."

Additional transport research criteria:

- Targeted – in line with transport policy aims, strategies and processes to solve the inherent problems for society.
- Accessible – a public activity, open to scrutiny by peers.
- Transferable – useful beyond the specific research project, applicable in principle to other researchers and research contexts as well as decision-makers in policy, industry and science.

Definition of transport

In order to clarify expectations from the Transport Research Knowledge Centre, and to ensure a common understanding of important terms, the Programme Analysis Group of EXTR@Web has come up with the following definition of transport.

- Transport is the means by which a person or material of any kind is passed from its origin to its destination.
- Transport comprises:
  - the transport users: passenger, business, freight;
  - the transport vehicles (full life cycle issues);
  - the transport infrastructure (full life cycle issues);
  - the transport system: the interaction of users, vehicles and infrastructure;
  - the impacts of transport: contribution to objectives, and hence to overall sustainability; and
  - the transport tools: methods and instruments to help ensure an effective contribution to the objectives.

Three levels of analysis

Project level analysis

For European, national and international projects the following harmonized process was agreed:

- For each eligible project, the project co-ordinator will be requested to draft a Project Profile;
- the EXTR@Web consortium identifies, for each project all relevant themes (typically up to five), and provides the project linkage;
- for each eligible project, the project co-ordinator will be requested to draft the other elements of the reporting scheme – Progress Summary and Result Summary – due to the project progress and provides the final report;
- projects with highest relevance and best available final results will be selected for analysis;
- for every such relevant theme within each project a short and concise paragraph – structured with bullet points as appropriate – will be written to present the key findings of the project in relation to the objectives of the theme; and
- this information will be searchable on the Knowledge Centre website.

Thematic analysis

The thematic analysis has been exploiting existing project level analysis. The consolidated project wise findings have been structured and analysed along 30 themes, which are fixed for the project life time and fed into annual Thematic Research Summaries and Annual Compendia. However, for reporting purposes Thematic Research Summaries have been limited to 28 volumes (cf. Chapter 1).
The sequence of outputs has been comprising an explanation of the overall structure, and regular reports treating national, European and international research in a comprehensive way.

Deliverable number	Title	Release date (final version)
D2.A	"Thematic structure and definitions – all themes"	August 2006
D2.B	"European, national and international project database"	July 2006
D2.C	"First annual thematic research summary"; 30 vol.	December 2004
D2.D	"Second annual thematic research summary"; 10 vol.	March 2006
D2.E	**"Third annual thematic research summary"; 28 vol.**	**August 2006**

Table: The sequence of deliverables

Policy level analysis

Whilst the 30 themes are fixed, this type of analysis should give the flexibility to provide information on ad hoc policy priorities. Hence, policy level analysis will synthesize key findings of projects across combinations of themes. As an output, policy brochures shall be prepared depending on ad hoc requirements by DG TREN or by the high-level Advisory Group (AG).

Annex III: Editorial team for Thematic Research Summaries

Please note that – in principle – all EXTR@Web partners and sub-contractors will be contributing to a particular Thematic Research Summary because all project level findings that are of some relevance to one of the 28 (30) individual themes are presented in the comprehensive format of these papers.
The following summary of authors and peer reviewers is presented in alphabetical order while the main author of this paper is given on page i of the document.

Fabien Dreveton, ISIS; France
Mr Dreveton has an electrical engineering post-MSc degree, an MBA and over 8 years experience in Intelligent Transport Systems for road transport. He has been a senior engineer with ISIS since 2001, specialising in traffic control, motorway management, ITS standards development process and system architecture.
Co-author: Road Transport

Prof J Augusto Felício, Neptune – CEGE/ISEG; Portugal
Professor Felício, holding a PhD in management, is teaching graduate and post-graduate courses such as 'Maritime transport and port management' and 'Land transport and logistic management' at ISEG, School of Economics and Management (Technical University of Lisbon). His activities include participation in transport research where he has published several related articles and books.
Main author: Waterborne Transport, Intelligent Transport Systems
Peer review: Efficiency, Vehicle Technology

Dr Paul E Firmin, Institute for Transport Studies, University of Leeds (ITS); UK
Dr Firmin has 30 years of experience in transport planning and engineering, including local authority, consultancy and academia. His research specialities are: traffic management, transport survey design & analysis, traveller information systems; driver route choice behaviour and transport telematics. He is currently the MSc(Eng) degree programme leader and international student adviser at ITS, University of Leeds. He teaches computing skills and traffic management, and supervises student dissertation projects.
Main author: Information and Awareness
Peer review: Safety and Security

Dr Nils Gendner, Neptune – University of Bremen, ISL; Germany
Dr Gendner has been working for more than four years at the University of Bremen, Institute of Shipping Economics and Logistics. His main topics include the analysis of processes, functions and data flows in shipping and within the rail sector. He contributes to ongoing efforts in intermodality by participating in several projects dealing with intermodal concepts and developments.
Main author: Intermodal Transport, Integration
Peer review: Financing Tools, Pricing and Taxation

Wolfgang Helmreich, Industrieanlagen-Betriebsgesellschaft mbH (IABG); Germany
Mr Helmreich is a civil engineer from the Technical University of Munich. He has more than 15 years experience with transport planning and infrastructure design in the rail, road and air sector, and sound knowledge of vehicle technologies. His expertise also includes project management, web publishing and dissemination skills. He joined IABG in 1999 as a senior transport consultant after working as project manager at several German engineering companies. He is principal editor of all Thematic Research Summaries.

Main author: Air Transport, User Aspects, Safety and Security
Peer review: Regional Transport, Rail Transport, Waterborne Transport, Environmental Aspects, Land Use Planning

Cristina I Ivan, Group of Independent Experts Ltd (GIE); Romania
Ms Ivan has a law degree and has graduated a Master course in project management. Ever since 1998 she has participated in various projects financed by international donors in Romania. The main areas of her expertise cover: project management, legal approximation of the EU acquis & drafting of environmental legislation, as well as the carrying out of awareness raising and dissemination activities, including those for the transport sector.

Main author: EU Accession Issues
Peer review: Economic Aspects, User Aspects, Transport Management

Dr Ann Jopson, Institute for Transport Studies, University of Leeds (ITS); UK
Dr Jopson is a Research Fellow whose main interests and expertise lie in the areas of travel behaviour psychology, transport marketing and urban transport planning and policy, with particular emphasis on travel demand management through attitudinal and behavioural measures. Her PhD thesis was based on the role of psychology in reducing car use.

Main author: Environmental Aspects
Peer review: Rural Transport

Dimitris Koryzis, Systema; Greece
Mr Koryzis is a production & management engineer from the Technical University of Crete and holds an MSc in Decision Sciences from Athens University of Economics & Business. He has more than 8 years experience as technical and managerial consultant for 30 European programmes in the transport sector (road, maritime and intermodal) as well as in research and innovation technology EC projects.

Co-author: Pricing, Taxation and Financing Tools
Peer review: Integration

Ulrich Leiss, Industrieanlagen-Betriebsgesellschaft mbH (IABG); Germany
Mr Leiss is an aerospace engineer from the Technical University of Munich. His professional career includes 24 years experience with research, technical analyses, monitoring and managing national and European projects and programmes. These activities cover the areas aerospace, transport, energy and new technologies.

Main author: Other Modes, Vehicle Technology

Bryan Matthews, Institute for Transport Studies, University of Leeds (ITS); UK
Mr Matthews has 9 years experience of transport research and project management in both consultancy and university settings. His research expertise is in transport policy analysis and transport economics. He has worked on a number of EU, UK DfT and Research Council projects. He also contributes to teaching activities, lecturing on Air Transport Systems and supervising student projects.

Main author: Rail Transport
Peer review: Air Transport

Prof Anthony D May, Institute for Transport Studies, University of Leeds (ITS); UK
Professor May has over 35 years' experience in transport planning and traffic engineering. He has been a professor at Leeds since 1977, and has served as Head of the Department of Civil Engineering, Dean of the Faculty of Engineering, Pro-Vice Chancellor for Research and Director of the Institute for Transport Studies. He also has practical experience with the MVA consultancy and the GLC in London. His research specialities include: land use planning, traffic management, road pricing, sustainable urban transport, integrated transport and environmental impacts of transport.

Supervision of entire process of thematic reviews

Batool Menaz, Institute for Transport Studies, University of Leeds (ITS); UK
Ms Menaz is a transport economist from the University of Leeds. She has been involved in a number of various projects including research into transport pricing reform issues in air, road and rail for the IMPRINT-Europe thematic network project, and research for the UK Rail Research Centre looking at the alternative visions for the future of the British rail system.

Main author: *Regulation/Deregulation*
Co-author: *Passenger Transport, Equity and Accessibility, Land Use Planning*
Peer review: *Road Transport*

Christina Paschalidou, Systema; Greece
Ms Paschalidou is a transportation engineer from Aristotle University (Thessaloniki), with a MSc in Urban and Regional Transport from Laboratory of Transport Economics in Lyon. Her field of interest is transport planning and engineering, EU and national transport policies, sustainability issues and research. She joined Systema in 2005, while her previous experience includes an internship in ISIS, traffic studies elaborated individually and research activities in the Aristotle University.

Main author: *Transport Management*
Peer review: *Information and Awareness*

Ignacio Rada Cotera, Neptune – IkerConsulting; Spain
Mr Rada Cotera is a lawyer from Deusto University in Bilbao, holding a diploma and certificate of European studies from Deusto and Saarland Universities, respectively. He has been working on EU projects since 2000. His main expertise is European commercial and regional policy, maritime transport and port affairs, legal aspects of international economic relations, urban planning, regional benchmarking and development.

Main author: *Regional Transport*

Marco Valerio Salucci, Università di Roma "La Sapienza", DITS; Italy
Mr Salucci holds a degree in mechanical engineering from the University of Rome “La Sapienza”. His past research experience has focused on computer modelling of the operations of freight terminals and automatic passenger transport systems, the latter being carried out within EC funded research projects. His current research for a doctorate is in the area of transhipment and information and communication technologies for intermodal freight transport.

Co-author: *Freight Transport, Urban Transport, Rural Transport, Efficiency, Decision-support Tools*
Peer review: *Intermodal Transport*

Dr Karsten Seidel, Neptune – European Networks and Cooperation; Belgium/Germany
Dr Seidel has graduated as economist and holds a PhD from the University of Bremen. He has been working on EU projects since 1988. His main expertise is in European industrial and regional policy, telecommunication research projects, maritime transport and port affairs, evaluation of technical aid, urban planning, regional benchmarking development.

Co-author: *Regional Transport*

Dr Paolo Delle Site, Università di Roma "La Sapienza", DITS; Italy
Dr Delle Site holds an PhD, and is a senior research fellow at DITS, Transport Area, University of Rome “La Sapienza”. He combines professional experience with research activities, the latter mainly being carried out within EC funded research projects. Related activities comprise urban transport planning, urban public transport design, transport project assessment, and policy analysis. His teaching activities include courses in transport planning. Furthermore, he is author of papers in Transportation Research Part A – Policy and Practice and in the European Journal of Transport and Infrastructure Research.

Co-author: *Freight Transport, Urban Transport, Rural Transport, Economic Aspects, Infrastructure Provision, Pricing, Taxation and Financing Tools*
Peer review: *EU Accession Issues, Intelligent Transport Systems, Regulation/ Deregulation*

Damian Stantchev, Institute for Transport Studies, University of Leeds (ITS); UK
Mr Stantchev holds a degree in Economics and Trade from Varna University of Economics in Bulgaria and an MA in Political Science from the Central European University in Hungary. His early research experience was in the area of small business development in transitional economies of Central and Eastern Europe. Damian has also contributed to an extensive report on the role of the logistics and transportation sector in society for the Logistics & Transportation Corporate Citizenship Initiative of the World Economic Forum. His research for a doctorate examines the role of logistics in enhancing the competitiveness of the regional economy and encompasses all aspects of original research and data collection including the design, conduct and analyses of large scale surveys as well as the collection of commercial data and development of case studies.

Main author: *Passenger Transport, Land Use Planning, Equity and Accessibility*
Peer review: *Freight Transport*

Andrew Winder, ISIS; France
Mr Winder is a transport planner with a BSc in transport management (Aston University, England) and over 15 years experience in consultancies and public transport authorities covering transport planning and policy, particularly at UK, French and Europe-wide levels. Since 1998 he has been a senior engineer at ISIS, responsible for a wide range of European projects focusing primarily on Trans-European Networks, ITS for road traffic management, urban and regional public transport and EU enlargement aspects.

Main author: *Road Transport*
Peer review: *Passenger Transport, Urban Transport, Other Modes, Equity and Accessibility, Infrastructure Provision*

Ard Wolthuis, Università di Roma "La Sapienza", DITS; Italy
Ard Wolthuis graduated in Science & Innovation Management, in the field of Transport and Mobility, from the University of Utrecht. He has been involved in transport projects and analysed socio-economic, environmental, political and legal aspects, such as the Phileas project, the Fokker bankruptcy, and innovation policy of companies in the Netherlands. Has participated in a European project on innovation in urban public transport systems. Since spring 2005 has joined DITS as a research fellow. His main areas of activities are policy analysis and dissemination of research results.
Co-author: Efficiency, Decision-support Tools

Dr Zhaomin Zhang, ANAST – University of Liege, Neptune; Belgium
Dr Zhang has got the university degrees of Civil Engineering, Mechanical and Marine Engineering; Master of Transportation Sciences and Doctor of Philosophy. He is a senior engineer and led the important projects related to the "Establishment of a mathematical traffic model on the Belgian waterway network" (Belgian national research program "Transport and mobility"), the project called "On computerisation and management in real-time of operations relating to the exploitation of fluvial traffic to organise the waterway transport", Belgian Regional Ministry of Public Works) and the Project related to the development of a transport cost model in the inland navigation sector. He has also been involved in numerous simulation and operation research activities.
Peer review: Decision-support Tools