FLUSSINFORMATIONSSYSTEME IM EUROPÄISCHEN VERGLEICH

RIVER INFORMATION SERVICES IN EUROPE

von / by

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1 Introduction

In the transport branch and definitely in inland shipping the use of information and communication technology (ICT) is increasing. ICT is potentially an important instrument for promoting transport over water. It can provide inland shipping with a competitive edge over road transport. In the European context, in recent years, an ICT-concept for traffic and transport management for inland shipping has been developed by the name of River Information Services (RIS). This concept is being detailed in the INDRIS project, which started in 1998 and was commissioned by the European Union[1]. The name INDRIS stands for Inland Navigation Demonstrator for River Information Services. The project is a joint venture of national public authorities, the transport branch, industry and research institutes from the Netherlands, Austria, Germany, Belgium, Italy and France. The project did run in the period from January,1998, through June, 2000.

The success of INDRIS has resulted in several initiatives in national and European context. In international context the Rotterdam conference of the European Ministers of Transport in September 2001 is a big step forwarding the implementation strategy of RIS in the Rhine and Danube countries. In strong relation to this conference this paper will give a restricted overview on several initiatives in Europe with respect to R&D activities in the context of RIS as well as the related implementation strategies in European.

Finally the paper will focus on the successor of INDRIS the COMPRIS project. COMPRIS is dealing with the last research step towards the Pan-European implementation of RIS.

2 INDRIS and RIS

In the European context, in recent years, a concept for *harmonised information services* to support traffic and transport management in inland navigation including has been developed under the name of River Information Services (RIS)[2].

An important aspect is that this concept also allows information sharing with transport companies, thus enhancing the efficiency of transport management. This concept has been detailed in the INDRIS project, which started in 1998. The INDRIS project started by describing the functions of RIS for all potential users (public authorities and transport industry) and specifying relevant information processes. These were used as the basis to develop a set of open standards for information exchange among public authorities and inland shipping parties. Open standards were defined for both information content and for information communication. These standards formed basically the core of the project.

To avoid a situation whereby inland shipping is faced with a multitude of required communications systems, it was decided to develop this standard as a pre-condition for further developments in the project. The standards set in INDRIS have been submitted to the European Commission to achieve a wide acceptance, making use of the channels that are capable to discuss and adopt these standards.

After the completion of the standardisation phase and the basic user requirements, the architecture of RIS has been defined.

From October 1999, through June 2000, a number of practical tests have been successfully demonstrated the value of RIS for the users and the practical use of the standards. These practical tests or “demonstrators” have been conducted in four regions in Europe. In 1999 three demonstrators took place on the river Danube in Austria, on the river Seine in France and in the port of Antwerp. The fourth demonstrator took place on the river Rhine, in Germany and the Netherlands, including the Rhine-Scheldt link. This demonstrator started in May 2000 and is finalised at the end of 2000.

A major strength of this project is clearly that public authorities of the Netherlands, Belgium, France, Germany and Austria took an active role in participating at both policy and technical levels. The industry and transport companies in these countries have also played an important and active role in this project. The project is a true example of a successful Public-Private Partnership.

2.1 RIS functionalities

INDRIS project concentrated on developing and demonstrating the RIS concept as an important step towards a pan-European implementation of information services in Inland navigation. In RIS the following main functions are defined:

1 A project of the 4th. Framework Research Programme of DG-VII of the European Union

2 River Information Services, is defined as a concept for harmonised information services to support traffic and transport management in inland navigation including interfaces to other transport modes

2.1.1 Tactical traffic information or tactical traffic image (TTI)

The TTI is a function creating a display of the traffic in an area. This TTI can be used on shore and on-board of an inland vessel. On shore the TTI will support a new method of traffic guidance through monitoring traffic using AIS, radar and ECDIS technology. On-board of inland vessels the TTI will become the navigational display using the same technologies.

Currently, along the major rivers in the Netherlands and Germany, a number of VTS centres (Vessel Traffic Services) are active, which focus on providing traffic information to vessels in the blind spots in the fairways network. Some of these VTS centres use TTI based information from permanent radar stations. This image is further enhanced by reports from vessels to the information centre whereby an overview is generated of vessels active in the VTS area of responsibility. The AIS technology will improve the TTI in such a traffic centre since ships are now identified and additional information is available, Fig. 1.

Fig. 1: VTS Centre Dordrecht - traffic management on inland waterways

When vessels are equipped with DGPS to determine the position of the ship, and a transponder which almost continuously transmits information about the ship's position and the ship's identity, verbal reports to traffic centres become redundant. The existing radar targets on the TTI can be enhanced by the precise position of the vessel and its identification label. In this manner the VTS-operator will know each vessel's position at any time. The TTI, including identification data of other vessels, can also be used on-board. This TTI may be enhanced in two ways:

- Firstly, the shore-based radar used in the VTS centre can provide information on vessels not being equipped with AIS. Some slots in the AIS can be used to transmit the so-called radar tracks. These may be displayed on the ship's TTI.
- Secondly, the ship's radar may be used to pick up the targets that the ship's radar antenna can sense.

The new technology enables the skipper to have a TTI that also contains targets of vessels that were not visible with conventional radar systems. The need to interpret and approve additional traffic information via VHF has gone.

The TTI also enables the skipper to identify vessels with which he desires to make navigational arrangements such as turning, overtaking and passing of other vessels. A complete TTI on-board enables the skipper to assume full responsibility for his own navigational decisions. Communications between the VTS centre and ships can now be limited to information or advise in those cases that participants wrongly interpret developments in the traffic, or fail to make clear navigational arrangements. The traffic operator can restrict his activities to pure safety information.

On-board AIS (Automatic Identification System) transponders may also be used in an autonomous mode in geographical areas where VTS centres or shore-based-radar stations are not available. Transponder information is, after all, exchanged among transponders. Transponders transmit their information – position and identity - in packages using a time sharing procedure. Each new transponder in an area listens to other transponders for a while and then decides which time slot is available to him to transmit the information. The information contained in the time slots generates a traffic image without the benefit of any on shore infrastructure, whereby this traffic image can be integrated in the on-board radar image thus substantially extending the information supplied by the on-board radar.

The benefit of an on-board transponder in the event of a calamity, for instance a collision between two ships, is clear. When ships are equipped with an AIS transponder, information will be immediately available on-shore concerning the ships' identity and, even more importantly, the cargo carried by these ships. The immediate availability of actual data such as position of accident, identity of ship and hazardous cargo, if any, will drastically limit adverse

consequences of the accident, due to a fast and appropriate response from rescue and calamity abatement authorities.

2.1.2 Strategic Traffic Image

A Strategic Traffic Image (STI) is useful for a number of users. A STI enables the authority to exert their power in Traffic Organisation Services. Such services are useful when traffic in fairways are approaching its maximum capacity. Monitoring a large stretch leads to improvement of throughput and minimises accidents. The monitoring capability of RIS may also be used for patrolling the fairways to monitor decent navigational behaviour and check conformity with navigational and sailing rules, Fig. 2.

For transport industry users tracking and tracing as well as fleet management are important applications. The STI provides information on the whereabouts of vessels and also provides the availability of other vessels, thus contributes in solving the transport capacity questions.

The role of Vessel Traffic Management will change. The present VTS centres are providing general as well as traffic related information. The VTS operators instructions will be reduced to the bare minimum. The new TTI on-board and the STI on shore will imply a new division of responsibilities. The skipper will be responsible for his navigation decisions and he is now able to do that. Verbal communication using the VHF will be largely reduced and the VTS-operator or rather the RIS operator will be mainly dealing with traffic planning and monitoring traffic safety.

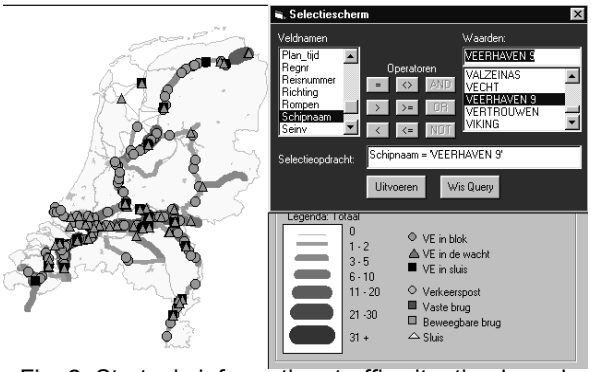

Fig. 2: Strategic information: traffic situation based on voyage and transport reports

2.1.3 Strategic information

Strategic information focuses primarily on planning and monitoring of transport activities over water. Skippers or ship-owners need information to plan a voyage and possibly adjust the planning to accommodate emergencies and changing conditions in the fairway network during the voyage. Managers of terminals or ports need ETA information to plan cargo-handling activities in their port or terminal. ETA information can also optimise planning in relation to the vessel's passage through locks and/or bridges.

This information function represents an added value for shipping provided by RIS, since it allows an improvement of logistics processes, such as transhipment. When a port or terminal has no capacity left the skipper may be informed of a Requested Time of Arrival (RTA). The skipper can consequently reduce the speed of his vessel or plan other activities. This will reduce fuel costs or and improve the business process of a vessel.

Strategic information can also serve authorities' needs. When sailing-schedules and ETA's for all ships are known, the lock cycles and transit times can be planned with higher accuracy. Lock keepers will then be able to ensure optimum use of lock-capacity. If the planning process is completed the lock keeper can inform approaching vessels of their RTA's. These messages may lead to savings on fuel consumption. Such a planning system can, at its extreme, postpone the realisation of new construction of lock chambers at a specific lock complex. Improved planning will also lead to reduced need for mooring facilities at lock-complexes. This in turn might lead to substantial savings in public expenditures.

2.1.4 Fairway Information System or FIS

FIS primarily supplies information to support tactical and strategic decisions.

It includes traditional information supply, such as notices to skippers and actual and predicted water levels and currents. The notices to skippers primarily include information about availability of the infrastructure. Water level reports are extremely important for vessels, since they determine the quantity of cargo a ship will take on. Reliable water level forecasts are of vital importance. The opening of the Rhine-Main-Danube canal has created greater opportunities for inland vessels. But these opportunities can only be fully utilised when water level forecasts for the entire route can be made available. Currently these forecasts are not available, Fig. 3.

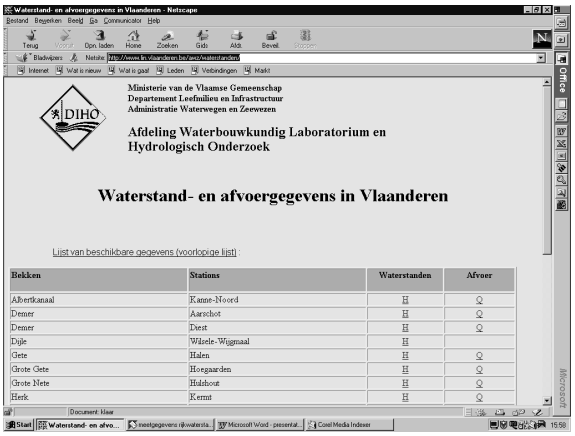

Fig. 3: Fairway information – information on waterlevels

Information concerning fairway geography, parameters and usage constraints is of major importance to present traffic information at tactical level and for planning and monitoring voyages. Activities in this context include the integration of electronic chart with ship's radar and transponder generated information in order to provide a TTI.

In Germany, Austria and the Netherlands, electronic charts are, at the end of INDRIS, available of parts of the rivers Rhine and Danube. These electronic charts are rather dynamic in nature. They may be regarded as geographically oriented databases. In future, electronic chart displays will include both static items such as traffic signs and opening hours of bridges and locks as well as dynamic information such as water levels and obstructions on fairways.

2.2 Standards

To fully benefit from RIS, it is necessary that different systems are interchangeable and capable of mutual communication. Although each party should be able to develop their own system with special functions, it advisable to adhere to a minimum set of basic principles. These basic principles are laid down in the INDRIS data and communications standards. Once all parties adhere to these standards all over Europe, authorities and the industry will be able to exchange data. This will mean substantial cost savings by abandoning the costly development of interfaces for the authorities and the shippers.

2.2.1 Data standards

International maritime and hydrographic organisations have developed a hydrographic and geographic oriented information system for maritime shipping under the name of *ECDIS - Electronic Chart Data and Information System*. ECDIS runs on two international agreed standards to exchange information on objects and the presentation of these objects. These standards have been expanded to accommodate inland shipping specific needs and objects for inland fairways.

These standards are used to define chart information and to describe in a harmonised format objects along the fairways. In a later stage water level information, as well as narrative information on locks and weather reports will be standardised. This information will be made available for presentation on an electronic chart, using the presentation standard. Currently Inland ECDIS standard for presenting and exchanging geographically oriented information for inland fairways has been accepted across Europe. This new standard is developed in a close co-operation between representatives of INDRIS and the ARGO project of the German Ministry of Transport. See for further details the chapter on CCNR and inland ECDIS.

The importance of harmonising transport or logistics data along the entire transport chain, regardless of modality, has been acknowledged for some time. Internationally, this has led to the development of a set of data standards for Electronic Data Interchange (EDI). In maritime and inland shipping, a number of specific *EDIfact* messages have been defined. These messages have been adopted in INDRIS with a few modifications and extensions.

2.2.2 Communication standards

Two standards are used for communication purposes. For FIS and strategic information, use is made of the TCP/IP protocol and GSM as the communications technology. The last mentioned, however, should be replaced without delay, anytime after new wireless technologies become available, such as UMTS. The dynamic traffic information, such as used in the TTI and STI, uses the AIS transponder as it has been standardised in maritime shipping by IMO. The messages that are used in maritime AIS have been modified for inland navigation. AIS allows simultaneous communications among a great number of ships.

3 Pan-European Conference on inland Waterway transport

On 5 and 6 September 2001 all transport ministers

from the Rhine and Danube countries and representatives of international organisations met in Rotterdam for a Pan-European inland shipping conference This conference aimed at: "An unrestricted inland shipping route from the North Sea to the Black Sea".

This inland shipping conference was an important step forward with regard to reinforcing the sector and realising an unrestricted connection between the North Sea and the Black Sea. A powerful European inland shipping sector is only feasible if all the European governments work together. In the conference the ministers mapped the pressure points for inland navigation together, discuss these with one another, and reach joint agreements aimed at resolving these issues.

In the final declaration of the conference the following very important statement was made with respect to the implementation of River Information Services, the statement on RIS is formulated as follows:

"To invite governments concerned to establish a Pan-European River Information Service (RIS) by the year 2005, based on standards to be drawn up in the framework of the European Union, UN/ECE and the two River Commissions, since river information services contribute to safer and more efficient inland waterway transport".

This declaration is a real step forward in the research activities on RIS and at the same time puts pressure on the next steps towards the implementation of RIS, a real European challenge for involved parties.

4 European RIS Platform

Within European R&D programmes like INDRIS the concept of River Information Services has been developed. Some applications within this concept have been successfully demonstrated. Some components are ready for implementation, whilst other components need further research. During the INDRIS project all partners met each other on a regular basis and could discuss a wide range of topics. On the issue of implementations however there is no platform left.

As inland navigation vessels can operate throughout large parts of Europe there is a need for all relevant parties (authorities, service providers, suppliers, end users) in the different European states to continue to work together on the further development of RIS, also when implementing the R&D results.

The (sub) services of RIS and the associated organisations, operators, systems and procedures will need to be developed and implemented in a harmonised manner throughout the interlinked inland waterway network in Europe under the guidance of a platform consisting of the national authorities responsible for RIS in this area.

The platform has the following objectives and supporting tasksin the area's research & development, standardisation, implementation:

- Extend mutual knowledge on RIS by exchanging/sharing the available knowledge, experiences and expertise on RIS
- Faster harmonisation of RIS by developing an overview of all activities relevant to RIS and by giving guidance and advice on the further development of RIS

The platform is set up for participation by all European (EU and non-EU) national authorities responsible for and actively involved in the development and implementation of RIS within the interlinked Rhine-Danube inland waterway network, including representatives of the relevant governmental CCR and Danube commissions. However the platform is also open for participation by national authorities responsible for RIS in other inland waterways.

The platform should co-ordinate with the European Fifth Framework R&D consortium COMPRIS.

The platform will establish relationships with other bodies involved in the development of RIS, such as the platform of European Waterway Authorities, the European Commission, CCR, Danube Commission, PIANC, IALA and the European 5FP thematic network consortium WATERMAN.

5 Thematic network WATERMAN

A significant part of research activities of the IVth Framework Programme comprising mainly the VTMIS concerted action, the INDRIS and VTMIS-Net projects, have brought insights on the concept of Vessel Traffic Management and Information Services. These activities also show the needs for information exchange between entities involved in both Vessel Traffic Management and Transport Management.

However, due to various constraints the research did not permit yet to fully evaluate the benefits that could be expected from the actual implementation of VTMIS and/or RIS. It was also not possible to assess the users' and operators' interests in the IT systems

that have been demonstrated as possible components of VTMIS/RIS. Nor has it been possible to fully determine to which extent and subject to which conditions private/public partnership could be organised and promoted.

Within the frame of the Competitive and Sustainable Growth programme of the EC, the thematic network on Waterborne Traffic Management and Information Services is a further and crucial step in the expected actual implementation of IT applications aimed at:

- Improving navigational safety and protection of the environment,
- Optimising control and use of resources, cargo flows and infrastructures through the integration of information related to transport logistics. Special mention is to be made here of the term "transport logistics" underlining the challenge to include and develop waterborne traffic as an integrated part of the total transport chain.

The project will provide the European Commission with a co-ordination structure:

- Offering all actors concerned a forum where their views will be expressed and discussed;
- Able to carry out the tasks:
  - To identify pending problems and the possible contribution to their solutions of IT technologies,
  - Capabilities and costs of IT technologies, commonly agreed proposals for the implementation of adequate information services.

6 CCNR and the inland ECDIS standard

"Inland ECDIS" is the standard adopted in 2001 by the Central Commission for the Navigation on the Rhine (CCNR) for the Electronic Navigable Chart (ENC) for inland navigation. The Inland ECDIS Standard adopts the regulations of the maritime ECDIS and adds requirements to it that are specific to inland navigation. This creates compatibility with sea-going navigation in river estuaries.

The latest release of the inland ECDIS standard is available on the internet site of the CCNR at www.ccr-zkr.org.

6.1 Inland ECDIS

ECDIS is structured as a database and so geo-objects can be stored in the electronic navigable chart along with text information (e.g. operating hours of locks). The ENC can contain depth information in narrow or shallow river stretches related to a reference water level or to the current water level, thus optimising the draught of vessels. Inland ECDIS can be operated in the "information mode" as a mere chart without traffic information. It is then a harmonised method of exchange of fairway information. Inland ECDIS can, however, also be operated in the "navigation mode" with overlaid radar and AIS (transponder) information. Then, the chart is the basis for a tactical traffic image on board or on the shore, Fig. 4.

The Inland ECDIS activities in CCNR are closely related to the activities and results of INDRIS and a project that run in Germany, ARGO.

The ARGO project was an initiative of the German Federal Administration of Waterways and Navigation. In the pilot project ARGO, the „minimum performance standards“ for an Inland ECDIS have been developed and tested. The system contains the components Electronic Navigation Chart, radar imaging and GPS. The position of the vessel is presented into the chart with the help of “radar map matching”. The electronic chart is overlaid to the radar picture in a way, that the navigator gets all tactical information in one single screen.

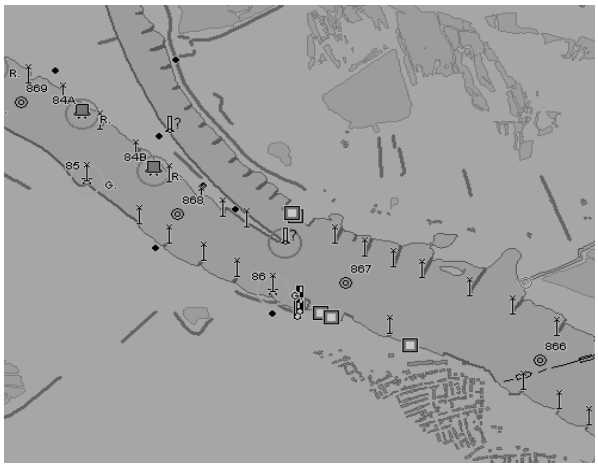

Fig. 4: Inland ECDIS – electronic chart of River near Milligan

In the ARGO project as well as in INDRIS, the choice is made to follow the maritime S-57 and S-52 standards. In this way, use is made of the work that has been done in the maritime world. It seems that by adding a limited number of objects to those that are already defined, the needs of inland navigation

can be properly met. An example of additional objects are the traffic signs that can be found along the Rhine indicating for example allowed berths, prohibitions, etc. An example is given below, Fig. 5.

Fig. 5: Traffic Signs

Another important role of Inland ECDIS is on a more strategic, a more long term level, i.e. with voyage planning, ETA calculation and as a 'database' of all geographical related data. This is recognised in INDRIS by its efforts to provide accurate and up-to-date data for the depth critical parts of the river. The depth contours are combined with actual or predicted water levels, the ship's draft and a user definable under keel clearance to a presentation of the actual navigable fairway on the display. However voyage-planning software may use the same data, without presenting it graphically, to calculate the maximum allowable draft or an accurate ETA.

Further steps that has been taken in this area are to provide the depth information and the resulting fairway width accessible for voyage planning software and with the same purpose to include information like:

- berths
- prohibited berths
- accessible dimensions of bridges and locks
- regulations with implications for the voyage planning
- etc.

The status of inland ECDIS in Europa is still in his infancy. Germany has inland ECDIS data available of large parts of the Rhine, In Austria inland ECDIS of the Austrian rhine will be available mid 2002. The Netherlands is in the stage of the start of real implementation of inland ECDIS with complete national coverage, this project will last at least 4 years before inland ECDIS is fully implemented. At this moment only trial version as a result of the INDRIS project are available. First data sets of inland ECDIS will be available at the end of 2002 in Zeeland and Zuid Holland (South -West Holland).

6.2 RIS Arbeitsgruppe

The CCNR will implement in 2002 the so called RIS Arbeitsgruppe, this group will deal with standardisation issues on:

- Electronic reporting
- Notices to skippers
- AIS
- RIS guidelines (based on PIANC guidelines for RIS see the chapter Pianc and RIS guidelines)
- VTS guidelines for inland waterways

7 PIANC and the RIS guidelines

PIANC installed in 2000 the working group 24 (WG24) . The working group finalised his activities in the end of 2001 and the report has been published in the first quarter of 2002. The report contains:

- An inventory of existing systems and relevant services, new developments.
- A glossary of terms for River Information Services (RIS) and related definitions (evaluate and make a choice for the purpose of WG 24).
- Guidelines and recommendations on River Information Services (RIS Guidelines).
- Recommendation of standardisation procedures for RIS standards.

PIANC WG 24 has also co-operated with IALA[3] in the development of the IALA "Inland VTS Guidelines" for local traffic organisation.

The topic of the PIANC activities in this working group was without doubt the development of the RIS guidelines.

The PIANC guidelines on River Information Services are developed on the basis of the RIS Guidelines 1999 of the INDRIS project. Guidelines on River Information Services (RIS Guidelines 2002) are needed, in order that the already existing standards for particular river information systems and services can be harmonised by a common frame.

These RIS Guidelines 2002 describe the principles and general requirements for planning, implementing and operational use of River Information Services and related systems. These RIS Guidelines 2002 are equally applicable to the traffic of cargo vessels,

[3] IALA International Organisation for Lighthouse Authorities

passenger vessels and pleasure craft. These Guidelines should be used in conjunction with international regulations, recommendations and guidelines, such as :

- Inland VTS Guidelines of the IALA (world-wide), 2001
- Regional Arrangement Concerning the Radiotelephone Service on Inland Waterways (Europe), 2000
- Inland ECDIS Standard by the Central Commission for the Navigation on the Rhine, 2001[4]
- UN Location Code for electronic reporting (world-wide)
- EDIFACT Standard (world-wide)
- Standardised UN/ECE Vocabulary for Radio Connections in Inland Navigation (Europe), 1997

An important element in the RIS guidelines is the RIS architecture. The concept for RIS architecture has been developed by the WATERMAN Thematic Network.

The development of a systems architecture for RIS has the objective to translate policy *objectives* into specifications for *application* design. The RIS Architecture is defined in such a way that RIS Applications can be produced that are efficient, expandable, and that can interact with other RIS Applications or systems for other modes of transport. RIS Architecture development should lead to an integrated environment of RIS Applications in a way that the performance, usefulness and efficiency of the applications will be enhanced.

8 From Research towards Implementation - COMPRIS

The success of INDRIS has resulted in the initiation of the project COMPRIS (Consortium for the development of an Operational Management Platform for River Information Services). COMPRIS is one of the Fifth Framework research projects in the Growth Programme of the European Commission. The project will start, pending successful negotiations with the EC, July 2002 and will last 36 months. The project is a co-operation between 44 - Public and Private - partners from the following European countries:

- Austria
- Belgium
- Bulgaria
- France
- Germany
- Hungary
- The Netherlands
- Romania
- Sweden
- Slovakia
- Ukraine

COMPRIS should be considered as the last stepping stone before initiating the full implementation of River Information Services (RIS) across Europe. Inland Navigation will strongly benefit from RIS through its contribution to safety, quality and above all efficiency.

For the different European regions West or East Europe scenarios for the implementation of River Information Services will be designed and finally COMPRIS will try to define tools and procedures for advanced information exchange to create seamless cross border transits all over Europe.

After the completion of the project, the market forces should be in a position to offer their solutions and services based upon and making use of the tested concepts and the specified standards.

RIS supports traffic manamgent on inland waterways in Europe. RIS however also supports the inland navigation transport mode as a strong competitive modality by contributing to transport and logistic information that underpins transport and logistical management. This implies that awareness and co-operation of all participants (user groups originating from industry and authorities) is of crucial importance regarding the scientific, technical and organisational elements of RIS.

The project starts with the definition of the architecture of RIS in its environment and in relation to other information systems. The main goals of this architecture definition in COMPRIS is to:

- Describe and agree on the overall architecture for River Information Services in functional, information, technical and physical sense in relation to developing architectures of other modalities, as well as structures that are internationally agreed in specialists forums such as CCR,

[4] Available on CD from Commission Centrale pour la Navigation du Rhin , 2 place de la République, F 67082 Strasbourg Cedex, France

Danube Commission, DG Transport and Energy, IALA, IMO, IEC, IHO, ITU.

- Develop and implement on the basis of this architecture the four clusters of RIS in such a way that RIS can be implemented during and after the completion of the project in the different countries

The COMPRIS framework architecture will cover four building blocks, namely: (i) a Reference Model for Enhanced Inland Navigation, (ii) a Functional and Information Architecture, (iii) a Physical, Communication and Data Architecture and (iv) an Organisational Architecture.

In addition the feasibility for practical implementation of this framework will be validated in the design phase and during a trial phase. On the basis of the architecture, in a second phase development of cluster of applications will take place.

- The first cluster addresses the organisation of spatial information and develops ship-borne (bridge) software based on this as well as AIS, Inland ECDIS with radar overlay and overlay of AIS information. These modules interact with voyage planning software. This software downloads river information such as water level and current speeds, in order to determine optimal routes and calculates expected times of arrival.
- The second cluster will develop Vessel Traffic Management software and software for optimum use of locks. In this cluster AIS network technology will play an important role with focus on the development of transponder technology for transport information. This cluster will as an enhancement of transponders address tracking and tracing used for cargo manamgent The cluster will in addition make use of the technology that is or will become available from Galileo.
- The third cluster will address logistic service providers-needs to obtain retrieval software to access information from the VTM database.
- The fourth cluster is designed to facilitate cross border passage by providing essential information to customs and emigration authorities in advance so that time delays can be avoided when arriving at the border.

In the third phase of the project an operational test platform will be defined and developed in order to create an environment to test and “certificate’ applications, clusters of applications and the system consisting of all clusters.

In the final phase of the project authorities and other interested parties will be able to subscribe to parts of or the entire system in order to demonstrate these parts or the entire system in their home countries . The successful completion of the demonstrations, is the basis upon which full implementation of RIS can be rolled out across Europe.

In addition to the mentioned phases four so called vertical activities are relevant for the different project-phases and the implementation of RIS in Europe. First of all in East Europe, scenarios will be developed for the operational implementation, the organisation and the provision of the financial means to introduce RIS in these countries.

During the project phases several working groups are active as there are working groups for:

- Harmonisation of information flows and communication methods,
- Harmonisation of Man Machine Interface and
- E-learning or user-training.
- Dissemination of RIS features

A final workpackage deals with an overall assessment of RIS and will determine the benefits and the costs for the different stakeholders.