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IRIS Europe – Implementation of River Information Services in Europe

FINAL TECHNICAL REPORT

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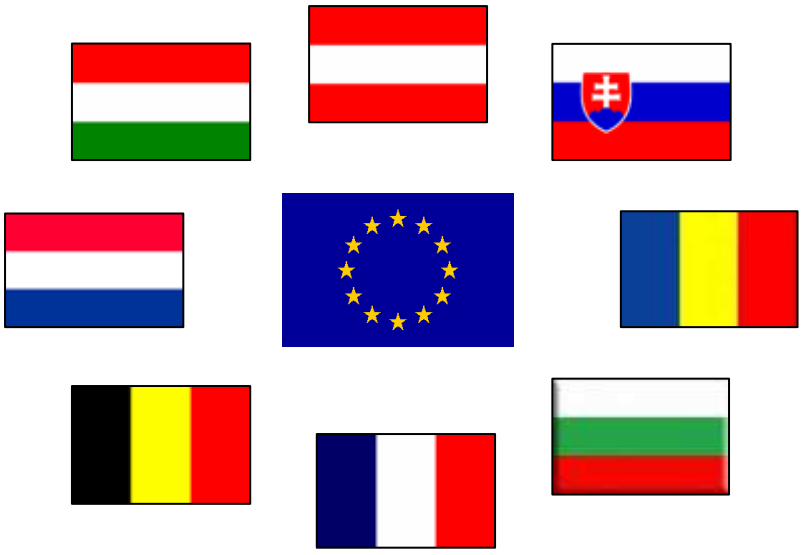

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Abbreviations

AIS	Automatic Identification System
API	Application Programming Interface
BCSPLTS	BICS Locations Table
BICS	Barge Identification and Communication System (Electronic Reporting Software)
BulRIS	River information services provided by Bulgarian Maritime Administration
CAP	Common Alert Programme
CAS	Calamity Abatement Support
CCNR	Central Commission for Navigation on the River Rhine
CFT	Compagnie Fluviale de Transport
CNR	Commission Nationale du Rhône
COMPRIS	Consortium Operational Management Platform for RIS (project)
CRORIS	Croatian RIS Implementation
DATEX	Data Exchange Standard developed for Road Transport
DaTraM	Dangerous Cargo Transport Monitoring on inland Waterways (TEN-T project)
DC	Danube Commission
DG TREN	Directorate General for Energy and Transport
dGPS	differential Global Positioning System
DGNSS	Differential Global Navigation Satellite System
DOAT	Data owner administration table
DoRIS	Austrian RIS System (Donau River Information Services)
DRBD	Distributed Replicated Block Device
EAR	European Agency for Reconstruction
EC	European Commission
ECDIS	Electronic Chart Display and Information System
EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
EIA	Environmental Impact Assessment
EITSA	European ITS System Architecture
ENC	Electronic Navigational Chart
ENI	Unique European Vessel Identification Number
ERI	Electronic Reporting International (expert group for electronic reporting)
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ERINOT	Electronic Reporting Notification Message
ERIRSP	Electronic Reporting Response Message
EU	European Union
FIS	Fairway Information Services
FOAR	Fleet Operator Access Rights

FRAME	Framework Architecture Made for European projects
GIS	Geographical Information System
GPS	Global Positioning System
GSM	Global System for Mobile communications
HS	Harmonised System Codes
HTTP	Hypertext Transfer Protocol
HDMI	Hull Data Management Infrastructure (i.e. register for vessel certificate data following Directive 2006/87/EC and its amendment Directive 2008/87/EC)
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICT	Information and Communication Technology
IMAP	Internet Massage Access Protocol
IMO	International Maritime Organisation
INDRIS	Inland Navigation Demonstrator for River Information Services
IRIS Europe	Implementation of River Information Services in Europe
ISRS	International Ship Reporting Standard
IT	Information Technologies
ITS	Intelligent Transport Systems
ITU	International Telecommunication Union
IVS90	Dutch Inland Navigation Information System
LEA	Law Enforcement Agency
MAP	Multi Annual Programme
MIB	German Traffic Information System for inland Navigation
MMSI	Maritime Mobile Service Identity
MoS	Motorways of the Sea
MoU	Memorandum of Understanding
MRA	Message Receive Application
NICT	New Information and Communication Technologies
NST	Standard Goods Classification for Transport Statistics
NTA	National Transport Authority
NtS	Notices to Skippers
OTP	Operational Test Platform
PIANC	International Navigation Association
R2D2	RIS Data Exchange Reference Documentation
RENC	European Regional Electronic Navigational Chart Centre
RIS	River Information Services
rkm	River kilometres
SFTP	Secure file transfer protocol
SIF	Système Information Fluviale
SMS	Short Message Service

SOAP	Simple Object Access Protocol
SSS	Short Sea Shipping
SSR	Seine-Scheldt-Rhine
STI	Strategic Traffic Image
SWP	Subworkpackage
SWPL	Subworkpackage Leader
TAA	Technical Administrative Agreement
TED	Tenders Electronic Daily
TEN-T	Trans European Networks – Transport
TMA	Time Multiple Access
TTI	Tactical Traffic Image
UN/ECE	United Nations Economic Commission for Europe
VHF	Very High Frequency
VTM	Vessel Traffic Management
VTMIS	Vessel Traffic Management Information Services
VTMS	Vessel Traffic Management Service
VTS	Vessel Traffic Services
WGS 84	World Geodetic System 1984
WP	Workpackage
WPL	Workpackage Leader
XML	eXtensible Markup Language

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1 Introduction

IRIS Europe as pilot implementation project for River Information Services (RIS) is co-financed by the Directorate General for Energy and Transport of the European Commission within the TEN-T programme (Trans European Transport Networks). IRIS Europe started in January 2006 and was finished in December 2008.

1.1 Main objectives of IRIS Europe

IRIS Europe was set up as a Europe-wide project in order to expand the functionality of River Information Services on the European waterway network. The project addressed the elimination of existing bottlenecks and defined additional functionality in the field of River Information Services (RIS) in the Danube and Rhine-Seine region. The project focused especially on cross-border information services and the related data exchange and procedures. Newly developed RIS Services such as traffic and transport information exchange, hull data exchange and calamity abatement service were validated by means of pilot installations, which are interconnected among each other.

Furthermore IRIS Europe met the general objectives of the European Commission, as set up in Article 5 of Decision No. 1692/96/EC, in order to integrate transport networks more efficiently by interlinking modes of transport with a view to making better use of the inherent advantages of each. By providing RIS services both in the old and new EU Member States, also inland navigation respectively inland waterway transport and intermodal transport is promoted within these European landlocked regions plus showing opportunities to interconnect inland navigation with maritime traffic.

One of the positive effects of intelligent inland navigation traffic systems is also the (in-)direct benefit for safety and security for passengers and critical infrastructure and environmental concerns (e.g. waste management). Moreover, it stimulates the cooperation alongside the Rhine/Meuse-Main-Danube inland waterway axis (Priority TEN Project #18) and the Seine-Scheldt inland waterway axis (Priority TEN Project #30) with links to short sea shipping through connections at seaports.

The specific objectives of the project were therefore:

- Pilot implementation of the EU RIS Directive 2005/44/EC in Austria, Slovakia, Hungary, the Netherlands, France and Belgium.
- Determination and pilot implementation of additional RIS Services, especially on the focus of cross-border operation and environmental Services, next to the minimum requirements according to the EU RIS Directive 2005/44/EC.
- Harmonisation and Standardisation of RIS-Technology, Applications and Services above the level of the minimum requirements according to the RIS Directive by supporting the relevant RIS Expert Groups and the RIS Committee with gained knowledge.
- Cross-border co-operation of the national authorities responsible for inland navigation and relevant for RIS according to the RIS Directive, focusing on cross border Services including the procedures of international exchange of relevant data.
- To lead the way of implementing the RIS Directive in Europe by supporting follow-up initiatives for the implementation of the RIS Directive by efficient knowledge transfer and provision of a functional reference specification for the implementation of RIS according to the RIS Directive.
- Close the lacks of RIS pilot infrastructure on the Upper Danube by setting up appropriate national as well as international infrastructure segments and ensure links between them by defining and implementing relevant interfaces. Consequently additional benefits are gained by merging the individual Services as well as efficient cross border management will be ensured.

1.2 Geographic scope of IRIS Europe

IRIS Europe was a Pan European Project with partners from 8 countries as well as interested parties from 4 other countries which were integrated as cooperation partners within IRIS Europe.

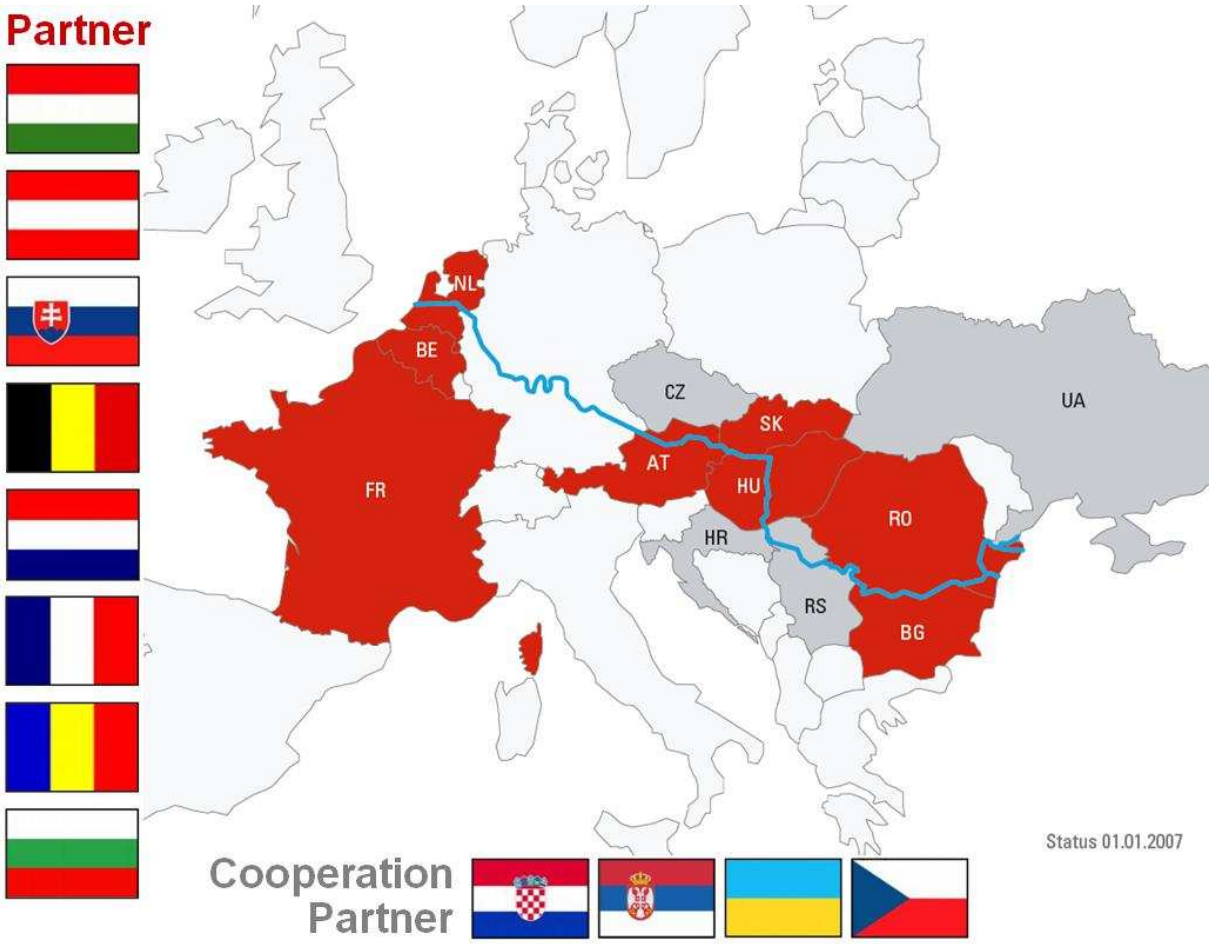


Figure 1: Geographical scope of the project

Although Bulgaria and Romania did not receive financial contributions by the European Community in the frame of IRIS Europe, it was decided by the Steering Committee of IRIS Europe to treat both Member States as equal partners with voluntary contributions.

1.3 Project partners IRIS Europe

The beneficiaries are the countries directly participating in IRIS Europe represented by the relevant national ministries from the EU Member States Austria, Belgium, Bulgaria, France, Hungary, the Netherlands, Romania and Slovakia. Furthermore Croatia, Czech Republic, Serbia and Ukraine are contributing to the project as cooperation partners.

Partner	Beneficiary of the project	Organisation in charge of executing the work	Country
Ministry of Transport, Telecommunication and Energy	x		Hungary
National Association of Radio Distress-Signalling and Infocommunications (RSOE)		x	Hungary
Ministry of Transport, Innovation and Technology	x		Austria
via donau – Österreichische Wasserstraßen-Gesellschaft mbH		x	Austria
Ministry of Transport, Posts and Telecommunications	x		Slovakia
VUD a.s. - Transport Research Institute, Inc.		x	Slovakia
KIOS s.r.o.		x	Slovakia
Ministry of Transport, Public Works and Water Management	x		The Netherlands
Rijkswaterstaat DVS - Dienst Verkeer en Scheepvaart		x	The Netherlands
Ministry of Public Works, Energy, Environment and Nature	x		Belgium
Waterwegen en Zeekanaal NV		x	Belgium
Ministry for Infrastructure, Transport, Spatial Planning, Tourism and the Sea	x		France
Voies Navigables de France		x	France

Table 1: IRIS Europe Project Partners

Additional Project Partners from 2007

Partner	Beneficiary of the project	Organisation in charge of executing the project	Country
Ministry of Transport, Constructions and Tourism	x		Romania
Romanian Naval Authority (RNA)		x	Romania
Ministry of Transport	x		Bulgaria
Bulgarian Maritime Administration (BMA)		x	Bulgaria

Table 2: IRIS Europe, additional Project Partners from 2007

1.4 Work breakdown structure of IRIS Europe

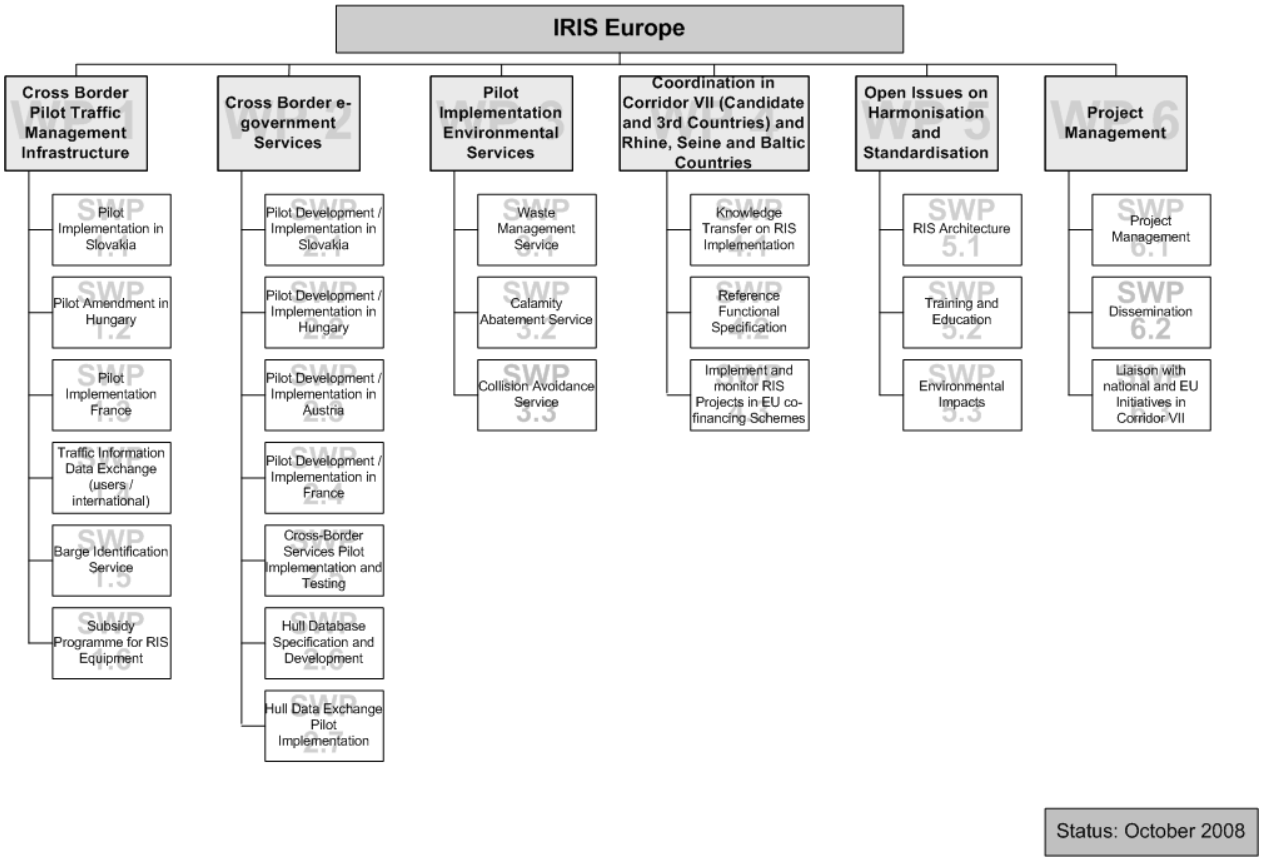


Figure 2: Work breakdown structure of IRIS Europe

2 Executive Summary

2.1 Introduction

The project IRIS Europe has led to the pilot implementation of RIS infrastructure in several member states and was the initiator of the implementation of RIS services on European level as defined in Directive 2005/44/EC on harmonised river information services (RIS) on inland waterways in the Community.

The main objective of the project was the contribution to and stimulation of harmonized implementation of River Information Services on basis of the EU RIS Directive in order to improve safety, efficiency and environmental friendliness on European inland waterways.

Some specific objectives of the project were therefore:

- Pilot implementations in the participating Member States of RIS services as defined in the 'EU RIS Directive'
- Define and implement in a pilot environment additional RIS services with special focus on cross-border operations, in line and exceeding the minimum requirements according to the 'RIS Directive'.
- Harmonisation and Standardisation of RIS-Technology, Applications and Services above the level of the minimum requirements according to the 'RIS Directive' and as such supporting the Expert Groups responsible for standardisation of RIS services
- Cross-border co-operation of the national authorities responsible for inland navigation and for the implementation of RIS according to the 'RIS Directive', focusing on cross border Services including the procedures of international exchange of relevant data.

IRIS Europe was designed in such a way that differing national requirements, existing RIS technologies and services and regional characteristics are brought together under one umbrella, which ensures harmonised implementation progress and compliance with relevant existing RIS-Standards.

2.2 IRIS Europe Infrastructure Implementation

In order to provide already defined but also new River Information Services, it was necessary to implement the appropriate intelligent infrastructure. Therefore a main focus of IRIS Europe was the specification, implementation and testing of pilot infrastructure for River Information Services:

- **AIS infrastructure** – Along the Slovakian stretch of the Danube Inland AIS base stations were installed, which forward traffic information received from Inland AIS transponders onboard the vessels, to the national RIS Centre. Traffic information contains details about the identification, position and movement of vessels on inland waterways and enables users to manage traffic in an efficient way. Furthermore the possibility of shared use of AIS infrastructure was investigated, agreed and tested within a pilot implementation between Slovakia and Hungary.
- **Electronic Reporting service infrastructure** – In Austria, Slovakia, Hungary and France, a national infrastructure was specified and implemented allowing to electronically report cargo and voyage data from skippers and fleet operators to relevant authorities. Electronic reports contain details about the vessel, voyage and cargo (dangerous, non-dangerous).
- **Hull database service infrastructure** – In Austria, Slovakia, Hungary and the Netherlands the infrastructure for management (creation, maintenance, availability) of hull data was specified and implemented. The national Hull databases contain the complete set of vessel certification data, while parts of this information are used for a more efficient provision of RIS. The national databases will be connected to the European Hull database in a later step (not part of IRIS Europe) for the exchange of the Minimum Hull Data Set defined by directive 2008/87/EC.
- **Infrastructure for international exchange of RIS data** – Austria, Slovakia, Hungary, Croatia, Romania and the Netherlands were elaborating detailed specifications for an appropriate decentralised infrastructure for the international exchange of position information (AIS data in a first step), cargo and voyage information (ERI data) and hull data between RIS centres and for the provision of information to entitled users.

- A technical concept was elaborated in cooperation with an IT expert company providing the basis for the specification and tendering procedures of the relevant pilot infrastructure in Austria, Slovakia, Hungary and Croatia. Proven experiences from similar systems in the maritime field were taken into account (e.g. SafeSeaNet).
- A Technical and Administrative Agreement (TAA) was drawn up with the expertise of experienced lawyers. The TAA will be signed by authorised representatives of the relevant Member States of the EU and provides the legal basis for the international exchange of RIS data. Already established legal agreements in the RIS field are taken into account.

2.3 IRIS Europe Services

Apart from the RIS services related to the above mentioned IRIS Europe infrastructures, the project also focused on the development of cross border information data exchange and several other RIS services.

2.3.1 Cross border information exchange

In recent years traffic management and transport management infrastructure for RIS were established on a national basis and with different speeds, which led to gaps in the provision of River Information Services covering the inland waterway network in Europe and a misfit of cross border information services. Therefore IRIS Europe was not in the first place a technological development project, but had its focus on the provision of services to the users of RIS, especially by implementing international exchange of information and ensuring a reliable quality of RIS services, from the data source to the end user.

In the Seine-Scheldt-Rhine countries operational information is exchanged since few years between the authorities, also involving the seaports in a standardised way (based on the Standard for electronic ship reporting in inland navigation by the CCNR). Between the Danube countries a first implementation of international exchange of traffic related information was demonstrated in the COMPRIS project. In order to harmonize the international RIS data exchange in a stepwise approach, in IRIS Europe the project standard on international RIS data exchange was developed and pilot implemented among 5 countries, supported by the experiences gained in the Seine-Scheldt-Rhine countries.

As information is accompanying the vessel on its whole journey, RIS should not to be limited by national borders with their traditional barriers for the information flow between authorities. A seamless crossing of borders is a crucial part in the inland waterway transportation process, one of the most essential activities of the IRIS Europe project has been the attempt to define the requirements and specify the data exchange between stakeholders in inland navigation on international level.

This activity focussed on the process towards an agreement between the member states who are participating in IRIS Europe and on a technical (project) standard for international data exchange in the RIS environment. The results of this activity were the RIS Data Exchange Reference Documentation, a technical project standard for international exchange of RIS data in all countries participating in IRIS Europe, and the draft Technical and Administrative Agreement as the legal basis for international exchange of RIS data.

Pre-condition for seamless provision of River Information Services is the introduction of the Unique European Vessel Identification Number (ENI). It was identified during COMPRIS and proved in practise within IRIS Europe that it is of utmost importance that vessels participating in RIS have a unique ENI number assigned, as an essential pre-condition to link the vessels and the RIS services. The ENI was implemented in IRIS Europe and the project proved that the introduction and acceptance of the ENI is an essential achievement for the RIS community.

Technical and legal agreements on a standardised provision of information across borders facilitates in the future vessel traffic management processes, incident abatement procedures, border controls etc. and makes these processes more efficient. In IRIS Europe the first steps have been undertaken to solve the technical, procedural and regulatory issues in cross-border data exchange. By taking these steps an important benefit is in reach for governmental users as well as for commercial users.

2.3.2 Innovative River Information Services

- Calamity abatement – Appropriate infrastructures for a service supporting calamity abatement were specified and pilot implemented by Austria, Belgium, Hungary, the Netherlands and Slovakia. One of the relevant proposals from the study on calamity abatement is the introduction of calamity classification (type and severeness) as essential part of calamity services. In this case not only the alert chain should be initiated but also the calamity related information has to be harmonised. A proposal for a special calamity abatement message to be exchanged between neighbouring countries is proposed by this study and already forwarded to the relevant organisations (G/ICC expert group of the CCNR, T&T expert group).
- Waste management – In principle the most important activity of RIS related to waste management is on short notice to create awareness in the inland navigation environment on waste management. The study also led to the conclusion that it would be appropriate to start with the inclusion of waste collection disposal facilities in Inland ECDIS. A proposal was forwarded to the Inland ECDIS Expert Group. Appropriate infrastructure for a service supporting waste management was pilot implemented in the Netherlands.
- Automatic identification and tracking & tracing of Barges – A feasibility study on a possible pilot implementation for automatic identification of barges and forwarding of relevant barge information (position, convoy data, …) to entitled stakeholders, based on the requirements of relevant actors. In a first step a concept for the integration of barge and convoy information into Inland AIS was forwarded to and is in discussion within the Tracking & Tracing expert group. In a second step further coordination with the ERI expert group is foreseen.
- Collision avoidance – A feasibility study on collision avoidance was elaborated focusing on the determination of additional measures for RIS systems in order to reduce incidents and accidents. In terms of RIS Services/Systems the study concluded that heading devices for larger vessels in combination with AIS transponders will improve safety of navigation, Inland ECDIS as well as NtS as standard facilities on board the vessels will further improve safety.

2.4 Technical and Administrative Agreement and the technical specification of the international data exchange

Within IRIS Europe, the international data exchange was specified

- By means of a Technical and Administrative Agreement (TAA) giving direction on the regulatory level which is to be accepted among the IRIS Europe beneficiaries of the Member States that are exchanging data among each other and
- By means of the initial technical specification of the interface between national or regional RIS infrastructures and as laid down in the so-called RIS Data Exchange Reference Documentation. This RIS Data Exchange Reference Documentation serves as input to the main annexes to the TAA

A Task Force on International Data Exchange, under the lead of via donau and Rijkswaterstaat and with the involvement of representatives of all beneficiaries and organisations in charge of executing the work in IRIS Europe, defined the provisional project standard on international data exchange in the RIS Data Exchange Reference Documentation. The reference documentation serves as a technical specification for international RIS data exchange consisting of:

- User roles / access rights of all stakeholder groups involved in inland navigation with possible national differences
- RIS data exchange process description
- Definition of the required data exchange messages (XML Messaging Reference Guide and XML Scheme Definitions)
- Technical description of the required interfaces (Technical System Concept)

In IRIS Europe a pilot implementation has been set up, which interconnects France, Belgium (Flanders), The Netherlands, Austria, Slovakia, Hungary and Croatia on basis of the RIS Data Exchange Reference Documentation. The Seine-Scheldt-Rhine system (SSR system) for data exchange between the Netherlands, France and Belgium (Flanders) is interconnected by means of the so called IRIS Europe layer with the systems in Austria, Slovakia, Hungary and Croatia. The IRIS Europe layer (the international data exchange between the fairway authorities of the SSR member states is based on the same international standards as the RIS Data Exchange Reference Documentation, however the technical implementation differs, see chapter 2.3.1.) is the linking element between existing operational systems and the RIS data exchange reference specifications of IRIS Europe.

Not in all participating member states a full-blown pilot implementation has been realised in the context of IRIS Europe. However the main principle of the international data exchange concept has been tested. On functional level there are no differences in the approaches. There are differences in the technical details, but the pilot implementations in IRIS Europe have shown that minor technical differences are no obstacles for the concept of standardised RIS data exchange as specified in the project.

An important remark has to be made on the national implementation of the different RIS pilot systems and technologies. It was not in the scope or the responsibility of the IRIS Europe project to come to identical national infrastructures in the different participating member states. The requirements with respect to the national infrastructures were restricted to:

- Compliance with the service requirements as defined in RIS Directive 2005/44/EC
- Compliance with the existing RIS Standards as defined in the RIS Directive and extensions to these as developed in IRIS Europe
- Compliance with the international data exchange provisional project standard on international data exchange as developed in IRIS Europe.

Existing applications and systems in Europe can differ on technical and operational level, the evolvement of these existing systems should lead in the future to one European data exchange approach.

As a consequence the RIS Data Exchange Reference Documentation is restricted to requirements for those parts of the national infrastructure that deal with the international data exchange. The national infrastructures can be set up according to the own national priorities as long as the international data exchange processes including user roles and access rights, network and security settings and as long as the defined international interfaces are strictly observed.

2.5 Additional outcomes of IRIS Europe

Whereas the pilot implementation of RIS infrastructures and the definition of new RIS-services were the main objectives of IRIS Europe, the project also created a multitude of results related to the implementation of the EU RIS Directive 2005/44/EC.

2.5.1 RIS Architecture

The IRIS Europe activities with respect to the RIS Architecture focused on the definition, extension and enhancement of roles for governmental and logistics RIS-users in the international data exchange.

In the development process for the technical and legal provisions of international RIS data exchange in IRIS Europe it was identified that accessibility, confidentiality and protection of data requires a common denominator on European level. As common denominators for users of River Information Services, so called roles, were introduced. It is a pre-condition that all countries participating in the international exchange of RIS data have implemented and defined exactly the same individual user roles in order to ensure appropriate filtering of data to which a user of a certain user role has no access.

The basis for the elaboration of the user roles was the already existing user roles definition of the COMPRIS project. First of all, all inland navigation related actors were listed and compared to the COMPRIS definition. It was found out that a high number of the existing COMPRIS definitions were

appropriate and those were kept. In some cases new user roles had to be defined or existing ones had to be redefined.

Consequently the defined user roles were first agreed among the participants of the technical RIS Data Exchange Task Force and finally form the basis for the national Access Rights Matrices, which are also an integral part of the Technical and Administrative Agreement. Furthermore the logistics task force reviewed and provided their input with respect to the logistic environment for the final version of the defined user roles.

Thus IRIS Europe contributed to the enhancement of the COMPRIS RIS architecture with a consolidated catalogue of roles for governmental and logistics RIS users.

2.5.2 Reference Functional Specifications

In IRIS Europe a guideline for the functional specification of a RIS reference system including the core components was elaborated. The guideline was a first attempt towards a comprehensive outline for functional specifications characterising a RIS system. The guidelines can serve as a starting point for the elaboration of detailed tender documents for possible RIS implementations in the future. The guidelines reflect the actual state of the art of RIS and require regular updates due to changes in technology and evolution in RIS standardisation. It is of utmost importance that the results of IRIS Europe on the “Guideline for the elaboration of functional specifications” are used as a starting point for future projects and initiatives dealing with Reference technical and functional specifications of RIS systems.

2.5.3 Training and Education

In IRIS Europe a concept for training and education of River Information Services was elaborated, based on the needs and requirements of the inland navigation sector. Originally it was foreseen to establish a RIS training concept for all European countries that have RIS implemented. After a first analysis of previous results related to training and education for RIS it was soon identified that no user need analysis was available, also given the fact that the RIS implementation status differs from country to country. Thus it was decided to perform the initial user needs analysis.

The IRIS Europe training and education concept resulting from the user needs analysis was designed in such a way that it can be applied on European level, due to its modularity and completeness in covering all available RIS technologies. The possible diversity of user needs in other countries can be covered by a suitable choice of training modules, as indicated in the training and education concept.

2.6 Additional activities within IRIS Europe

2.6.1 Knowledge Transfer on RIS Implementation

In order to support the implementation of RIS alongside the inland waterway network in Europe, a proper knowledge shall be available at the involved governmental and commercial stakeholders of RIS. During IRIS Europe selected key experts, who have worked for governmental stakeholders (ministries of transport, waterway and traffic authorities, RIS providers, RIS authorities, etc) were invited for expert visits, which lasted between 2 – 5 days. In some cases it was required that IRIS Europe Member State experts gave a training in the country of the respective organisation, mainly due to travel or budget constraints of the organisation interested in the knowledge transfer.

Besides transferring knowledge by means of expert exchange programmes in IRIS Europe, templates for traineeship programmes were developed, applicable in the Danube region as well as in the Rhine/Seine/Scheldt region. Also a series of dedicated technical workshops were held. Some highlights are:

- Workshop on electronic reporting, BICS and position information for Belgium and France (performed by Rijkswaterstaat)
- Workshop on electronic reporting and BICS for Austria, Slovakia, Hungary and Croatia (performed by Rijkswaterstaat)
- Workshop on international RIS data exchange with Germany (performed by via donau)

- Workshop on River Information Services with the Ukraine (performed by Rijkswaterstaat and via donau)
- Several workshops on River Information Services with Chinese delegations in Europe and China (performed by Rijkswaterstaat)

Furthermore cooperation partners or partners not directly involved in the project or some if its work-packages were invited to relevant meetings and workshops.

2.6.2 Dissemination and Coordination

In order to disseminate the work and results of IRIS Europe to different stakeholder groups, a wide variety of dissemination measures was performed. On national level regular stakeholder group meetings were held, where the status of the project was communicated. Different dissemination material was produced and distributed, for example the IRIS Europe project folder in English language or the IRIS Europe project folder in Slovak language, specifically addressing inland navigation stakeholders in Slovakia.

One of the most important dissemination but also coordination measures was the establishment and the maintenance of the IRIS Europe project website, which offers a public section and a partner section. The public section provides general information about the project and reports, which are of public interest. The dedicated partner section provides a full set of information, working documents and the complete provisions for the international RIS data exchange including all Change Requests and Requests for Information of the task force for international RIS data exchange.

IRIS Europe results were also presented on a variety of conferences, workshops and meetings, for example at international transport conferences, at meetings of the international RIS Expert Groups, at meetings of the Central Commission for Navigation on the River Rhine (CCNR) and also at meetings of the RIS Committee of the European Commission.

Apart from various presentations during conferences and meetings, the Management team of IRIS Europe convened an IRIS Europe Seminar on International Data Exchange for River Information Services (RIS) on 22 October 2008 at the Crown Plaza Hotel in Brussels. During the Seminar, keynote speakers presented the conclusions of the IRIS Europe project and the latest developments on international data exchange in the field of River Information Services (RIS) for the future of inland navigation, and Member States have also demonstrated their achieved results.

3 Conclusions and Recommendations

3.1 Conclusions

The main conclusions from WP 1 "Cross border pilot traffic management infrastructure" are:

- AIS pilot infrastructure implementation related tasks were executed fully in line with the provisions in the workplan.
- As a result of the IRIS Europe work package 1, AIS pilot infrastructure is available in Hungary and Slovakia. It can be concluded after an extensive testing period that the performance of the AIS network on the Danube – as far as it is implemented – is providing on an adequate level the required RIS services to the authorities and the private users. In the basic network additional services are implemented, for example:
    - Real time water level information together with Inland Electronic Navigational Charts to support the users with the possibility for more accurate depth information for navigation purposes and as a first step towards the calculation of current and future water depths leading to a better utilisation of the fairway and transport capacity in terms of loading draught
    - dGPS position services to provide more accurate positioning
- Based on the results of the pilot implementation of Slovakia and Hungary, from the technical point of view it is possible to share AIS infrastructure in common river stretches in order to increase reliability and availability.
- Through the IRIS Europe project a lock management system is implemented and tested on three main waterways in France (Seine, Mosel, and on the Dunkerque Scheldt link in the north of France) and is currently in test on 4 locks on the Saone River. The lock keeper's software is a computerization of the lock operator's common tasks. The system is an important tool to improve lock management in the mentioned areas and leads to an optimisation of the lock process and consequently to the efficiency of the locks, the waterway network and the traffic on these fairways. The lock management system leads in addition to a centralised and improved statistics of traffic on these fairways and will provide more and more accurate information on the detection of bottlenecks and consequently helps to identify measures for solving and preventing bottlenecks.
- During the roll out of RIS in previous projects (e.g. in the frame of DoRIS in Austria) it was identified that traffic related RIS services only can be exploited to a full extent if the significant majority of vessels are equipped with Inland AIS transponders. In the direct context of IRIS Europe it was investigated how to initiate RIS equipment programmes in Slovakia and Hungary. With respect; those programmes are planned to be implemented in the near future. As an extension to previous equipment programmes it was identified that Inland AIS transponders alone don't generate full benefits for skippers, and that also other RIS equipment like Inland ECDIS viewers should be subject of future equipment programmes.
- The feasibility study on barge identification has led to the conclusion that the use of Inland AIS for the transmission of the identification, loading status and position of individual barges within a convoy is technically preferable, cost effective and in line with the RIS standards and guidelines. The use of Inland AIS for this purpose only requires an additional message for the transmission of the barge and convoy information. Barge identification service can be made available in this way to authorities and logistics users. Authorities have a focus on T&T information of barges involved in navigational activities (e.g. to improve lock management), whereas logistics users (e.g. ports and terminals) also require information about moored barges e.g. to locate them for transhipment processes and for the calculation of fees. Additional research is needed with respect to barge identification for uncoupled barges.
- Detailed tests of the pilot implementation of the international exchange of RIS data among several countries within IRIS Europe have proven the defined concept and elaborated specifications. The pilot implemented infrastructure provides the necessary functionality for the international exchange of traffic information (AIS data).

The main conclusions from WP 2 "Cross border e-government services" are:

- ERI, Hull and data exchange pilot infrastructure implementation related tasks of WP2 were executed fully in line with the workplan.
- In line with the obligations on electronic reporting in the RIS Directive, skippers and fleet managers have now also the possibility to create and provide vessel, cargo and voyage information electronically to the related national authorities of Austria, Slovakia, Hungary and Croatia. This can be done either via the electronic reporting client application BICS by the implemented interface to the national systems or directly via the Graphical Web User Interface of the national systems. As a first step towards the fulfilment of the requirements of the EU RIS Directive, France has implemented pilot electronic reporting services by using existing infrastructure (e.g. RWS mail server of the Netherlands and MIB of Germany).
- A Hull data management infrastructure was specified, implemented and successfully tested in Austria, Slovakia, Hungary and the Netherlands. The implementation of the national Hull data management infrastructures, Austria, Slovakia, Hungary and the Netherlands are inline with the requirements out of Directive 2006/87/EC, its amendment 2006/137/EC and Directive 2008/87/EC. Related national authorities are the main users and manage their national vessel certification data according to the Directive.
- As it is required for proper operation of RIS, a subset of the national Hull data, the so called Minimum Hull Data Set, is successfully exchanged via the international RIS data exchange infrastructure among the participating countries.
- The national infrastructures implemented within IRIS Europe provide the basis for the interconnection to the European Hull Database which will be implemented in the frame of the PLATINA project.
- The RIS Data Exchange Reference Documentation as specified in IRIS Europe is a viable foundation for implementation of international RIS data exchange. The provisions for the international RIS data exchange are successfully deployed by means of pilot implementations. The pilot implementations enable authorities and logistic users likewise to access position, cargo-, voyage- and hull-related data in a secure manner.
- The project standard on international data exchange as specified in the RIS Data Exchange Reference Documentation will need after the IRIS Europe project further enhancement and most probably in the coming years there will be a need for further extension e.g. based on operational experiences, new RIS services and existing systems and applications.
- The beneficiaries of the IRIS Europe Member States identified that a multilateral administrative agreement among the Member States is needed as basis for the international data exchange in order to fulfil the requirements of European privacy regulations. For this purpose they have elaborated the so-called "Technical and Administrative Agreement for the international data exchange with regard to River Information Services", in short TAA.
- Pan-European RIS Services require harmonised RIS reference data.
- The IRIS Europe Logistics Task Force provided a set of advices, aiming for a future integration of the logistics sector into RIS pilot projects.

The main conclusions from WP 3 "Pilot implementation environmental services" are:

- The studies, pilot implementations and related tasks within WP 3 were executed fully in line with the workplan.
- Waste management practices differ in countries, in urban and rural areas, and as far as residential, industrial, and commercial producers are concerned. The conclusion of the feasibility study on added value for a RIS service on waste management is that the River Information Services can support waste management. The priority for this moment is however to create awareness on a harmonised approach on waste collection instead of using River Information Services for enforcement of proper waste management for inland shipping. All the countries involved agree that RIS should be used primarily for information exchange. This information can support the skippers as well as the authorities and third parties. The first step

in using RIS for waste management for inland navigation should focus on the use of defined standards and available services. Examples of this are:

  - Adding the location of waste collection points, location of waste facilities in ports and on locks - including the types of waste that can be discharged - to the Inland ECDIS charts. A successful pilot was executed in IRIS Europe on providing information in the Inland ECDIS on waste collection disposal. Based on this pilot, a change request was forwarded to the Inland ECDIS Expert Group that contains the proposition to add the location code attribute to refuse dumps.
  - Equipping bilge boats and waste collecting vessels with AIS in order to provide information on the position of the bilge boat to other skippers and to facilitate planning of the disposal of waste during navigation.

- IRIS Europe defined a unique classification (type and severeness) of calamities, essential for cross border calamity abatement services. A proposal for a special calamity abatement message to be exchanged between neighbouring countries is proposed and already forwarded to the relevant organisations (G/ICC expert group of the CCNR, T&T RIS expert group). Apart from the information, a general guideline on the alert chain should be harmonised on European level, considering differing competencies of local authorities and organisations.
- Calamity abatement pilot services are integrated in the RIS data exchange infrastructure in Austria, Slovakia, Hungary, Belgium, the Netherlands and Croatia.
- As a result of the feasibility study on collision avoidance it is concluded that heading devices for larger vessels in combination with AIS transponders will improve safety of navigation. Inland ECDIS as well as NtS as standard facilities on board the vessels will further improve safety.

The main conclusions from WP 4 “Coordination Corridor VII, Rhine, Seine and Baltic” are:

- The tasks on knowledge transfer, reference technical specifications and EU co-financing schemes within WP 4 were performed fully in line with the workplan.
- The knowledge transfer on RIS implementation based on trainings of key experts showed very good results and proved to be an efficient method of providing organisations throughout Europe with basic know-how about the initial steps to be taken for RIS implementation in their countries. The whole concept of River Information Services shows an increasing level of complexity, thus it is a very important task to provide on one hand a general overview of RIS including all the required components, on the other hand to share detailed key expertise and practical experiences in RIS related technologies, their implementation and operation.
- RIS projects in EU co-financing schema: The cooperation within IRIS Europe supported the administrations in charge in preparing pilot systems and allocated the budgets in EU co-financing schemes. In Serbia, Romania and Bulgaria, (at least) RIS pilot systems are implemented, the full scale implementation of RIS in these countries is planned within the next 3 years. In Croatia, RIS implementation is very much advanced. The cooperation as cooperation partner within IRIS Europe assured the harmonized development.

The main conclusions from WP 5 “Open issues on harmonisation and standardisation” are:

- The studies on RIS architecture, training and education and environmental impacts of RIS implementation within IRIS Europe were executed fully in line with the workplan within WP 5.
- The user needs analysis in IRIS Europe with relation to training and education showed that there is a strong need from the inland navigation sector for RIS specific trainings. The analysis also showed that RIS did not yet find its way into existing courses for skippers. As a consequence a training concept was elaborated in IRIS Europe, providing an outline for training modules related to the different RIS technologies as they are made available on board of vessels. It was concluded that in a first step it is in the responsibility of RIS authorities and RIS providers to initiate education and training programmes in close cooperation with the branch organisations and application providers.

- The overall environmental impact of IRIS Europe is positive. The deployment of RIS on the European inland waterway network will improve safety, efficiency and environmental friendliness of inland navigation and as a contribution to environmental friendly transport will lead to a modal shift from road to waterborne transport. The implementation of RIS in Europe will also further enhance the environmental friendliness of inland navigation, and RIS will significantly contribute to the achievement of environmental goals (such as defined in the Kyoto Protocol).

3.2 Recommendations

The main recommendations from WP 1 "Cross border pilot traffic mgmt. infrastructure" are:

- In order to enable real time tracking of vessels, the set up of a seamless shore based Inland AIS infrastructure is essential. It is therefore recommended to facilitate the implementation of shore based Inland AIS infrastructure and close gaps, where required.
- It is recommended to share the use of Inland AIS infrastructures in border areas to increase reliability and availability and/or reduce implementation, operation and maintenance costs. As an example it is recommended to share the use of AIS infrastructure in particular in the long border stretch in the Romanian-Bulgarian section of the Danube.
- The provision of Inland AIS transponders by means of equipment programs lowers the barriers for skippers and fleet operators in making use of RIS and it also eases the introduction of Inland AIS. It is therefore recommended to carry out equipment programs and (if feasible) harmonize the criteria for providing Inland AIS transponders and other RIS systems. It is recommended to start equipment programs in all European countries, and not restrict equipment programmes to Inland AIS transponders only, as it was identified that transponders alone don't generate full benefit for the skippers and fleet operators.
- Skippers appreciated the provision of additional information services, provided by means of Inland AIS (e.g. water level information over Inland AIS, dGPS information over Inland AIS, barge identification information, provision of hydro-meteo data). It is therefore recommended to investigate, which additional information are demanded and are technical feasible (in particular with view on the channel capacity). Moreover, the authorities are recommended to agree on a minimum level of information services provided for the skippers at European level.
- It is recommended to initiate further research on barge identification of uncoupled barges, based on the result and conclusion of the IRIS Europe feasibility study on Barge Identification.
- The European wide availability of RIS Reference Data is a pre-requisite for the proper functioning of Pan European RIS Services. At present, only a few countries are providing this Reference Data according to the agreed codification. It is therefore recommended to place additional emphasis on the collection, harmonisation, dissemination and maintenance of Reference Data as this form the common basis for most RIS Services.

The main recommendations from WP 2 "Cross border e-government services" are:

- IRIS Europe successfully established the technical foundation for the provision of information to logistical RIS users making use of national and international data exchange. It is recommended to develop services by means of tests under operational conditions. Making use of this experience, a more suitable and sustainable approach can be implemented which takes into account:
    - The Technical and Administrative Agreement as the multilateral European administrative agreement for national and international data exchange
    - The RIS Data Exchange Reference Documentation as the technical basis for national and international data exchange.
    - The experiences of the Task Force for International Data Exchange and the Evaluation Task Force as working platforms for the definition and facilitating the implementation of international data exchange

- It is recommended that those countries, not having started yet with the work on national and international data exchange to follow the developments in other countries, familiarize themselves with the TAA and the RIS Data Exchange Reference Documentation, and then start their own activities.
- It is recommended to make electronic reporting of vessel, voyage and cargo data mandatory in a stepwise approach for certain classes of vessels after the operational introduction and test phase of electronic reporting.
- It is recommended to evaluate the effectiveness of the implemented infrastructures and systems under operational conditions in relation to e.g.:
    - The objectives of the TAA
    - The project standard on international data exchange
    - Interconnection with Third Parties
    - National regulations of the several member states
- It is recommended that the IRIS Europe project standard on international data exchange, as laid down in the RIS Data Exchange Reference Documentation will be
    - Adopted, formalised and implemented by the European Commission,
    - Amended where necessary,
    - Enhanced and extended on basis of future related projects and experiences with the standard and
    - Maintained, independent from project initiatives.
- It is recommended that the responsible bodies in their national administrations will implement the IRIS Europe pilot infrastructure on international data exchange as operational systems in their RIS infrastructure as an interface to external authorities or private users, under the conditions of the European and national regulations on data privacy.
- The following improvements of the national and international data exchange are recommended at the technical, legal and organisational level:
    - It is recommended to enhance the RIS Data Exchange Reference documentation, in particular with simplification of the ‘roles and access’ table in such a way that implementation is eased.
    - The RIS Data Exchange Reference Documentation is recommended to be improved in such a way that the partners can support multiple different message versions simultaneously.
    - It is recommended to amend Annex III of the TAA in such a way that it also takes into account existing approaches with respect to international data exchange
    - It is also recommended to continue using XML for the data exchange and investigate experiences of the maritime sector (e.g. Short Sea XML, MaRNIS) from services for the benefit of RIS users (e.g. single window, cargo manifest) in close cooperation with the maritime sector.
    - Each country should prepare an inventory to determine if the provisions for national and international data exchange are in line with the National and Regional regulation and needs (RIS-users, RIS-operators). Based on the results the necessary changes will be handled in the maintenance organization following its terms of reference.
    - The access rights tables concerning the logistic parties as published by the Logistic Taskforce should be taken into account. The approach of integrating logistical users in the development of additional services of RIS Providers is recommended to be continued (e.g. by means of a logistical task force).
    - It is recommended to find solutions which enable the data exchange with non-EU countries, which are not considered as safe-harbour in terms of the EU data protection legislation (e.g. Serbia, Ukraine, and Croatia).

  - It is recommended to forward a request to the supplier of the BICS software to update the documentation especially with respect to the communication with other mail-systems.
  - It is recommended to investigate, if the utilization of the standardised ship-shore RIS messages is the most suitable approach for the international data exchange, also considering the differing national access rights.

- It is recommended that national Hull Data Management infrastructures as implemented in IRIS Europe will be interconnected with the European Hull Database, which will be implemented in the frame of the PLATINA project.

The main recommendations from WP 3 "Pilot implementation environmental services" are:

- It is recommended to implement the determined services (e.g. information on disposal facilities in the Inland electronic navigational charts) at a European level and to develop those services further.
- Based on feasibility study and a pilot on added value for a RIS service on waste management, it is recommended to the Inland ECDIS expert group to add the ISRS location codes to waste collection facilities in Inland ECDIS charts.
- It is recommended that bilge boats and waste collecting vessels will be equipped with Inland AIS transponders in order to provide information on the positions of the bilge boats to the other skippers and to facilitate planning of the disposal of waste during navigation. It is recommended that this will be prioritised in RIS equipment programmes.
- It is recommended to continue the work on calamity abatement, in particular towards data exchange with emergency and rescue service providers, actual information to skippers in case of emergencies.
- It is recommended to adopt the proposal of IRIS Europe to implement a unique classification (type and severeness) of accidents, essential for calamity abatement services. The cooperation with international bodies (e.g. G/ICC expert group of CCNR, T&T expert group) is recommended for this task.
- It is recommended to implement a special calamity abatement message, to be exchanged between neighbouring countries in case of an accident. The cooperation with international bodies (e.g. G/ICC expert group of CCNR, T&T expert group) is recommended for this task.
- It is recommended to consider ways how to increase the availability of heading information and its provision to Inland AIS transponders. Moreover, it is recommended to continue the research on collision avoidance and develop additional tools for assisting the skipper in its navigation decisions. For future developments it is recommended to consider results of projects like CREATING, and to closely cooperate with future project initiatives in this field, e.g. the FP7 project ARIADNA (Maritime Assisted Volumetric Navigation System).

The main recommendation from WP 4 "Coordination Corridor VII, Rhine, Seine and Baltic" is:

- It is recommended to continue the knowledge transfer on RIS implementation in the future based on key-expert exchange programmes, enabling those countries to catch up with the high speed of RIS development and implementation, which joined the RIS community in a later stage.

The main recommendations from WP 5 "Open issues on harmonisation & standardisation" are:

- In order to ensure the proper use of RIS-services and –technologies, training and education should be enhanced. The results of IRIS Europe shall be brought to the project PLATINA, which currently discusses the harmonisation of job-profiles.
- It is recommended that RIS Authorities together with RIS Providers initiate education and training programmes in close cooperation with the branch organisations and application providers, and make use of the training and education concept as provided by IRIS Europe.

The main recommendations from WP 6 “Project management” are:

- It is recommended to connect the national RIS Implementation projects by means of an “integrating” project such as IRIS Europe. By means of jointly deciding on the way forward, the implementation of RIS is harmonized at a European level. Special focus should be placed on the involvement of competent RIS Authorities and RIS Providers, and logistical RIS users in order to assure the demand-driven development and implementation of RIS Services. The concept of cooperation partners and observers should also be implemented in such a project.
- In order to improve the exchange of information and gained experience a on (non)-technical level, a ”Virtual Technical Platform” (moderated Forum) should be established where (non)-technicians can exchange information, experiences, background information and can have direct contact with other (non)-technicians. Synergies between this “Virtual Technical Platform” and the “RIS Community Portal” from PLATINA should be investigated.
- The cooperation of RIS expert groups and European RIS Implementation Projects proved to be an important pillar of harmonized RIS implementation. It is recommended to continue this cooperation.
- In future RIS initiatives a more intense dialogue on RIS implementation between the competent authorities and the logistics stakeholders should be held in order to engage the logistics sector to participate in pilots and further developments.
- It is recommended to facilitate RIS implementation in those countries, which are lagging behind. Additional financial support from the European Union might facilitate the implementation in countries such as the Ukraine.
- It is recommended to start research projects to address new services and technologies, which are not yet close to pilot implementation (e.g. collision avoidance).
- It is recommended to prepare an inventory of all terms used in the area of RIS, especially in legal documents. According to the results of this inventory the RIS Guidelines could be amended with proper and unambiguous definitions.
- It is recommended to define a Project Management Handbook additionally to the workplan at the beginning of each project, which is applicable for all partners, the Taskforces and ad-hoc working groups and describe the roles and engagements within a project. The Project Management Handbook should contain also a communication strategy, terms of reference of task forces and working groups as well as provisions on meeting preparation and execution.
- The implementation partners should define a clear project-plan with respect to the implementation schedule and the partners shall also work according to this plan and respect this plan. When several parties are involved also an integration manager could have benefits in order to monitor progress of technical implementation and takes pro-active necessary actions.
- It is recommended that the results and observations of the IRIS Europe project are brought to the attention of the PLATINA project and the RIS-expert groups, and to create awareness in some of the work packages of PLATINA on the relevancy of the results of IRIS Europe for the PLATINA tasks.
- It is recommended that the results and observations of the IRIS Europe project are brought to the attention of organisations and institutions like CCNR, Danube Commission and PIANC to create awareness on the relevancy of the results of IRIS Europe.

4 WP 1 – Cross Border Pilot Traffic Management Infrastructure

Responsible Member States: Austria, Slovakia, Hungary, France

4.1 WP 1 Introduction and Summary

4.1.1 Main objectives and outcomes of WP1

Based on research and development results of previous RIS related projects it was important to transfer the achieved results into functional pilot implementations. This especially refers to the international exchange of position related information and its legal basis. Within the EU FP5 project COMPRIS already the technical concept for position information exchange based on the Inland AIS technology between members states in Europe was analyzed. In WP1 this concept was further enhanced and the geographical scope was enlarged. Thus it was required to enhance the COMPRIS concept in such a way that not only position related information could be exchanged, but also other information such as cargo and voyage related information and hull related information. This lead to a strong interdependency between WP1 and WP2, where on one hand the required pilot infrastructure for obtaining and processing basic data needed to be established, and on the other hand a common legal basis needed to be worked out.

The interdependencies between WP1 and WP2 mainly apply between SWP 1.4 “Traffic Information Data Exchange (users /international)”, SWP 2.5 “Cross-border Services Pilot Implementation and Testing” and SWP 2.7 “Hull Data Exchange Pilot Implementation”. Due to the technical, legal and geographical complexity of the international RIS data exchange, dedicated chapters of the report at hand deal with the technical / procedural provisions for the data exchange (RIS Data Exchange Reference Documentation) and the legal / administrational provisions for the data exchange (Technical and Administrative agreement). These aspects are thus not covered in full extent in the WP1 part of the final technical report.

Besides the harmonized implementation of international RIS data exchange in Europe it was identified that countries implementing Inland AIS shore infrastructure (e.g. Inland AIS base stations) should make shared use of this infrastructure in common border sections. In IRIS Europe a first pilot implementation was made between Slovakia and Hungary, which should serve as best practice example for countries like Romania and Bulgaria.

In France special emphasis was placed on the pilot implementation of a lock management application as an integral part of traffic management. Main objectives of the pilot implementation in SWP 1.3 were to improve traffic statistics, to warn upstream or downstream of a coming vessel, to ease lock keeper’s work and to optimize processes of locks thanks to a better planning of vessel’s passages on a complete waterway section.

Due to the fact that the majority of inland waterway transports is performed by means of push convoys consisting of several barges, a feasibility study on “Barge identification, tracking and tracing” was conducted. Especially the suitability of modern RIS technologies like Inland AIS for tracking and tracing of barges was analyzed, and a possible pilot implementation concept was elaborated in SWP 1.5.

The increase of traffic safety by means of Inland AIS strongly depends on the degree of vessels equipped with suitable Inland AIS transponders. In the past an equipment programme was initiated by Austria within the TEN-T co-funded project DoRIS. Following this example and taking into account national particularities, Slovakia and Hungary elaborated scenarios for RIS equipment subsidy programmes in WP1.

4.1.2 Work approach

- The beneficiaries of the Member States involved in WP1 provided strategic guidance and supported necessary political decisions to be taken either on national or international level.
- The organisations in charge of implementing the project in their countries were responsible for the national implementation of the systems and infrastructures within WP 1 according to available relevant Standards, Draft Commission Regulations and EU Directives.

- Technical provisions for the implementation / amendment of the national traffic management pilot infrastructures were available and used as basis for specifying the related systems
- The coordination of international tasks, for example in setting up the shared use of AIS infrastructure, was done in the regular IRIS Europe coordination meetings, whereas clarifications of technical details were done in a bilateral or multilateral meetings among the partners involved.
- Feasibility studies were presented at the regular IRIS Europe coordination meetings and also made available to the IRIS Europe consortium by means of SWP reports, also enabling the provision of feedback from partners not directly involved in the SWP / WP.
- A summary of all main technical outcomes is provided in the final technical report, whereas each partner was responsible for the individual input.

4.1.3 Results of WP1 in short

The main outcomes of WP1 are:

- Implemented / amended operational pilot traffic management infrastructure based on Inland AIS in Slovakia and Hungary
- Implemented and operational pilot lock management application as part of the IRIS Europe traffic management infrastructure in France
- Implemented traffic data exchange between Austria, Slovakia and Hungary
- Implemented pilot implementation for shared use of Inland AIS shore infrastructure between Slovakia and Hungary
- Feasibility study for barge identification and tracking and tracing service, including a pilot outline for a technical solution based on Inland AIS
- Elaborated scenarios for subsidy programmes for RIS equipment in Slovakia and Hungary

4.2 SWP 1.1 Pilot Implementation in Slovakia

Responsible Member State: Slovakia

4.2.1 Introduction / Main objectives of SWP 1.1 in Slovakia

The main objective of SWP 1.1 in Slovakia was to set up and test the traffic management pilot infrastructure on the Slovak test stretch. The traffic management pilot infrastructure, in terms of tracking and tracing pilot system, is in line with the Commission Regulation (EC) No 415/2007 concerning the technical specifications for vessel tracking and tracing systems – Inland AIS Standard.

4.2.2 Legal requirements

The RIS Directive 2005/44/EC on River Information Services has been transposed into the national legislation by the Act No. 179/2008 Coll. as amending the Act No. 338/2000 Coll. on Inland Navigation. As a result of transposition of RIS Directive the Ministry of Transport, Post and Telecommunications of the Slovak Republic (MDPT SR) assigned State Navigation Administration (SPS, Štátna plavebná správa) as the Slovak national RIS Provider.

Based on the Basel Agreement, which entered into force for the Slovak Republic on 1 December 2005, the Slovak Republic made available the VHF channels for the purposes of automatic identification systems.

4.2.3 Components and basic functionalities of the traffic management pilot infrastructure

The traffic management pilot infrastructure for automatic tracking and provision of vessel positions makes use of the Inland AIS technology. The pilot infrastructure comprises of bellow described segments and communication network ensuring the link between them:

- Vessel segment, which generates and exchange the static and dynamic tactical traffic information of own and other vessels by means of Inland AIS transponders within AIS coverage and with the base stations in the shore segment. Furthermore, it allows displaying the static and dynamic tactical traffic information by means of Inland ECDIS Viewers.

  For a proper testing of the traffic and tracing pilot infrastructure, 8 governmental vessels were equipped with Inland AIS mobile transponders and Inland ECDIS Viewers in information mode (4 vessels of State Navigation Administration, 2 maintenance and measurement vessels, 1 passenger and 1 small tank vessel of the Slovak Water Management Enterprise).

- Shore segment, which receives and stores static and tactical traffic information of vessels within AIS coverage of the Inland AIS base station and sends it to the operator segment. It furthermore, broadcasts safety relevant messages, or generates dGPS correction data and broadcast them to vessels within AIS coverage of the base station. It comprises of 4 AIS base stations located in Bratislava, Gabčíkovo, Komárno, Štúrovo, each consisting of base station transponder and controller connected via internet to AIS network.

Figure 3: Shore / central segment (RIS Centre Bratislava at premises of SPS)

- Central segment, which receives static and tactical traffic information of vessels within AIS coverage of the base stations of the shore segment and store it in the database server and provides this information for national and international exchange of traffic data to governmental as well as commercial users (SWP1.4) as well as to WP2 for triggering purposes of automatic forwarding of other relevant data or to SWP 3.2 ('Calamity Abatement Service') for enhanced information provision in case of calamities.
- Authority segment, which displays actual and historic static and tactical traffic information of vessels within AIS coverage as the tactical traffic image for the authorities by means e.g. Inland ECDIS Viewer. For the purposes of tests, different authorities have been equipped with work stations, consisting of personal computers with the electronic navigational chart connected to the RIS System, incl. national and international data exchange:
    - RIS Operator in Bratislava in the premises the RIS Centre (4 computers);
    - Local offices (captaincies) of State Navigation Administration in Bratislava, Komárno and Štúrovo;
    - Lock operator in the lock of Gabčíkovo.

Figure 4: Authority segment as part of the IRIS Europe traffic management pilot infrastructure

Communication network overview for the traffic management pilot infrastructure

The communication network of the traffic management pilot infrastructure consists of following physical components (without details on ship borne sites):

- Base station sites comprises of one base station transponder *(Kongsberg Seatex AIS BS 410)* and one controller *(HP Compaq ProLiant DL320 G5 Dual-Core Intel Xeon 3060)*. The base station transponder is a fixed station for communicating with AIS transponders on vessels.

  The controller's main function is to receive, process and broadcast (e.g. safety related messages) AIS messages. The controller partially decodes the message and extracts the message id, sender's MMSI, etc. If the controller is connected to the AIS central database, the messages are stored at the central server; otherwise the messages are stored locally.
- Central servers – the AIS pilot system runs on identical servers *(HP Proliant DL380G5, Intel Xeon 5130 Dual Core processor)*. One of two servers is active and the other is backup server. The active central server runs AIS database *(PostgreSQL)*, which stores all AIS data. The backup is done as failover system. Failover is the capability to switch over automatically to a redundant (backup) server. Active and backup servers are in sync and always contain the same data. Upon the failure or abnormal termination of the previously active server, the backup server becomes active.
- Interconnectivity – all shore base stations are connected to the system by means of internet connectivity. Bratislava, Gabčíkovo and Komárno are connected with WiMAX technology. WiMAX is the microvawe technology according to the 802.16e standard in the licensed 3,5 GHz frequency band.
- Terminals (work stations) are capable of displaying the Tactical Traffic Image (TTI) in two different modes: real time mode (allowing users to display actual traffic situation on ECDIS viewer) and history mode (allowing users to display historical traffic situations on ECDIS viewer).

  Terminals are personal computers with the EuRIS software package (EuRIS Viewer and EuRIS Player) and the Inland ECDIS Viewer installed (Tresco Inland ECDIS Viewer localised into Slovak language was used in the project IRIS Europe). Terminals are connected to the

AIS pilot infrastructure via VPN client (if not located within the LAN network). Depending on the users rights database the user will only get messages generated by own ships.

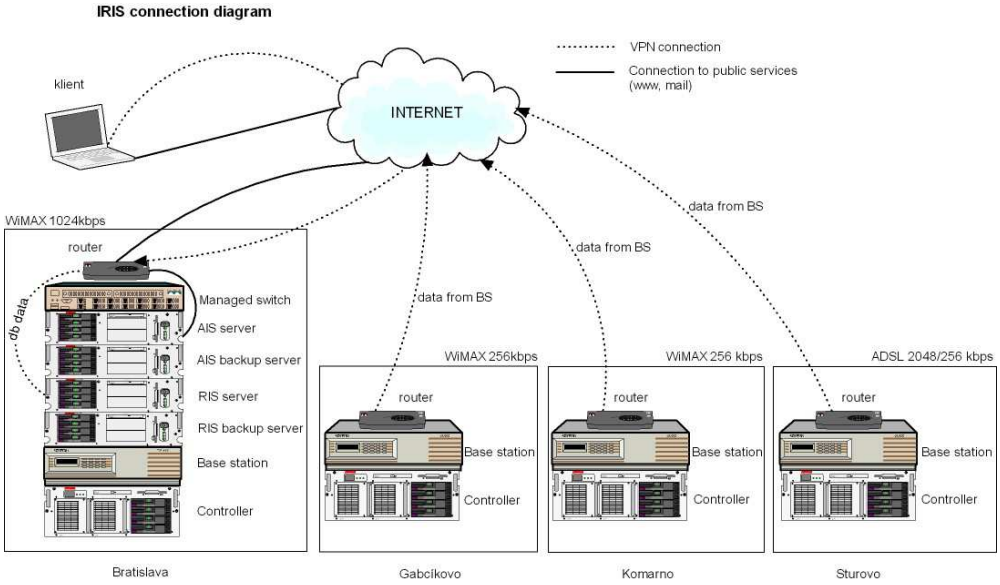


Figure 5: Communication network within the traffic management pilot infrastructure in Slovakia

4.2.4 Advanced functionalities of the traffic and tracing pilot infrastructure

Additionally to basic requirements the pilot implementation of advanced services (functionalities) was carried out. This comprises:

- Broadcasting of water levels over AIS is additional short term information to the water levels distributed via Notices to Skippers. Actual water level information over AIS, as pilot implemented in the Slovakia, is transmitted as a broadcast message once a day at 8 a.m from shore to ship in line with the “Inland specific message 24: water levels“ of the AIS Standard.

  Water level data is provided by the Slovak Hydro-meteorological Institute (SHMU) from 7 gauges located on the Slovak pilot stretch of the Danube. The update rate for broadcasting data is subject of the availability of data and is configurable.

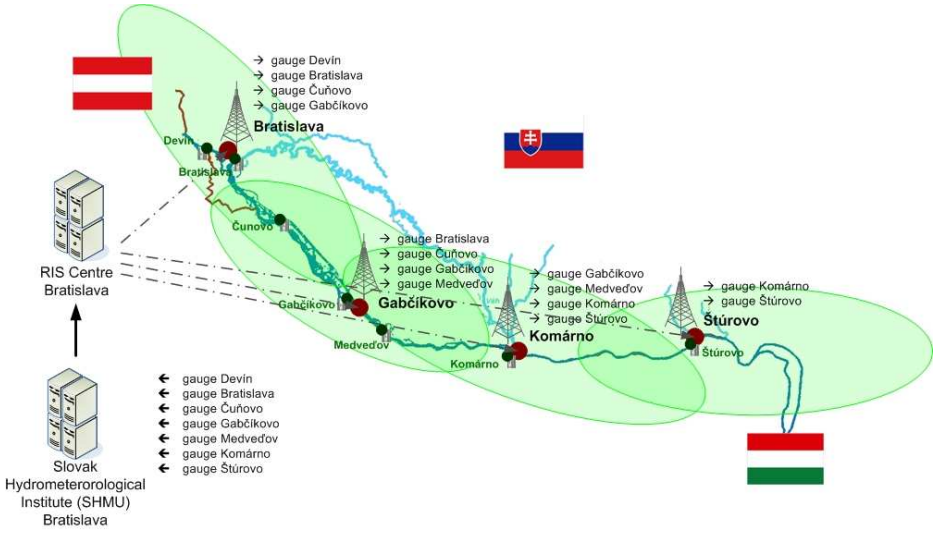


Figure 6: Provision of water level information to vessels within the coverage of base stations

- DGNSS corrections over AIS pilot infrastructure was set up as a pilot in Slovakia to provide higher accuracy for position information. This is achieved by continuously sending DGNSS correction data, converted into AIS message 17, to vessels within the coverage of base stations. AIS ship borne transponders can afterwards compensate common errors in position calculations.

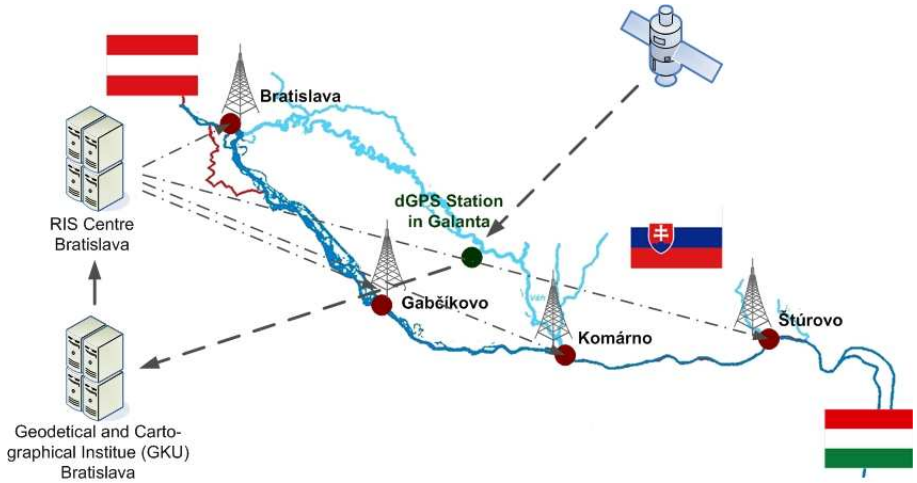


Figure 7: Provision of DGNSS corrections over Slovak AIS pilot infrastructure

- Pilot implementation of the share use of Hungarian and Slovak AIS infrastructure provides exchange of live AIS data in the common stretch of the Danube between Slovakia and Hungary, and is meant to be used in emergency situations only. Transfer of data starts manually and is done via secure SSL.

  The system consists of two software components: the AIS server and the AIS client. The AIS server only sends available AIS messages. For each message and each client, the server checks if the client is allowed to receive the AIS messages (if ship is navigating in client area) and sends the message.

  The Slovak AIS database introduced a special base station called “Hungary_live” with MMSI number 2472. A default setting for this base station is off-line, whereas the administration can access the settings and change to on-line in case of emergencies.

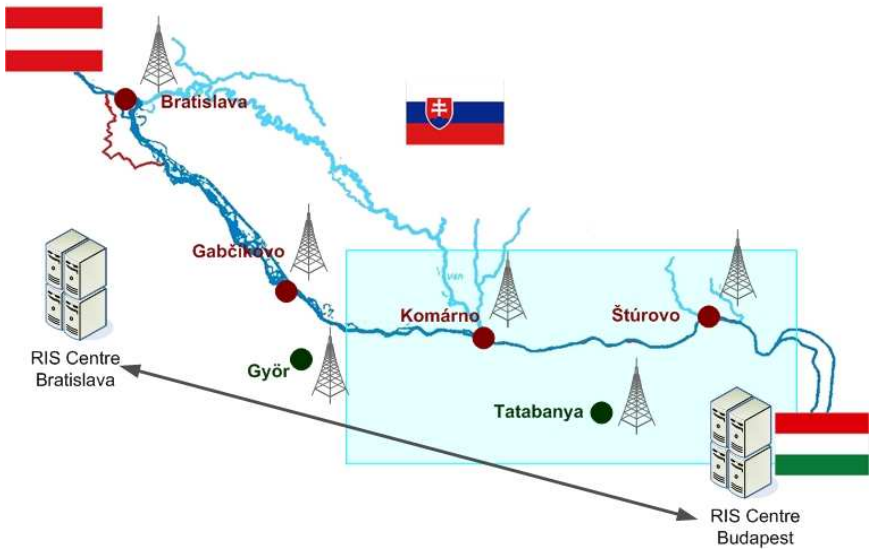


Figure 8: Shared use of Hungarian and Slovak AIS infrastructure

4.2.5 Monitoring of the pilot implementation and tests

The Slovak part of the project in SWP1.1 focused especially on building up a pilot traffic management infrastructure (including hardware, software and network) in particular tracking and tracing infrastructure, in line with the transposed Directive and the Commission Regulation 415/2007 of 13 March 2007 concerning the technical specifications for vessel tracking and tracing systems.

A complete set of acceptance tests was done after starting of the test operation of the AIS pilot network. The tests proved that the pilot system works properly and is stable. During finalization of pilot infrastructure testing, the preparation works for pilot operation had started.

The picture bellow shows the location of base stations and the AIS coverage of individual AIS stations.

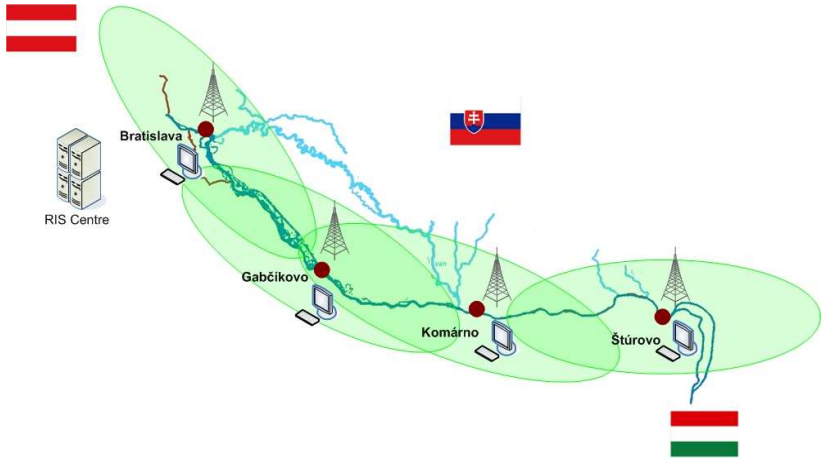


Figure 9: Location of AIS base stations and their range – the Slovak stretch of the Danube River

Acceptance criteria:

Tasks executed		Outcome	Availability
1	Elaborate tender specifications	The international call for tender has been issued on 6.9.2006. Tender Specifications has been part of the tender documentation	Language: SK Available at MDPT SR.
2	Tender the implementation considering national and international regulations	The contract concluded with between MDPT SR and Consortium IRIS (VUD, a.s. and KIOS s.r.o.) on 10.11.2006 and prolonged on 17.12. 2007.	Language: SK Based on the Contract conditions.
3	Monitor the implementation and execute acceptance tests	Test Report Acceptance Report	Language: SK, EN Availability (IRIS Consortium, MDPT SR)
4	Obtain official AIS frequencies and MMSI numbers and all other relevant permissions	AIS frequencies and MMSI numbers obtained from Telecommunication office for all AIS transponders used in the project	Language: SK, Availability (IRIS Consortium, MDPT SR)
5	Establish national RIS operator responsible for the provision Tactical Traffic Information	Official letter from the Ministry (27 December 2006) assigning the State Navigation Administration (SPS) to be RIS provider based on the letter on.	Language: SK Available at MDPT SR.
6	Document results of the SWP according to the provisions in the work plan	Report on SWP1.1	Language: SK, EN Availability (IRIS Consortium, MDPT SR)

Table 3: Tasks performed by Slovakia in WP 1.1

4.3 SWP 1.2 Pilot Implementation in Hungary

Responsible Member State: Hungary

The main objective of this SWP was the set up and the test of a pilot traffic management infrastructure in the Hungarian test stretch.

The pilot traffic management infrastructure comprises of the following segments:

- Ship Segment to generate and exchange the tactical traffic information by means of inland AIS transponders, moreover to display the tactical traffic information on inland ECDIS Viewers (=Tactical Traffic Image)
- Shore Segment to receive the tactical traffic information by means of inland AIS base stations (which include base station controller and systems for the provision of dGPS over AIS)
- Operator Segment to process (store, display,…) the tactical traffic information
- Authority Segment to display the tactical traffic image for the authorities

In 2007 the Governmental Decree 219/2007 (VIII.15.) on River Information Services has been issued in Hungary that is regulating the roles and responsibilities of the RIS authority and RIS operator/provider. In this context the National Transport Authority is the designated RIS authority that has contracted RSOE as RIS provider after public procurement.

The segments provide the following functions within SWP1.2

The **'Ship Segment'** generates static and tactical traffic information of own vessel by means of AIS transponders and also receives this information from other vessels. It also generates and receives safety relevant messages by means of an Inland ECDIS viewer and broadcasts them to other vessels with AIS coverage. This segment can display actual tactical traffic information and safety relevant messages from other vessels within AIS coverage by means of an Inland ECDIS viewer.

The **'Shore Segment'** receives and stores this static and tactical traffic information and safety relevant messages of vessels within AIS coverage and sends it to the operator segment, or broadcast the information received from the shore (generated in the operator segment) to vessels.

The **'Operator Segment'** receives the static and tactical traffic information and safety relevant messages of vessels within AIS coverage of the Inland AIS base stations of the shore segment and stores it in the database server. It monitors and controls the network and the network elements, and provides tactical traffic information, gathered via the AIS shore infrastructure to governmental as well as commercial users to WP2 for triggering purposes of automatic forwarding of other relevant data and to SWP 3.2 ('Calamity Abatement Service') for enhanced information provision in case of calamities.

The **'Authority Segment'** receives the traffic information and safety relevant messages of vessels within AIS coverage from database server within the operator segment. It generates safety relevant messages by means of an Inland ECDIS viewer, sends safety relevant messages to Inland AIS base stations in the shore segment and displays actual and historic tactical traffic information and safety relevant messages of vessels within RIS area on an ENC by means of an inland ECDIS viewer

For the proper execution of the tests eight governmental/authority vessels have been equipped with Inland AIS transponders and Inland ECDIS viewers in information mode. RSOE has signed an agreement whit all the respective partners on the fact itself and on the circumstances of the delivery and usage of the equipment.

<u>These vessels are operated by the:</u>

- National Transport Authority,
- Hungarian Police (Danube Water Police Captaincy, Border Police),
- Water Management Directorates,
- Customs.

Moreover, five workstations (HP dx2200) have been installed at the following organizations:

- National Transport Authority (one workstation with radar pilot software)
- Danube Water Police Captaincy (three offices)
- RSOE (test workstation for the RIS provider)

Figure 10: On shore workstation at authorities

The onshore AIS equipment has also been amended with:

- Base station controller in Győr,
- Base station controller with dGPS option in Budapest.

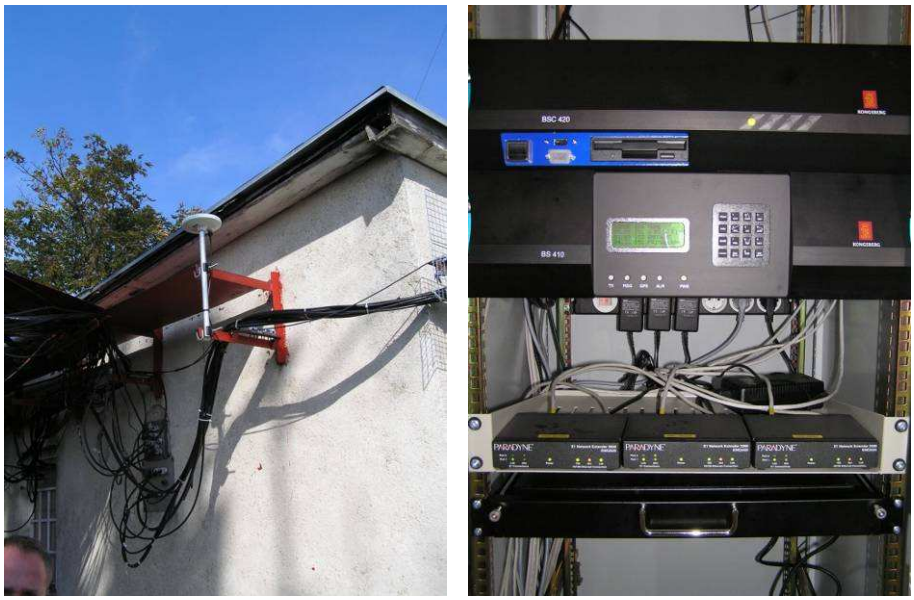


Figure 11: Base station equipment

Two modern servers have been purchased and installed in the RSOE offices for the following reasons:

- To run RIS data exchange (national/international),
- To host the Hungarian RIS website (PannonRIS),
- To broadcast water level messages over AIS (the four most important water level gauges' data have been broadcasted via AIS two times per day as pilot operation),
- To broadcast dGPS information (Message 17).

Figure 12: IBM x3650server

- All equipment has been delivered on the basis of the framework contract signed by RSOE and Ericsson Hungary Ltd. (Ericsson Magyarország Kft.) with the countersign of the responsible intermediate body. The contract has been signed after a Europe-wide public procurement procedure published on TED under 2006/S 226-242679. During the cooperation with Ericsson Hungary Ltd. (Ericsson Magyarország Kft.) the deliverables arrived on time and the subcontractor has installed them properly on the vessels. The services became available on the workstations with the support of RSOE.
- In the course of the pilot implementation the crew of the vessels and also the office employees started to get acquainted with the new services.
- On the basis of the feedbacks received in the course of the operation of the equipment RSOE carried on and keeps carrying on conciliations with the providers.
- In cooperation with the Slovakian project partner the live data exchange service for the common Slovakian-Hungarian Danube stretch has been developed and tested, that it can serve as a model for those countries that have similar geographical characteristics (e.g. Romania-Bulgaria). The system overview is the following:

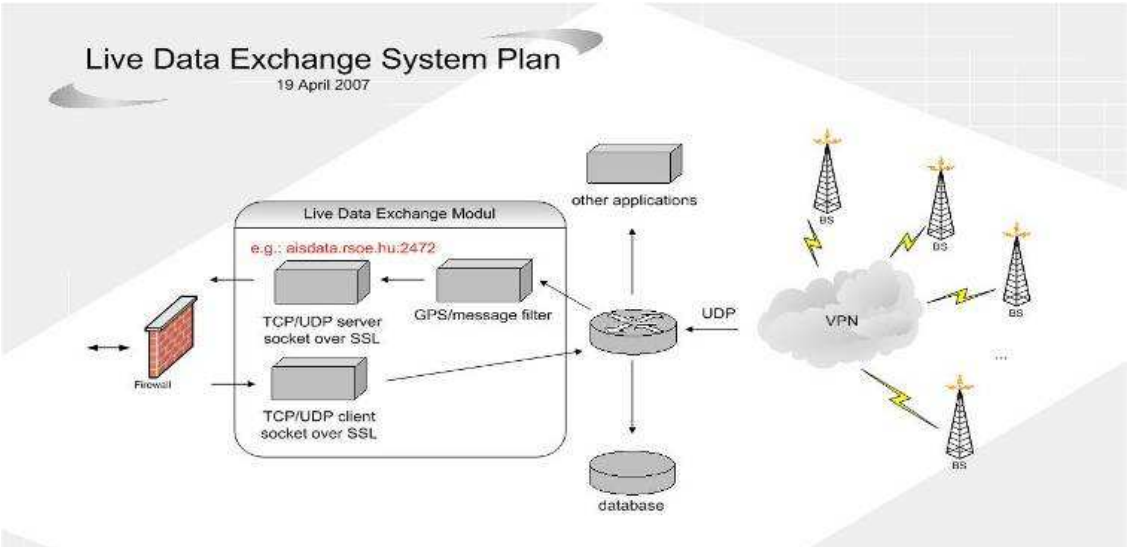


Figure 13: Live data exchange system plan

Acceptance criteria:

Tasks executed		Outcome	Result
1	Elaborate tender specifications including all functions mentioned above	Tender Specifications	✓- Available at RSOE
2	Tender the implementation considering national and international regulations	Contract	✓ - Framework contract with Ericsson Hungary Ltd. (Ericsson Magyarország Kft.)
3	Monitor the implementation and execute acceptance tests	Test Report, Acceptance Report	✓ - Complete documentation, accepted by MoET
4	Obtain official AIS frequencies and MMSI numbers and all other relevant permissions	Certification from the responsible authority(ies)	✓ - According to MoUs with the users
5	Establishment of national RIS operator for the provision of Tactical Traffic Information	Official assignment from the Ministry	✓ - RSOE contracted by NTA for being the RIS provider
6	Document results of the SWP according to the provisions in the workplan	Reports on SWP1.2	✓

Table 4: Tasks performed by Hungary in WP 1.2

4.4 SWP 1.3 Pilot Implementation in France

Responsible Member State: France

4.4.1 Introduction

The lock keeper's software is a computerization of the lock keeper's common tasks. Main goals are to improve statistics about traffic, to warn upstream or downstream of a coming vessel, to ease lock keeper's work and to optimize processes of locks thanks to a better planning of vessel's passages on a complete waterway aspect. It's now implemented on three main basins (Seine River, Mosel river and on the Dunkerque Scheldt link in the north of France, in test on 4 lock on the Saone River)

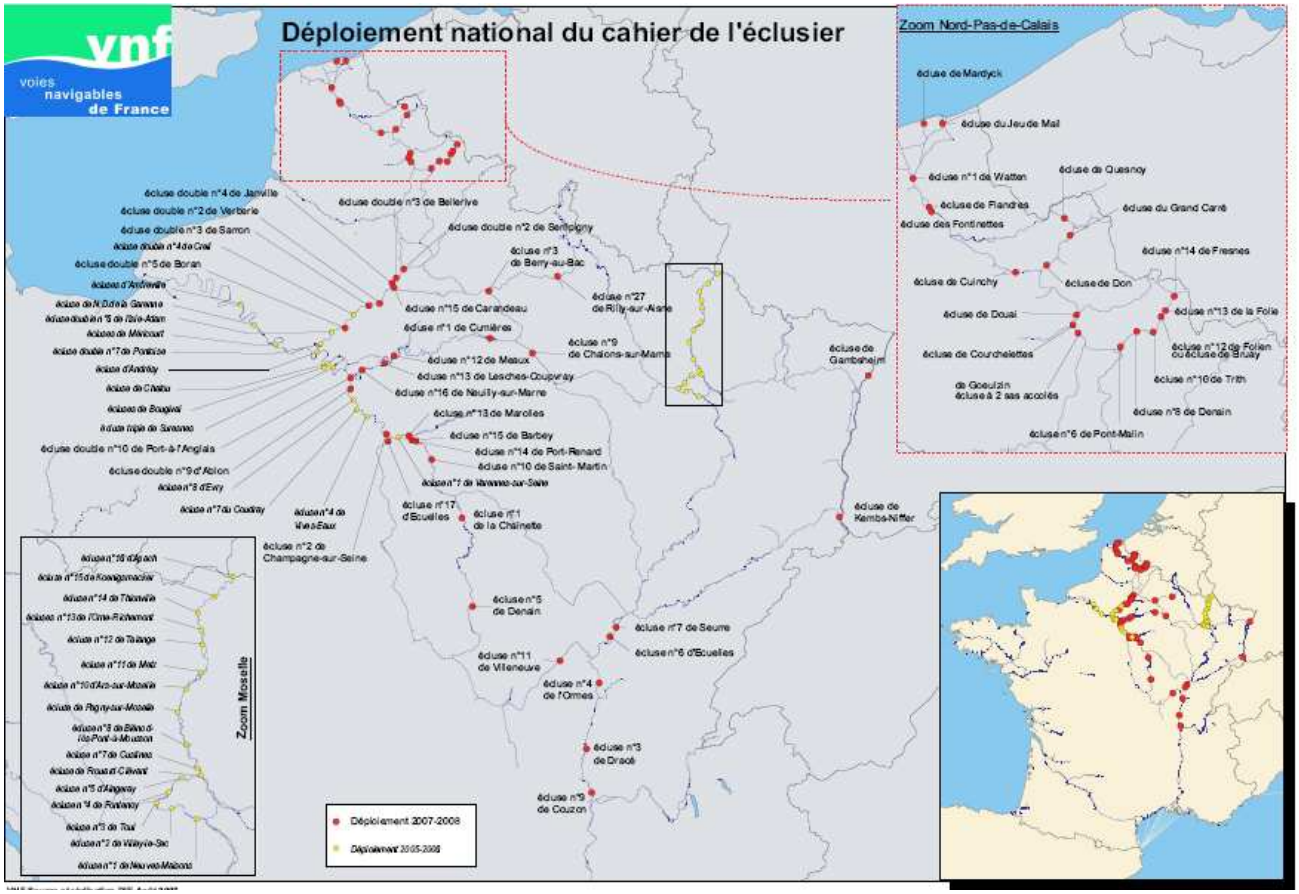


Figure 14: Overview of locks in pilot area - France

- In the Seine, Oise Area, currently 35 locks are equipped, and strategically selected to collected most of the traffic
- On the Mosel river, all locks are now equipped (zoom back left)
- In the north of France it's 18 locks(zoom top right)
- On the Saone river(connected to the Rhône river), it's 4 locks

Main objectives were to use on high capacity network a common tool used to:

- Collect traffic information via a harmonised and automated method.
- Collect statistic about the use of each lock (number of chambers operations…)
- Replacing papers collection of data by an internet application
- Giving to lock keeper an overview of the traffic arriving at his lock.
- Possibility to obtain more reliable statistics in a more global context.
- Giving the possibility to management to deploy lock keepers where they need to be in function of the traffic.
- Giving to lock management authority a tool to affect lock keepers on locks, if it's not done, the lock keeper won't be able to access to this interface for a specific lock.
- Giving to lock keeper real time information about the traffic with ETA of the vessels, and their actual position in the previous upstream and downstream locks

The different kinds of users involved are:

- The lock keepers who will enter all traffic information and will be informed of the arrival traffic.
- The regional administrators who are managing the lock keepers and the navigation network in general.
- The global administrator, which can access to all functions, can add specific parameters and can create any kind of users.
- The statistic department not directly in use of the lock keeper software but more about all the data collected.

4.4.2 How it works, description of the process:

1. A vessel is arriving at the first lock
2. The lock keeper enters the name/id of the boat and request the database
3. If the boat is unknown, the lock keeper enters all the required information
4. If the boat is already known (BICS, previous passages, voyage planning…) information are retrieved automatically
5. The lock keeper checks the retrieved information
6. Corrected information and/or passing (time, date) information are sent to the database
7. The next lock on the vessels path is warned about its coming. An ETA is calculated for all next passage points, every information and validation by the lock keeper generate a new itinerary calculation for all the next passage points.
8. The next lock keeper can get ready to operate the coming vessel

To be able to use the application the lock keeper need a common computer with an internet navigator. The lock has to be connected to the internet or to the intranet. 512 Mb/s is the basic connection needed to use the application.

Depending on the geographical conditions both of the computers are connected via these possibilities:

- If the lock can be connected to the I² network from the ministry of transport, we are always choosing this solution.(connection via intranet)
- If it's not possible, we are searching for a private telecommunication operator solution (connection via internet)

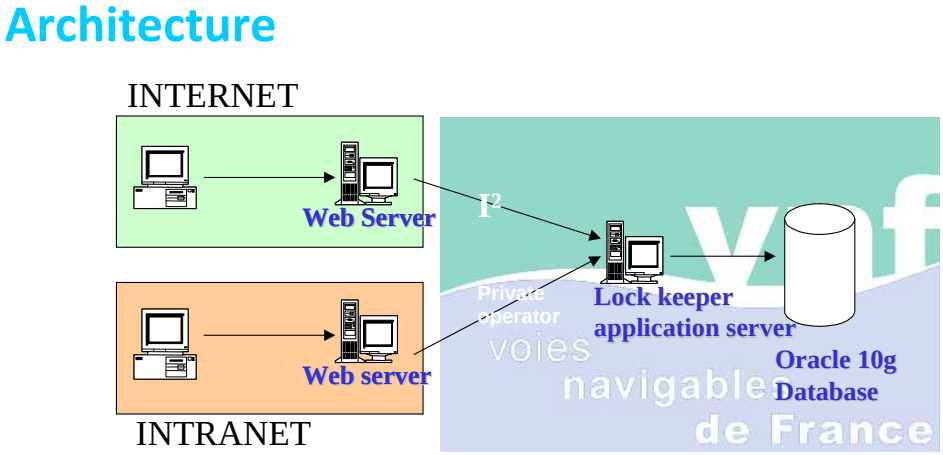


Figure 15: Lock management computer architecture

In Parallel of the lock keeper software deployment, the bidder of the application had to generate based on the database; business objects reports which are used by the statistics department to communicate any king of statistics. Statistics can be refreshed in real time at the moment.

Main page of the application, management of the lock:

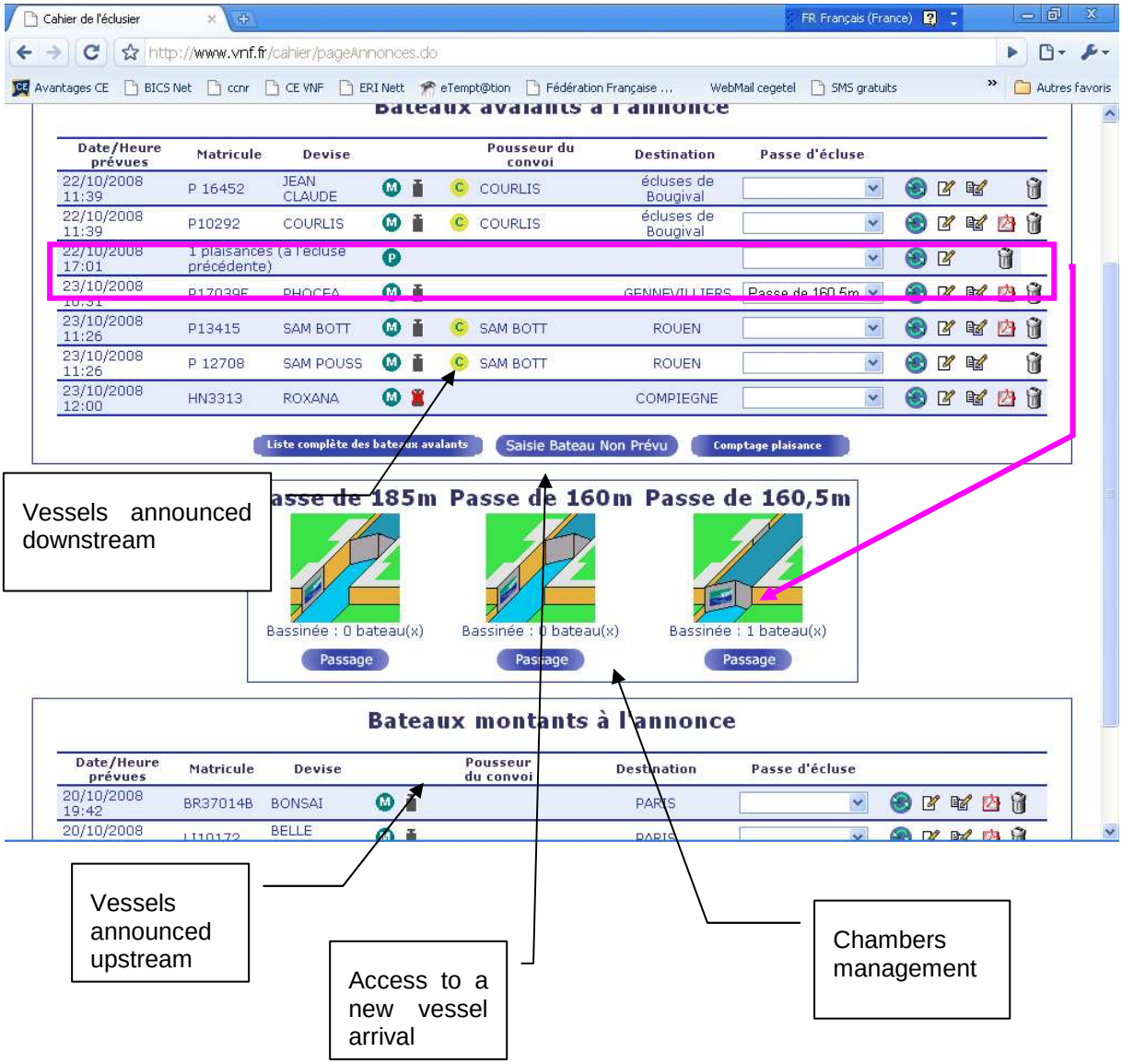


Figure 16: Main page of the lock management application

One vessel is arrived at the lock and affected to the chamber (160,5 m long), you only have to press button “Passage” to record the passage and announce the vessel to the next lock of the network.

New declaration

The user has to:

- Select the kind of vessel (Goods, vessels, passenger vessels, etc.)
- Search for the vessel in the database (here “Annemase”) and select the vessel
- Declare the number of Person on board (here 2)
- Select the kind of the goods (here petrol product)
- The tonnage (here 250 tons), for each goods selected

- The destination (here “Amfreville”)
- Validate the declaration , then the vessel is arriving on the list like on the previous page**Results and Benefits**

The application provides a tool to optimize lock processes and increases the statistical and operational information on the transport via the related fairways.

After the lock keeper software deployment, a traffic analysis application was realised. All the information used in it is extracted from traffic data which were recorded by lock keepers in the lock keeper software. The analysis application allows any user to replay the traffic on a specific part of the network within a defined time period. This way it’s possible to have several kinds of interpretations. The consequences will be that major bottlenecks detected could be limited by specific actions decided on the basis of this analysis (e.g. lock keeper activities, etc.).

Example of this application which can analyse the number of vessels on a specific period on each locks, based lock keeper software data:

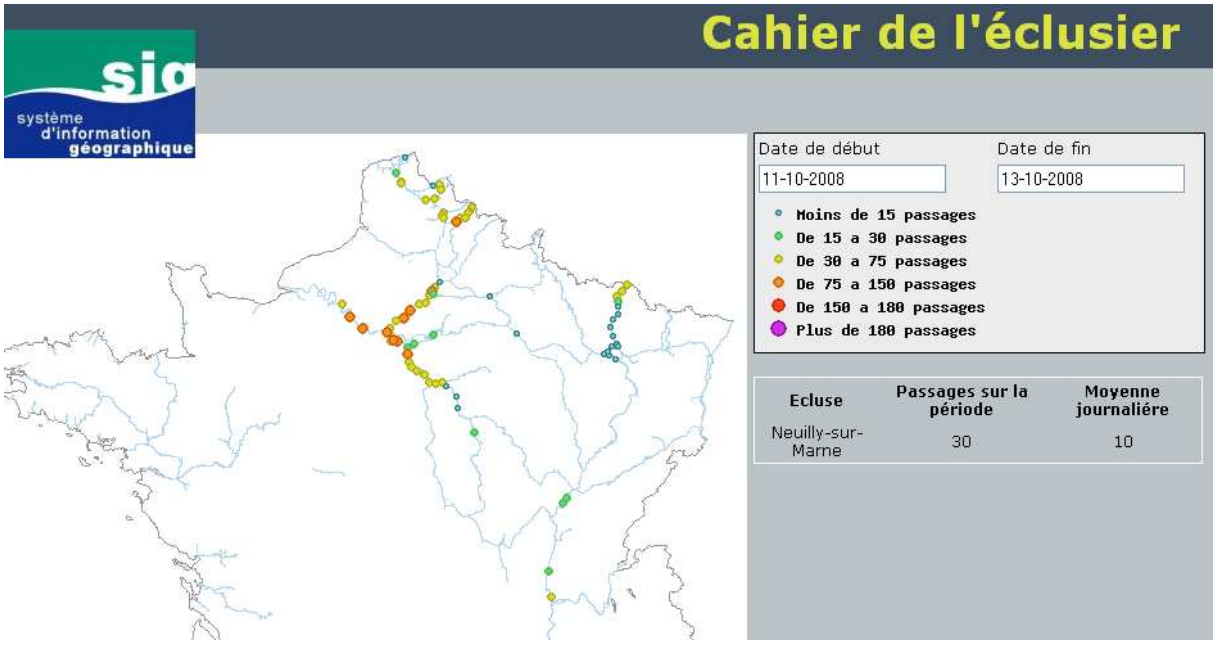


Figure 17: Example of lock statistics

The colours depend on the number of vessels in the area. Green stands for the less frequented areas, red for the most frequented areas.

The lock keeper software is also a great opportunity to harmonise data entry about vessels traffic on the high capacity network. The advantages are very important.

- Limiting the number of heterogeneous tools for the lock keepers
- Centralised collection of the data in a same database, allowing better analysis and possibility to develop common tools for every users of the network wherever they are.

4.4.4 Conclusion

Deployment of such an application was not easy at the beginning because the lock keepers were not aware about the use and the possible benefits of new technologies and systems. But after an adaptation period, the results became very interesting and the users had the feeling to be involved in the software development and were very reactive about its use. This point was a key in the process of a global implementation of the software all over the country.

Training of the lock keepers turned out to be a pre-condition for a successful pilot operation of the system. Several hundreds of lock keepers need to be trained, which required a high effort during the deployment of the system.

Also very important for the lock keepers was the deployment of an interface between the German software and the lock keeper software (described in SWP 2.1). Now on each part of the cross border, only one data entry is needed, the other side receives the information directly, the job becomes more efficient and more cooperative between the two countries.

The software is now able to be connected with other information systems, to send or integrate messages to announce vessels on each lock. Each lock of the network which is using the application is configurable to send information when a vessel is crossing the lock to other systems. This could also be done for upstream or downstream or both.

In the future steps, the software has to be deployed in the rest of the country on high capacity waterways. Moreover some tests will be done for an adapted version especially dedicated to small rivers where locks management is not the same as on big canal (personal not always on each lock).

The future evolutions of the software will concern:

- New itinerary calculation more efficient and with more constraints (NtS, locks planning,…) , under development
- Codification of the goods in HS instead of NST
- Integration of RIS index location codes

4.4.5 Acceptance Criteria

Tasks executed	Outcome	Availability
Elaborate tender specifications including all functions mentioned in the work plan	The tender concerning the lock keeper software is part of the global tender concerning evolution of IS application focused in part 5 of the tender	✓ In French At VNF Information system department tender called TMA 2006-2009 (Part of it called “lot 5”)
Tender the implementation considering national and international regulations	The contract was concluded for a 3 year period ,and started at the beginning of 2006 with the LOGICACMG company Every evolution or development is specified in a specific demand associated to invoices	✓ In French Contract signed at VNF
Monitor the implementation and execute acceptance tests	Acceptances tests and scenarios in specific report, every problems categorized and review with the bidder Meeting reports With the users With the bidder (technical and financial review)	✓ In French All reports stored in groove work spaces at VNF At information system department (“suivi Tma 2006 “ At DIEE/DME department (user reports)
Document results of the SWP according to the provisions in the work plan	Reports and SWP 1.3	✓
Report on feasibility study for exchange of information with other systems		✓

Table 5: Tasks performed by France in WP 1

4.5 SWP 1.5 Barge Identification Service

Responsible Member State: Austria

4.5.1 Main objective

Tracking and Tracing (T&T) solutions as AIS enable the provision of static and tactical traffic information of equipped vessels, which contributes not only to increased safety but also to enhanced efficiency of inland navigation. After this first step the logical consequence is to include information of non-motorised barges in order to be able to provide additional services to commercial and governmental users.

Therefore the main objectives of SWP 1.5 were:

- Elaborate the requirements of relevant actors involved in barge operation
- Conduct a feasibility study for a barge ID system.
- Elaborate and outline a possible pilot implementation for automatic identification of barges and forwarding of relevant barge information (position, convoy data, etc.) to the operator segment, based on the requirements of relevant actors within the Danube region.

A study (IDEAL) was conducted within the lead project “Innovative Inland Navigation” under the “I2 – Intelligent Infrastructure” program of the Austrian Federal Ministry of Transport, Innovation and Technology to elaborate detailed requirements for a barge ID system with respect to the user needs of users involved in barge operation. Existing fleet management systems (e.g. COPIT, ELWIS, BOATRACS, and FLOSYS) were analyzed to evaluate their suitability for barge ID. The existing systems were rated as not applicable.

As required in Directive 2005/44/EC AIS infrastructure is deployed on several rivers in the European Union. Therefore the use of already existing AIS infrastructure to transmit barge information is obvious. Electronic Reporting is the leading technology within the SSR-Corridor whereas AIS is dominant on the Danube River (e.g. in Slovakia and Austria). In a first step an integration of barge information via enhancement of AIS was focused, since AIS allows for continuous T&T of vessels.

4.5.2 Requirements for a barge information system

Requirements towards a barge identification service are made from the authorities and from logistics users. Authorities have a focus on T&T information of barges involved in navigational activities (e.g. to improve lock management), whereas logistics users (e.g. ports and terminals) also require information about moored barges e.g. to locate them for transhipment processes and for the calculation of demurrage fees.

In the table below main requirements for a barge information system are listed:

#	Keyword	Description
1	T&T availability coupled	The Barge T&T system shall provide continuous T&T of barges with high position accuracy and a high update rate when coupled to a push boat.
2	T&T availability uncoupled	The Barge T&T system shall provide barge position information while the barge is uncoupled.
3	Low costs	The expenses for the Barge T&T system shall be kept as low as possible. This includes development costs, implementation and setup costs as well as maintenance costs and costs for data transactions.
4	Long-life circle	The Barge T&T system hardware shall operate for long times without attendance of maintenance personnel.
5	Power supply	There shall be no need for frequent change of batteries of the T&T device.
6	Usability	The system software shall be easy to use by skippers without special training. Input of data shall be carried out by the shipmaster on board the push boat but not on the barge.

7	System scope	The Barge T&T system shall be applicable to the entire inland navigation fleet as far as possible. The system shall not be restricted by administrative or system inherent barriers.
8	International scope	The Barge T&T system shall provide all authenticated users (e.g. fleet operators, logistical users) with most recent Barge T&T information on request, while the barges are travelling inland and abroad.
9	Durability	The Barge T&T system equipment shall be mounted in a secured means to prevent damage by cargo during transhipment activities.
10	Anti-theft protection	No costly equipment shall be mounted on the barge to prevent it from being stolen.
11	Enhancement of RIS core technologies	The Barge T&T system shall be in line with existing RIS standards, guidelines and technologies, in particular with [EC/414/2007] and [EC/415/2007] of the European Parliament. The Barge T&T system shall easily be integrated into existing RIS implementations.
12	Automatic identification	Barges shall be registered automatically at certain locations (e.g. locks, ports) and at push boats they are coupled to.

Table 6: Requirements for a Barge Information System

4.5.3 Outline of a possible pilot implementation

The barge identification service shall be developed and installed in two phases. In the first phase mainly the demands of the authorities are met, in the second phase the system shall be further developed to meet the demands of logistics users.

4.5.3.1 System proposal phase 1

The high demand for sufficient anti-theft protection, long-life circle and the power supply limitations on the barge called for a solution that is installed on motorized vessels only. Therefore, the focus of the new Barge T&T system in the first phase is on the coupled state without barge device. The system shall use the existing AIS infrastructure and shall not require additional expensive hardware on shore or maintenance intensive hardware onboard the barge. Barge information shall be integrated into the AIS transponder of the push boat.

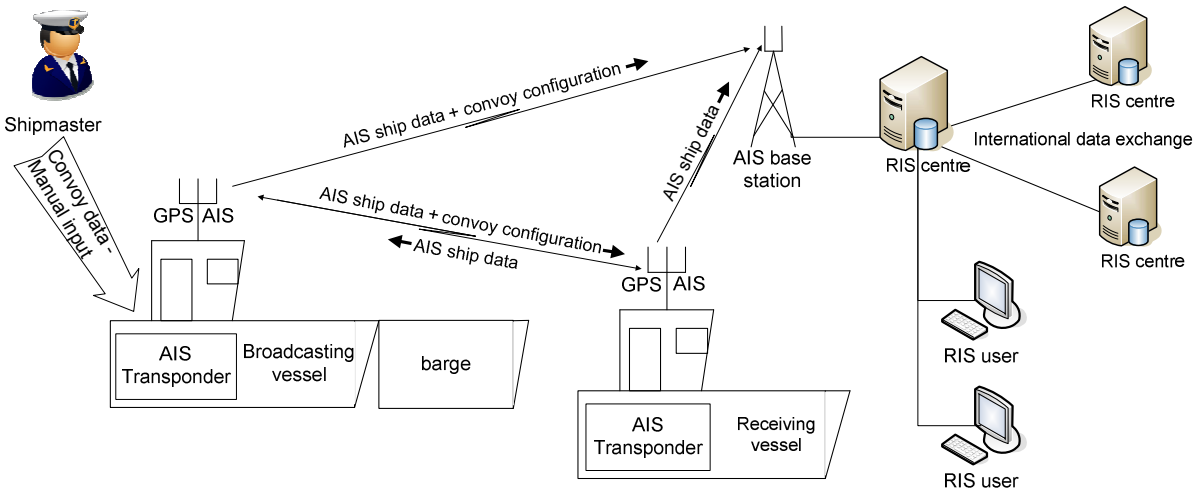


Figure 18: System proposal for Barge Tracking and Tracing

The onboard AIS transponder of the push boat is used to transmit barge information by means of a new AIS message, whereas the barge position derives from the push boats' position report. The shipmaster registers all elements of the convoy on the on-board computer using an as much as

possible simplified application. The new defined AIS message containing the barge and convoy data is received by all AIS transponders and AIS base stations in VHF range and is stored at the local RIS centre. The data can be queried by authenticated users and be interpreted by external applications providing customised services to relevant stakeholders.

Structure of the new AIS convoy message

The Inland AIS standard [EC/415/2007] shall be enhanced by a new defined binary broadcast message 8 “AIS convoy message”.

As an example the message for a convoy comprising three barges occupies one AIS time slot. The length and structure of the convoy message is adapted to the convoy size. The convoy message can occupy a maximum of two consecutive time slots; for very large convoys the convoy data is split to up to eight message parts transmitted time shifted. The relevant barge data is provided by the on-board barge application and transmitted in the following data fields:

Parameter	Description
Convoy Code	The convoy code contains information about the amount of barges coupled in the convoy, the type of push boat and the arrangement of the barges within the convoy.
Part number	The part number assures the correct attribution of the message part sent to the whole convoy message and therefore ensures the correct allocation of barge positions within the convoy.
ENI	Barges are identified by their Unique European Vessel Identification Number (ENI).
Load condition	The load condition is of relevance for e.g. lock operators

Table 7: Example of AIS convoy message related parameters

To show how convoy information is displayed in the barge ID system, an example for a convoy consisting of tree barges can be found below. The elements and the content of the elements are described in the column on the right hand side.

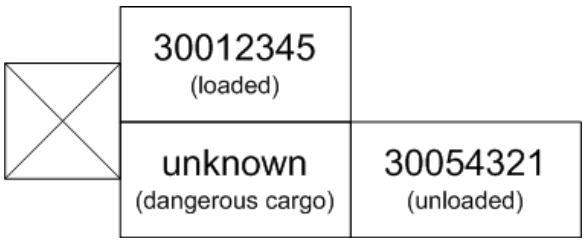
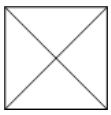
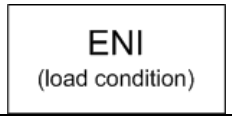
Convoy shape	Elements	
		Push boat
		Barge

Table 8: Example of a Convoy shape to be displayed by the barge ID system

Information provided by the barge ID system:

The following table gives an overview of available barge information and the source of this information

Information	Parameter	Description	Source
Barge identification	ENI	For T&T of objects, a unique ID is needed. Barges are identified by their Unique European Vessel Identification Number (ENI).	1
Convoy position	Longitude	Longitude of the convoy position	2
	Latitude	Latitude of the convoy position	2
Convoy formation	Convoy code	Number of barges in the convoy, arrangement of barges in the convoy	1
Barge position within the convoy	Barge position in convoy	The barge position within the convoy derives from the convoy message.	3
Barge load condition	Load condition	Load condition of the barge	1
Type	Type of craft	Type of Craft according to ([2006/87/EC] Article 1.01)	4
Length	Length over all	Length of the barge according to ([2006/87/EC] Article 1.01 Section 70)	4
Breadth	Breadth over all	Width of the barge according to ([2006/87/EC] Article 1.01 Section 73)	4
Deadweight	Deadweight	Deadweight capacity of the barge according to ([2006/87/EC] Annex VI, 11th Column)	4
Draught	Draught	Draught according to ([2006/87/EC] Article 1.01 Section 76)	4
Operator	Operator	Operator of the barge	4
Name	Name of vessel	Barge name according to ([2006/87/EC] Annex V, Part 1, Section 1)	4

Table 9: Information provided by the barge ID system

Data source	
1	Data is provided by the Inland AIS convoy message
2	Longitude and latitude of the convoy derive from the push boats position report (AIS messages 1, 2 and 3)
3	The position of the ENI within the convoy message implies the position of the barge within the convoy.
4	Data is provided by minimum hull database available at the competent RIS Centre. The ENI is used to identify the barge and therefore the minimum hull dataset within the database.

Table 10: Data source for the information provided by the barge ID system

4.5.3.2 System proposal phase 2

Based on the experience gained in phase one the barge T&T system shall be enhanced to eliminate the system drawbacks. Information provided by other systems such as Electronic Reporting shall be integrated into the Barge Information System to increase the value of the service for logistics users (e.g. coupling with cargo and voyage information).

To eliminate the shortcoming of no-availability of position information when a barge is not coupled to a motorized vessel broadcasting the AIS convoy message, a GPS/GPRS tracking box may be installed aboard the barge providing position information in addition to the AIS convoy message. Such position information could be sent rarely (e.g. only once a day) by this tracking box to extend the battery life to a few years in an ideal case. Phase 2 has to be evaluated in detail in the future, whereas independent from the technology, the Inland AIS convoy message definition should be applied.

4.5.3.3 Conclusions and recommendations on European level

The concept for system phase one shall be proofed in a pilot implementation.

The following tasks have to be performed:

- Development of the on-board Barge T&T software application interfacing to a common AIS mobile station
- Discussion of the AIS convoy message in the T&T expert group for Inland AIS to be included into the Inland AIS standard if the RIS committee approves.
- Broadcasting of AIS convoy configuration test messages by AIS mobile stations
- Receiving and processing of AIS convoy configuration messages at the RIS centre

Optional tasks for the enhancement of the pilot:

- Proceedings with the producers of ECDIS viewers to interpret and display convoy information in ECDIS viewers
- Provision of convoy information to relevant RIS users
- Definition of value added services for RIS users

4.5.4 Acceptance Criteria

Executed tasks		Outcome
1	Definition of the user needs on barge identification and information provision	IDEAL study / Deliverable SWP 1.5
2	Evaluation of best practise in Europe concerning barge identification in inland navigation	IDEAL study
3	Elaboration of a pilot service for barge identification in inland navigation	Deliverable SWP 1.5
4	Documentation of results of the SWP according to the provisions in the work plan	Deliverable SWP 1.5

Table 11: Tasks performed within SWP 1.5

4.6 SWP 1.6 RIS Equipment Program in Slovakia

Responsible Member State: Slovakia

4.6.1 Introduction

The RIS Directive 2005/44/EC represents the general framework for the implementation of the RIS concept in Slovakia, at European level, in order to achieve effective interaction between different information services on waterways. The Directive 2005/44/EC on River Information Services has been transposed into the national legislation by the Act No. 179/2008 Coll. as amending the Act No. 338/2000 Coll. on Inland Navigation.

4.6.2 State of the Art

In the Slovak Republic there are about 10 providers of water transport and administrations which operate more than 120 vessels. Some of these vessels were equipped with ship borne Inland AIS transponders in the frame of different projects and programmes.

Totally 10 vessels of the Slovak administration (SPS – State Navigation Administration, SVP – Slovak Water Management Enterprise) have been equipped for test purposes within the COMPRIS project and the IRIS Europe project by ship borne transponders. It was agreed that the referred vessel operators can continue using the installed equipment after the projects are finished.

Most of the Slovak fleet (there are altogether 44 companies licensed for national and international inland waterway transport, as from January 2008) was equipped within the Austrian Transponder Equipment Programme, which was finished by the end 2007.

In the course of the IRIS Europe project, the statistical analysis of ship borne AIS equipment needs for the Slovak fleet was carried out. The results of the analysis are displayed in the table.

Kinds of vessels	No. of vessels	Remark
Commercial / administration vessels (already equipped, December 2007)	46	
Commercial vessels (to be equipped in the 1st phase)	10	Rest of Slovak fleet (commercial vessels) of the main 2-3 companies
Administration vessels (to be equipped 1st Phase)	14	Ships from state enterprise used for maintenance and own purposes. Ships navigate on waterway VIa and higher, it means Danube.
Administration vessels (to be equipped in 2nd Phase)	23	Mainly technical ships on Danube waterway and other waterways in Slovakia
Total	**93**	
Total number of self propelled ships registered in Slovakia, December 2007	127	Waterway V and higher

Table 12: Number of vessels equipped with an AIS Transponder

4.6.3 Conclusions

Work done in several projects concerning RIS and positive reactions from stakeholders showed that carrying AIS equipment on board the inland waterway ships and utilisation of tracking and tracing brings advantages.

The performance and functionalities of system providing river information services, in particular position information, are limited by ships navigating without being equipped with AIS transponder.

Furthermore, from the safety point of view, it is important to equip not only ships navigating internationally but all vessels, including technical, maintenance and measuring ships. The result of analysis showed that there is need of about 50 transponders to have a well covered Slovak fleet.

Other problem is represented by foreign ships navigating on the Slovak part of the Danube waterway without AIS transponders. To arrange portable AIS equipment and its mounting will need organisational effort from competent authorities in Slovakia and coordination with neighbouring countries.

Acceptance criteria:

Task to be executed		Outcome	Availability
1	Slovak subsidy program, which is approved by the ministry of transport	Documentation	Language: SK Available at MDPT SR.
2	Document results	Report on SWP1.6	Language: SK Available at MDPT SR.

Table 13: Tasks performed by Slovakia within SWP 1.6

4.7 SWP 1.6 RIS Equipment Program in Hungary

Responsible Member State: Hungary

During the roll out of RIS in Austria, it was identified that River Information Services can be only effectively deployed, if a sufficient number of fairway users are making use of these services and share information, so if a high number of vessels are equipped with inland AIS transponders. For this reason, SWP 1.6 has delivered a subsidy programme concept for RIS equipment for Hungary. This subsidy programme has been elaborated in close national (with the ministry of transport and the RIS Authority) and international cooperation in order to ensure a rapid introduction of RIS for the fairway users.

Research

In close cooperation with the ministry of transport RSOE analysed the status of equipment of the Hungarian registered commercial vessels in order to be able to determine the necessary investment. An online questionnaire containing 30 questions regarding the available number of vessels, their equipment and their regular route has been elaborated by RSOE. The questionnaire was sent out to all available Hungarian companies possessing a navigation permit on 21st April, 2008 via email. 11 filled and valuable questionnaires have been sent back to RSOE that has elaborated the necessary report based on these data.

The result showed that only 50% of the Hungarian shipping companies possess at least one vessel that has a unique ENI number and/or which is equipped with AIS transponder, and there is only one organisation the fleet of which is totally equipped. Moreover it can be stated that the technical background of the vessels is quite week, there is no internet connection and GPS antenna on the board of the majority. Although there is only one company that has an important technical novelty regarding the RIS system: an ECDIS viewer, their on-shore offices are well equipped: all of them possess at least one computer with internet connection.

The questionnaire highlights the need of precise and detailed information of the stakeholders, because only 70% of them are willing to exchange traffic information (AIS data), cargo and voyage information (ERI data) and hull data, which is essential for the proper functioning of the RIS.

The answers for the last question indicate that although all of the respondents are interested in participating in the subsidy program, the majority can not invest own funds at all or not more than 1000 €.

The Austrian equipment program

In 2006 via donau started a programme for the provision of inland AIS transponders to the fairway users. Fairway users, which cruise on the Austrian Danube at a regular basis, can apply to obtain a transponder from the fairway authority for very favourable conditions. By means of this, a high percentage of the commercial vessels, which sail on the Austrian Danube have been equipped with inland AIS transponders and this way have access to the basic RIS Services. After the introduction phase, the Austrian Ministry of Transport, Innovation and Technology made the carriage of inland AIS transponders mandatory.

The Hungarian subsidy program

RSOE reconciled with via donau plans to follow this successful process, the subsidy programme developed under SWP 1.6 is going to be similar to the Austrian approach:

- A vessel, in order to get a loaned transponder, has to prove with documents that the vessels in question travel on the Hungarian Danube on a regular basis. Regular travel is defined on one hand as the vessel entered Hungary at the rkm 1811 and/or 1433 at least 10 times a year. On the other hand the vessel has to be operated on the Hungarian Danube-stretch (between rkm 1811 and 1433). Vessels include the following: crafts of length of 20 metres or more navigating on fairways with RIS services.
- The transponder will remain the property of the RIS provider and will be made available to the user for a period of three years subject to retention of a security deposit. The user can return the transponder to the RIS provider at any time before the expiration of the loan period without having to state any reasons. The RIS provider will be entitled to terminate the contractual relationship at any time for important reason and demand that the transponder be returned.
- When the agreed loan period expires the User may keep the transponder against a token payment and assumption of the obligation to dispose the Transponder.
- It will be necessary to apply for an MMSI number from the competent national telecommunications authority for the AIS transponder. The MMSI number must be issued before the transponder can be installed on board the vessel, as it may not be activated otherwise.
- The AIS transponder needs a power supply of 24V DC and is directly connected to the electricity network on board. Furthermore a VHF antenna and a GPS antenna have to be connected to the transponder. If the vessel is already provided with a computer and a proper ECDIS Viewer Software the transponder can be connected to it.
- The transponder can be installed only by the RIS provider or a company recommended by the RIS provider at the User's request, which will state the MMSI number, and after the receipt of the agreed security deposit at an installation site on the Hungarian Danube.
- The maintenance of the transponder can exclusively be executed by the RIS provider or a company recommended by the RIS provider. Since for these types of equipment the manufacturers generally furnish one year guarantee, and the program lasts for 3 years, it is advised to clarify the questions about the guarantee and warranty in the framework of the receivable public procurement procedure and to inform the Users properly about it.
- It will be prohibited for the User to install or uninstall the transponder or to make any changes of or to it. If the transponder has to be uninstalled the RIS provider has to be provably informed thereof.
- The user will be obliged to turn on the transponder during cruises on the Hungarian Danube as well as when standing in ports or at shore stations and it is prohibited for the User to change the following data, which has been programmed in the course of installation, and review the same on a regular basis (MMSI Number, ENI Number, Call sign, Name of vessel, Type of vessel, Dimensions).

In the framework of the future programs and projects the acquisition of 300 pieces of transponder is recommended. Continuous coordination with partner institutions from the Danube Region is of outmost importance.

Acceptance criteria:

Task		Outcome	Result
1	Hungarian subsidy programme, which is approved by the ministry of transport	Documentation	✓ - Available at RSOE, accepted by MoET
2	Document results of the SWP according to the provisions in the work plan	Reports on SWP1.6	✓

Table 14: Tasks performed by Hungary within SWP 1.6

5 WP 2 – Cross Border e-government Services

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands, France

5.1 WP 2 Introduction, Summary and Description of Task Forces

5.1.1 Main objectives and expected outcome of WP 2

The main objective of WP 2 was to set up an electronic ship reporting and a hull data management pilot infrastructure as well as the specification and pilot implementation of international RIS data exchange.

The expected outcomes of WP 2 were:

- Implemented electronic reporting pilot infrastructure to receive, process, transmit, store and archive information about voyages and cargo in AT, SK, HU, FR
- Implemented pilot installation of national Hull data management infrastructure to store and maintain national vessel certification data in AT, SK, HU, NL
- Elaborated procedures and legislation and defined systems for cross-border data exchange
- Implemented cross-border pilot data exchange of cargo and voyage related data as well as of the minimum set of vessel Hull data among AT, SK, HU, NL

5.1.2 Work approach

- The organisations in charge of implementing the project in their countries, were responsible for the national implementation of the systems and infrastructures within WP 2 according to available relevant Standards and Directives
- Technical provisions for the implementation of the national electronic reporting infrastructures as well as for the implementation of the national Hull data management infrastructures were available and used as basis for specifying the related systems
- Technical and legal provisions for the international data exchange on a common European level did not exist at the beginning of the project. In order to guarantee that the national infrastructures for international data exchange are compatible with each other and able to exchange data appropriately, the technical specifications and the legal framework had to be defined and agreed among the participating countries. Therefore the technical and legal foundation was elaborated within several task forces:

    1. **Technical task force for international data exchange**; main objectives:
        - Elaboration of the technical specifications (technical system concept, processes, messages, access rights mechanisms, etc.) for the interface among RIS Centres, the so-called RIS Data Exchange Reference Documentation (R2D2)
        - Maintenance of the R2D2 based on change requests and requests for information brought in by participating organisations based on the experiences within pilot implementation and testing
        - Elaboration of detailed test plan and all necessary information (test cases, test data, etc.) for detailed testing of the interconnection of the national data exchange pilot systems and execution of the interconnection tests in several steps based on the test plan
        - Members of this task force are representatives of the following countries:
            - Austria, Slovakia, Hungary, the Netherlands (implementing partners)
            - Croatia (implementing cooperation partner)
            - Romania, Belgium, France (observing partner)
            - Germany (observing cooperation partner)

- Meetings: The task force had common meetings every 2-3 months, depending on the progress of the implementation of the international data exchange

2. **Legal task force for international data exchange**; main objectives:
   - Elaboration of a Technical and Administrative Agreement (TAA), which is to be concluded among the IRIS Europe Member States implementing the international data exchange based on the R2D2
   - The TAA forms the legal basis for the operational exchange of real RIS data, thus an agreement on the TAA has to be reached among the related IRIS Europe Member States
   - Therefore, the final task of this task force is to have the TAA signed by the related national authorities
   - Members of this task force are representatives of the following countries:
     - Austria, Slovakia, Hungary, the Netherlands, Belgium, France, Croatia

3. Logistics task force; main objectives:
   - Integration of logistics users represented by the European branch organisations of Inland shipping into the definition of the rules and access rights for the international exchange of RIS data
   - Elaboration and provision of the rules and access rights table regarding the international exchange of data between skippers/shippers and other non-governmental or non-public parties involved in inland shipping
   - Members of this task force are representatives of the following organisations:
     - European Barge Union
     - European Skippers Organization
     - European Shippers' Council
     - European Community Association of Ship Brokers and Agents
     - European Association for Forwarding, Transport, Logistic and Customs Services
     - Federation of European Private Ports Operators
     - Bureau Telematica Binnenvaart

4. **Evaluation task force;** main objectives:
   - Critical review of the discussions and the documentation, change requests elaborated by the technical task force for international Data Exchange
   - Evaluation of the RIS Data Exchange Reference Documentation (R2D2)
     - Evaluation of the implemented data exchange based on R2D2 based on the detailed test results provided by the technical task force for international data exchange after the execution and documentation of the interconnection tests
     - Identification of open issues and potential improvements of international RIS data exchange
     - Elaboration of recommendations for further implementation
   - Members of this task force are representatives of the following countries:
     - The Netherlands, Austria, Slovakia, Hungary (implementing partners)
     - Croatia (implementing cooperation partner)
     - Romania, Belgium, France (observing partner)
     - Germany (observing cooperation partner)

5.1.3 Results of WP 2 / Electronic Reporting

An electronic reporting pilot infrastructure was specified, implemented and successfully tested in Austria, Slovakia, Hungary and France as the table below illustrates:

Main activities in WP 2 related to electronic reporting	SK	HU	AT	FR
System (tender) specifications based on national requirements and defined procedures	√	√	√	n.a.
Pilot implementation of the system according to the specifications including testing	√	√	√	√

Table 15: Electronic Reporting related activities performed in WP 2

The applicable existing Standards and Directives for the implementation of electronic reporting infrastructure are:

- Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the Community
- Draft COMMISSION REGULATION concerning the technical specifications for electronic ship reporting in inland navigation referred to in Article 5 of Directive 2005/44/EC on harmonised river information services (RIS) on inland waterways in the Community. The Draft Commission Decision describes the electronic key Message for sending cargo and voyage data (ERINOT Message) and the acknowledgement of the proper receipt of the Message (ERIRSP Message), as well as the codification of the locations codes, ship types, etc. The Message format of the ERINOT and ERIRSP Message is defined out in the 'Standard for Electronic Ship Reporting in Inland Navigation' (version 1.2, 19.10.2006) from the CCNR.
- Standard for Electronic Ship Reporting in Inland Navigation
- ERI Guide version 2.0, that provides a
    - General introduction and functional description of electronic reporting (part I)
    - Guidance for the protection of data and Code of Conduct for Electronic Reporting (part II)
    - Message Implementation manual Conventions, containing the technical specifications of the message standards (part III)
    - Codes and References (part IV)

Skippers and Fleet Managers have now, as a result of IRIS Europe, the possibility to create and provide cargo and voyage information electronically to the related national authorities of Austria, Slovakia and Hungary. This can be done either via the electronic reporting client application BICS and the implemented interface to the national systems or directly via the Graphical Web User Interface of the national systems.

Details about the implementation of the electronic reporting infrastructure in the respective countries are contained in the following subchapters related to SWP 2.1, SWP 2.2, SWP 2.3 and SWP 2.4.

5.1.4 Results of WP 2 / National Hull Data Management Infrastructure

A Hull data management infrastructure was specified, implemented and successfully tested in Austria, Slovakia, Hungary and the Netherlands as the table below illustrates:

Main activities in WP 2 related to Hull data management infrastructure	SK	HU	AT	NL
System (tender) specifications based on national requirements and defined procedures	√	√	√	√
Implementation of the system according to the specifications including testing	√	√	√	√

Table 16: Hull Data Management related activities performed in WP 2

The applicable existing Standards and Directives for the implementation of Hull data management infrastructure are:

- Directive 2006/87/EC of the European Parliament and the Council of 12 December 2006 laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC
- Directive 2006/137/EC of the European Parliament and the Council of 18 December 2006 amending Directive 2006/87/EC laying down technical requirements for inland waterway vessels and repealing Council Directive 82/714/EEC
- Amendment proposal of the Joint Working Group (JWG) for the requirements of Annex II – Appendix IV of the Directive 2006/87/EC, containing the prescriptions on the Unique European Vessel Identification Number (ENI) – in specific the data necessary for the Identification of a Vessel (= Minimum Set of Hull Data). Document JWG (06) 17 rev 3
- Draft COMMISSION REGULATION concerning the technical specifications for electronic ship reporting in inland navigation referred to in Article 5 of Directive 2005/44/EC on harmonised river information services (RIS) on inland waterways in the Community - Part II: Codes and references (including reference to ENI, Minimum Set of Hull Data, Vessel and Convoy Types)
- Minimum set of Hull Data XML Scheme Definition (XSD) in version 1.0 or higher, elaborated by the ERI Expert Group on European Hull Database (for the international data exchange in IRIS Europe it was agreed to use the version 0.8 of the Minimum Set of Hull Data)

By the implementation of the national Hull data management infrastructures, Austria, Slovakia, Hungary and the Netherlands fulfilled the requirements out of Directive 2006/87/EC and its amendment 2006/137/EC. Related national authorities are the main users and manage their national vessel certification data according to the Directive. As required by Directive 2005/44/EC a subset of the national Hull data, the so called Minimum Hull Data Set, is exchanged via the international RIS data exchange infrastructure among the participating countries.

The ERI workgroup on Hull data and Unique ID defined this minimum set of vessel (hull) data, which is subject for international data exchange among entitled stakeholders. The definition for the minimum set of vessel data will be included as an annex to the Technical Directive of the EU (2006/87 rev.).

Details abut the implementation of the national Hull data management infrastructures in the respective countries are contained in the following subchapters related to SWP 2.6.

5.1.5 Results of WP 2 / International RIS Data Exchange

The international exchange of RIS data (AIS, ERI, and Hull data) was specified in detail by the technical task force for international data exchange (see description within “work approach” above). Participants from Austria, Slovakia, Hungary, the Netherlands, Belgium, Croatia (cooperation partner) and Romania (cooperation partner) actively contributed to the elaboration and continuous improvement of the so called “RIS Data Exchange Reference Documentation” (R2D2). Based on the

specifications, the national infrastructures for the international data exchange was pilot implemented and tested in Austria, Slovakia, Hungary, Croatia (as cooperation partner) and the Netherlands as the table below illustrates:

Main activities in WP 2 related to international RIS data exchange	SK	HU	AT	NL	HR (cooperation partner)
System (tender) specifications based on national and international requirements and defined procedures	√	√	√	√	√
Legal basis for the international exchange of RIS data	√	√	√	√	X
Implementation of the system according to the specifications including testing	√	√	√	√	√

Table 17: Data exchange main activities performed in WP 2

As operational information in the Seine-Scheldt-Rhine countries is exchanged internationally since few years between the authorities, the Netherlands established the so called IRIS Europe layer as linking element between the already operational systems in the SSR countries and the IRIS Europe pilot implementations in Austria, Slovakia, Hungary and Croatia.

Details concerning the legal basis for the international RIS data exchange are provided in chapter 5.11 RIS Data Exchange – Legal Level and chapter 5.12 – Simplified TAA.

The applicable existing Standards and Directives for the implementation of international RIS data exchange are:

- Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the Community
- IRIS Europe project standard for the international exchange of RIS data, the so-called RIS Data Exchange Reference Documentation (see chapter 5.13 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – common European approach))
- Other Directives and Standards related to the data to be exchanged and infrastructure to be interfaced (AIS, ERI, Hull)

Based on predefined access rights on a user-role basis, national users of the respective countries can request data of vessels navigating in other countries as well. Furthermore, the exchange of the Minimum Hull Data Sets out of the national Hull data bases is implemented within the international RIS data exchange. In addition to this, relevant electronic reports that are received from Skippers / Fleet Managers can be notified to neighbouring countries and relevant authorities in order that the reporting party doesn't have to report again and again when crossing a border.

Details abut the implementation of the international RIS data exchange in the respective countries are contained in the following subchapters related to SWP 1.4, SWP 2.5 and SWP 2.7.

5.2 SWP 2.1 Pilot Development and Implementation in Slovakia

Responsible Member State: Slovakia

5.2.1 Main objectives of SWP 2.1 in Slovakia

The main objective of SWP 2.1 in Slovakia was to prepare the technical solution in Slovakia and to set up the electronic ship reporting pilot infrastructure in line with national and international requirements.

The setting up of the pilot infrastructure and the pilot implementation covered following issues:

- System specification in line with the electronic ship reporting in inland navigation standard and RIS directive 2005/44/EC regarding the voyage and cargo reporting (incl. requirements, use cases based on the national and international requirements)
- Design and development (incl. data model, prototyping and development based on the system specification)
- Monitoring of the pilot implementation and testing
- Pilot deployment (incl. integration of users by means of the proper authentication and authorisation mechanism)

5.2.2 Legal requirements

Based on the national legislation the vessels sailing on the Slovak stretch of the Danube (class VIb from rkm 1880,2-1867,0 and class VII from rkm 1867,0 to 1780,2) are obliged to report at captaincies providing voyage and cargo data (Decree of the MDPT SR on the Rules concerning safety of vessel operation on the inland waterways in the Slovak Republic).

Since the new amendment of the national legislation the skipper or fleet manager submits the reports from the vessel about the vessel, vessel combination, cargo, crew and passengers. These reports are provided in electronic form and shall be transmitted to the competent authorities of the neighbouring state (see the Act No. 179/2008 Coll. as amending the Act No. 338/2000 Coll. on Inland Navigation, which transposes the RIS Directive 2005/44/EC).

RIS Directive 2005/44/EC defines requirement to set up RIS in the member states, i.e. provide electronic reporting infrastructure able to receive electronic ship reports of the required data from ship and transmit them to the competent authorities of the neighbouring state, and this before arrival of the vessel at the border.

Within the project IRIS Europe implementation following regulations (adopted or in adoption process) are addressed:

- Electronic ship reporting (technical guidelines are under adoption process)
- Directive 2006/87/EC laying down technical requirements for inland waterway vessels regarding the use of the Minimal hull data set
- Commission regulation No. 415/2007 concerning the technical specifications for vessel tracking and tracing systems

5.2.3 Components and functionalities of the electronic ship reporting infrastructure in Slovakia

Design and development has been carried out based on the system specification, functional and non-functional requirements elaborated during the system specification phase taking into account the respective standard for electronic ship reporting (see previous general chapter on WP2). The focus was on pilot implementation and testing of the voyage and cargo related data (ERINOT message) and the appropriate response (ERIRSP).

The following main functionalities of the electronic ship reporting are covered by the Slovak pilot implementation:

- Generate, modify and submit electronic reports making use of national web based interface (national infrastructure)

- Receive and process electronic reports (e.g. BICS application, other RIS Centres, etc.), store and archive electronic reports and generate acknowledgement on the reports received (and send them to Senders)
- Exchange electronic reports based on agreed specification for international RIS Data Exchange with other RIS Centres (for details see chapters 5.10 - 5.15)
- Retrieve and view electronic reports for different users based on their access rights, in line with the data protection rules and national / international legislations,
- Administration part for administering of users, roles and access rights, the reference data (create, update, delete), or application settings, etc.
- Logging of events, etc.

There are different data sources for the voyage and cargo related messages (ERINOT message):

- Interface to the BICS application
- Web based entry form for voyage and cargo related message
- Messages received from other RIS Centres within international data exchange (for details see chapters 5.10 - 5.15).

All electronic reports (generated, received, processed) are stored in the relational database (PostgreSQL database system).

Interface to the BICS application:

BICS application is a third party software, which enables users to generate, modify and send the ERI messages (incl. voyage and cargo message ERINOT) to a receiving system in the EDIFACT format. BICS application is already used by many IWT stakeholders, thus an interface to ensure communication with this application was required.

BICS interface enables the BICS users to send messages (ERINOT) to the Slovak national reporting system (Slovak RIS Centre). To ensure the receiving of messages generated by BICS and sending messages to the BICS users the following components were set up:

- Mail server – providing the email functionality

  The national mail server is available on two failover servers ensuring the system backup and availability. The SMTP-mail server receives messages. After the message is received correctly, the message is stored on the server and after a configurable time the next process picks up the message for further processing. In order to ensure the communication the port 465 was opened. This port is used for the secure communication between the BICS application and the RIS centre. SMTP server uses a client's credentials, in particular user name and password (for authentication and authorisation) to determine whether it is eligible to relay email.

  The dedicated mailbox is regularly checked for new messages. The new message is withdrawn, specified parameters are checked and the format is verified, message converted and stored in in the database tables. If user requests the acknowledgement, the ERIRSP message in XML format is sent to the EDI mailbox (RWS mail server) or other mailbox of the sender of the message.

- Conversion module for messages in EDIFACT format to XML format

  Having received the message from BICS, checked the parameters and format, the conversion from the EDIFACT format (original format of messages from BICS) to XML format (format used in the national pilot implementation) making use of conversion module (*Symphonia environment with the message mapper*) is done and the data is stored.

Web based interface:

The web based interface provides all necessary functions for authorised users to interact with the system. Web-based user interface accepts input and provides output by generating web pages which

are transmitted via the Internet and viewed by the user using a web browser program. The Slovak pilot implementation utilizes Java to provide real-time control in a separate program. Graphical user interface has been proposed to comply with requirements of the human-machine interface.

Users have restricted access to implemented functions, depending on their role and assigned access rights. The web based interface provides, next to others, specific functions enabling authorised users to manually enter voyage and cargo related data into the system and to receive / retrieve this data from the system. Only the user in the role Fleet operator is allowed to create / modify / cancel the voyage and cargo related message (ERINOT).

Fleet operators can create the voyage and cargo related message (ERINOT) when following prerequisites are fulfilled:

- The User is registered in the SlovRIS system. The administrator registers the user in the system and provides the user necessary UserId = SenderId and other credentials.
- The Vessel for which the ERI report is generated is available in the Vessel Index (register of all vessels of countries participating in RIS data exchange) and has ENI / IMO number.
- First reporting point for the respective voyage and the receiving system is SlovRIS system.

The user in the role Fleet operator can carry out following operations with regard to the electronic ship reporting:

- View own vessels with hull details (minimal hull data set)
- Management of access rights for third parties to vessel view data
- Management of electronic ship reports, incl. edit, publish (new), modify (update already published), cancel electronic reports
- View own electronic ship reports
- Search for the data *(based on search criteria defined for international data exchange)*

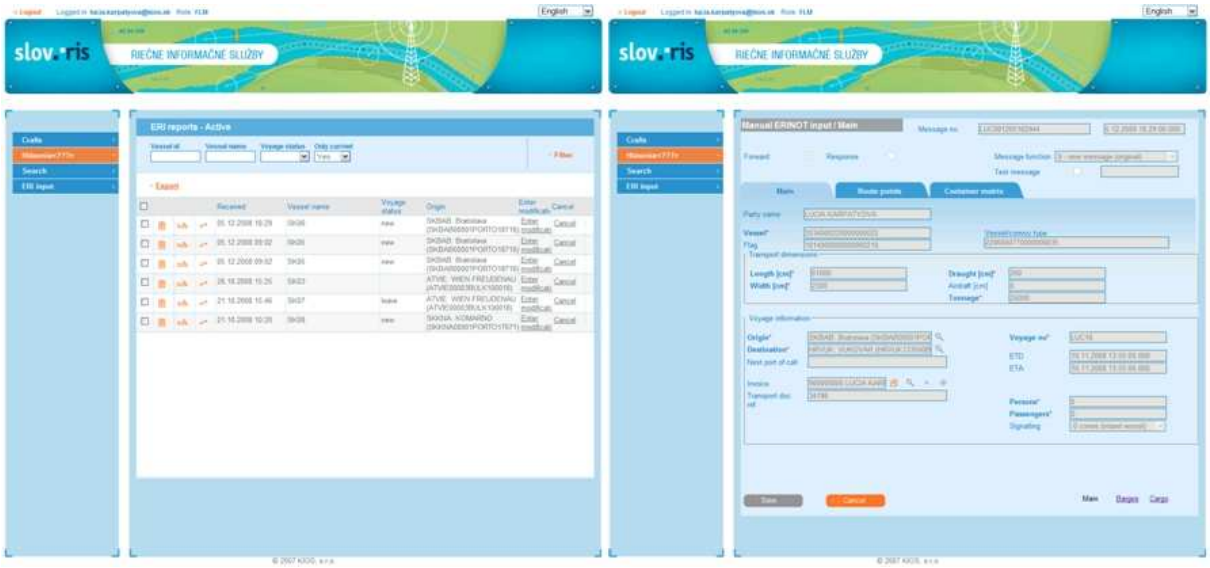


Figure 19: Screenshots from the web interface for electronic ship reports

5.2.4 Monitoring of the pilot implementation and testing

In the course of the implementation of the national electronic ship reporting the clarification rounds with the development team, international standardisation expert groups and national competent authority were carried out. The important clarification with regard to the ERINOT and ERIRSP message and the graphical user interface took place within the BICS / ERI workshop.

The implementation was verified by series of tests. Based on the system specification, in particular requirements and the use cases, a set of test cases has been prepared for testing the implementation of national electronic reporting infrastructure. Tests have been executed by internal consultant and

testers. The error tickets, bugs and change requests were administered and maintained within the web-based bugtracking system called Mantis.

Furthermore, the tests covering the international RIS data exchange have been defined and executed on two interconnection workshops (for details see chapter 5.10).

The tests proved the functionalities of the system as defined within the system specification and requirements analysis.

5.2.5 Pilot deployment

The electronic ship reporting infrastructure is deployed on two servers, which operate in failover cluster (high availability cluster), located in the Slovak National RIS Centre in the premises of the State Navigation Administration. High availability clustering (failover cluster) remedies unavailability of system due to failure of system component by detecting hardware/software faults, and immediately restarting the application on another system without requiring administrative intervention. This installation serves as the pilot environment.

Another installation for purposes of new developments and training of the users (mainly administrators and other users appointed by the State Navigation Administration, administering the system for electronic reporting and the international data exchange) is installed on servers located in the premises of the implementing organisation.

Integration of users was done by implementing the role and their access rights mechanism, as well as the modern authentication / authorisation mechanisms. This includes mainly Skippers / Fleet Managers providing the electronic reports and governmental stakeholders, in particular authorities allowed to receive the electronic reports.

5.3 SWP 2.2 Pilot Development and Implementation in Hungary

Responsible Member State: Hungary

The main objective of this SWP was to provide the technical foundation in terms of infrastructure and services for efficient electronic reporting in Hungary according to the RIS Standard for 'electronic ship reporting in inland navigation' (version adopted by the RIS Committee), fulfilling the requirements out of the RIS Directive 2005/44/EC with respect to voyage and cargo reporting in inland navigation. The pilot electronic reporting infrastructure is able to receive, process, transmit, store and archive information about voyages, cargo (e.g. dangerous, hazardous for environment, non-dangerous), bounded stores, persons on board (crew and passenger), waste disposal and statistics.

The primary role of the IRIS Europe System, from functionality aspect, is that it should be a node within the network of national RIS Centres. As such, IRIS Europe System has to feed this international network with local data taken from Hungarian systems about vessels, their missions, and their traces, while also serving Hungarian users with similar data retrieved from RIS Centres of other countries.

The overview of the Hungarian IRIS Europe System is as follows:

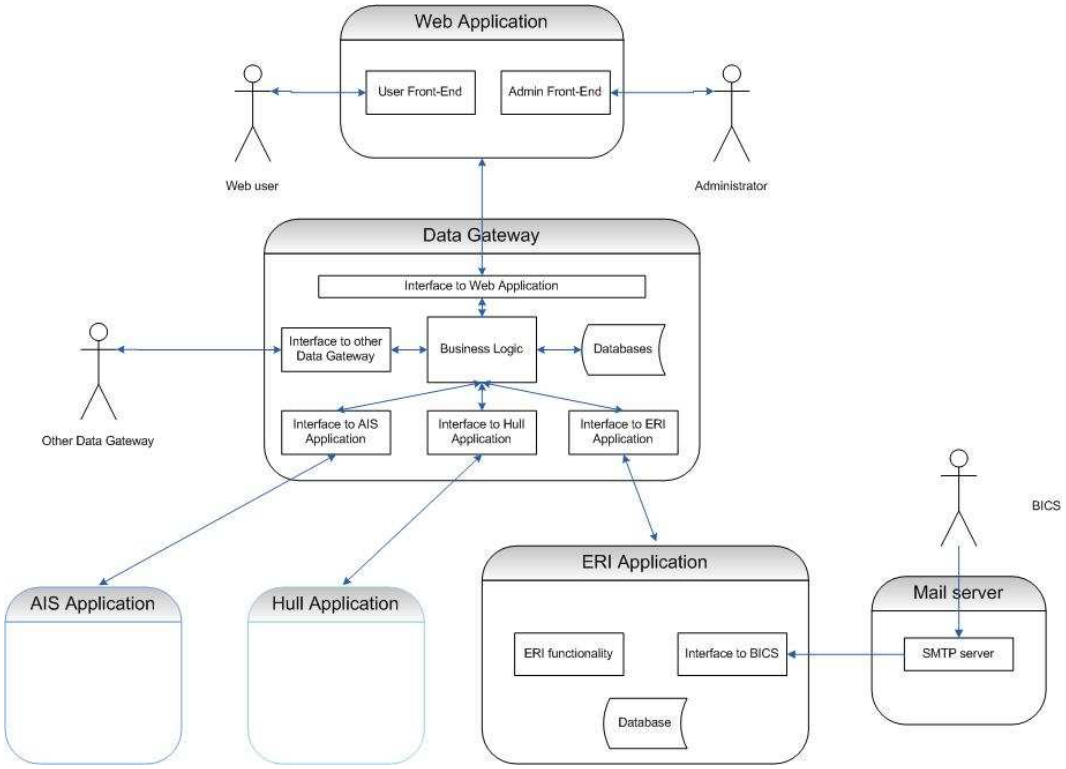


Figure 20: Overview of Hungarian IRIS Europe System

One of the system's main components is the Electronic Reporting Infrastructure (ERI) application. The primary purpose of it is to serve as storage for ERI Reports.

Some of stored ERI Reports are created by national users into this ERI Application, others are received as ERI Messages from foreign RIS Centres or BICS.

The functions of ERI Application are categorized as following:

- It handles incoming ERI Messages (from other RIS Centres and BICS users) and receipts, according to relevant specifications.
- Provides ERI Editor functions for national users with roles enabling them to be authors of ERI Reports.
- ERI Report management functions: force sending ERI Messages, recipient list manipulation, interface to manual acknowledge by ERIRSP creation.
- In case of ERI Events, sends ERI Messages to recipients of ERI Reports.

ERI report query

When an ERI Report is queried, the user who queries is added to Recipient table (if not yet), and is connected to ERI Report via Distribution List.

Handling incoming ERI Messages and ERIRSP receipts

Incoming ERI Messages can be received from BICS via the Mail Server and the EDIFACT/XML converter, or from the Data Gateway. (Note: this is different from ERI Editor functions, where users are connected to the ERI Application in order to work with their ERI Reports.)

Additionally, if the above described handling of the ERI Message is successful, a Receipt by this ERI Application will be created (when required), and the corresponding ERIRSP receipt will be sent to the origin of the ERI Message. The ERIRSP will be sent to the direction from where the ERI Message had been received (BICS or Data Gateway).

Incoming ERIRSP receipts are stored as Receipt entries, connecting History entries to those of Recipients'.

Validation

Both for incoming ERI Messages and ERI Editor functions, the received XML content is validated before further processing.

ERI Editor API

The ERI Application provides an ERI Editor API for the Web Front-End (tunnelled via Data Gateway). This API gives the possibility for the users to create/edit/publish draft ERINOT reports, and update/cancel existing published ones.

The pilot ERI infrastructure developed in the project is connected to the National Transport Authority's (NTA) HIR system as NTA the responsible organization for controlling dangerous cargo transport on the Hungarian section of the Danube. The ERI-related international data exchange is organized according to the RIS Data Exchange Reference Documentation (including access rights.)

All software tools have been delivered on the basis of the framework contract signed by RSOE and Ericsson Hungary Ltd. (Ericsson Magyarország Kft.) with the countersign of the responsible intermediate body. The contract has been signed after a Europe-wide public procurement procedure published on TED under 2006/S 226-242679. During the cooperation with Ericsson Hungary Ltd. (Ericsson Magyarország Kft.) the deliverables arrived on time. The software solutions have been audited by Fornax Zrt. and accepted by the Hungarian ministry responsible for transport.

5.4 SWP 2.3 Pilot Development and Implementation in Austria

Responsible Member State: Austria

5.4.1 Main objectives and expected outcome of SWP 2.3 in Austria

The main objective of SWP 2.3 in Austria was to set up an electronic ship reporting pilot infrastructure and services for efficient electronic reporting in Austria to receive, process, store and archive information about voyages and cargo as reported by Skippers / Fleet Managers as well as to provide relevant information to the national responsible authorities.

The expected outcomes of SWP 2.3 in Austria were:

- System specifications for electronic reporting of cargo and voyage information in Austria based on national requirements and according to the RIS Standard for 'electronic ship reporting in inland navigation' fulfilling the requirements out of the RIS Directive 2005/44/EC with respect to voyage and cargo reporting in inland navigation
- Pilot Implementation of electronic reporting infrastructure in Austria based on the elaborated system specifications
- Detailed testing and acceptance of implemented electronic reporting infrastructure in Austria
- Integration of logistics stakeholders (mainly Skippers / Fleet Managers providing the electronic reports) and governmental stakeholders (mainly authorities receiving the electronic reports) based on suitable authentication / authorisation mechanisms

5.4.2 Results of SWP 2.3

An electronic reporting infrastructure was specified in detail, tendered and pilot implemented into the Austrian RIS system.

Elaboration of system specifications:

via donau elaborated detailed technical and functional specifications for electronic reporting in Austria based on national requirements and following the standard for 'electronic ship reporting in inland navigation', fulfilling the requirements out of the RIS Directive 2005/44/EC with respect to voyage and cargo reporting in inland navigation.

Tender of the pilot implementation:

Based on a European-wide tender procedure, via donau identified and contracted the best bidder with the pilot implementation of the Austrian electronic reporting infrastructure whereas the implementation was coupled with the pilot implementation of the Austrian infrastructure for the national and international exchange of RIS data.

Monitoring and acceptance of the pilot implementation:

During the implementation a lot of clarifications, especially related to the creation of an electronic report within the graphical user interface and related to the interface with the electronic reporting client application BICS were necessary. With the support of Rijkswaterstaat Netherlands, via donau achieved to clarify all necessary issues. via donau executed a series of detailed tests in order to monitor and prove the proper pilot implementation of the system split into the following phases:

- Functional tests of the electronic reporting prototype system mainly focused on the graphical user interface
- Detailed functional and technical tests of the entire system excluding the BICS interface
- Detailed stability, usability and conformity (standardised messages) tests of the entire system including the BICS interface and the final graphical user interface
- Functional, technical, performance and security tests after the migration of the system into the operational RIS system in Austria (DoRIS)

As the executed tests proved the proper functioning of the electronic reporting infrastructure, via donau accepted the pilot implementation of the system.

Integration of users:

Users of the Austrian Supreme Navigation Authority (Oberste Schifffahrtsbehörde – OSB) in their role as RIS authority, as official authority for receiving the electronic reports, were involved in the detailed tests and acceptance of the system from the functional point of view.

Experiences:

During the implementation of electronic reporting pilot infrastructure within IRIS Europe it was clearly experiences that there is a high demand for coordinated pan-European reference data management, as already several pilot implemented systems and services strongly depend on the uniqueness, completeness and availability of RIS reference data. In the course of IRIS Europe, especially the location codes and fairway hectometre codes were of special importance and it was identified that the available reference data is far from being complete and conform to the existing definitions.

5.4.3 Implemented functionality

Creation and management of electronic reports by skippers / fleet managers:

The figure below illustrates the screen of the authorised users (Skippers / Fleet Managers) for creation and management of the electronic reports that belong to the specific user. An authorised user can create and manage electronic reports only for the own vessels.

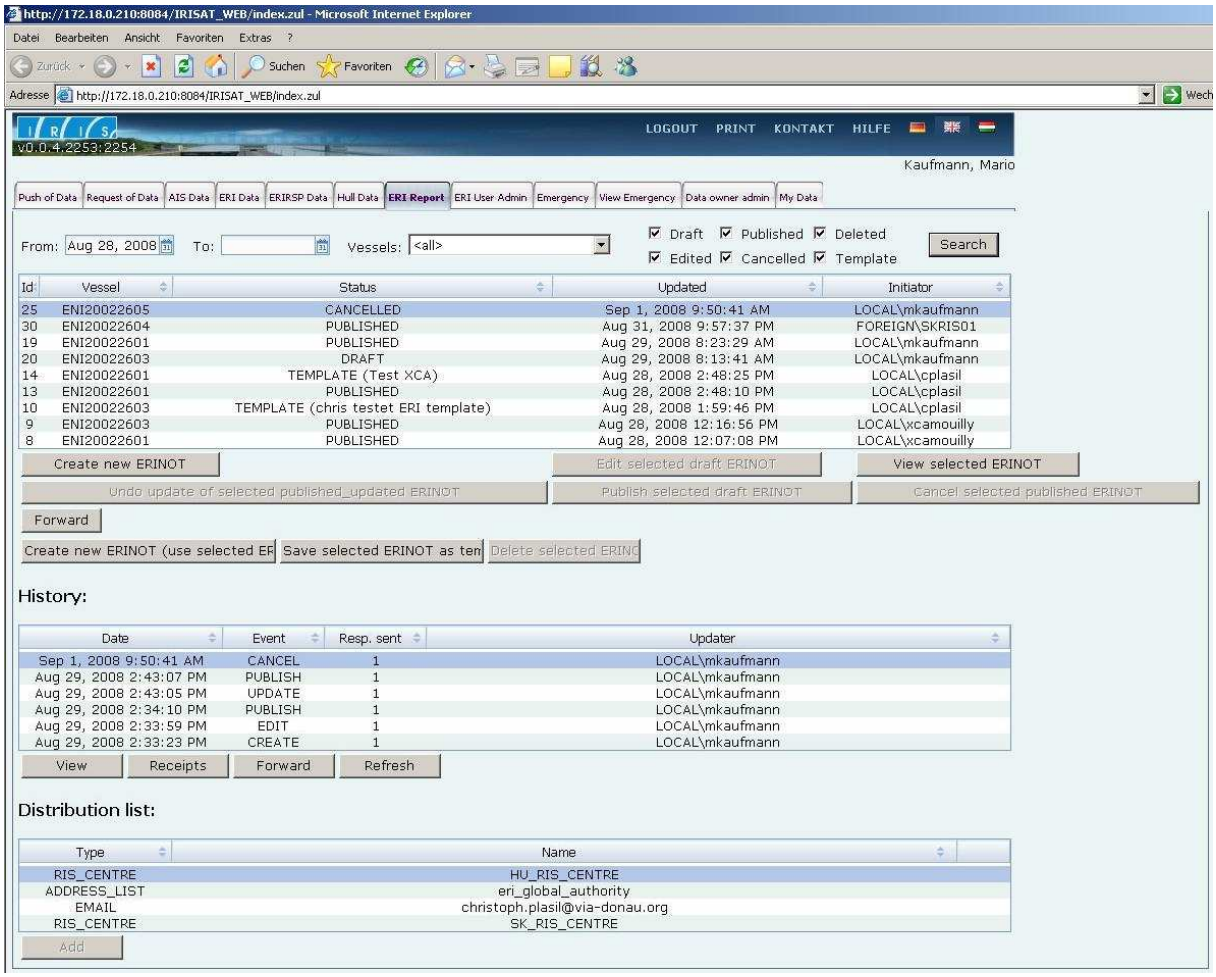


Figure 21: ERI Report on Electronic Reporting Web GUI

In this screen the user has an overview on the existing reports and can execute several actions:

- Filter for existing electronic reports
- Create new electronic reports

- Edit, send (publish), modify (update), cancel electronic reports
- Forward electronic reports
- View electronic reports and response messages
- Template management
- View history and distribution list of selected electronic report

BICS interface:

The Austrian electronic reporting pilot infrastructure provides also an interface for the electronic reporting application BICS. This interface enables skippers and fleet managers to provide their electronic reports via BICS to the Austrian electronic reporting infrastructure. Therefore, the Austrian infrastructure was included as first reporting point into the BICS application. When an electronic report is received at the Austrian infrastructure from BICS, the report is converted from the EDIFACT format into the XML format, stored and further processed (notified to defined receivers). Furthermore a response message is provided to the sender of the electronic report in order to indicate the proper receipt and acceptance.

Receiving electronic reports by national authority:

When an electronic report is received in the Austrian electronic reporting infrastructure, the system notifies the report to the defined authorities. The figure below illustrates the screen of the authority responsible for receiving the electronic reports. In this screen the authority has an overview on the received reports and can click on a specific report to see the details. Furthermore, filtering functions are implemented in order to allow the authority to search for specific reports.

Figure 22: Push of Data on Electronic Reporting Web GUI

Configuration of electronic reporting functionality:

The system administrator can configure necessary settings within the electronic reporting pilot infrastructure:

- Authority distribution list: In this list it is specified to what national authorities' incoming electronic reports are notified (provided).

Figure 23: ERI application administration GUI - Austria

- BICS users: In this list, registered users can be allocated to their BICS user-ID with the purpose to provide those registered users' access to their electronic reports provided via BICS and the BICS interface that is implemented as well within the electronic reporting infrastructure.
- ERI application preferences: In this screen the system administrator can configure other necessary system settings.

View electronic reports by national authority as well as by authorised users:

The figure below illustrates the screen where the electronic report is displayed to the user. (Remark: During the creation of this document this screen was under finalisation, and screenshot provided below is just an intermediate version.)

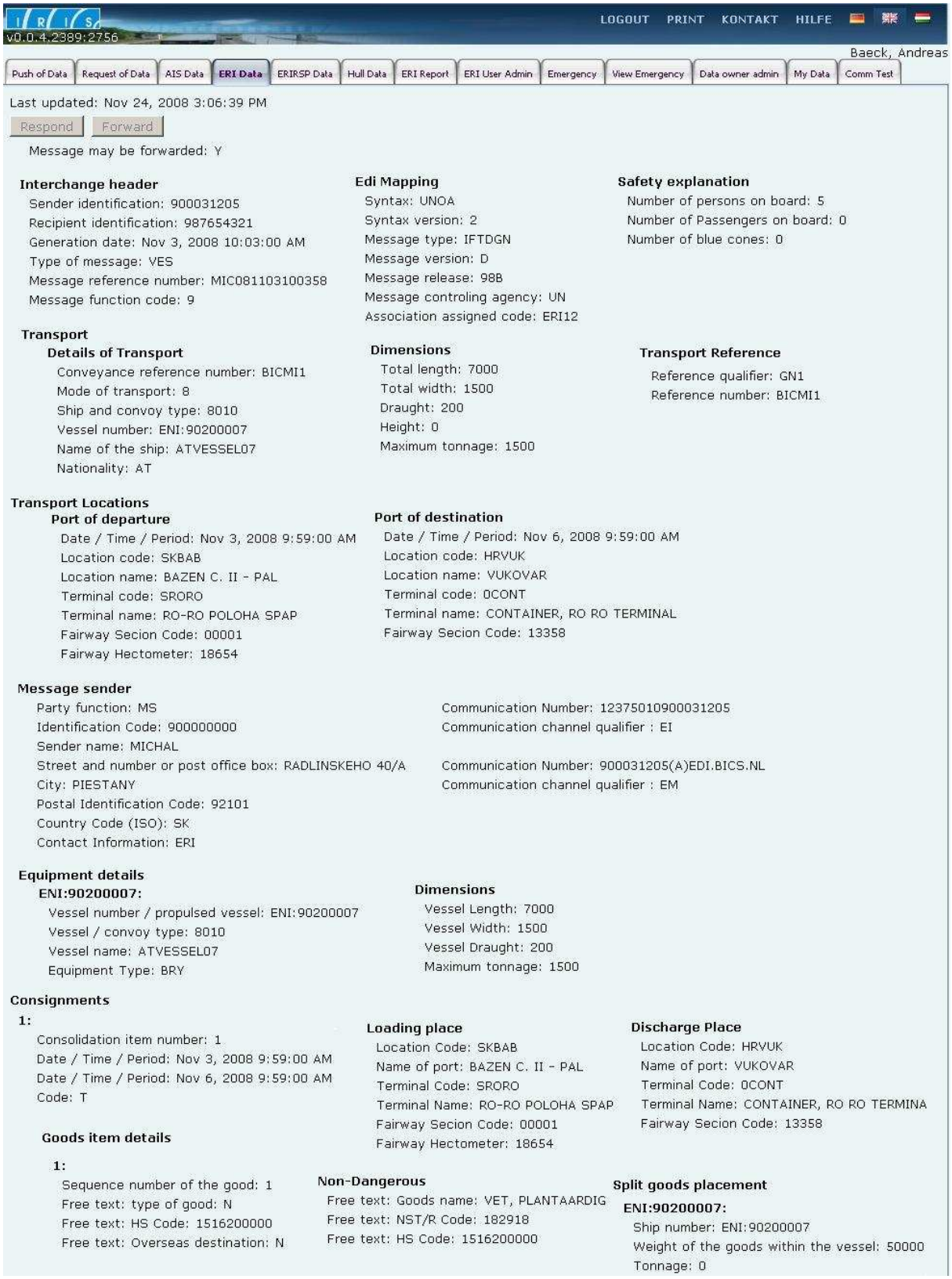


Figure 24: Displayed ERI Data on Electronic Reporting Web GUI

5.5 SWP 2.4 Pilot Development and Implementation in France

Responsible Member State: France

5.5.1 Introduction/ main objectives

The main objective of this SWP was to provide the technical foundation in terms of infrastructure and services for efficient electronic reporting in France according to the RIS Standard for 'electronic ship reporting in inland navigation' (version adopted by the RIS Committee), fulfilling the requirements out of the RIS Directive 2005/44/EC with respect to voyage and cargo reporting in inland navigation. The electronic reporting infrastructure must be able to receive, process, transmit, store and archive information about voyages, cargo (e.g. dangerous, hazardous for environment, non-dangerous), number of persons on board, statistics**.**

The locks especially involved in the pilot are the:

- The main locks close to the Belgian border in the north of France
    - on the Leie /Deule river; lock of Quesnoy sur Deule
    - on the Scheldt, lock of Fresnes sur Escaut
- The first lock on the French Mosel river
    - The lock of Apach very close to Luxembourg in front of the lock of Statbredimus managed by the German application MIB.

Technically the application was realised to allow all the locks of the network to be parameterized that to say able to be interconnected with any other systems.

The specific objectives of this SWP were:

- Requirement analysis for electronic reporting in inland navigation in France
- Definition of reporting procedures in France
- System specification for electronic reporting in France
- Electronic reporting pilot service specification
- Implementation of electronic reporting infrastructure at the French RIS-Centre
- Integration of commercial stakeholders in France (mainly stakeholders providing reports)
- Testing of electronic reporting system in France
- Test and validation of electronic reporting pilot services in France

Ship reporting segment, shore reporting segment:

1. Generate all relevant electronic reports
2. Transmit the relevant electronic reports from /Shore to the Operator Segment (national RIS centre)
3. Allow forwarding of data on a voyage per voyage basis

The ship segment needs to be taken into account as well as possible by the infrastructure operator, from the traffic management point of view. The ship segment must report about the voyages he realises to pay the taxes to VNF. In the experimentation the Shore segment sends the electronics reports via BICS as fleet operator for the vessels (ship reporting). The Shore segment must report about the voyages he realises to pay the taxes to VNF.

Authority segment:

1. Receive all relevant electronic reports in inland navigation from operator segment

Operator segment:

1. Receive all relevant electronic reports from RIS centres in neighbouring countries, neighbouring authorities (ports)

2. Provide all relevant electronic reports to RIS centres in neighbouring countries
3. Provide relevant electronic reports to fairway authority
4. Provide relevant electronic reports to traffic authority
5. Provide relevant electronic reports to statistics authority

The operator Segment has to ensure a good traffic management, he must also invoice the fleet operators and ships for all the voyages they are doing on the network.

5.5.2 Description of the processes

5.5.2.1 Existing electronic Reporting procedure at VNF, use of BICS software

Concerning Electronic reporting from fleet operator, CEMEX and CFT Companies were the 2 mains fleet operators who decided to make electronic reporting via BICS application to exchange information with VNF about all the transports they are operating. As described below, they provide the electronic reports for the ships they own.

The exchange of messages is done via a secure modem connexion, ERINOT messages are used, send to the BICS Server in Netherlands and re dispatched to VNF.

Based on these declarations, VNF is invoicing the Transport taxes. One of the main benefits of these actions is the significant reduction of administrative paper procedures, replaced by automatic treatments of this kind of information. 10% of the traffic of the Seine River is now declared by this way.

5.5.2.2 Implementation of an Interface on the Mosel River to announce vessel arriving from each country to the other country in the lock keeper software

Implementing an interface between the lock keeper software and the MIB software from Germany in order to test the possibility for reporting about vessels arrivals from the neighbouring perimeter was the basic interconnection system realised. The neighbouring application is declaring the vessel arrival through the border (country border or application border) via an exchange of traffic data information.

The first implementation of the interface is an interface between Germany and France on the Mosel River. Discussion about the possibilities of data exchange from a legal point of view between these countries were done at the Mosel commission during September 2008

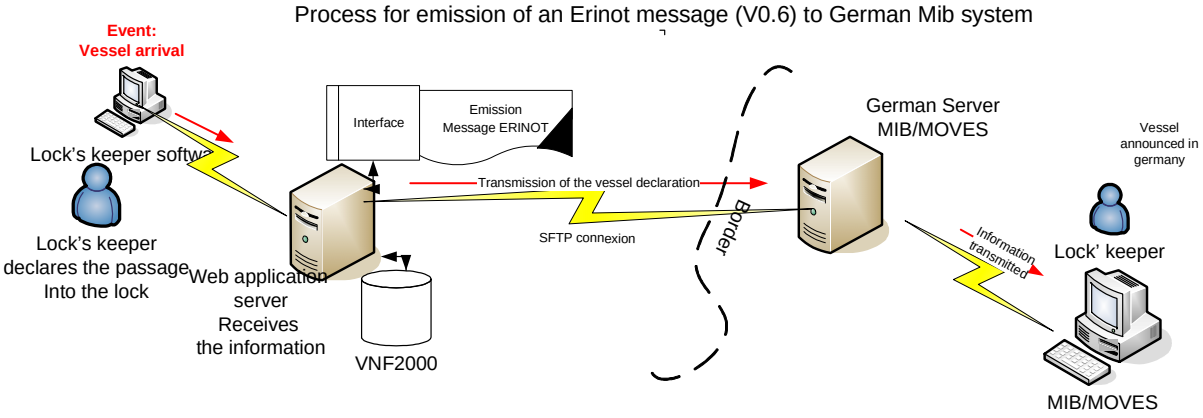


Figure 25: Sending of ERINOT

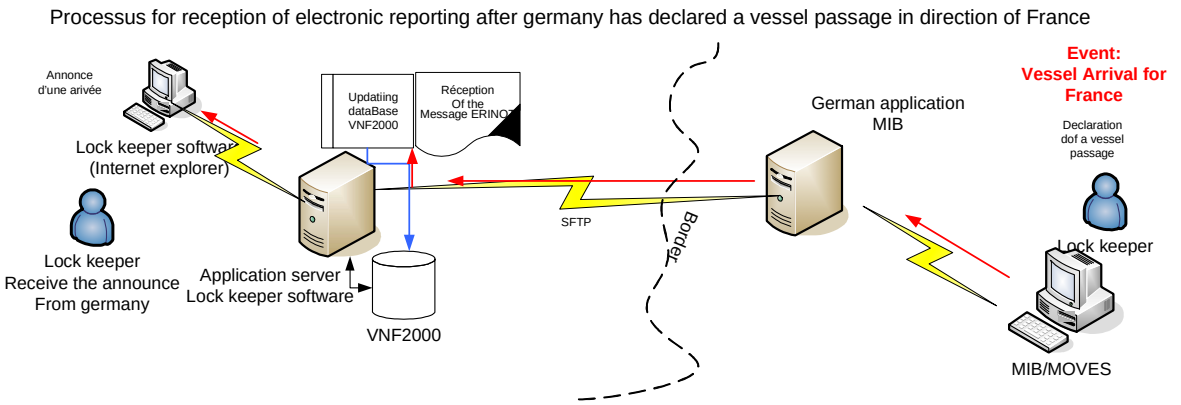


Figure 26: Receiving of ERINOT

The interface in France with the lock keeper software is receiving the messages and put them into the lock keeper software database, then the information can be used, the vessel appears in the application.

On the other side (Germany) when a vessel travels to Germany, the lock keeper software calls the web service of the application and gives it all the necessary information to build an ERINOT message. Then the interface sends the message via SFTP to German side.

The next step is to use this interface to initiate a communication with sea ports of Dunkerque and le Havre, and the CNR (Commission National du Rhone) which manage traffic on the Rhone river, and is connected to VNF waterway network via the Saone river. To be able to realise such communications, the interface allows the management of different kind of communication mode, taking in account different versions of the ERINOT message.

The ERINOT message can be generated in:

- Version 0.6
- Version 1.2 (the latest one)

These two evolutions offer the interface to participate to the experimentation with Belgium and Netherlands, to perform tests about international data exchanges, which was demonstrated on the 22. October 2008 in Brussels at the IRIS Europe Seminar.

5.5.2.3 Implementation of international data exchange with Belgium and Netherlands

As explained in the previous chapter, this interface was the basis used for the international data exchange in the experimentation with Belgium and Netherlands concerning electronic reporting with ERINOT messages.

Two different kinds of exchanges were realised:

- ERI messages are exchanged in ERINOT v1.2.
- Position messages are sent to Flanders and Netherlands.

All emitted messages were centralised in the ERINOT server and the position server.

Concerning the position, it is not real time position information, because AIS system wasn't in place at this period. The position comes from each lock crossed; the estimated time of arrival is updated for the next passage points. That was also demonstrated during the pilot implementation of cross border exchange with Belgium and Netherlands.

This new function was developed and integrated in the lock keeper software. A web service developed by Netherlands was called in our application when the vessel in direction of Belgium arrived at the two locks:

- Lock of Quesnoy sur Dêule
- Lock of Fresnes sur Escaut

When the position information is sent to the position server this vessel appears on the map, and the ERINOT message associated to the vessel could also be visualized, when you select the vessel on the map.

The reception of position information from the other countries in VNF Information system wasn't implemented.

5.5.3 Conclusions and future steps

The interface to exchange electronic reporting in an international context will offer all the partners new tools to manage the traffic and will be very helpful, in the context of corridor management of the waterways. To manage waterways by corridor, the user necessary needs a lot of effort on the communication aspects between all the stakeholders involved in it. In an international corridor, the standardisation of all the exchanges is mandatory and the use of ERINOT standard messages was the basic of these exchanges.

If focussing now on the job of the lock keepers, it can be observed that for the French part, such an interface is providing him a facilitation of the job concerning traffic management.

The interface furnish him the announcement of the vessel, instead of entering all the data, that procedure limits the errors due to manual data entry at first, at second, in summer period, especially on the Mosel river, the lock keeper has a lot of difficulties to operate the lock and in parallel to enter all the data, because of the high number of vessels at the locks. In summer a lot of pleasure craft are navigating on the Mosel River.

The next steps of this communication are the discussion engaged with seaports of Le Havre and Dunkerque each of them are very interested in the announcement of inland vessels which are arriving by electronic reporting We are engage with Dunkerque to announce al the vessels that will arrive by the Mardyck Lock's several meeting about the way of exchange the format (ERINOT) used. On the other side, the port of Dunkerque will send to VNF, ERINOT messages when vessels are leaving the port to enter into inland navigation. The same process is implemented on the Seine River at the lock of Amfreville (Last inland lock) for all the vessels in direction of Le Havre.

5.6 SWP 2.6 Hull Database Specification and Development in Slovakia

Responsible Member State: Slovakia

5.6.1 Main objectives of SWP 2.6 in Slovakia

The main objective of SWP 2.6 in Slovakia was to prepare a technical solution and to set up a hull data management pilot infrastructure in line with national and international requirements, involving management of vessel certification data provided by the competent technical certification authority and management of minimal hull data set by the RIS provider in Slovakia.

The setting up of the pilot infrastructure and the pilot implementation covered following issues:

- System specification for the hull data management pilot infrastructure (incl. requirements, use cases based on the national and international requirements - according to the Directive 2006/87/EC and its amendment 2006/137/EC)
- Design and development (incl. data model, prototyping and development based on the system specification)
- Monitoring of the pilot implementation and testing
- Pilot deployment (including the integration of the stakeholders: State navigation administration as the Technical Certification Authority and the Slovak RIS Provider)

5.6.2 Legal requirements

The State Navigation Administration (SPS) is a governmental authority responsible for technical certification of inland navigation vessels. Central register of vessels is a publicly available list of vessels kept by the State Navigation Administration. Before putting the vessel into operation it must be measured and this is done by SPS, too.

5.6.3 Components and functionalities of hull data management infrastructure in Slovakia

To overcome technical problems caused by the use of old-fashioned central register of vessels *(Sybase data system running as standalone application unable to share data among workstations)* and to fulfil legislative requirements, the new application for registering of vessels was developed. The application is based on the requirements derived from the existing solution, requirements defined by the State Navigation Administration and additional arising from the Directive 2006/87/EC laying down technical requirements for inland waterway vessels.

The following main functionalities of the hull data management infrastructure are covered by the Slovak pilot implementation:

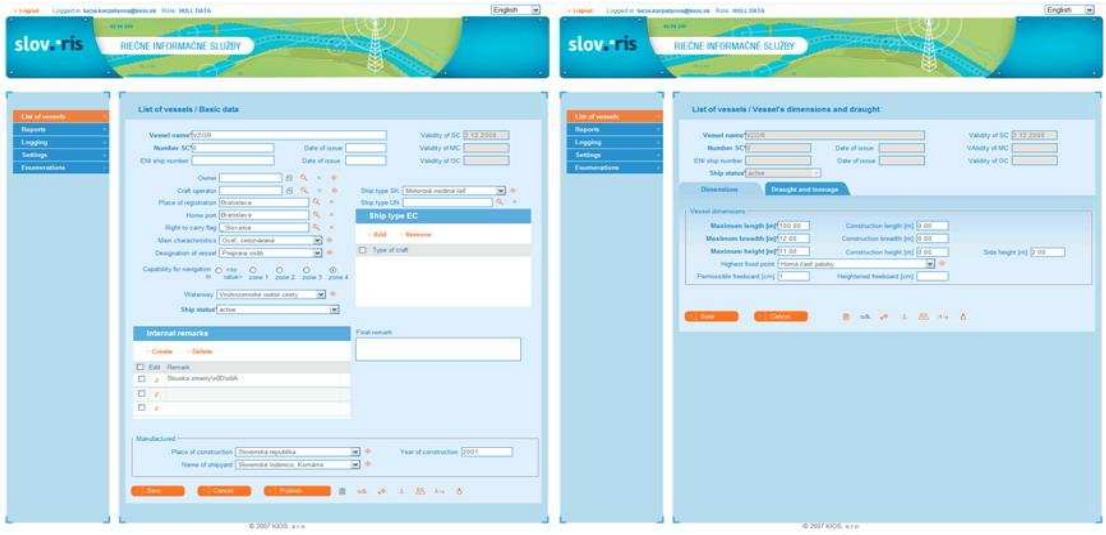


Figure 27: Graphical user interface for the national hull register – create, modify, display

- Create, modify and display whole set of hull data (incl. measurement data)
- Create and print hull data documents (vessel certificates, measurement certificate in pdf format)

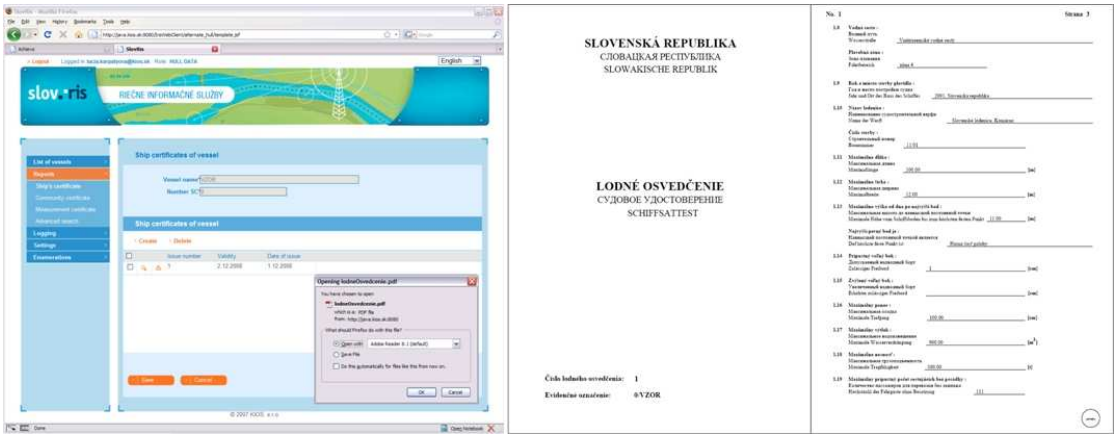


Figure 28: Graphical user interface for the national hull register – certificates

- Statistical queries based on pre-defined selectable criteria and display in customized reports
- Exchange of minimal hull data set as part of the international data exchange (exchange of minimal hull data set)
- Administration of users, roles and access rights, the reference data (create, update, delete), or system settings, etc.
- Logging of events (e.g. view history of modifications of existing data sets)

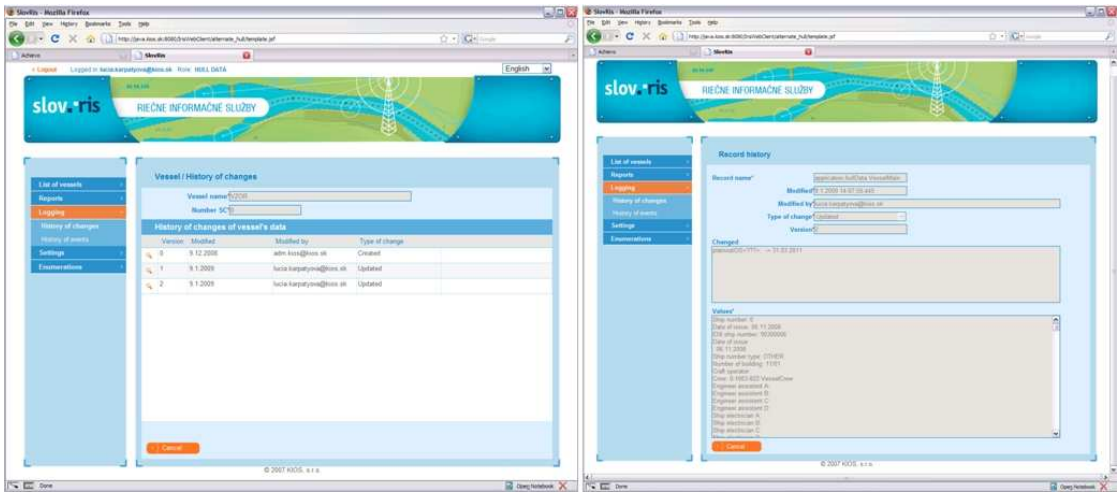


Figure 29: Graphical user interface for the national hull register – history of modifications

- Interface for entering the data by the RIS Operator about vessels participating in RIS but not falling under the Technical Directive 2006/87/EC (interface for entering RIS related hull data).

5.6.4 Monitoring of the pilot implementation and testing

In the course of the implementation of the national hull data management infrastructure the clarification rounds have been carried on with the national competent vessel certification authority (State Navigation Administration).

The implementation was verified by series of tests. Based on the defined use cases, a set of test cases has been prepared for testing the implementation of national electronic reporting infrastructure. Tests have been executed by internal consultant and persons assigned by the State Navigation Administration (RIS authority / RIS provider). The error tickets, bugs and change requests were administered and maintained within the web-based bug tracking system called Mantis.

Furthermore, the tests covering the international RIS data exchange have been defined and executed on two interconnection workshops (for details see chapter 5.10).

The tests proved the functionalities of the system as defined within the system specification and requirements analysis.

5.6.5 Pilot deployment

The Hull Data Management Pilot Infrastructure is deployed in the same way as the electronic ship reporting infrastructure on two servers, which operate in failover cluster (high availability cluster), located in the Slovak National RIS Centre in the premises of the State Navigation Administration.

Integration of users was done by implementing the role and their access rights mechanism, as well as the modern authentication / authorisation mechanisms.

Furthermore, the State Navigation Administration (Štátna plavebná správa) in Slovakia, as the official technical certification authority, was involved in the specification as well as in the detailed tests and acceptance of the system from the functional point of view since the beginning of the project.

The experiences gained within the implementation of national Hull data management pilot infrastructure within IRIS Europe contributed to the elaboration of the system specifications for the European Minimum Hull Data Base as well as to the standardisation of the Minimum Hull Data Set.

5.7 SWP 2.6 Hull Database Specification and Development in Hungary

Responsible Member State: Hungary

In Hungary the hull databases are located at the National Transport Authority (NTA) as technical certification authority. Due to this fact RSOE has attended the working meeting of the Hull Database Expert Group (ERI sub-group) together with the NTA experts. The two organizations (NTA and RSOE) have jointly created a synchronization mechanism to request the minimum set of hull data of the vessels from NTA towards the RIS Centre operated by RSOE. The processes are in accordance with the RIS Data Exchange Reference Documentation.

This work has been done in close co-operation with the National Transport Authority, since the NTA has also been working on its complex inland navigation information system (HIR system) that has several functionalities which will be in permanent contact with the RIS system (e.g. hull data system, notices to skippers, ERI system).

Based on the contract signed between the National Transport Authority and RSOE the hull data exchange process looks like the following:

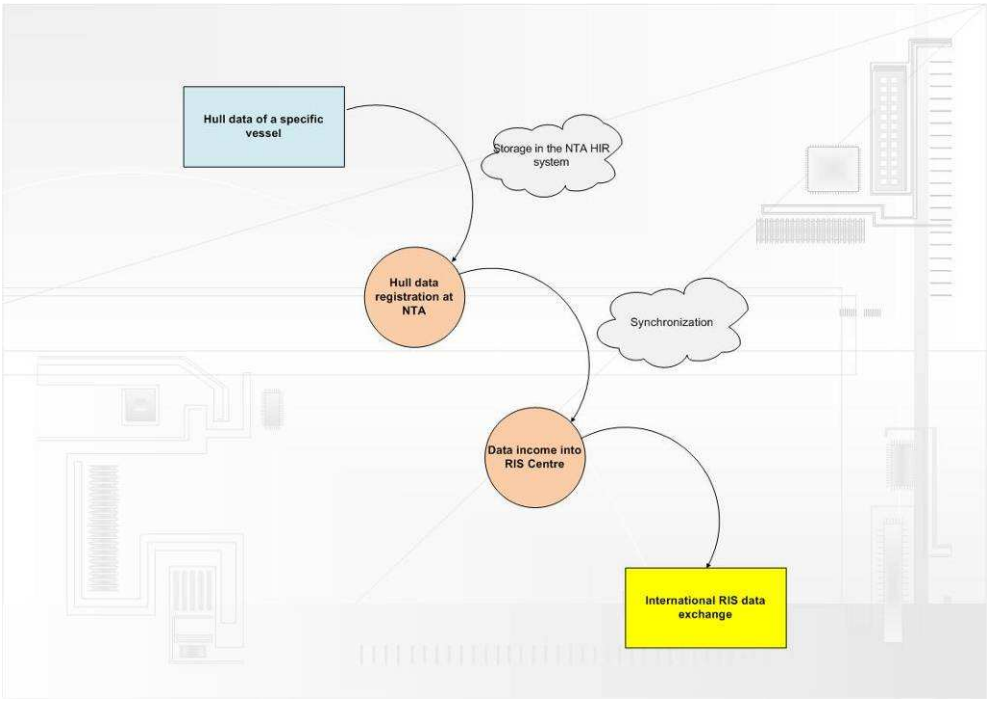


Figure 30: Hull data synchronization process

The hull data are exchanged by using the Hull_data_v0p8.xsd format.

5.8 SWP 2.6 Hull Database Specification and Development in Austria

Responsible Member State: Austria

5.8.1 Main objectives and expected outcome of SWP 2.6 in Austria

The main objective of SWP 2.6[1] regarding Austria was to set up a Hull data management pilot infrastructure for efficient management of the national Hull database and its vessel certification data by the responsible national authority as well as the RIS provider in Austria.

The expected outcomes of SWP 2.6 in Austria were:

- System specifications for national Hull data management infrastructure in Austria based on national requirements and according to the Directive 2006/87/EC and its amendment 2006/137/EC; including contributions to the specification of the European Hull Database from the ERI Expert Group.
- Pilot implementation of national Hull data management infrastructure in Austria based on the elaborated system specifications
- Detailed testing and acceptance of implemented national Hull data management infrastructure in Austria
- Integration of stakeholders: Austrian Supreme Navigation Authority in their role as vessel certification authority as well as via donau – Österreichische Wasserstraßen-Gesellschaft mbH in their role as national RIS provider based on suitable authentication / authorisation mechanisms

5.8.2 Results of SWP 2.6

The Hull data management infrastructure was specified in detail, tendered and pilot implemented into the Austrian RIS system.

Elaboration of system specifications based on requirement analysis:

Together with the national authority responsible for the management of the Austrian Hull data, the Supreme Navigation Authority (Oberste Schifffahrtsbehörde – OSB) in their role as technical certification authority and RIS authority, via donau elaborated detailed technical and functional specifications for the management of the Austrian Hull data based on national requirements and following Directive 2006/87/EC and its amendment 2006/137/EC. It was decided to implement the Minimum Hull Data Set in version 0.8 in order not to cause any conflicts with the messages used in the international RIS data exchange.

Tender of the pilot implementation:

Based on a European-wide tender procedure, via donau identified and contracted the best bidder with the pilot implementation of the Austrian Hull data management infrastructure.

Monitoring and acceptance of the pilot implementation:

During the pilot implementation some clarifications, especially related to the high amount of different data fields that are partly depending on each other were necessary. With the support of OSB, via donau achieved to clarify all necessary issues. via donau executed a series of detailed tests with strong involvement of OSB in order to monitor and prove the proper implementation of the pilot system split into the following phases:

- Testing and acceptance of the style of the graphical user interface
- Detailed functional and technical tests of the entire Hull data management pilot infrastructure

[1] According to the IRIS Europe workplan, the activities and results described in this chapter are partly allocated to SWP 2.7. During the execution of the project it was handled that way that SWP 2.6 deals with the specification and implementation of the national infrastructures and SWP 2.7 deals with the international exchange of the Hull data

- Detailed stability, usability and conformity (standardised messages) tests
- Functional, technical, performance and security tests after the migration of the system into the operational RIS system in Austria (DoRIS)

As the executed tests proved the proper functioning of the Hull data management pilot infrastructure, via donau accepted the implementation of the system.

Integration of users:

The Austrian Supreme Navigation Authority (Oberste Schifffahrtsbehörde – OSB), as official authority for the management of the Austrian Hull data, were involved in the specification as well as in the detailed tests and acceptance of the system from the functional point of view since the beginning of the project.

Experiences:

The experiences gained within the implementation of national Hull data management pilot infrastructure within IRIS Europe contributed to the elaboration of the system specifications for the European Minimum Hull Data Base as well as to the standardisation of the Minimum Hull Data Set.

5.8.3 Implemented functionality

Search for existing data sets:

The figure below illustrates the screen of the authorised users to search for existing Hull data sets.

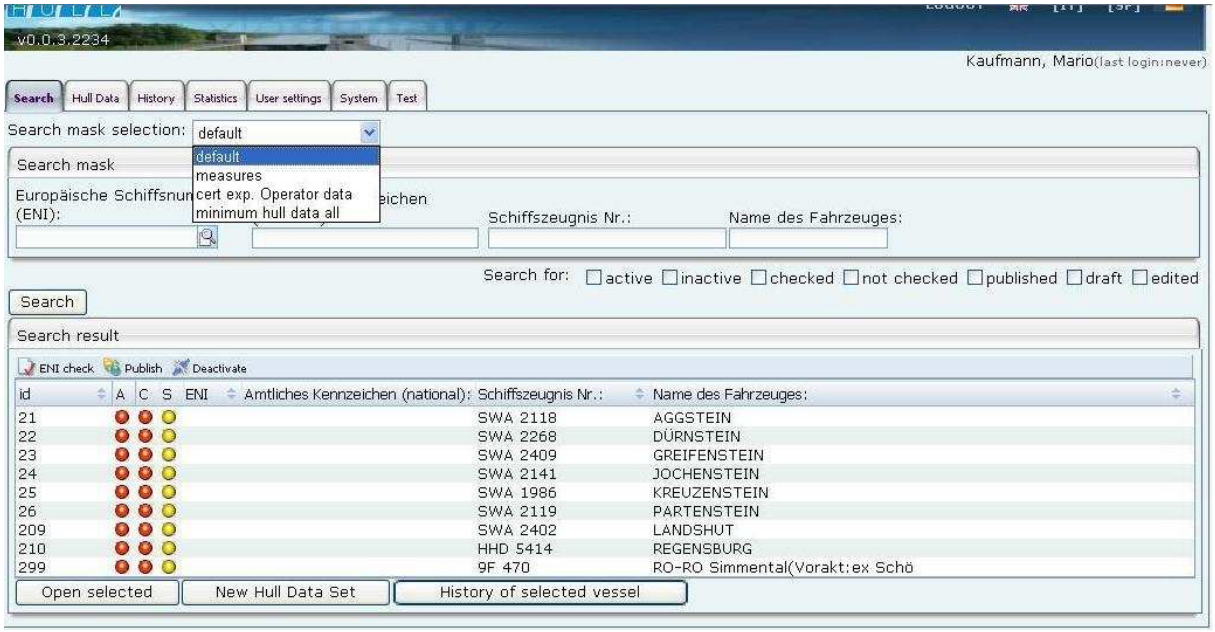


Figure 31: Searching of specific hull data on Hull Database

In this screen the user has the possibility to

- Search for specific Hull data sets by using 4 different search masks and several filtering criteria
- Open selected Hull data set to view, modify, store, etc. the data set
- View history of data set

View, create, modify and manage Hull data sets:

The figure below illustrates the screen for the management of the Minimum Hull Data Set of an existing Hull data set.

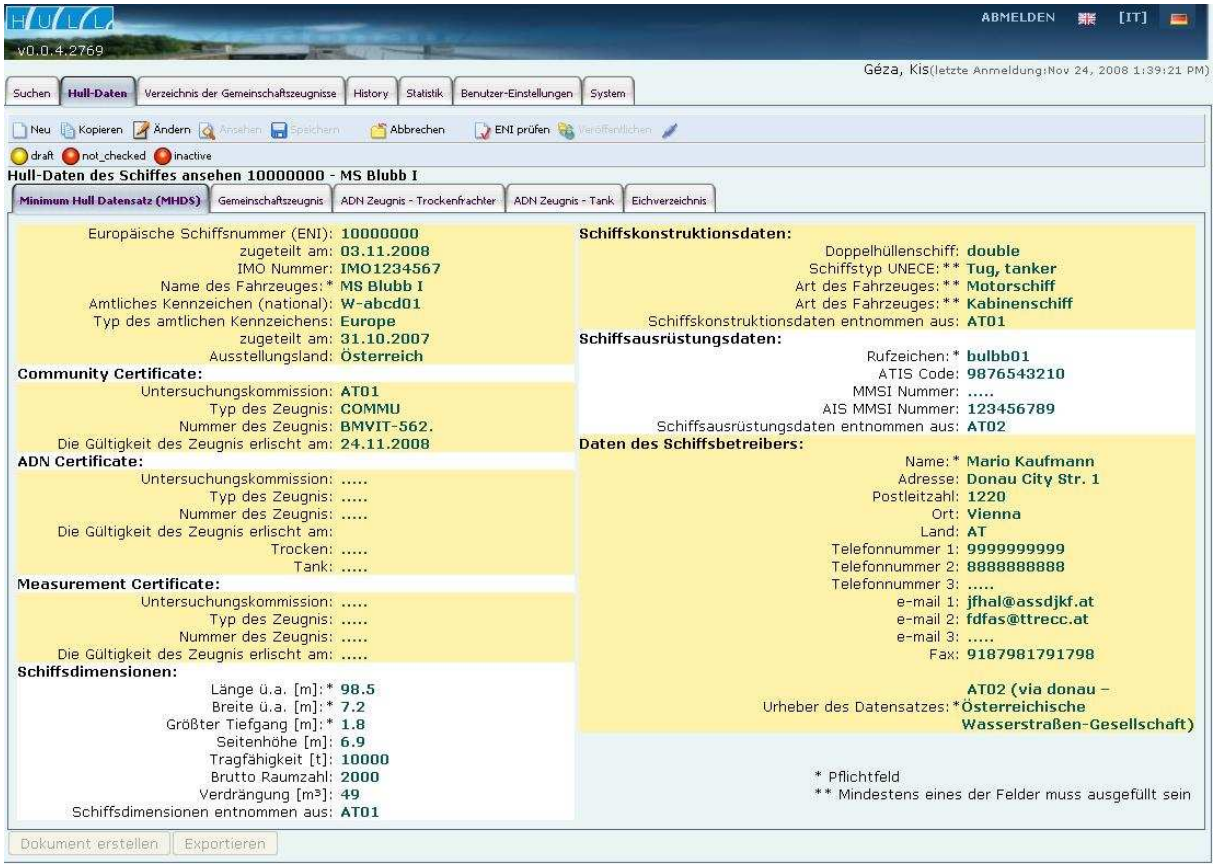


Figure 32: Display of Minimum Hull Dataset

Next to this screen other screens are provided to the user where the other Hull data can be managed:

- Community Certificate
- ADN Certificate for dry cargo vessels
- ADN Certificate for tank vessels
- Measurement Certificate Index
- Register of Community Certificates

In these screens the user has the possibility to:

- View, modify and change status of the existing data sets
- Create new data sets
- Create the related Certificates in the pre-defined format conform to given Directives and standards

Other functionalities:

Next to the main functionalities described above, the Hull Data Management Infrastructure provides several additional functionalities to the users:

- View and print Register of Community Certificates
- View history of modifications of existing data sets
- Statistical queries based on pre-defined selectable criteria
- Configure user settings
- Configure system settings

5.9 SWP 2.6 Hull Database Specification and Development in the Netherlands

Responsible Member State: The Netherlands

Implementation Hull database - SSR-Pilot Implementation

Within the European working group for specifying the European Hull Database a functional specification document has been elaborated, *Functional Specifications or the Minimal Hull database and its services, version 1.3,*. The RIS-Pilot Implementation on the Seine-Scheldt-Rhine corridor is a first set-up to determine the feasibility of the Hull database. The experience gained at this pilot Implementation will act as an input for the definite implementation during the European RIS implementation in the near future and also the support the operational systems in order provide the existing systems with the correct vessel identification numbers. The scope of the realization of the hull database during this pilot will be described in this chapter.

5.9.1 Architecture for SSR-Pilot Implementation

During the Pilot Implementation the architecture as presented in Figure 33 will becomes an integral part of the RIS implementation on SSR-corridor. To make the implementation of the hull database also available to other RIS partners the usage of the IRIS-Europe layer is a necessity.

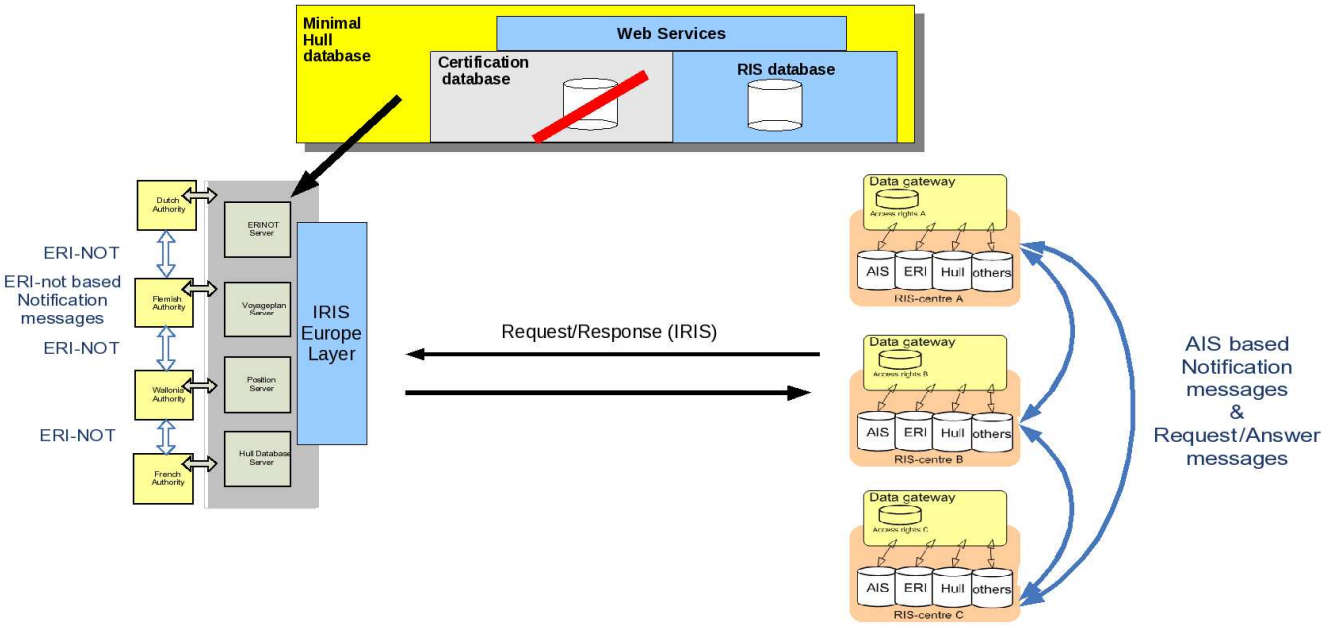


Figure 33: Hull database for the RIS -Pilot Implementation Seine-Scheldt-Rhine corridor

5.9.2 Functional overview of the hull database

The functionality to be implemented has the following features:

Identified end-users:

- Certification authorities (official creator of the vessel data and the issuing of ENI numbers);
- RIS authorities (or RIS provider on behalf of the RIS authority);
- Branch organization (third parties such as commercial parties).

Data structures: The vessels within the hull database are kept in two almost identical rise data structures:

Data structure	Description
Certificate database	Contains data provided by certification authorities. The data is published towards RIS provider database.
RIS provider database	Contains all data originating from the certification database extended with data from RIS provider.

The data stored within the database contains the following parts:

- Vessel data;
- Historical data;
- Process related data;
- Role based access;
- Reference data.

Access Rights: The content of the response messages provided by the Hull database is determined by usage of roles.

5.9.3 Functions which are implemented

The hull database contains the following functions which will be available to all partners (depending on the role and access rights) using web services:

Functionality	Administrator	Authorities and external partners
Maintenance roles and users	X	
Maintenance on access rights (data field level)	X	
Backup & Restore	X	
Maintenance referential data	X	
Search for vessel		X
Create vessel		X
Move (transfer vessel)		X
(De)activate vessel		X
Update Vessel		X (RIS provider as owner of data)
Notification for incorrectness		X (RIS provider is not data owner)
Log in/Log of		X
Reporting		X
On line help		X
Request for historical data		X

Table 18: Functions of the SSR Hull Database

Beside the above-mentioned functions the hull database knows the following standard reports:

Type of report	Available to which role	Parameters used as search criteria (the criteria are related to each other using the logical and behaviour)
New, changed and expired certificates	Certification authority and RIS operator	Period, type of certificate, Certification authority
New ENI number issued	Certification authority and RIS operator	Period, Certification authority
List of vessels marked as incorrect	Certification authority and RIS operator	Period, RIS authority (operator)
List of recently updated vessel data (equipment, dimensions, construction, operator)	Certification authority and RIS operator	Period, Type of data (dimensions, equipment attributes, construction)
List of vessel given a specific vessel type	Certification authority and RIS operator	Range of vessel number, Type of vessel.
List of deactivated vessels	Certification authority and RIS operator	Type of vessel, name of vessel, ENI number,
List of vessels with changed operator data	Certification authority and RIS operator	Period, ENI number, name of vessel operator data (address, email, telephone, number)

Table 19: Overview of functionalities to be realized for a fully operational SSR Hull Database

5.9.4 Overview of the supported messages:

The main purpose of the described messages is to enable in a first step authorities (e.g. for certification of vessels) or organizations acting on behalf of authorities (e.g. RIS provider) to exchange vessel certification data (hull data). In a second step these messages can as well be used for the provision of hull data to entitled logistics stakeholders or the public.

The exchange of data required by different processes will be performed using Web services making use of XML messages. The necessary XML messages are:

- Content (service) related XML messages
    1. Notification / Receipt XML messages (Not_Data_Hull.xml / Receipt_Data_Hull.xml)
    2. Request / Response XML messages (Req_Data_Hull.xml / Resp_Data_Hull.xml)

The XML messages are gathered into the following so-called Hull data exchange transactions:

- Search (Request / Response Hull data)
- Create (Notify / Confirm receipt Hull data)
- Update (Notify / Confirm receipt Hull data)
- Move (Notify / Confirm receipt Hull Data)
- *Delete (not required)*

5.10 SWP 1.4, 2.5 and 2.7 RIS Data Exchange Overview

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands

Cooperation partners and observers: Croatia, Serbia, Belgium, France, Germany, Romania

5.10.1 Main objectives and expected outcome of SWP 1.4, SWP 2.5 and SWP 2.7

The international exchange of RIS data among several countries is seen as the focal point within IRIS Europe and is handled within the following SWPs:

- SWP 1.4: National and international exchange of traffic information (AIS data)
- SWP 2.5: National and international exchange of cargo and voyage information (ERI data)
- SWP 2.7: International exchange of minimum set of the national vessel certification information (Minimum Hull Data Set)

The main objectives of those SWPs were to set up, specify and pilot implement infrastructure for international RIS data exchange. The expected outcomes were:

- Elaborated procedures and legislation and defined systems for cross-border data exchange
- Implemented cross-border pilot data exchange of cargo and voyage related data, minimum set of vessel Hull data as well as traffic related data among the participating countries

Summarised, the expected outcome of above mentioned SWPs is the implementation of infrastructure for the national provision and international exchange of AIS, ERI and Hull data among Austria, Slovakia, Hungary, the Netherlands (on behalf of the Seine-Scheldt-Rhine area including Belgium and France) and Croatia (as cooperation partner).

5.10.2 Work approach

- Technical and legal provisions for the international data exchange on a common European level did not exist at the beginning of the project. In order to guarantee that the national infrastructures for international data exchange are compatible with each other and able to exchange data appropriately, the technical specifications and the legal framework had to be defined and agreed among the participating countries. Therefore the technical and legal foundation was elaborated within several task forces. Details about those task forces and their work approach are provided in chapter 5 Introduction to WP 2.
    - Details about the technical specifications for the international RIS data exchange are provided in chapter 5.13 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – common European approach).
    - Details about the legal basis for the international RIS data exchange are provided in chapter 5.11 RIS Data Exchange – Legal Level.
- The organisations in charge of implementing the project in their countries, were responsible for the national pilot implementation of the systems based on the defined specifications

5.10.3 Results of SWP 1.4, 2.5 and 2.7 / International RIS Data Exchange

The international exchange of RIS data (AIS, ERI, and Hull data) was specified in detail by the technical task force for international data exchange. Participants from Austria, Slovakia, Hungary, the Netherlands, Belgium, Croatia (cooperation partner) and Romania (cooperation partner) actively contributed to the elaboration and continuous improvement of the so called “RIS Data Exchange Reference Documentation” (R2D2). Based on the specifications, the national infrastructures for the international data exchange was pilot implemented and tested in Austria, Slovakia, Hungary, Croatia (as cooperation partner) and the Netherlands as the table below illustrates:

Main activities in WP 2 related to international RIS data exchange	SK	HU	AT	NL	HR (cooperation partner)
System (tender) specifications based on national and international requirements and defined procedures	√	√	√	√	√
Legal basis for the international exchange of RIS data	√	√	√	√	X
Implementation of the system according to the specifications including testing	√	√	√	√	√

Table 20: International RIS data exchange related activities performed in WP 2

Details about the implemented national pilot infrastructures for the international exchange of RIS data are provided in the following chapters:

- 5.15 RIS Data Exchange Implementation– Technical level in Slovakia
- 5.16 RIS Data Exchange Implementation– Technical level in Hungary
- 5.17 RIS Data Exchange Implementation– Technical level in Austria
- 5.18 RIS Data Exchange Implementation– Technical level in the Netherlands

5.11 RIS Data Exchange – Legal Level (TAA)

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands, Belgium, France

Cooperation partners and observers: Croatia, Serbia, Belgium, France, Germany, Romania, Bulgaria

SWP 1.4 (Traffic Information Exchange), SWP2.5 (Cross-Border Services pilot implementation and testing) and SWP2.7 (Hull Data Exchange Pilot Implementation) required the clarification and preparation of amendment proposals of the legal framework for traffic information, cargo and voyage data and hull data. During IRIS Europe, it was concluded that the legal framework would consist of two elements:

- The participating member states of IRIS Europe identified that a multilateral legal agreement among the member states is recommended as basis for the international data exchange. This so-called **"Technical and Administrative Agreement for the international data exchange with regard to River Information Services", in short TAA**, can supplement the EU RIS Directive 2005/44/EC especially with relation to the international data exchange.
- The **adaptation of the national legislation** in order to enable the organisations, which provide RIS Services, to exchange RIS data with governmental RIS users (traffic authorities), logistical RIS users (e.g. fleet manager) and RIS Centres in other countries.

The **Technical and Administrative Agreement for the international data exchange with regard to River Information Services (TAA)** can fulfil the following main requirements:

- To serve as legal basis for the data exchange with RIS Centres in other countries, in particular fulfilling the EU Data Protection Legislation, in particular the Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data and its amendments
- To define the data to be exchanged, the parties of the data exchange (countries and RIS users, etc) and the measures for assuring the data privacy and security
- To define the cost of operation and the Liability for nationally generated and exchanged data
- To define procedures for amendments of the TAA (especially new countries, new messages, new RIS Users, technical enhancements, in particular amendments of RIS standards)
- To define the responsibilities of individual actors

- To define other important issues such as time for the storage of data in case of international data exchange which were identified during the in-depth discussion of the Technical and Administrative Agreement

The process for preparation of the TAA included the following steps:

- Preparation of a draft TAA by lawyer on basis of reference agreements for Electronic Reporting, DoRIS user agreement, ERI Guide, SafeSeaNet, Digital Tachograph, Corvette traffic data interchange for road transport
- Fine-tuning after discussions at several IRIS Europe Meetings, which included the IRIS Europe Steering Committee Meeting, IRIS Europe Coordination Meetings, special meetings with the Rhine-Seine countries, meetings of the Task Force for International Data Exchange
- Fine-tuning after discussions during the ERI Expert Group Meetings
- Fine-tuning after discussions with the logistical stakeholders, which led to the formation of a so-called logistics task force and sea-ports
- Fine-tuning after discussions with the relevant ministries of transport and national data protection agencies

After the drafting and fine-tuning phase, the TAA was agreed to be authentic in English and French. Furthermore it was identified that only those countries, which are considered as safe harbour in terms of the EU data protection legislation can join the TAA. EU Member States and Switzerland are considered as such, for Croatia, Serbia and the Ukraine, separate agreements will have to be determined, which might have the “TAA” as core, but also conclude the directives with relation to the EU Data Protection Legislation in addition.

The TAA with the following structure and the contents of the main text (without the annexes as they were not finalized at that time) was agreed by the Steering Committee of IRIS Europe on 2.4.2008:

- Preamble
- The Introduction of RIS
- The Sets of Data to be exchange
- Data Exchange
- Permitted Usage of Data
- Costs
- Liability
- Questions concerning the Interpretation and Application
- Modification of TAA
- Denunciation and Ceasure of Effectiveness
- Accession by further Parties
- Administration of TAA
- Entry into Force
- Annexes
    1. Data of RIS-Providers to be exchanged between Parties to TAA
    2. Sets of Data to be forwarded to Specific RIS Users and to Specific Governmental Authorities
    3. Technical Specifications of Data Exchange and Mode of Communication Regarding Consent of RIS User to Forward Information
    4. Data Exchange Security Measures

After the general agreement on the main text in the IRIS Europe Steering Committee, several countries prepared the internal approval for the signature of the TAA. The Austrian State Secretary in the Ministry of Transport, Innovation and Technology sent a letter to her colleagues inviting her colleagues to join the TAA and recommend to the other countries to authorize the civil servants in

charge of inland navigation in the ministries of transport to sign the TAA. Afterwards, the TAA will enter into force by means of sequential signatures of the following countries: Austria, Slovakia, Hungary, Romania and Bulgaria.

While several countries are in the official signature process for the TAA, other countries volunteered to investigate the TAA in additional detail and determined additional needs for improvement as precondition for their signature. These additional needs included e.g. the time for storage of data in case of the international data exchange. Moreover, it was identified that additional elements need to be included to fulfil additional requirements of the maritime users as their way of working is different. These valuable proposals for amendments will be discussed at the beginning of IRIS Europe II and will lead to additional amendments before the conclusion of the TAA by other countries.

Some of the countries needed an adaptation of the national legislation as necessary pre-condition for concluding the TAA. The **adaptation of the national legislation** was required in order to enable the organisations, which provide RIS Services, to exchange RIS data. In Austria, for instance, several steps of the transposition of the EU RIS Directive are relevant for data exchange.

- RIS was mentioned in the Amendment to the Inland Waterway Transport Act 9th of June 2005. The purpose of RIS is outlined.
- The Waterway Act was the fundamental restructuring of the Austrian organisation of the Federal Administration of Waterways. In part II of this Act, via donau was assigned as RIS provider.
- In the Amendment of the Navigation Act 2007 the definitions of e.g. River Information Services, Notices to Skippers and Electronic reporting are transposed into national law and responsibilities are stated and the legal framework for data storage and distribution, national and international data exchange is defined.

In summary, the Technical and Administrative Agreement for international data exchange was one of the major achievements of IRIS Europe and constitute one important pillar of international data exchange. The further development will include the inclusion of European Services, which are for instance developed within the FP7 project PLATINA and data exchange agreements with third countries, which are not considered as safe harbour in terms of the EU Data Protection Legislation.

5.12 RIS Data Exchange – Legal Level (Simplified TAA)

Responsible Member States: The Netherlands, Belgium, France

The SSR-countries (France, Belgium and the Netherlands) are aware that multilateral legal agreements with respect to International Data Exchange on an European level are necessary, given the fact that transport of goods is a global process with involvement of many participants (authorities and non-authorities). The (information on) transport of goods is not limited to one country or a specific region especially when logistic partners are involved.

The international exchange of data between the authorities (Fairway Authorities and Port Authorities) in the SSR-corridor started in the seventies of the previous century with several studies how to Exchange Data between the several authorities in Belgium and the Netherlands. In the westerschelde-area Exchange of Data between the Netherlands and Belgium was established and operational in the early eighties. In 1994 Exchange of Data between Germany and The Netherlands was established. Both approaches are still operational and working according the needs of the operators.

Based on the operational experience the authorities have developed and improved these systems accordingly to new technological developments, the changing needs of the authorities and legal changes of the last 25 years. The results of these developments are several concepts in exchange different types of data which are necessary to ensure the availability of detailed information for operators and other involved authorities, to fulfil their obligations such as waterway management, calamity abatement.

Due to the time needed for the legal validations and due the differences in existing technical solutions for data exchange, it was not possible to formalize the TAA within the IRIS Europe project within the SSR-corridor. For this reason the SSR-countries have established an intermediate agreement based on natural understanding in order to authorize the exchange of data between the authorities and provide data to logistic partners on a limited scale, this natural understanding is described in a letter with the working name ‘Simplified TAA’.

5.13 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – common European approach)

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands

Cooperation partners and observers: Croatia, Serbia, Belgium, France, Germany, Romania

5.13.1 Main objectives and expected outcome

The international exchange of RIS data among several countries is seen as the focal point within IRIS Europe and is handled within the following SWPs:

- SWP 1.4: National and international exchange of traffic information (AIS data)
- SWP 2.5: National and international exchange of cargo and voyage information (ERI data)
- SWP 2.7: International exchange of minimum set of the national vessel certification information (Minimum Hull Data Set)

The expected outcome of above mentioned SWPs was the implementation of infrastructure for the national provision and international exchange of AIS, ERI and Hull data among Austria, Slovakia, Hungary, the Netherlands and Croatia (as cooperation partner).

5.13.2 Work approach

According to the work plan the international exchange of RIS data is a cross WP-SWP activity that was not foreseen in such a combination. In order to follow a coordinated approach in specifying and implementing the international data exchange, a task force was set up, the so-called 'RIS Data Exchange Task Force' (detailed information to this task force is provided in chapter 5 Introduction to WP 2). When the task force was set up, detailed terms of references were specified and agreed in order to clearly define the tasks and rights of this task force.

The main goal of this task force was to elaborate and maintain detailed technical and functional specifications for the international exchange of RIS data. The participants of the technical RIS data exchange task force met approximately in a 2 months interval to present and discuss their input to the R2D2 respective necessary updates and change requests to the existing documentation. The participants from the individual countries mainly represented the implementing organisations considering the technical character of the task force. Furthermore the there was a strong involvement of the national RIS providers and RIS authorities of the implementing countries.

During the elaboration of the R2D2 it was soon identified that there are different system architectures in the involved regions. Whereas in the Danube region the international exchange of RIS data is set up in a full distributed architecture (no centralised components), in the Seine-Scheldt-Rhine region the existing infrastructure among the Netherlands, Belgium and France is implemented in a partly centralised architecture. Therefore a major issue within the specification and implementation of the international exchange of RIS data was the interconnection of the systems among the different architectures.

5.13.3 Results

All necessary specifications were summarised under the term 'RIS Data Exchange Reference Documentation' that consists of the following documents:

- Technical System Concept (latest version: v2.5)
- National Access Rights Matrices (latest version: v1.01)
- RIS Data Exchange Process Description (latest version: v1.3)
- RIS Data Exchange XML Messaging Reference Guide (latest version: v1.3)

For the pilot implementations in IRIS Europe it was agreed that the XML Scheme Definition (XSD) in its version 0.3 is leading, and that the documentation will be updated after gaining experiences from the pilot implementations.

RIS_v0.3.xsd makes use of the following additional messages: ERINOT 1.2c.xsd, ERIRSP 1.2c.xsd, Hull_Data_v0.8.xsd.

Technical System Concept:

The document defines the requirements for the international exchange of RIS data on technical system level and provides detailed specifications on:

- System architecture
- Interfaces
- Communication protocol
- Authorisation and authentication
- Data security
- Other relevant technical details

Details about the above listed issues are provided in the following:

- System architecture: The architecture contains detailed definitions of all necessary system components of the national infrastructures for the international RIS data exchange, the so-called Data Gateway (DGW) including the interfaces to other systems and infrastructures as the figure below illustrates.

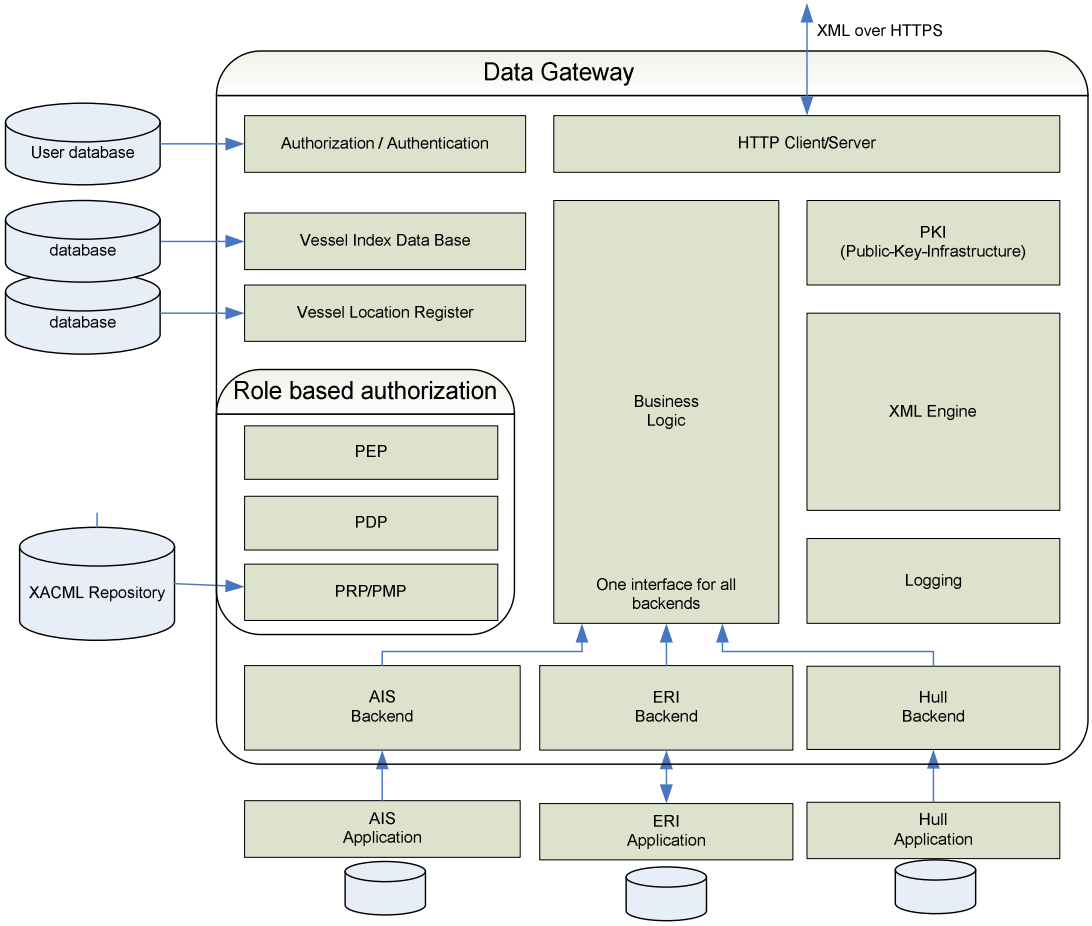


Figure 34: System architecture of international RIS data exchange system

- Interfaces:
  - The HTTP Client/Server is responsible for the HTTP communication and provides the URL to Data Gateways of other countries for communication. The web-server also provides the web-interface for the system users and the system administrator
  - The backend modules fetch and save information from and into the existing national AIS, ERI and Hull infrastructures

- Communication protocol: The communication is performed over a SOAP interface
    - SOAP is transported via HTTPS (HTTP over SSL)
    - The information is packed into XML messages and transported with SOAP requests in an asynchronous way that means the response is sent back in a separate SOAP/HTTP connection
    - Every Message is acknowledged with an HTTP status code immediately and with an appropriate XML answer after processing the XML message
    - The SOAP interface is described in WSDL
- Data security: The communication over HTTPS (HTTP over SSL) and the usage of certificates ensures the data encryption and protecting against attacks
    - Secure Sockets Layer (SSL) provides secure point to point connections over an IP network. It allows to verify the other's identity and secures the connection by encrypting the data exchanged between the applications
    - Every Data Gateway provides a Public Key Infrastructure (PKI) which handles the certificates in the international RIS data exchange
- Authorisation and authentication: There are users, roles and clients in the concept of Data Gateway
    - Every user is a person or system that needs to be allocated to one or more defined user roles
    - The user is identified by the user-ID, which is unique within the Data Gateway
    - The user role is mapped to a set of access privileges that are defined in detail in the “National Access Rights Matrices”

National Access Rights Matrices:

For the definition of the access rights on data field level, a role based mechanism is used, whereas the user role of a user is assigned by the RIS provider. Therefore user roles were uniquely defined on basis of the existing definitions out of the EU Research Project COMPRIS. In order to consider the particularities of national legislation, the related access rights for each role are defined on data field level within the national Access Rights Matrix of each participating country individually. The considered data fields for the mentioned RIS data are based on the existing technical regulations of the European Commission in the field of RIS. The following figure illustrates the layout of the Access Rights Matrix:

			User roles		
			User role 1	User role 2	…
Data fields	AIS data	Data field 1			
		Data field 2			
		…			
	Hull data	Data field 1			
		Data field 2			
		…			
	ERI data	Data field 1			
		Data field 2			
		…			

Figure 35: Exemplary layout of the roles / access rights tables

By the fact that the access rights are sometimes depending on pre-defined circumstances (as defined in the legend of the matrix, e.g. access just when data owner permits), the access rights can in addition be based on the pre-defined circumstances (access rules):

Legend	
0	Role has NO ACCESS to the data field
1	Role has ACCESS to the data field
2	Role has ACCESS to data of vessels currently involved in an EMERGENCY
3	ACCESS when DATA OWNER PERMITTS
4	Data for STATISTICS
5	Role has access just to "OWN VESSELS"
6	Role has ACCESS to data of vessels which have the DESTINATION of the requesting USER
7	ACCESS to data of vessels currently navigating in the PERMITTED REQUEST AREA of the requesting user
8	Access to data if the following is fulfilled: Rule "2" AND "6" OR Rule "2" AND "7"
x	Data STORED but no access rights

Figure 36: Additional rules applicable for the international data exchange

The processes regarding the access rights check are described in detail within the RIS Data Exchange Process Description.

RIS Data Exchange Process Description:

The RIS data Exchange Process Description defines the processes for the international exchange of RIS data among the participating Data Gateways, following the Commission Regulations in the field of RIS.

The document contains detailed definitions and descriptions about:

- Different functions of a RIS Centre (Data Gateway)
- Necessary background functions as preconditions for the international data exchange
    - Exchange of ‘Alive’ notifications among the Data Gateways
    - Synchronisation of the national Minimum Hull Data Sets
    - Notification of pointers to the related Data Gateway when a vessel crosses a border
    - Notification of emergency messages
- Processes within international RIS data exchange by means of request / response
    - The search criteria and their possible combinations are described in detail
    - Each necessary step for all possible request/response scenarios are described in comprehensive use cases and references to the related XML messages are contained
    - Details about the processes related to the check of the access rights of users which are able to request and receive data out of the system are defined as well
    - The figure below illustrates the basic request / response process:

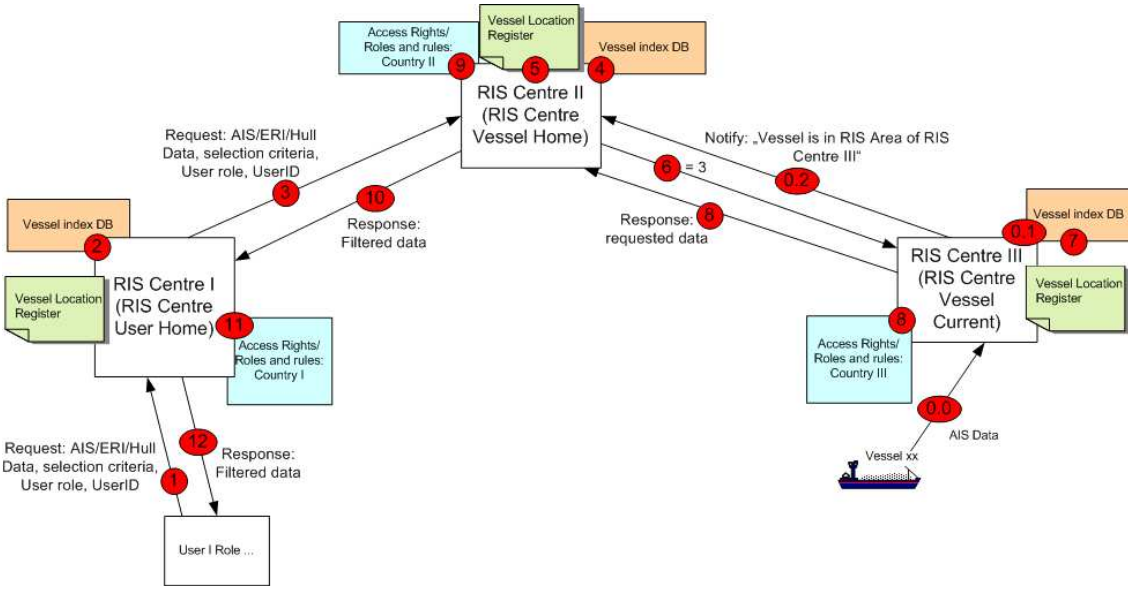


Figure 37: Basic request / response process

- Processes within international RIS data exchange by means of notification / confirmation of receipt
    - The triggers (automatic or manual) for the notification of RIS data to foreign Data Gateways are described in detail
    - Each necessary step for all possible notification scenarios are described in comprehensive use cases and references to the related XML messages are contained
    - The figure below illustrates the basic notification process:

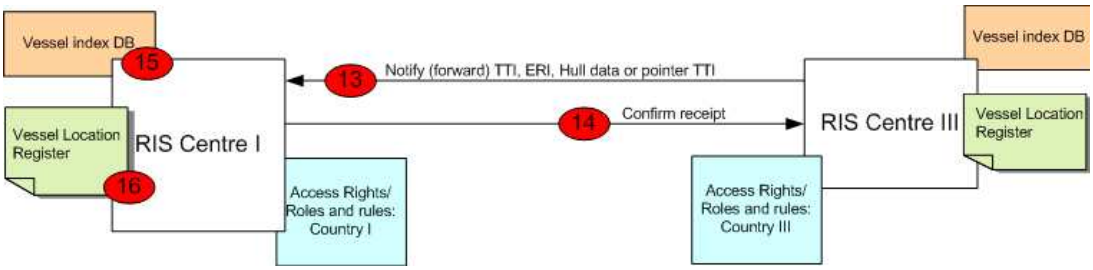


Figure 38: Basic notification process

- Necessary tables and registers
- The unique user-ID
- Handling of requests based on different search criteria combinations
- Processes of checking the different access rules according to the national Access Rights Matrices

The XML messages to be exchanged based on the defined processes are specified in detail within the RIS Data Exchange XML Messaging Reference Guide.

RIS Data Exchange XML Messaging Reference Guide:

The XML Messaging Reference Guide contains detailed information about the XML messages used for the international exchange of RIS data among the participating Data Gateways based on the processes described in the RIS Data Exchange Process Description.

The document contains detailed definitions and descriptions about the:

- Conventions for the XML messaging

- Individual XML messages to which reference is made within the RIS Data Exchange Process Description:
    - Content (service) related XML messages
        - Notification / Receipt XML messages
            - Not_Data.xml
            - Receipt_Data.xml
        - Request / Response XML messages
            - Req_Data.xml
            - Resp_Data.xml
    - Signalling (system) related XML messages
        - Notification / Receipt XML messages
            - Not_Pointer_TTI.xml
            - Not_Alive.xml
            - Not_Emergency.xml
    - The following figure illustrates how each individual message is described in detail:

Item	Occ	Type	Length	Description
Header	1			
field name	1 0-n …	Text Int …	…	Description of the field and its usage
…	…	…	…	…
Body	1			
field name	1 0-n …	Text Int …	…	Description of the field and its usage
…	…	…	…	…

Figure 39: Scheme for message definition

- Message transactions (main scenarios for the exchange of the defined xml messages)
    - Update pointer TTI (to notify where a specific vessel is currently navigating and therefore the most actual data is available)
    - Request / Response AIS, ERI, Hull data
    - Forward AIS, ERI, Hull data / Confirm receipt
    - Forward alive status
    - Forward emergency information
    - The following figure illustrates the message transaction for the basic request/response process:

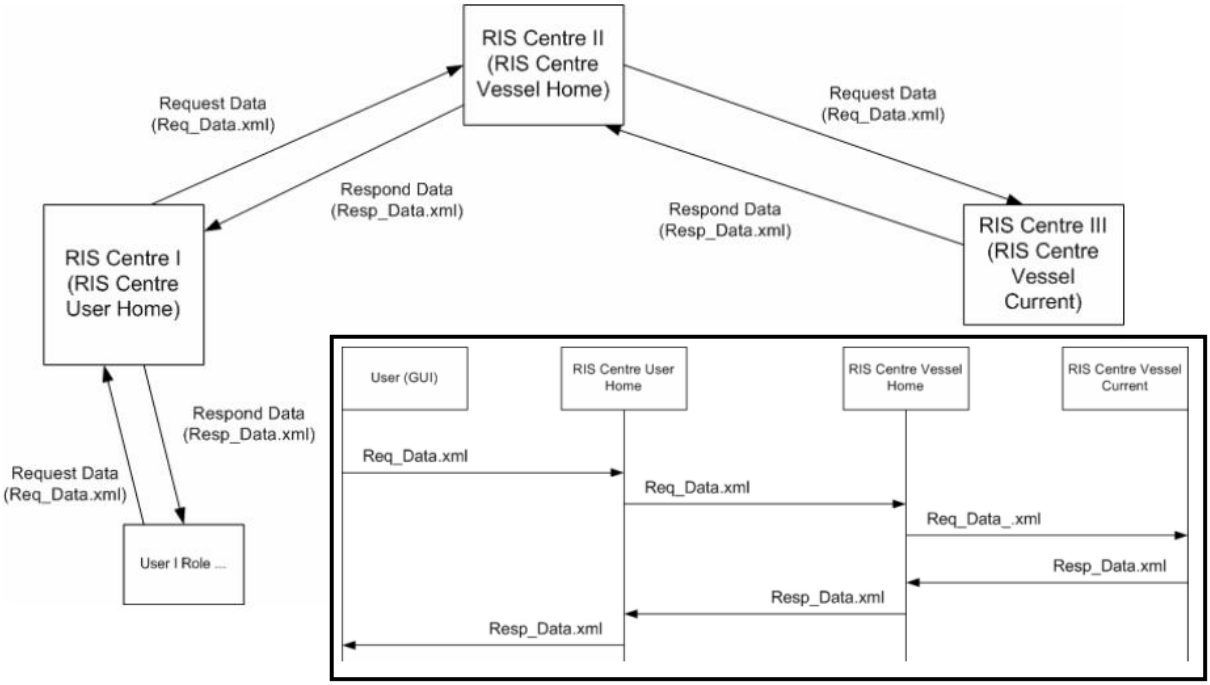


Figure 40: Message transaction for the basic request/response process

5.13.4 Summary, conclusions and recommendations

Status of R2D2:

In May 2007 the available version of the R2D2 was declared to be the basis for the pilot implementation in the participating countries. During the pilot implementation and during the tests several necessary amendments were identified and brought into the technical RIS data exchange task force for discussion and agreement. Consequently several update of the R2D2 were made in the course of the pilot implementation and testing of the national infrastructures. The several changes of parts of the R2D2 as well as of the implemented XML/XSD messages resulted in minor conflicts within the specifications and partly differences between the specifications and the implemented XML/XSD messages as well as the implemented processes. Therefore an amendment of the R2D2 is necessary based on all changes and the finally implemented messages, processes, etc.

The R2D2 is the IRIS Europe project standard for the international exchange of RIS data. It is of utmost importance to guarantee the further maintenance of this standard and to bring it on a European level. Therefore the IRIS Europe Awareness Paper on international data exchange was elaborated and agreed within IRIS Europe. It recommends several future steps towards the formalisation and further enhancement of the project standard, among them to advise the IRIS Europe Steering Committee to address the European Commission and recommend them to

- Adopt the project standard on international data exchange,
- Amend the project standard where necessary and
- Initiate the formalisation and implementation of the standard,
- Enhance and extend the standard on the basis of future related projects and experiences with the standard and
- Organise the maintenance of the standard on international data exchange

5.14 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – regional particularities SSR)

Responsible Member State: The Netherlands

5.14.1 Introduction

The international exchange of data between the authorities (Fairway Authorities and Port Authorities) in the SSR-corridor started in the Seventies of the previous century with several studies how to exchange data between the several authorities in Belgium and the Netherlands. In the Western Scheldt area Exchange of Data between the Netherlands and Belgium was established and operational in the early Eighties. In 1994 Exchange of Data between Germany and The Netherlands was established. Both approaches are still operational and working according the needs of the operators.

Based on the operational experience the authorities have developed and improved these systems accordingly to technical developments, the needs of the authorities and legal changes of the last 25 years. The results of these developments are several concepts which exchange all kind of the data which are necessary to ensure the availability of detailed information for operators and other involved authorities, to fulfil their obligations such as waterway management, calamity abatement.

During the previous projects such as INDRIS and COMPRIS, also the providing of data to logistics stakeholders has been established. For this purpose the systems of the fairway authorities provide the necessary information to a logistic platform. This platform is on limited scale accessible by logistic organizations, in order to gain more practical experience several pilots are being and will be set-up in close cooperation with European and national branch organizations. These pilots can result in adjustments in the documentations and technical approaches.

At this moment data to be exchanged are categorized as follows:

1. Voyage and cargo related data
2. Position data
3. Hull data

The following data categories are subject for international exchange in the future:

1. Water level information
2. Voyage plan-information
3. VTS-images

5.14.2 Generic overview of the SSR - System

Geographically the related fairways in The Netherlands, Belgium and France are gathered in the Seine - Scheldt - Rhine corridor. All vessels passing this corridor are monitored by their local Vessel Traffic Management Systems (e.g. IVS90, MCCD, GINA, MIB, etc.).

When a skipper starts his voyage he sends an electronic announcement to the competent authority. This announcement is realised by creating a message consisting of voyage, cargo and personal related data using for instance an onboard application like BICS. Once the announcement is received by the competent authority, the VTMS will process the announcement and display the relevant information to the RIS-operator. All relevant data will be stored at the centralised location by using web-services.

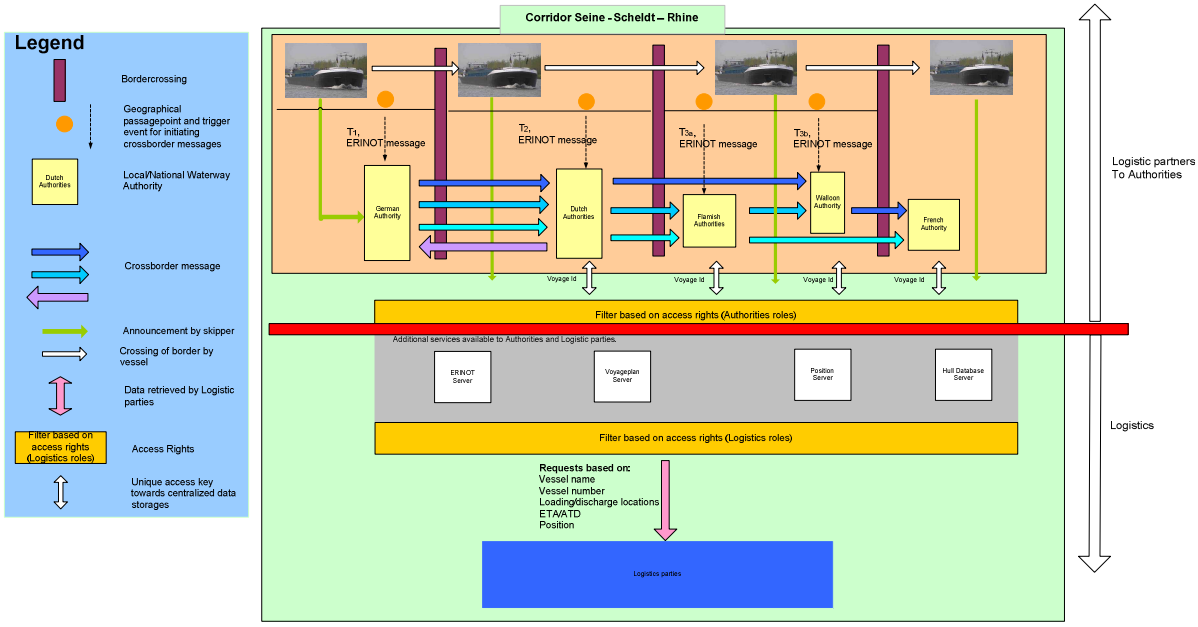


Figure 41: Architecture of the SSR system

The VTM-Systems monitor all the traffic within their own VTS-area, in case a vessel crosses a border, the next VTMS will be notified in advance. The decision made to send such a notification depends on a so called trigger points assigned to the fairway. These points are virtual markers known by the local system.

During the voyage also the position of the vessels will be stored on the centralised platform. The positions of the vessels are the last know position or a calculated position of a vessel.

All the data can be retrieved from centralised platform by using web-services given a specific user and its corresponding authorisation level

Currently the following SRR-partners are using the centralised pilot services:

Organization	System Area	Area	Nationality
MET	Gina system	Walloon area	Belgium
Nv De Scheepvaart	MCCD	Flanders	Belgium
Waterwegen en Zeekanaal nv	IBIS/MCCD	Flanders	Belgium
Port of Brussels	Brussels	Brussels	Belgium
Rijkswaterstaat	IVS90	The Netherlands	The Netherlands
VNF Lockkeeper	France	France	French

Table 21: Organisations involved in exchanging centralised data in the SSR corridor

5.14.3 Overview of the components

5.14.3.1 Hull reference data

Based on the functional specifications regarding the European Hull database a partial implementation is realised. The implementation covers:

- Insert and update of a vessel
- Activate and deactivate a vessel
- Notification of vessel

The implementation is based on the 1.1 XSD which is an enhanced version of the XSD (version 0.8) as agreed within IRIS Europe. To be able to exchange hull data with the IRIS partners an update and downgrade is implemented within in the RIS layer.

The hull database as implemented is a web service (Docstyle) and can process request messages directly or by a message received from partners via the IRIS Europe Layer and RIS layer (notification data for hull data and request/response.

5.14.3.2 Position data

In some cases the position of a vessel during its voyage must be available in order to have complete overview in order to provide

1. Strategic traffic data
2. Traffic management
3. Logistic data

to fairway authorities and entitled third parties. The collection of vessel positions is made available by using several data sources like:

- AIP (based on GPRS and GPS data)
- AIS
- Radar
- Vessel related information systems

The Position Server provides a service for **pushing and requesting strategic** position data in a standardized way. Depending on the level of authorisation any application can access the Position server by making several types of requests.

When **not in the coverage range** of the above stated shore based systems (this will be the most common situation) position data can be provided by other systems (here defined as external systems). Two types of external systems can be identified:

1. Shore based systems such as :
   - Administrative systems (IVS, MIB etc)
   - Lock planning applications
   - Terminal applications
2. Ship based systems such as :
   - Voyage planner
   - ECDIS viewer

Regarding the IRIS project the position server contains position information of the vessel sailing the countries as mentioned above. The information can be retrieved from the position server is based web server requests. The types of requests supported are:

- Position of vessels within a certain area
- Position of a vessel by its vessel id
- Position of a vessel/ vessels by its destination

5.14.4 ERINOT – server

Although the competent authority receives a notification message (ERINOT 1.2 message) in case of cross border activity, some authorities and logistic parties want to have this information available at an early stage, so that planning activities can take place (e.g. lock planning, terminal planning, berth planning).

The ERINOT server supports these activities using a central storage location which can be accessed by multiple authorities. The data stored can be split up in three main categories:

1. Voyage data
2. Cargo data
3. Persons related data

5.15 RIS Data Exchange Implementation – Technical level in Slovakia

Responsible Member State: Slovakia

5.15.1 Main objectives of SWP 1.4, 2.5 and 2.7 in Slovakia

The main objective of SWP 1.4, 2.5 and 2.7 in Slovakia was to prepare the technical solution and to set up the pilot infrastructure for national and international RIS data exchange in Slovakia.

The setting up of the pilot infrastructure and the pilot implementation covered following issues:

- System specification for the hull data management pilot infrastructure (incl. requirements, use cases based on the national and international) – for details see chapter 5.13
- Design and development (incl. data model, prototyping and development based on the system specification) and interconnection to other systems
- Monitoring of the pilot implementation and testing
- Pilot deployment (including the integration of the stakeholders by means of the proper authentication and authorisation mechanism)

5.15.2 Legal requirements

In order to enable RIS data processing and exchange, the RIS Directive 2005/44/EC was transposed into the national legislation in the Act No. 179/2008 Coll. as amending the Act No. 338/2000 Coll. on Inland Navigation, in which the definitions of River information services, Notices to Skippers, Electronic reporting are transposed and responsibilities are assigned and the legal framework for data collection, storage and distribution are provided.

Further legal requirements, in particular those relating to the international legislation, are described in general chapters of the WP1 and W2.

5.15.3 Architecture, components and implemented functionalities

Slovakia fully supports the RIS Data Exchange Reference Documentation (R2D2) as defined within the IRIS Europe Task Force on the International RIS Data Exchange. International RIS Data Exchange was defined within the Task Force for RIS Data Exchange, in which the Slovak beneficiary was represented by company KIOS s.r.o. This way Slovakia actively contributed to the development of the R2D2, incl. national definition of the access rights or e.g. encoding guides for the ERINOT and ERIRSP messages.

The special focus of R2D2 lies in description of processes, definition of messages, technical concept (version 2.5 from 31.7.2007, incl. additionally specification of XPath for filtering), and access rights matrix as the base for the roles based access control mechanism (for details see the chapter *5.13 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – common European approach)*).

- Processes (cases defined for international data exchange)

  The processes as elaborated within R2D2 are implemented in the RIS data exchange pilot infrastructure in Slovakia as part of the business logic of the RIS Gateway. RIS Gateway represents the interfaces to the outside world.

- Messages

  The system related message, notification and request/response messages are implemented as defined in R2D2. This means the notification of the position related data (tracking and tracing system), voyage and cargo related data (ERINOT message out of the Electronic Reporting Infrastructure) and hull related data (Hull Data Management Infrastructure). Furthermore, the position related, voyage and cargo related data as well as hull data can be requested by users based on the agreed roles and their access rights.

Data exchange of	Message
Message describing web services used for int. data exchange	ris-europe.wsdl (version 0.3 from 20 May 2008)
Messages for RIS Data Exchange as defined in R2D2.	Version 0.3 from 20 May 2008
Cargo and voyage related messages (dangerous / non-dangerous cargo)	ERINOT_SRS_V1_2c.xsd, ERIRSP_SRS_V1.2c.xsd
Hull related message	Hull_data_v0p8_iris.xsd
Tracking and tracing messages (as part of the Not_Data.xml or Resp_Data.xml)	IMO Msg. 1, Dynamic Data, IMO Msg. 5, Static Data, Inland Vessel Data Report, Inland specific message FI 21: ETA at lock/bridge/terminal, Inland specific message FI 22: RTA at lock/bridge/terminal, Inland specific message FI 55: number of persons on board

Table 22: Implemented messages for RIS Data Exchange in Slovakia

- Access rights matrix

  The access rights matrix in its final version 1.01 was approved by the Slovak RIS Authority (State Navigation Administration) and is considered as the final for the implementation and the rollout of the national SlovRIS system. The possible updates of the access rights depend on changes in national legislations, or necessary improvements based on the experience from the real life operation.

The national pilot implementation of the RIS Data Exchange Gateway and its relevant modules (infrastructure) considers national specifics and requirements and complies with the international technical concept and agreed processes (R2D2 specification).

The national pilot implementation employs the three tier client server architecture. All functions are accessible on the presentation tier via thin client making use traditional web browsers (presentation tier), which ensures the easy accessibility for users. Functional business logic (application tier) containing business rules based on required functionalities and defined processes runs on an application server (Tomcat). Data tier provides data storage and data access mechanism to an application. PostgreSQL is used as a database server.

The system contains components as displayed bellow in the figure:

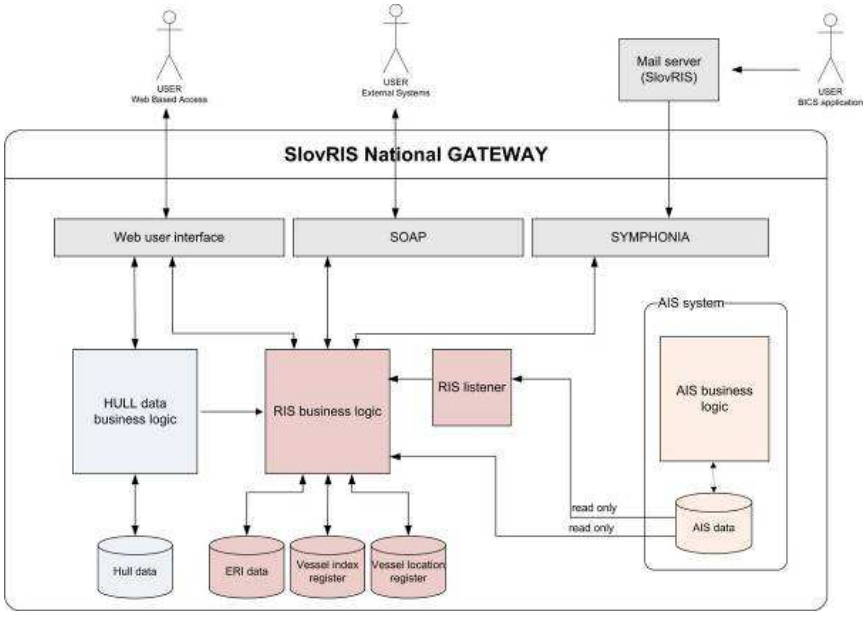


Figure 42: SlovRIS architecture incl. data exchange

Web users / clients

Client workstations use thin client (internet browser) for access to the application. Communication is done via http over an encrypted SSL connection (HTTPS).

The GUI for registered users provides different functionalities based on their roles.

- General functionality for internationally defined users and their access rights to the data covers “request / response of RIS related data” (in particular AIS, ERI, HULL data), incl. the view of results based on the role and access rights to the specific data fields.
- Additional functionality for the fleet operators containing the “data owner” administration, allowing the vessel owner (fleet operator, skipper or an authorised person) to maintain the access rights to data of the own vessels (necessary for access rights where the permission of the data owner is necessary).
- Administrator functionality, including the management of users, reference data, access rights matrix, public access details of the RIS Centres, further application settings as well as access to the history of messages or logs.
- Administrator functionality for manual entry of “position information” (vessel is / is not in the area of the RIS Centre SK).

Interface to other external systems, incl. RIS Centres

The communication with external systems is done via defined interfaces, via SOAP interface. For security reasons and to ensure data integrity, no other direct access to the data in the SQL databases will be available, except of access via interfaces defined via RIS Gateway. The data exchange is done by using of XML messages, which are transported with SOAP requests. External systems are treated as a registered user with pre-defined access rights.

Interface to hull database

Interface to hull database is implemented in such a way, that when a minimal hull data set is created / updated, the hull data application will send a standardized XML message to Slovak national Data Gateway and the vessel index will be updated. In parallel the minimal hull data set is notified to all participating RIS Centres.

Interface to tracking and tracing system (AIS data)

There is read-only access to the AIS data. AIS interface is implemented as listener, which periodically checks for changes in the tracking and tracing system. This indicates when the vessel enters or leaves the Slovak stretch of the river Danube or the common stretches with Austria or Hungary. This functionality is necessary for proper implementation of internationally agreed processes.

BICS Interface

BICS interface enables the BICS users to send messages (ERINOT) to the Slovak national reporting system (Slovak RIS Centre). For details see the chapter 5.2.3 *Components and functionalities of the electronic ship reporting infrastructure in Slovakia*.

5.15.4 Monitoring of the pilot implementation and testing

The Slovak representatives (KIOS s.r.o.) took part in the RIS Expert Group meeting in the course of the IRIS Europe project in order to follow the newest standardisation as well as to inform on the progress of RIS implementation in Slovakia.

During the design and implementation process, a lot of clarifications were necessary. Based on the experience from the pilot implementation of the RIS data exchange in Slovakia requests for changes to the reference documentation were proposed and done. The change requests and clarification were considered during the implementation of the pilot implementation in Slovakia. The proposed change requests dealt mainly with:

- Simplification of processes
- Message specifications (corrections in XML specifications and XML messaging guide)
- Proposals for changes in processes
- Technical concept (e.g. clarifications for the XPath implementation)

In the course of the year 2008 the RIS data exchange infrastructures of Slovakia, Hungary, Austria, Croatia and the Netherlands were interconnected and detailed stepwise functional interconnection tests were prepared. Slovak representatives in the Task Force for international RIS Data Exchange elaborated test cases for the international interconnection dealing with notification messages and processes. Test scenarios were tested, besides remotely running tests, on two interconnection workshops in Budapest, Hungary (end of September) and Piestany, Slovakia (end of October) during which the detected errors were documented, fixed and re-tested afterwards.

The tests proved the functionalities of the system as defined within the system specification and requirements analysis.

Experience

During the implementation of RIS data exchange pilot infrastructure within IRIS Europe the experiences clearly showed that there is a high demand for coordinated pan-European reference data management and alignment of time schedules of implementation at different member states, or one-stop information share. Further observations and recommendations are part of the follow up chapters of this Final Technical Report.

5.15.5 Pilot deployment

The pilot RIS data exchange infrastructure is deployed in the same way as the electronic ship reporting, or hull data management infrastructure on two servers, which operate in failover cluster (high availability cluster). Servers are located in the Slovak National RIS Centre in the premises of the State Navigation Administration.

Integration of users was done by implementing the role and their access rights mechanism, as well as the modern authentication / authorisation mechanisms. The State Navigation Administration (Štátna plavebná správa) in Slovakia, as the RIS authority and RIS provider, was involved in the specification as well as in the tests since the beginning of the project.

The RIS related data will be available in Slovakia under one access point, which is the web site www.slovris.sk. The user can access different information regarding the RIS via this web site, such as Notices to Skippers, water level information, legislation applicable, and can access the web interface allowing queries for AIS data; voyage and cargo related data and the hull data based on the assigned access rights.

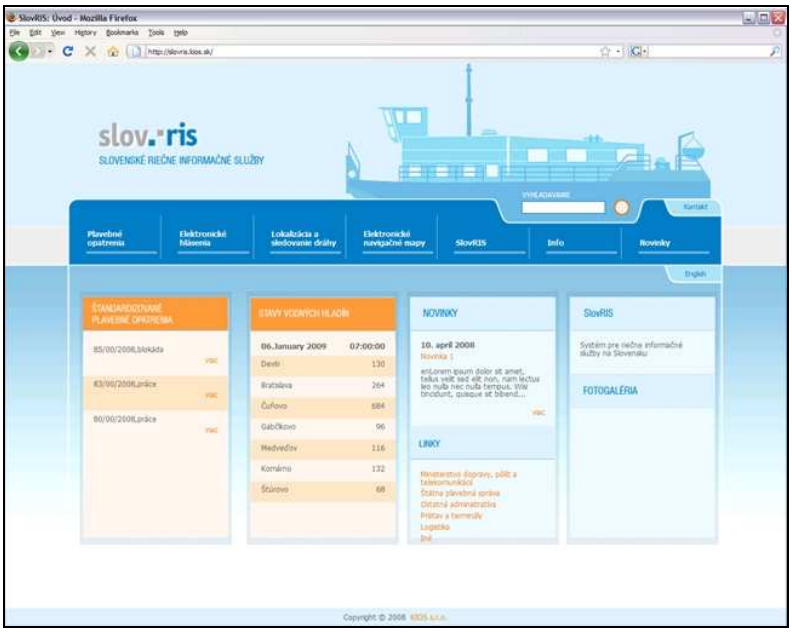


Figure 43: Screenshot for single access point for RIS data in Slovakia “slovris.sk” (in SK/EN)

5.16 RIS Data Exchange Implementation – Technical level in Hungary

Responsible Member State: Hungary

In Hungary the National Transport Authority (NTA) is the designated RIS authority that has contracted RSOE as RIS provider after public procurement. In this regard RSOE keeps constant co-ordination with NTA as well as in the roll out of the NTA HIR system development project as it has many connections to the RIS services such as electronic reporting, hull data and notices to skippers. The national data exchange procedures are agreed between NTA and RSOE as the contract. Steps towards the pilot development of the international data exchange infrastructure have been taking place in the IRIS Europe project as follows.

Participation in the RIS data exchange task force

Hungary participated in all of the RIS data exchange task force meetings involving the National Transport Authority as far as it was possible and in this Hungary was an active member in the elaboration of the **RIS Data Exchange Reference Documentation** and its maintenance during the lifetime of the project. Hungary has also hosted some of the meetings, e.g. the Interconnection Test Workshop in September 2008.

Special focus has been placed on the elaboration of the **Access Rights Matrix** containing the priority roles to be handled within IRIS Europe (e.g. authority responsible for dangerous cargo transport, fleet operators etc.). Hungary has elaborated the necessary document and updated it to the version 1.01 that is considered as final for the rollout of the IRIS Europe project processes.

The following **change requests (14) and requests for information (5)** have been submitted by the Hungarian partners:

Change Requests	Requests for Information
Change because of mistyping (severeness)	How to resolve complex requests in Req_data.xml in Data Gateways?
XSD structure regarding filtering (optional vs. mandatory)	ISRS location codes for RIS centres?
Length of user ID (change from 100 char to unlimited)	How to handle vessels belonging to a RIS Centre VH not participating in the system?
Mistyping of TypOfData_Requested element in the XSD	Handling of “Only Hull” and “Only ERIRSP” queries
Introduce Time-to-live (max-depth) field in every message, for eliminating never ending cycles	ERINOT related questions (ETA, ETD, BCSPLTS, RIS Index)
Error handling (HTTP, SOAP, Custom error) => synchronous SOAP response	
Filtering according to rule 3 (Data Owners Administration Table – DOAT)	
Filtering according to rule 6 (vessel destination)	
Filtering according to rule 7 (area of competence)	
There is need to synchronize the RIS indexes of the countries	
Modify XSDs to enable filtering (follow up CR 0030)	
Decreasing traffic (messages exchanged) between Data Gateways	

Border crossing pointer issues (introduction of Receipt_Not_Pointer_TTI)	
Hull synchronization problems, need for more status codes and messages	

Table 23: RIS Data Exchange implementation change requests / requests for information

Implementation procedures

According to the RIS Data Exchange Reference Documentation the data gateway has been elaborated in the Hungarian RIS Centre.

According to the RIS Data Exchange Reference Documentation Hungary has elaborated the pilot infrastructure for international data exchange of RIS-related data as follows:

Type of work	Data or message	Version
Message to exchange RIS data	RIS message including: • Content (service) related XML messages o Notification / Receipt XML messages ▪ Not_Data.xml ▪ Receipt_Data.xml o Request / Response XML messages ▪ Req_Data.xml ▪ Resp_Data.xml • Signalling (system) related XML messages o Notification / Receipt XML messages ▪ Not_Pointer_TTI.xml ▪ Not_Alive.xml ▪ Not_Emergency.xml	v0.3
Message to exchange dangerous cargo related data	ERINOT – XML	v1.2c
Message to respond to the ERINOT message	ERIRSP – XML	v1.2c
Message to exchange semi-static vessel data	Hull data – XML	v0.8

Table 24: Overview of messages and their versions as implemented in Hungary

During the interconnection test procedures the infrastructure has been tested together with project partners implementing the similar services. In the elaboration of the pilot system special emphasis has been put on the successful integration of the BICS interface.

Web interface

The elaboration of the web interface has been finalized. The basic functionalities are available for testing for the registered users. The graphical user interface is available at: http://ris.rsoe.hu/iris.

Figure 44: Graphical user interface - Hungary

RIS index

The first draft version providing information regarding the Hungarian section of the River Danube has been finalized.

The RIS index (draft version no. 5) contains:

- bridges,
- biggest ports (national public ports),
- cables overhead,
- ferries,
- border control,
- water level gauges,
- RIS Centre,
- Water police stations.

This version is downloadable from the website www.risexpertgroups.org.

The important data in respect of electronic reporting have been integrated in the system, e.g. ports (for start and end of voyage), however, BICS tables v3.07 are used in the IRIS Europe project.

The international RIS data exchange services and processes are successfully implemented in Hungary according to the agreed standards and formats. These solutions can be integrated into the PannonRIS (River Information Services in Hungary) system.

5.17 RIS Data Exchange Implementation– Technical level in Austria

Responsible Member State: Austria

5.17.1 Main objectives and expected outcome of SWP 1.4, 2.5 and 2.7 in Austria

The main objective of SWP 1.4, 2.5 and 2.7 in Austria was to set up pilot infrastructure and services in Austria to enable national and international exchange of RIS data. The expected outcomes of above mentioned SWPs in Austria were:

- System specifications for national and international exchange of RIS data based on relevant Directives and Standards as well as considering data protection regulations
- Definition of cross border data exchange procedures
- Pilot Implementation of RIS data exchange infrastructure in Austria based on the elaborated system specifications
- Interconnection with foreign RIS data exchange infrastructures
- Detailed testing and acceptance of implemented RIS data exchange infrastructure

5.17.2 Results of SWP 1.4, 2.5 and 2.7 in Austria

Detailed tender specifications were elaborated. The tendered infrastructure was pilot implemented into the Austrian RIS system as illustrated in the following table and described below:

	Status
Activities in SWP 1.4, 2.5 and 2.7 related to national and international RIS data exchange Austria	**AT**
Elaboration of system specifications	√
Elaboration of cross border data exchange procedures	√
Tender of the pilot implementation	√
Monitoring the pilot implementation	√
Interconnection with foreign infrastructures	√
Detailed testing and acceptance of pilot implementation	√

Table 25: Results of SWP 1.4, 2.5 and 2.7

Elaboration of system specifications and cross border data exchange procedures:

via donau took the lead in the elaboration of the RIS Data Exchange Reference Documentation (R2D2) within the technical task force for RIS data exchange. Details about the R2D2 are provided in chapter 5.13 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – common European approach). For the tendering of the national RIS data exchange infrastructure, via donau elaborated detailed tender specifications whereas the R2D2 was an integral part of the specifications. As the R2D2 specifies in detail the international exchange of RIS data, detailed specifications on the national requirements regarding interfacing with other national infrastructure (e.g. existing DoRIS AIS infrastructure), graphical user interfaces for logistical / governmental users and for the system administrator as well as the integration of the infrastructure into the existing Austrian RIS system DoRIS.

Tender of the pilot implementation:

Based on a European-wide tender procedure, via donau identified and contracted the best bidder with the pilot implementation of the Austrian infrastructure for the national and international exchange of RIS data whereas the implementation was coupled with the pilot implementation of the Austrian electronic reporting infrastructure.

Monitoring of the pilot implementation:

During the implementation a lot of clarifications, especially related to the international RIS data exchange processes were necessary. Within the technical RIS data exchange task force, all implementing organisations provided their experiences and came up with necessary change requests to the existing specifications (R2D2). Those changes where as well considered during the implementation of the Austrian pilot infrastructure.

Interconnection with foreign infrastructures:

In the course of 2008 the implementing organisations interconnected the RIS data exchange infrastructures of Slovakia, Hungary, Austria, Croatia and the Netherlands and executed detailed functional interconnection tests in several steps. Next to detailed pre-tests, 2 test workshops with two days each were organised. In those test workshops detailed functional tests were executed based on elaborated test cases and the detected errors were documented, fixed and re-tested afterwards.

Detailed testing and acceptance of pilot implementation:

Next to the interconnection tests, via donau executed a series of detailed tests in order to monitor and prove the proper pilot implementation of the system split into the following phases:

- Functional tests of the RIS data exchange prototype mainly focused on the graphical user interface
- Detailed functional and technical tests of the entire system within a test bench with simulated foreign data exchange systems
- Detailed stability, usability and conformity (standardised messages) tests of the entire system
- Functional, technical, performance and security tests after the migration of the system into the operational RIS system in Austria (DoRIS)

As the executed tests proved the proper functioning of RIS data exchange infrastructure, via donau accepted the pilot implementation of the system.

5.17.3 Implemented functionality

Basically all implemented functions related to the international exchange of RIS data is fully conform to the specifications within the RIS Data Exchange Reference Documentation (R2D2). Details on the R2D2 are provided in chapter 5.13 RIS Data Exchange Specification– Technical level (RIS Data Exchange Reference Documentation – common European approach).

Interfaces to other national infrastructure:

- The Austrian RIS data exchange infrastructure is interfacing with the existing Austrian AIS infrastructure to provide relevant AIS data to authorised users.
- Furthermore the system is interfacing as well with the pilot implemented Hull data management infrastructure in order to enable synchronisation of the Minimum Hull Data Sets among the interconnected systems and to provide relevant Hull data to authorised users.

Interface to foreign RIS data exchange infrastructures:

- Based on the R2D2 the Austrian RIS data exchange infrastructure is interfacing with the foreign infrastructures in order to enable international RIS data exchange based on the technical specifications and based on the specified processes and messages. The main functionality provided by this interface is:
    - Notification of system relevant messages (alive status, vessel pointer information)
    - International request / response of RIS data

- Notification of RIS data based on defined trigger events
  - Synchronisation of Minimum Hull data sets
  - Notification of electronic reports to relevant foreign systems (e.g. next country along the route)
  - Notification of emergency reports

Graphical user interface for system users:

The user GUI provides several functions to registered users:

- Request / response of RIS data: The figure below illustrates the screen for the manual request of RIS data based on specific search criteria.

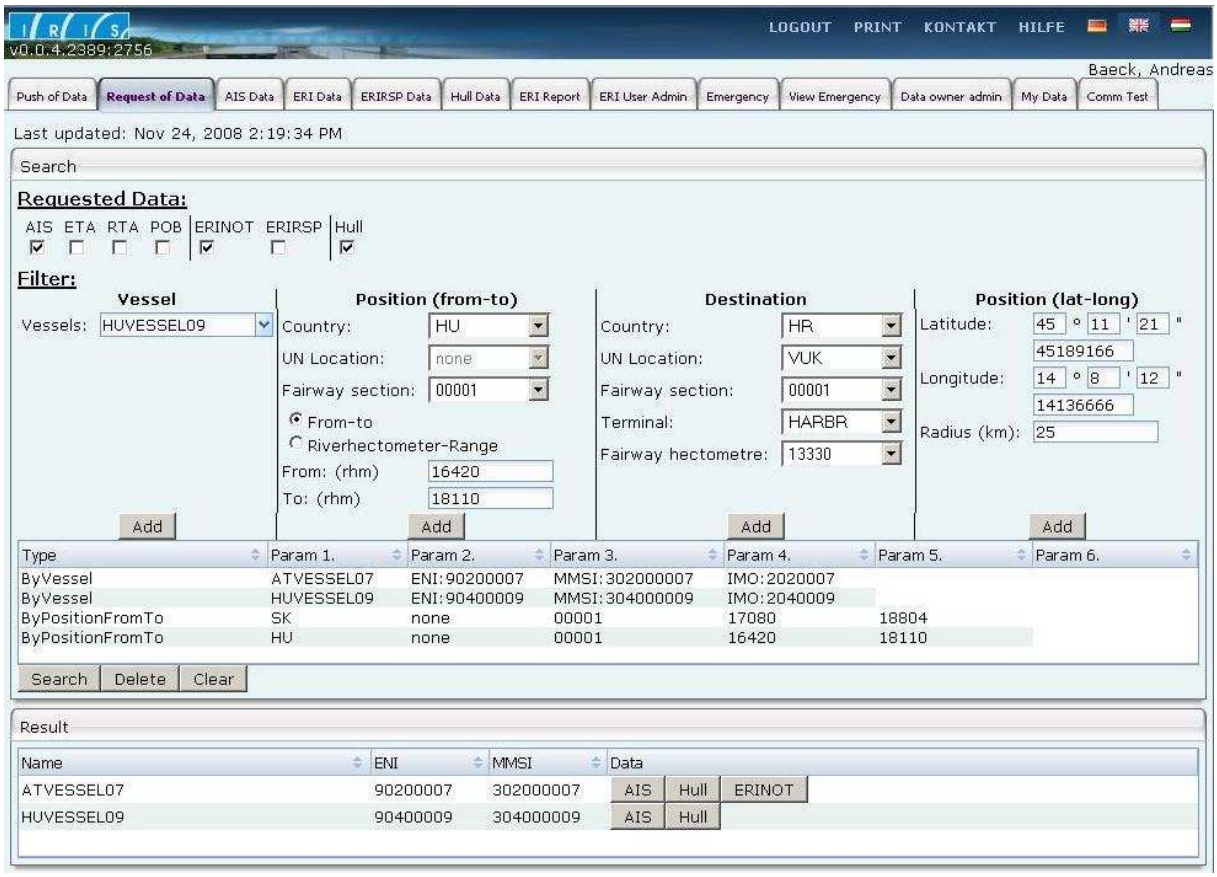


Figure 45: Request of Data on Electronic Reporting Web GUI - Austria

In this screen the user has the possibility to request RIS data based on several criteria:

- First of all the user can chose the type of data to be requested
  - AIS data (IMO msg. 1, IMO Msg. 5 and Inland vessel data report)
    - The addressed AIS messages ETA (estimated time of arrival), RTA (required time of arrival) and POB (persons on board) are not implemented so far in the national infrastructure but the integration into the national and international exchange of RIS data is prepared
  - ERI data (available ERINOT and ERIRSP reports)
  - Hull data (Minimum Hull data set)
- Then the user can define specific search criteria for vessels which's data the user want to request
  - Search criteria vessel-ID: The user has the possibility to search for a specific vessel by selecting from a combo-box that contains all vessels participating in RIS of the

countries that have implemented the international RIS data exchange are interconnected to each other. Furthermore the user can directly type in the ID of the vessel (e.g. ENIxxx, IMOxxx or MMSIxxx).

- Search criteria destination: The user has also the possibility to search for all vessels with a specific destination. The destination is compared with the destinations of the available AIS and ERI data. If there is a positive match, the criterion is fulfilled.
- Search criteria position: The user has also the possibility to search for vessels based on their current position. Therefore the user has different possibilities to define a specific search area:
  - River kilometre from – to
  - River kilometre and radius
  - Longitude, Latitude and radius

  All vessels that are currently navigating in the defined area fulfil the search criterion in this case.
- Furthermore the user has the possibility to combine different search criteria (details are contained in the R2D2).
- Based on the defined access rights within the national access rights matrices (details are contained in the R2D2) the system responds the requested data to the user unfiltered, partly filtered or does not provide the data at all when the user has no access rights to the requested data.
- The user can view the details of the responded data by clicking on the related button in the results list box.

- Push of data subscriptions: The figure below illustrates the screen where the user has the possibility to set specific criteria for automatic requests of data. As those subscriptions are checked continuously by the system and in case of positive match the data is provided automatically to the user, this function is called ‘push of data subscriptions’.
- Push of data screen: In this screen the user has an overview on all the data that has been notified to him by the system. Such a notification can be triggered by the push of data subscriptions. Furthermore authorised users get electronic reports and emergency messages notified via this screen.
- View AIS, ERI, and Hull data: Certainly a user can view the responded or notified data. Therefore several screens for the individual data groups are provided.
- Data owner administration: In this screen the vessel owner (or an authorised person) can maintain the access rights to data of the own vessels. This is necessary to check specific access rights where the permission of the data owner is necessary.
- User data administration: This screen provides the possibility to the user to administer the own user related data like preferred GUI language and contact details.
- Other functionality: The functionality for electronic reporting as well as for emergency reporting was also integrated into the user GUI. Details can be found in the respective chapters within this document.

Graphical user interface for system administrator:

The administrator GUI provides all necessary functions to the authorised system administrator:

- The administrator has an overview on the status of the foreign data exchange systems.
- Configuration of system settings: The administrator can configure several system settings.

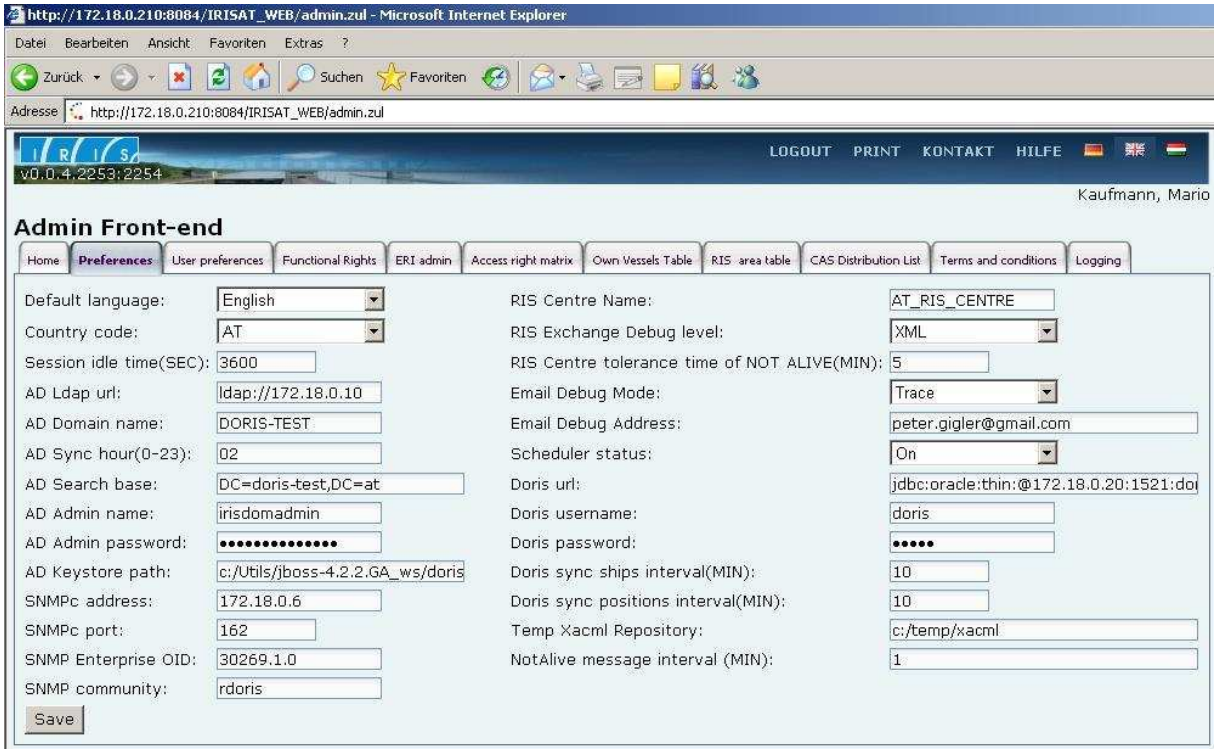


Figure 46: Preferences on Electronic Reporting Web GUI - Austria

- Administration of functional user rights. The administrator can define on user role basis to what functionality users of specific roles have access within the user GUI.
- Distribution lists: The administrator can maintain specific distribution lists. According to those lists specific data is provided to authorised users.
- Maintenance of reference data: The administrator has the possibility to maintain and import specific reference data into the system (e.g. access rights matrix).
- Terms and conditions: The administrator can maintain different versions of terms and conditions that have to be accepted by registered users when first logging in into the user GUI.
- Logging: Furthermore the administrator can view the recent entries of the log file in order to check the system behaviour.

5.18 RIS Data Exchange Implementation– Technical level in the Netherlands

Responsible Member State: The Netherlands

5.18.1 System outline

The participating countries within IRIS Europe have agreed on the realization of a Pan-European pilot implementation of RIS data exchange. The pilot will interconnect the implementation on the Danube corridor with the Seine-Scheldt-Rhine corridor (SSR-corridor).

The objective of this pilot implementation is to gain experience for future RIS implementations, by assembling two distinct architectures of both corridors into one Pan-European data exchange architecture. In order to realize the interconnection, the current RIS-services on the SSR-corridor have been extended with additional components to enable the interconnection

The extension can be split up in the following components:

- IRIS-Europe layer and RIS-layer for the exchange of data between the RIS implementations on the two corridors;
- Implementation of the RIS authority Hull-database server;

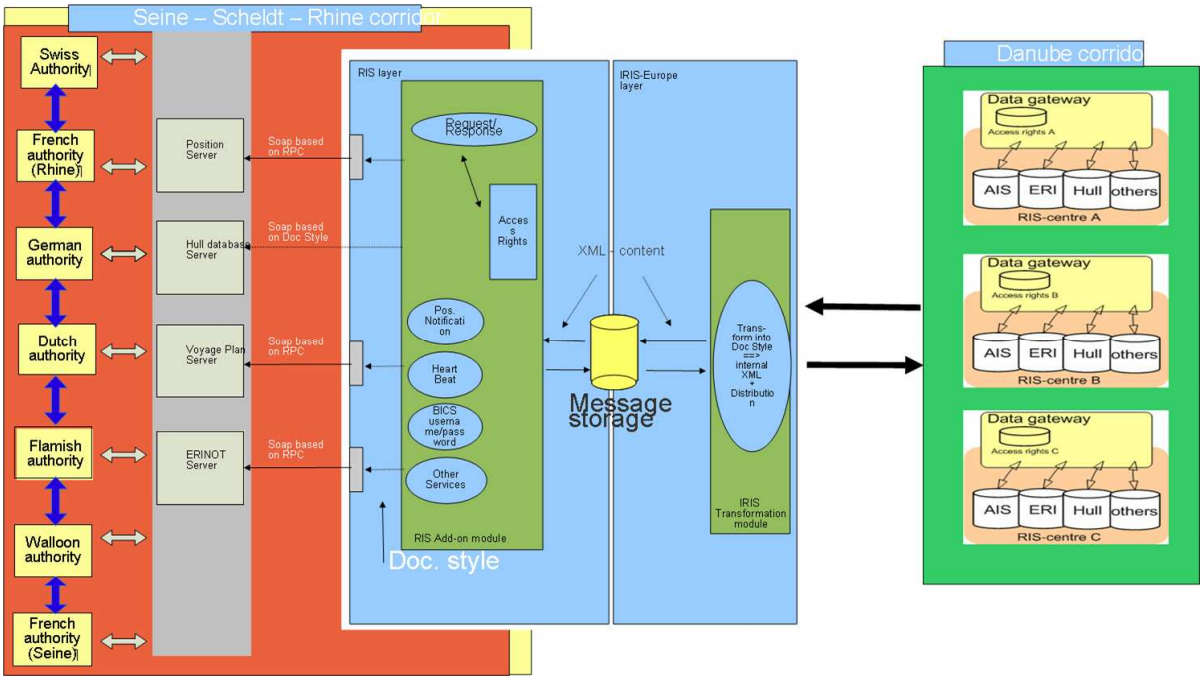


Figure 47: IRIS Europe layer in relation to the SSR-corridor and Danube-corridor

The following types of messages have been identified, as specified within "RIS dates Exchange XML Messaging Reference Guide" [2].

Message Type	Type	Description	SSR → Danube	Danube → SSR
Not Alive	Broadcast	Heart beat message. Initiated by the system (RIS layer) not by a request message.	Yes	Yes
Not pointer TTI	Unicast	Notification position data of vessels. Initiated by the system (RIS layer) not by a request message.	Yes	Yes

Message Type	Type	Description	SSR ➔ Danube	Danube ➔ SSR
Not data.xml (AIS)	Unicast	Notification data, no request.	No	No
Not data.xml (ERI)	Unicast	Notification data, no request.	No	No
Not data.xml (HULL)	Broadcast	Notification data, no request. Initiated by the system (RIS layer) not by a request message.	Yes	Yes
Receipt_data.xml	Unicast	Acknowledgment. Initiated as result of receiving a notification message.	Yes	Yes
Req_data.xml	Unicast	Request message initiated by RIS partner.	Yes	Yes
Resp_data.xml	Unicast	Response to RIS partner given a request message.	Yes	Yes
Not_Emergency.xml	Broadcast	Emergency messages to all partners	No	Yes

Table 26: Types of messages implemented in the IRIS Europe Layer

5.18.2 Differences IRIS implementation SSR - corridor and the RS2D2 specification and its processes

The implementation of the SSR framework for the interconnection with the Danube area differs from the IRIS Europe documentation on several issues. This section gives an overview of these differences and its cause and consequences.

No forwarding of requests messages:

In case a request is made to the IRIS Europe layer then it will only provide information based on the information available within the Dutch area. So in case data is requested by the Austrian RIS Centre for a Dutch vessel sailing in Austria, no request is forwarded towards the Austrian RIS Centre to obtain the actual position.

The reason for acting this way is based on the Dutch legislation resulting in the fact only data available within the Dutch area may be provided towards the requesting partner.

Leaving the Dutch area regarding notification pointers:

The notification pointers will always provide the actual coordinates so a partner is able to derive where a border crossing is taking place.

Position Requests:

Positions based on a river km as defined within the R2D2 specification is not possible yet, so only those requests will be supported referring to:

1. Request based on the Vessel identification
2. Request on the Vessel position
3. Request based on a Destination

Timeout values:

The Timeout values are set to a default value of 1000 seconds. In all cases a request is processed even if the timeout value has elapsed.

5.19 SSR Demonstrator

Responsible Member State: The Netherlands

Within the SSR-corridor several RIS-services have been established and on a limited scale made accessible to logistic organizations (Remark: only after authorisation by the skipper). In order to gain more practical experience, several pilots are defined and realized in close cooperation with European branch organizations in order to gain more operational experiences regarding sharing of RIS information.

As integral part of the IRIS Europe Seminar (see also 9.6 “Dissemination”), a demonstration was organised to present the achieved results. The demonstration was mainly dealing with how to provide information (using messages and visualisations) to the logistic partners by using the established RIS-services. The pictures below are examples of the several representations.

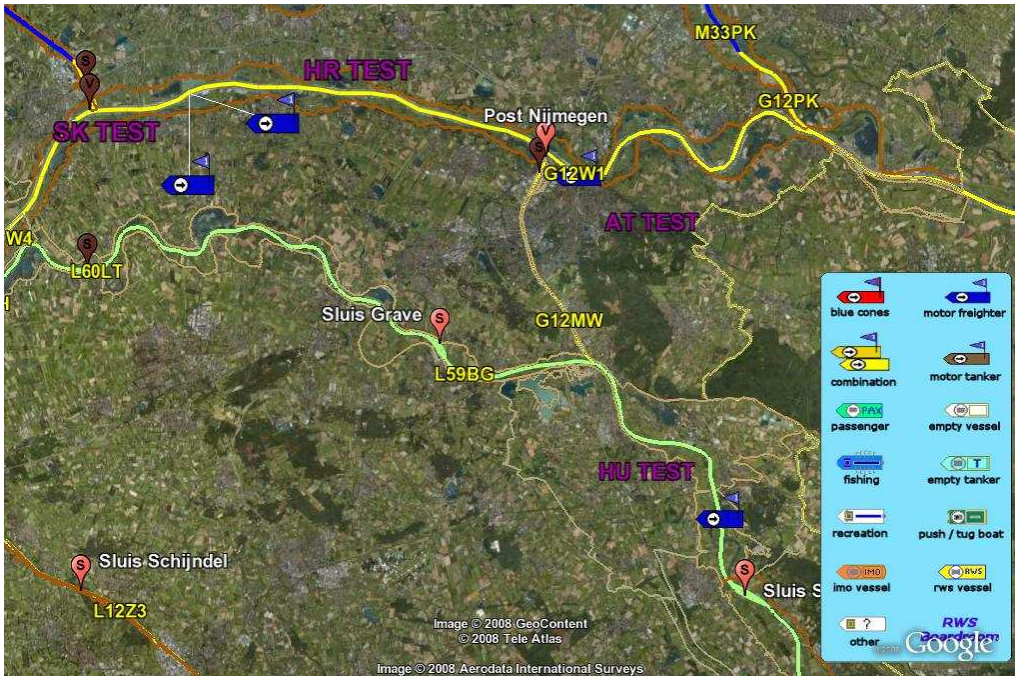


Figure 48: Presentation of RIS data in Google Earth – SSR demonstrator

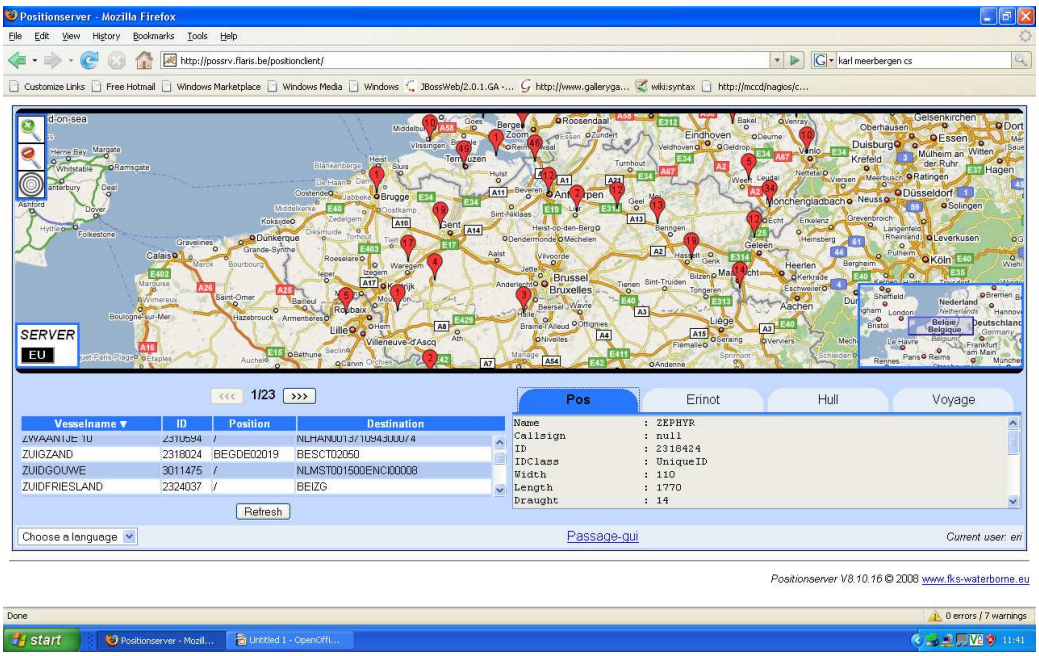


Figure 49: Presentation of RIS data on digital maps - SSR demonstrator

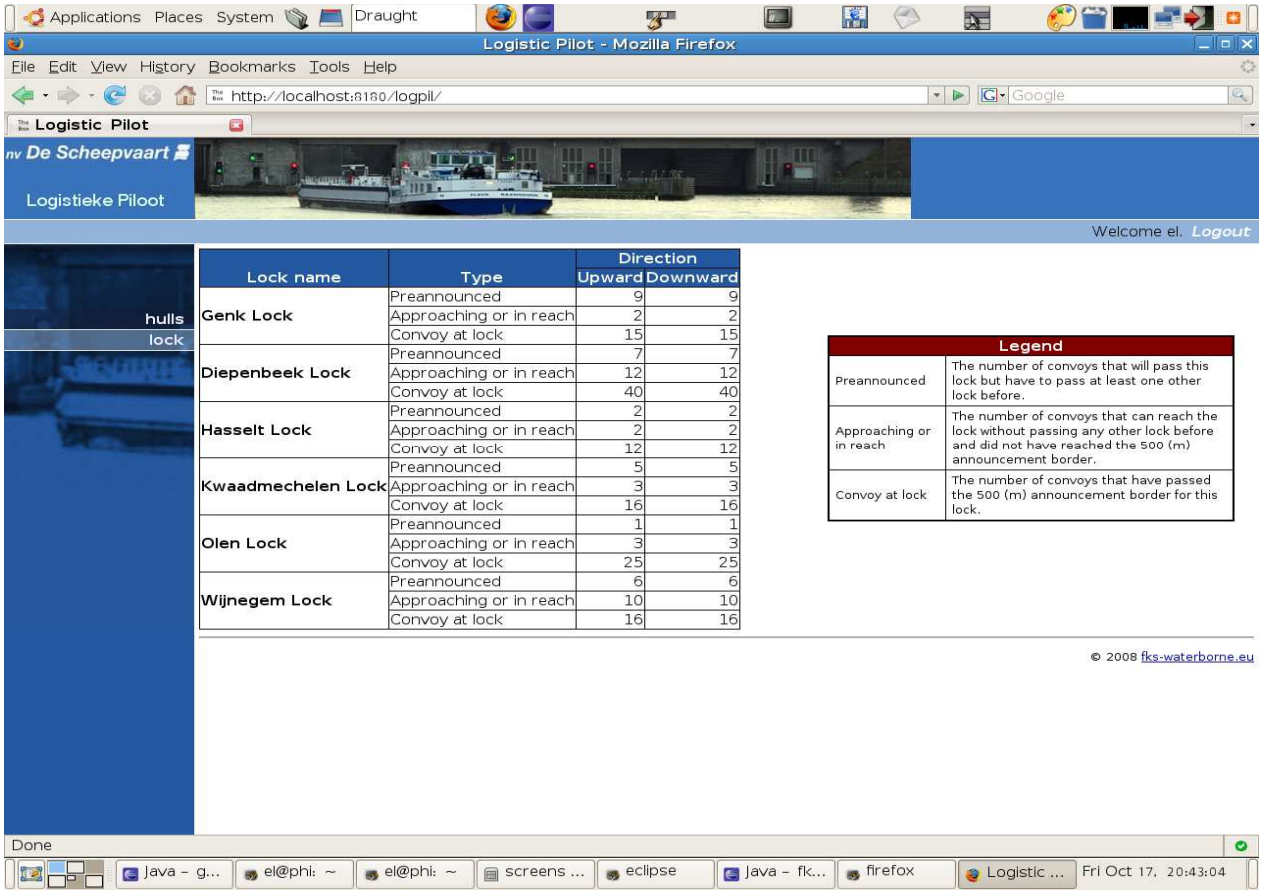


Figure 50: Presentation of RIS data on website in table format - SSR demonstrator

6 WP 3 – Pilot Implementation Environmental Services

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands, Belgium

6.1 WP 3 Introduction and Summary

6.1.1 Main objectives and expected outcome of WP 3

Seamless integration of inland waterway transport into modern industrial supply chains demands inland navigation to improve its services, reliability, ability to plan, flexibility and traceability of operation resulting in increased safety and efficiency of inland navigation. One major requirement to reach these goals is to elaborate the needs for and to define new RIS Services additionally to the minimum requirements out of the European RIS Directive. Therefore WP3 focuses on three of those additional RIS Services, which are considered as very important.

The main objectives of WP 3 are:

- Execute a feasibility study for a waste management service
- Set up a pilot implementation for waste management service
- Execute a feasibility study for a RIS Service for calamity abatement support
- Set up a pilot implementation for a RIS Service for calamity abatement support
- Execute a feasibility study for collision avoidance service

6.1.2 Work approach

- SWP 3.1 Waste Management Service
    - The Netherlands took the lead for the execution of the defined tasks according to the workplan
    - Partners from Austria, Slovakia and Hungary actively contributed to the elaboration of the feasibility study
    - The Netherlands were responsible for the pilot implementation of the waste management service.
- SWP 3.2 Calamity Abatement Service
    - Belgium took the lead for the execution of the defined tasks according to the workplan
    - Partners from the Netherlands, Austria, Slovakia and Hungary actively contributed to the elaboration of the feasibility study
    - The pilot implementation of the calamity abatement service was done in Austria, Slovakia and Hungary, integrated into their international RIS data exchange infrastructure. Furthermore the development of a pilot service was started in Belgium.
- SWP 3.3 Collision Avoidance Service
    - Austria was responsible for this SWP

6.1.2.1 Results of WP 3 / Waste Management Service

A feasibility study on waste management service in inland navigation as well as a pilot implementation in the Netherlands was carried out as illustrated in the table below:

	Status in country			
Main activities in WP 3 related to Waste Management Service	**NL**	**AT**	**SK**	**HU**
Elaborate current processes, define user needs and evaluate best practise in Europe concerning waste management in inland navigation	√			
Develop a pilot service for waste management in inland navigation	√			
Implement pilot waste management service in inland navigation	√			

Table 27: Results of Waste Management Service

Details about the results of the Waste Management Service are covered in the following subchapters related to SWP 3.1.

6.1.2.2 Results of WP 3 / Calamity Abatement Service

A feasibility study on calamity abatement service in inland navigation was elaborated. A common proposal for the classification of accident types and accident severity was elaborated. An xml message was developed by the technical RIS data exchange task force for the implementation of the pilot service integrated into the international RIS data exchange infrastructures.

	Status in the countries				
Main activities in WP 3 related to Calamity Abatement Service	**BE**	**NL**	**AT**	**SK**	**HU**
Elaborate current processes, define user needs and evaluate best practise in Europe concerning calamity abatement in inland navigation	√	√	√	√	√
Develop a pilot service for preventive and reactive calamity abatement in inland navigation	√	√	√	√	√
Implement pilot calamity abatement service in inland navigation	√	√	√	√	√

Table 28: Results of Calamity Abatement Service

Details abut the results of Calamity Abatement Service are contained in the following subchapters related to SWP 3.2.

6.1.2.3 Results of WP 3 / Collision Avoidance Service

The situation concerning collisions in inland navigation was investigated for the Austrian Danube as the table below illustrates:

	Status in country
Main activities in WP 3 related to Collision Avoidance Service	**AT**
Analyse the status quo and the root influential causes of collisions in Austria	√
Elaborate Conclusions & Recommendations for the collision avoidance service from the Austrian perspective	√

Table 29: Results of Collision Avoidance Service

Details abut the results of Collision Avoidance Service are contained in the following subchapters related to SWP 3.3.

6.2 SWP 3.1 Feasibility study for Waste Management

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands

6.2.1 Introduction

"*How can RIS support and enhance waste management within the relevant countries along the Rhine-Danube corridor?" or "Is there added value for a RIS service on waste management?"*.

These questions shall be answered in this paragraph. The interface between the following two processes is elaborated:

- the waste management processes for inland shipping
- the RIS services offered to inland navigation

The question of whether waste management processes - concerned with the collection of specified categories of waste originating from inland navigation - in inland navigation can be supported by River Information Services (RIS).

This feasibility study covers the first two tasks as defined in the SWP:

1. To gather information about the regional / national current processes and measures for waste management in inland navigation (with special focus on the systems in operation in the Rhine countries).
2. To determine the needs and requirements of the organisations involved, concerning relevant information that can be provided via RIS.

6.2.2 Waste Management

Waste management practices differ in developed and developing nations, in urban and rural areas, and as far as residential, industrial, and commercial producers are concerned. Management of non-hazardous residential and institutional waste in metropolitan areas is usually the responsibility of local government authorities, while management of non-hazardous commercial and industrial waste is usually the responsibility of the generator.

Waste management for inland navigation focuses on the following four categories of waste:

- Oily and other hazardous waste;
- Waste caused by cargo;
- Domestic waste;
- Sewage water.

There are a number of concepts concerning waste management that vary in their usage between countries or regions. The waste hierarchy classifies waste management strategies according to their desirability. The waste hierarchy has taken many forms over the past decade, but the basic concept has remained the cornerstone of most waste minimisation strategies. The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste.

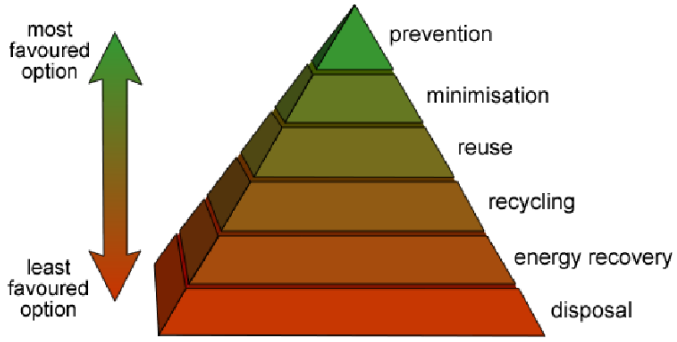


Figure 51: The waste hierarchy (source: RSOE)

6.2.3 The inventory phase

The actual practice of waste collection for inland navigation has been studied for the countries involved in IRIS Europe. The first part of the feasibility study is based on literature, observations, visits to the countries and from information provided by the individual countries and interviews. Waste collection related to inland navigation has the attention of the parties involved in each country.

All the countries involved (Austria, Belgium, France, Hungary, Netherlands, Romania, Slovakia) are working on the subject of waste management in inland navigation.

The “Rhine” countries have developed a waste management treaty which specifies the waste categories: waste contaminated by oil and grease and cargo waste. This treaty became in force recently.

The Danube countries are also working on this subject in the INTERREG-project proposal “WANDA, Waste management for inland Navigation on the Danube”, aimed at concerted development and exemplary implementation of preventive measures to ensure a sustainable, environmentally sound and trans-nationally co-ordinated approach in ship waste management along the Danube. In cross-border co-ordination a stepwise capable ship waste management system is to be set up along the Danube. The importance of waste management is undisputed.

The next table gives an overview of the actual situation of waste collection as developed during the IRIS Europe workshop on waste management in Budapest on October 11th 2007. The figures in the table represent the number of available collection points for the type of waste mentioned in the rows and in the country mentioned in the columns.

Clearly a lot of attention is paid to waste contaminated with oil. Each country is busy collecting and recycling waste but their positions in the field differ. Conflicting regulations and lack of resources for enforcing existing laws make the present situation even more complex.

		A	B	F	HU	NL	RO	SK
Ship borne waste	Oil containing waste	7		5	2	23	4	1
	Other hazardous waste	3		3	1	9		1
	Domestic waste	12				10+		1
	Industrial waste	3-9				9		1
Waste caused by cargo	Swilling out water							
	Cargo residues							
	Slops							

Separate and registered waste collection
Separated and controlled waste collection
Separated and uncontrolled waste collection
Uncontrolled

Figure 52: Development of waste

6.2.4 Regulatory Framework

Waste management treaty

The Shipping Waste Treaty is an agreement between the Netherlands, Belgium, Luxemburg, Germany, France and Switzerland wherein each country has made individual agreements on how to deal with oil and greasy waste streams, washing water, loading remains, dirt water, household wastewater, household garbage and small hazardous waste in inland shipping. The treaty was signed in 1996, and has come recently into force.

The treaty consists of three parts:

- Part A: Waste containing grease and oil
- Part B: Cargo-related waste
- Part C: All other waste

The Danube River Protection Convention[2]

The Convention on Co-operation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention) forms the overall legal instrument for co-operation and trans-boundary water management in the Danube River Basin. The Convention was signed on June 29th 1994 in Sofia, Bulgaria, by eleven of the Danube riparian states, namely Austria, Bulgaria, Croatia, the Czech Republic, Germany, Hungary, Moldova, Romania, Slovakia, Slovenia and Ukraine plus the European Community. The Convention duly came into force in October 1998. The main objective of the Danube River Protection Convention (DRPC) is to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainable and equitably.

6.2.5 RIS and Waste management

River Information services are dedicated to safety and efficiency issues for inland navigation, but their use in supporting waste management is also being discussed by all the countries. The first priority is however, agreed by all parties involved, to create awareness of the implications and importance of an appropriate waste collection system and as the next step it was concluded that RIS can be used in the near future to support and spread information to the relevant parties regarding the collection of waste.

This can be accomplished – for instance – with the use of AIS, NTS and inland ECDIS charts. All of these can give information to the relevant parties. AIS can be used to communicate the locations of waste-collecting vessels, thereby supporting the possibility of waste disposal during navigation. AIS can also be used for berth planning or terminal planning. This increases the availability of berths for the disposal of cargo waste by providing the possibility of planning capacity. Inland ECDIS charts (can) give information about the location of waste facilities in harbours and on locks. They can also

[2] Source: Blueprint for organising the collection of waste from IWT vessels in Romania, NEA, Rijswijk 2007

provide information about the proposed use of facilities to avoid misuse. NTS (Notices to Skippers) can be used to spread all kinds of relevant information to the skippers, such as the availability of waste disposal facilities. The content of the hull database should be reconsidered in order to prepare RIS for monitoring and controlling of waste management in the future.

The possible use of RIS to improve and enforce waste collection for inland shipping underlines the need for harmonisation of waste collection within the different countries. All the countries need to take several steps in the facilitation, regulation and enforcement of waste management processes. Building adequate and sufficient facilities, harmonising conflicting regulations and arranging the separate collection of different types of waste are questions which have to be dealt with before enforcement has a reasonable chance to succeed.

6.2.6 Conclusions

The conclusion of this research is that River Information Services can support but not enforce proper waste management for inland shipping. All the countries involved agree that RIS should be used primarily for information exchange. This information can support the skippers as well as the authorities and third parties. The first step in using RIS for waste management for inland shipping should focus on the use of defined standards and available services.

Examples of this are:

- Definition of standard messages for waste management in Notice to The Skippers (NTS). NTS can be used to spread all kinds of relevant information to the skippers, such as any breakdown in the waste collection installations, or to provide internationally travelling vessels with correct and up-to-date information in their own language on how to dispose different types of ships' waste produced during navigation in the country actually visited.
- Adding of the locations of waste collection points, including the types of waste that can be discharged to the inland ECDIS charts. Information about the location of waste facilities in harbours and on locks can be provided through RIS.
- Equipping bilge boats/ waste collecting vessels with AIS in order to enable communication between the bilge boat and the skippers and to facilitate the planning of the disposal of waste during navigation. This can bring waste disposal within the reach of more skippers. AIS can also be used for berth planning or terminal planning. This increases the number of berths available for the disposal of cargo waste by making it possible to plan capacity.

The proposed use of RIS for "levelling costs and income due to waste collection processes" is considered beyond the reach of RIS at this moment.

6.3 SWP 3.1 Pilot implementation for Waste Management in the Netherlands

Responsible Member State: The Netherlands

6.3.1 Introduction

Services offered by RIS, at present or in the near future, are primarily related to safety and efficiency considerations on the European waterways, but can also support waste management. AIS, Inland ECDIS charts and NTS (Notices To Skippers) are examples of such services. AIS can be used to point out the location of the nearest waste-collecting vessel (bilge boat). Inland ECDIS charts can be used to point out locations of waste collection including their capacity and opening hours. The Notices to Skippers standard can be used to give information about the availability of collection points.

The conclusion of the previous chapter was that the possibilities of RIS can be used to support and inform the parties involved in the waste collection process. Monitoring and controlling of the waste collection process by means of RIS seems possible. In order to do so, the first priority is to address the harmonisation of the legislation and rules between the countries involved. It is expected that this harmonisation process will take a long time. Therefore the focus on using RIS to support waste management should be on the standards already developed within the IRIS-Europe project such as AIS, NTS and Inland ECDIS charts.

6.3.2 RIS pilots on waste management

This chapter gives a brief overview of the workout of the recommended actions dealing with informing skipper about locations of waste collection.

Until now two actions were executed:

- A change request was composed that contains the proposition to add locations for waste collection in the RIS index. The object with the function code “WASTE” was proposed to be added and adopted at the NTS meeting in November 2008, in Vienna.
- Inland ECDIS information on waste disposal

As a pilot for Inland ECDIS, a special Inland ENC was defined to get inputs to make a proposal for a discussion at the Open ECDIS forum with the goal to include waste management as a proper part of the Inland ENC standard.

In one ENC a waste collection location was added and a facility XML scheme was constructed. This file was linked to the specific object “refuse dump”. Within the RIS index it is possible to add the name of the XML file to make it possible to use the information within other RIS functions like route-planning.

In the following images the pilot implementation of the waste collection disposal in Inland ECDIS is presented.

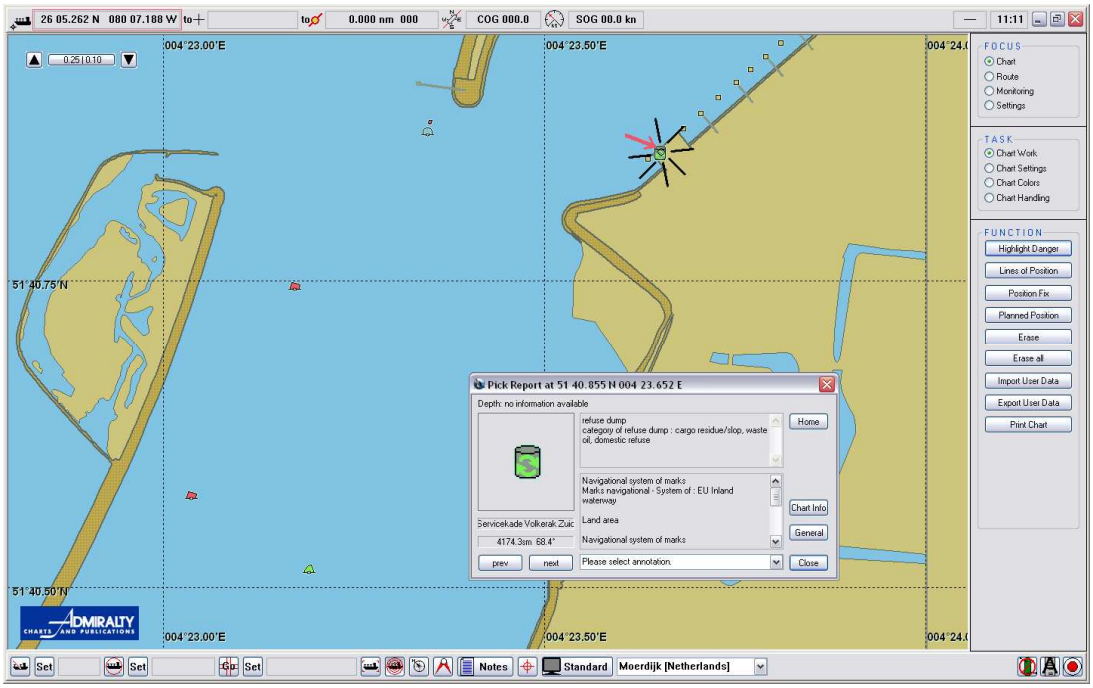


Figure 53: Inland ENC Object: Refuse Dump

Figure 54: Example Facility Scheme Refuse Dump

6.4 SWP 3.2 Feasibility study on Calamity Abatement

Responsible Member States: Belgium, the Netherlands, Austria, Slovakia, Hungary

6.4.1 Introduction

In inland navigation, there is a strong need for information exchange between different parties. River Information Services (RIS) aim at integration of information flows related to both traffic and transport.

Calamity support does not incorporate traffic and transport management tools, however it makes use of them when a calamity occurs. Therefore, it is clear that the development of a calamity support tool focuses on calamity-related information flows only. To prevent and abate the calamity, the other RIS services are crucial and intensively used.

6.4.2 Aim of the study

Within the framework of the IRIS EUROPE project, a specific sub work package was devoted to develop a Calamity Abatement Support (CAS) module in RIS. It focused on the provision of useful information to relevant authorities and rescue forces in case of calamities on inland waterways.

The main objectives of this sub work package are:

- the execution of a feasibility study and the specifications of the calamity abatement service;
- the implementation of a pilot installation for testing and enhancing the defined services.

In order to provide CAS, it is assumed that the basic RIS services are available in practice, i.e.:

- tracking and tracing services, e.g. by means of AIS;
- the availability of ENC;
- the availability of NtS; and
- Electronic reporting systems for cargo and voyage information.

Therefore, it deals with (i) traffic information coming from the AIS base stations and (ii) the cargo and voyage information from the electronic reporting infrastructure.

As shown in Figure 55, the RIS centre interacts with both, the authority and shore segment. The implementation of CAS is at the same level and clearly interacts with the authority segment of the entire information system. Finally, it can be mentioned that different RIS systems may exist in a country, depending on the geography and their tasks. Hence, calamity abatement procedures may differ between countries. However, the international information exchange should be coherent.

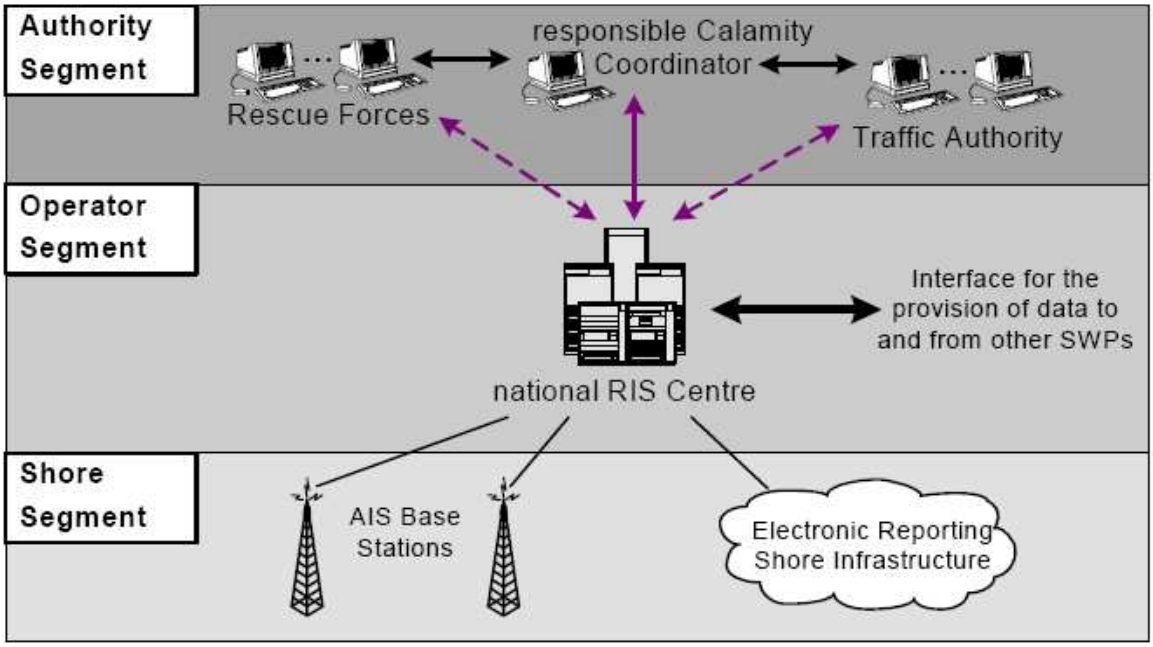


Figure 55: Configuration of the calamity abatement information system

To develop such a CAS, it would be internationally beneficial if the different national systems deal with the same kind of information when a cross-border calamity occurs. This study therefore aims at setting up 'best practices' with respect to the international information exchange before and during calamity abatement.

6.4.3 Calamity abatement support in River Information Services

Besides the general implementation of RIS architecture and hardware, the development of a CAS module is included in the framework of the IRIS EUROPE project. However, to obtain a Europe-wide recognised framework for CAS, it is crucial to have a common vision on the functionalities of such a system.

The RIS Guidelines describe the following functionalities for CAS:

- Information on incidents focused on traffic situation;
- Assessment of the traffic situation in case of an incident;
- Coordination of the assistance of patrol vessels;
- Assessment of the possible effects of the accident on the environment, people and traffic;
- Presentation of information to patrol vessels, police boats, fire squat boats;
- Initiation and coordination of search and rescue activities;
- Measures to be taken on traffic, environment and people protection.

These functionalities are generally accepted by the IRIS Europe partners. However, it is stressed that:

- stands for providing information are coordinated only; actions are not truly coordinated;
- the information exchange on international level is very important, cf. cross-border calamities. Common agreement exists on the need for international harmonisation on accident classification (mainly type and severity) and the procedures to communicate the notification of a calamity to the neighbouring river authorities, cf. RIS centres;
- roles, instructions and responsibilities should be clear for everyone involved in calamities;
- CAS should be simple to be efficient; and
- CAS should make distinction between different types of calamities and their seriousness.

Because the classification of calamities and incidents is considered crucial for initiating the right information flow, i.e. what information to whom, this topic was investigated in detail as well as the data needs and requirements from the user's point of view.

6.4.4 Calamity classification

Calamity classification is seen as an essential part of CAS. Depending on the calamity classification, the alert chain shall be initiated. The calamity-related information is to be harmonised.

6.4.5 Proposal of calamity classification system

One can conclude that many calamity or accident classification systems have been developed. At the moment there is no harmonised European way to perform a classification. This would be beneficial to exchange standardised information in case of a cross-border calamity and between different national authorities working with different information systems.

Starting from the EU COMPRIS project's outcome, calamities are classified according to:

- types or events;
- consequences and
- severity.

6.4.6 Procedure of data / information exchange

In case of a calamity, not only the nature of the transferred information is important; other requirements can be important too. In this respect, the availability of RIS data must be set/determined for different roles (e.g. fire brigade, waterway operator, skipper, etc), both national and international. Data access rights are not linked to incoming data, but to data requests. During 'normal' circumstances, not every person has access to all available data in RIS. In case of calamities, every bit of information should be available for people involved with the calamity abatement though. Indeed, every calamity may be different and demands for another set of data and information to be solved. People not involved in the formal calamity chain team are unauthorised (cf. authority side).

6.4.7 Proposal to best practices

Based on the above findings, best practices in relation to calamity abatement and information exchange can be proposed. These findings should form the base for developing a calamity abatement support tool within RIS. Within the European context, they are summarised below.

The alert signal to the waterway operator or RIS centre can have different origins like phone, fax, etc. How calamities are prevented, alerted and abated may differ for each country. Instead, the information flow between RIS centres, when cross-border calamities occur, needs to be standardised. It is also recommended that neighbouring RIS centres are alerted in case of a cross-border calamity or in case of a large risk for cross-border effects.

In this respect, the traditional RIS services, as mentioned in the international RIS guidelines, are assumed to be adopted and applied in practise to enable a proper calamity abatement management. The traditional RIS services play an important role in the prevention and abatement of calamities as summarised in Table 30 and are related to an optimised navigation management. Supplementary, specific calamity abatement support services within RIS are needed for proper and efficient calamity abatement. Additional functions are mentioned in Table 31. The extra functions do not cover all phases of the safety chain.

Phase in the Safety chain	RIS system	Role in calamity abatement
Pro-active		Only statistical analysis of data derived from RIS might help to diminish structural causes of risks, e.g. where the accident locations with a high frequency of occurrence are.
Prevention	Vessel Tracking and Tracing System	The skippers have traffic information of vessels available, which might not be visible on the radar screen.

	Inland ECDIS	The skipper can display the traffic information generated by radar and the vessel tracking and tracing system (see above) on the Inland Electronic Navigation Chart (Inland ENC). Possible shallow water sections, etc. can be displayed on the Inland ECDIS chart. Possible mooring places, which are accessible by calamity abatement forces, can be displayed.
	Notices to Skippers (NtS)	By means of NtS, water level information, ice messages and obstructions of the fairway can be published.
	Ship Reporting System	Not applicable
	Hull Data	Not applicable
Preparation	Vessel Tracking and Tracing System	Not applicable
	Inland ECDIS	Not applicable
	Notices to Skippers (NtS)	Not applicable
	Ship Reporting System	According to the national legislation in most countries, cargo and voyage information (e.g. dangerous cargo) has to be reported to the relevant authority.
	Hull Data	Not applicable
Repression	Vessel Tracking and Tracing System	The leading organisation in charge of calamity abatement can see where the most appropriate fire brigade vessels, etc. are located at the moment. The accident can be replayed and the actual traffic situation can be sent to the calamity abatement forces. Traffic management can be supported too. Short-term warnings[3] can be sent by means of binary messages to the vessel and be displayed on the Electronic Navigational Charts of the concerned vessels.
	Inland ECDIS	See vessel tracking and tracing system.
	Notices to Skippers (NtS)	Rescue vessels can choose which way to go by considering Notices to Skippers (e.g. in case of a revision of a lock, it might not be possible to pass this lock). After the accident, a Notice to Skippers can be issued in case the fairway use is restricted for a longer period (e.g. by a sunken vessel).
	Hull Data	Basic information on the type and the dimensions of the vessels is directly accessible.

[3] The technical feasibility of this was verified but the operational feasibility is to be examined.

	Ship Reporting System	In case of an emergency, the relevant cargo and voyage information (e.g. type of cargo, classification and quantity) can be provided to the calamity abatement forces. The information on dangerous cargo allows the fire brigades and rescue services to select the necessary equipment (oil barriers, breathing apparatus, fire extinguishing substances, medical equipment). The information on the number of persons on board is the basis for rescue operations.
After Care	Vessel Tracking and Tracing System	A replay of the traffic situation of the accident can be supportive at trials, for the documentation by the various authorities and for the Accident and Incident Investigation Body[4.]
	Inland ECDIS	see vessel tracking and tracing system
	Notices to Skippers (NtS)	NtS Information can be used for the documentation of the information provided by the authorities.
	Ship Reporting System	ERI Information can be used for the documentation of the information provided to the authorities.
	Hull Data	Not applicable

Table 30: The role of traditional RIS services in the calamity prevention and abatement

Forwarding relevant information to the calamity abatement forces (cf. repression)	Problem: No electronic forwarding of traffic situation, cargo and voyage data to the relevant (local) authorities in charge and calamity abatement forces. Solution: Electronic forwarding of information to the relevant authorities and calamity abatement forces.
Classification of accidents especially for international alerting of other countries (cf. repression and after care)	Problem: Classification of the accident is required for the planning of the calamity abatement forces. In several European countries, classification of accidents is not done on basis of pre-defined categories. Consequently, the neighbouring country cannot be informed in a harmonised way by means of an emergency notification, which is outlined by the Task Force for international RIS Data Exchange on basis of the SafeSeaNet Emergency Notification Messages. Without an internationally accepted classification, the possibly involved neighbouring countries cannot be informed properly. Possible Solution: Harmonise the classification of accidents at a European level or, at least, at the river system level, and harmonize the forwarding of information. SafeSeaNet and several authorities can serve as examples.

Table 31: Possible additional functions for calamity abatement support as part of RIS

Every calamity should be classified in order to warn the emergency services and authorities accordingly. The calamity type and its severity also determine what information should be transferred to whom. A calamity classification system has been proposed in this study, merging the positive elements of all referenced classification systems.

Besides traditional RIS data (like ERI and hull data), calamity specific data should be collected and exchanged by the RIS system too. This set of data should be accessible by everyone involved with the calamity abatement; the same accounts for the traditional RIS services. When no calamity occurs, access rights limit the user's authorisation to the RIS system. It is proposed that a similar selection of data should be available for the people to be alerted in case of a calamity (both national as

[4] based on Directive 94/56/EC and its revisions

international). Therefore, an international harmonised filing of accidents documenting relevant RIS information should be beneficial. The use of standardised coding and messaging systems (e.g. CAP, GLIDE, etc.) should be initiated as well. In this respect, the Not_Emergency.xml is recommended by the IRIS Europe Task Force for the international RIS data exchange. With respect to this message protocol, the accident type and severity can be coded.

6.4.8 Conclusion

RIS incorporates many services. One of them is the Calamity Abatement Support (CAS) module, which should facilitate the data transfer between people involved in incidents or accidents. Hence, this can be on both, national and international scale. CAS not only realises the data flow, but it also determines what information to be sent based on a classification of the calamity. Structured logging of information is performed as well and aims at facilitating the data collection for the reconstruction of the calamity.

Different European countries (Austria, Belgium, Hungary, Netherlands, Romania, and Slovakia) have contributed to set up best practices for this CAS module. Additionally, literature has been reviewed with respect to different accident/incident classification systems.

The best practices are related to:

- means for data transfer, e.g. NtS, Inland AIS, etc…;
- standardized international exchange of data in case of relevant events;
- calamity classification;
- data needs and requirements from the calamity team's point of view; and
- logging of information.

The outcome of this analysis should be considered when setting up a CAS within the European context of waterway management.

6.5 SWP 3.2 Pilot implementation on Calamity Abatement in Flanders

Responsible Member State: Belgium

Concerning the pilot implementation, the efforts of Flanders were only restricted to sketch the outlines of the future implementation and will be financed by other sources than IRIS Europe.

The calamity abatement module will be fed by the RIS-key services: Tracking & Tracing, Notices to Skippers, Inland ECDIS and Electronic Reporting International. Modern communication channels will be used to inform the people on the field. This is illustrated by a schematic figure.

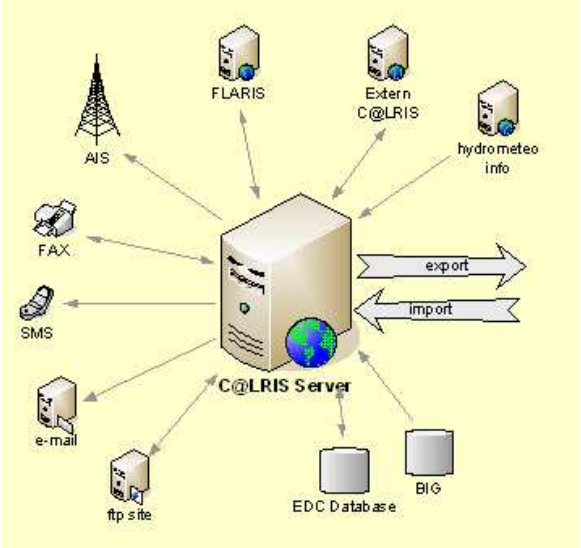


Figure 56: Calamity abatement module

6.6 SWP 3.2 Pilot implementation on Calamity Abatement in Slovakia

Responsible Member State: Slovakia

6.6.1 Main objectives of SWP 3.2 in Slovakia

This SWP focused on the provision of useful information to relevant authorities and rescue forces in case of calamities on inland waterways. The main objective regarding Slovakia was to contribute to the feasibility study as well as to pilot implement the calamity abatement service in Slovakia.

6.6.2 Inventory of national requirements

This SWP focused on the evaluation of national requirements for calamity abatement service. Thus, an independent study regarding the calamities on inland waterways was done covering the Slovak situation. The inventory of national requirements was aligned with other partners in the IRIS Europe project. As a result the classification of calamities (accidents) has been defined, internationally accepted and the respective message on calamity abatement has been developed.

In order to provide basic information about the navigation situation on the Slovak part of the Danube, in case of any incident, partners from administrations were involved in the testing of the tracking and tracing system, including:

- Police
- Complex Central Rescue Service
- Waterway maintenance Dispatch centre (of the Danube river)
- State Navigation Administration
- Ministry of Transport (MDPT SR)

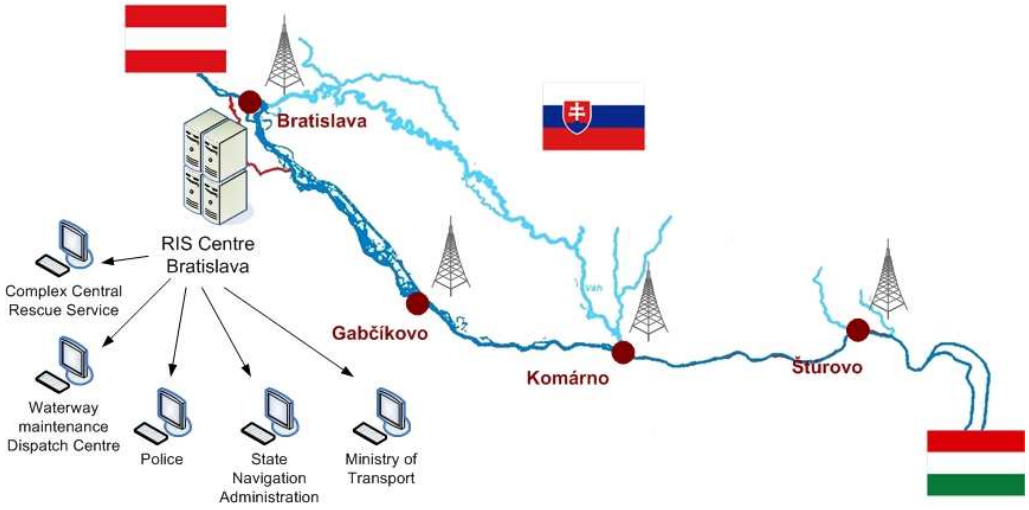


Figure 57: Configuration of the calamity abatement system in Slovakia

6.6.3 Components and implemented functionalities

The pilot implementation of the calamity abatement service in Slovakia is integral part of the SlovRIS system, and as such it uses the same architecture and is in line with the technical concept, processes and messages as defined in the IRIS Europe project.

The reporting about defined events has been implemented based on the Calamity Abatement specification done in cooperation with partners of the IRIS Europe project. This way the compatibility with other European countries is ensured and the information on the defined event is available to the entitled stakeholders.

Having an emergency activated, the respective users who are entitled to receive data related to the incident can access it and can use it for the calamity abatement activities.

The functionalities of the pilot calamity abatement service are as follows:

- Generation of notification of emergencies by authorised user, in case of Slovakia by in this case the State Navigation Administration in the role of CAT, which gathers information on the accident
- Sending and receiving notifications of emergencies to/from neighbouring countries, or those who could have interest on information about the calamity (accident)
- Storing of all emergency notification (incl. history of sent / received messages)
- Management of users entitled to receive information / data in case of accident with limited access rights to the data. Having an emergency activated, the respective users who are entitled to receive data related to the incident can access it and can use it for the calamity abatement activities.

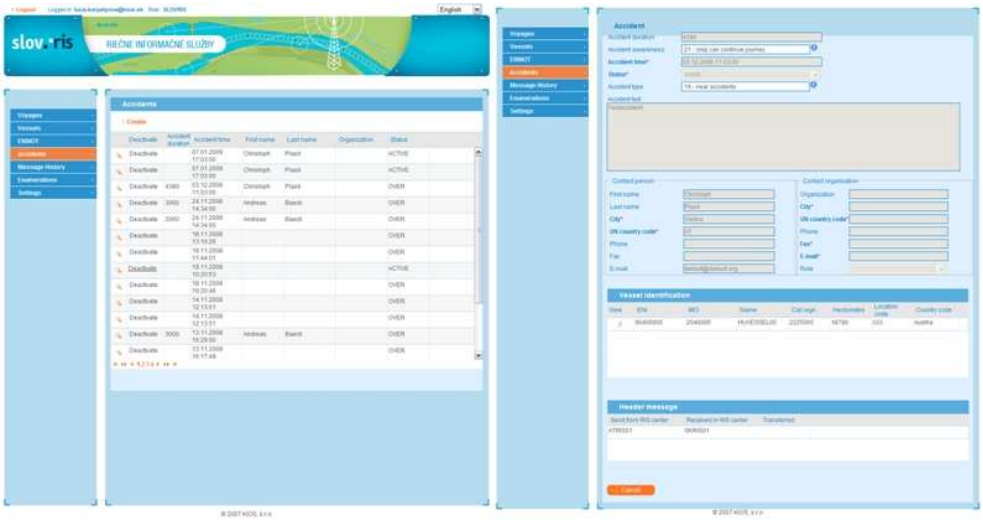


Figure 58: Screenshots of the pilot implementation of calamity abatement service in Slovakia

6.6.4 Monitoring of pilot implementation and testing

During the pilot implementation of the calamity abatement service functional tests, incl. those related to international data exchange were executed, detected errors were fixed and re-tested.

The executed tests proved the proper functioning of the implemented pilot calamity abatement service.

6.7 SWP 3.2 Pilot implementation on Calamity Abatement in Hungary

Responsible Member State: Hungary

This SWP focused on the provision of useful information to relevant authorities and rescue forces in case of calamities on inland waterways. For this reason RSOE in cooperation with the partners and the national ministry of transport executed a feasibility study and developed specifications for a Calamity Abatement Service in Hungary and implemented a pilot installation for testing and enhancing the defined service.

In section 5.4 of the Commission Regulation (EC) No 414/2007 of 13 March 2007 concerning the technical guidelines for the planning, implementation and operational use of river information services (RIS) it is stated that one of the functions of RIS is the ‘Calamity Abatement Support’ defined as:

1. Calamity abatement support registers the vessel and transport data at the beginning of a voyage in a RIS centre and updates the data during the voyage. In case of an accident, the RIS centre delivers the data without delay to the emergency services.
2. Depending on the risk assessment, a calamity abatement service may register only certain types of vessels and compositions or all vessels.
3. It should be the responsibility of the skipper to report the required data.

4. A ship reporting system with a database and appropriate means of communication should be established.
5. Position and sailing direction of the vessel should be reported:
    a. when entering or leaving the area of a RIS centre;
    b. at specified reporting points within the area of the RIS centre;
    c. when the data has been changed during the voyage;
    d. before and after stops of longer than a specific period.

The national report elaborated by RSOE shows the background and status quo of the currently existing relevant Hungarian system connected to the above listed measures and had the aim to elaborate a pilot application that can enhance the calamity abatement support activities.

After the definition of safety and security related affairs the effects of potential events have to be analyzed. First of all in order to have all responsible authorities and institutions involved in safety and security related River Information Services all of them have to be informed about the deployment works in the field of RIS and elaborate recommendations for work and information exchange processes.

In the current status of RIS deployment in Europe it can be stated that all organizations taking part in inland navigation shall establish, implement and maintain documented safety and security objectives and measures at relevant functions and levels within the organization.

The organizations shall take into account:

- Legal, statutory and other safety and security regulatory requirements,
- Safety and security related threats and risks,
- Technological and other options and potential solutions,
- Financial, operational and business requirements,
- Views of appropriate stakeholders.

The calamity abatement and crisis management objectives and measures shall be:

- Consistent with the organization's commitment to continual improvement,
- Quantified (where practicable),
- Communicated to all stakeholders,
- Documented,
- Reviewed periodically.

Best practise

The information for skippers 6/Taj/2006 defines the usage of the radio channels in inland navigation. This definition also includes the reporting of calamities to the authorities.

In case of an accident happening on the Hungarian Danube section the accident can be reported via VHF communication to the Radio NAVINFO-BUDAPEST – Calamity Centre (24/7 service). To check the relevancy of the report the NAVINFO– Calamity Centre checks the information back on VHF clarifying the following data:

- Where has the accident happened?
- Is there the need for medical help?

After having reliable data and identifying the exact location of the accident the NAVINFO – Calamity Centre notices the competent authorities and organizations.

In case of an accident happening on the Hungarian Danube stretch the coordination is permanent between the NAVINFO– Calamity Centre and the Danube Water Police Captaincy and the vessel. After receiving the report of the accident the vessels 20-25 km far from the place of the accident are

informed about the event. In case the accident has a longer impact on inland navigation the Calamity Centre provides permanent information. A notice to skippers is issued in approximately 20-25 minutes if needed (in case of waterway closure). The rescue forces arriving to the place of the accident are coordinated by the Danube Water Police Captaincy.

If an accident has impact on one or more bridges, depending on whether railway or motorway bridge, the relevant organization is informed (MÁV or the regional motorway operation company).

Accident documentation is prepared by the Danube Water Police Captaincy. A final accident report is prepared by the NAVINFO – Calamity Centre. Accident reports are stored on the server of the NAVINFO – Calamity Centre and they are forwarded to the pre-defined list of organizations via electronic data exchange. The receipt of the report is being checked via telephone. At the end of each year the Ministry of Economy and Transport receives the overall statistical figures of the annual inland navigation data (Danube, River Tisza, Lake Balaton).

Pilot service

The Hungarian system proposal of dealing with calamity abatement is currently in the testing phase through a pilot service in Hungary. This service is highly suitable to inform the relevant domestic and foreign authorities in a fast and secure way. The service makes use of the Common Alerting Protocol.

The Common Alerting Protocol (CAP)[5] is a simple, but general format for exchanging all-hazard emergency alerts. The format is compatible with emerging techniques, such as web services, as well as existing formats.

The CAP alert message consists of four segments:

- <*alert*> Basic information about the current message.
- <*info*> Description of the anticipated or actual event in terms of its urgency (time available to prepare), severity (intensity of impact) and certainty (confidence in the observation or prediction), as well as some categorical and textual descriptions of the subject event.
- <*resource*> Provides optional reference to additional information related to <info>.
- <*area*> Description of the geographical area to which the <info> segment in which it appears applies.

The Hungarian interface used for calamity abatement can be found on http://www.rsoe.hu/head. The server is not public; it is only accessible for the relevant authorities for editing, although for testing with the username ‘guest’ and password ‘guest’ it is possible to log in. This application is used for the national data exchange.

The experiences of this application have also been utilized to elaborate the pilot application in IRIS Europe due to the fact that in the international context IRIS Europe had the task to develop a standardized way of data exchange, meaning the Not_Emergency.xml message.

The interface was tested by reporting a real event. Just after grounding took place, an agent informed our calamity centre and the service was used to inform the disaster management.

The pilot system elaborated for the sake of the national use is a convenient tool for those who are responsible for the registration and reporting and for the recipient organizations; see benefit of this service. However, in work package two of IRIS Europe an integrated portal for the international RIS data exchange was developed that conforms the Not_Emergency.xml message requirement.

On the 26-27th of March 2007 the Calamity Abatement Service Workshop took place in Hungary and it was hosted by RSOE.

[5] See also at: http://docs.oasis-open.org/emergency/cap/v1.1/errata/approved/CAP-v1.1-errata.html

6.8 SWP 3.2 Pilot implementation on Calamity Abatement in Austria

Responsible Member State: Austria

6.8.1 Main objectives and expected outcome of SWP 3.2 in Austria

The main objective of SWP 3.2 regarding Austria was to contribute to the feasibility study in close coordination with other SWP 3.2 partners as well as to pilot implement the calamity abatement service in Austria. The expected outcomes in Austria were:

- Feasibility study on potential calamity abatement service in Austria
- System specifications for pilot implementation of calamity abatement service in Austria
- Pilot Implementation of calamity abatement service in Austria
- Detailed testing and acceptance of implemented pilot service

6.8.2 Results of SWP 3.2 in Austria

First of all Austria contributed, next to other countries, to the elaboration of the feasibility study for a calamity abatement service. A major outcome of this feasibility study is a common proposal of the involved partners for the classification of accident types and accident severity.

Those classifications were included into the Not_Emergency.xml message by the technical RIS data exchange task force under the lead of Austria. This specified message is part of the so called RIS Data Exchange Reference Documentation (see chapter 5.13) and was implemented in Austria, Slovakia, Hungary, Croatia (as cooperation partner) and Belgium for the national and international notification of emergency information.

Therefore, the related functionality was specified in detail and included in the tender specifications for the implementation of the Austrian RIS data exchange infrastructure. The tendered infrastructure was pilot implemented into the Austrian RIS system.

Contribute to feasibility study:

Austria contributed actively to the elaboration of the feasibility study under the lead of Belgium. The detailed findings, results and recommendations out of this feasibility study are contained in the related SWP documentation.

Elaboration of system specifications:

Detailed specifications on the national requirements, regarding the pilot service for calamity abatement support, were elaborated:

- Interface to other national infrastructure to get relevant data (e.g. Austrian AIS infrastructure to get traffic related information in case of emergencies; e.g. Austrian electronic reporting infrastructure to get relevant cargo and voyage related data of involved vessels in case of emergencies)
- Graphical user interface for authorised users to report and maintain the status of emergency reports and for the system administrator to administer the list of receivers in case of incoming emergency reports, etc.
- Procedures for the automatic / manual notification of emergency information to other countries

Tender of the pilot implementation:

The implementation of the calamity abatement pilot service was integrated as part of the pilot implementation of the national and international exchange of RIS data in Austria. Based on a Europe-wide tender procedure, via donau identified and contracted the best bidder with the pilot implementation coupled as well with the pilot implementation of the Austrian electronic reporting infrastructure.

Detailed testing and acceptance of pilot implementation:

During the implementation of the pilot service a lot of functional tests were executed, detected errors were fixed and re-tested. As the executed tests proved the proper functioning, via donau accepted the implementation of the pilot service.

6.8.3 Implemented functionality

The implemented pilot calamity abatement service provides the following functionality:

- Management of emergency reports by authorised users
- Storage of received emergency reports and notification to specific receivers by the national infrastructure
- Administration of the receivers that shall be notified in case of incoming emergency reports by the system administrator
- Notification of emergency reports
- Reception of notified emergency reports by authorised users

Management and storage of emergency reports:

- Within the graphical user interface, authorised users have an overview on the reported emergencies including the most relevant information (status, accident type(s), accident severeness, involved vessels, time, and estimated duration) as the figure below illustrates. Within this overview screen, the users have as well the possibility to search for emergency reports by date and/or by status.

Figure 59: Management and storage of emergency reports on Electronic Reporting Web GUI

- By selecting an existing emergency and clicking on the “view” button, the related emergency message is displayed to the user as the figure below illustrates

Figure 60: Displaying of emergency reports on Electronic Reporting Web GUI

- By a clicking the “new” button, a separate window appears providing an input mask for the user to create emergency reports and to send them to the national infrastructure, as the figures below illustrate
    - In this input mask, the user can select accident type and accident severeness, type-in free text for additional information, can select involved vessels from a list and can set the accident time and estimated duration as well as additional receivers (registered users, foreign systems)
    - By clicking the “send” button, the created emergency report is sent to the national infrastructure which then notifies the received emergency report to the relevant users as identified directly within the report, in addition to the receivers according to the emergency receivers list

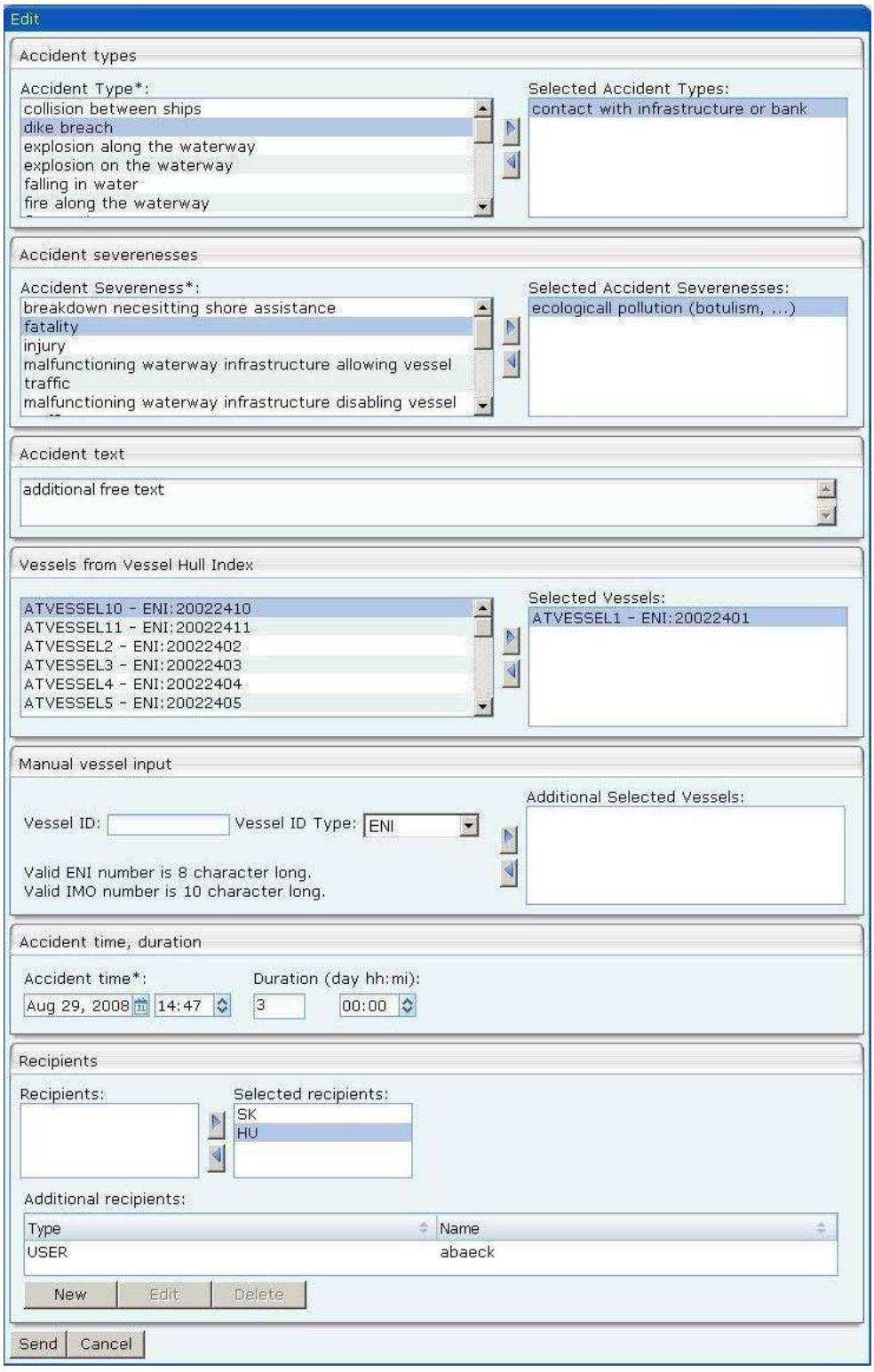


Figure 61: Calamity abatement pilot implementation, GUI example - Austria

Administration of receivers list:

- In the graphical web user interface of the system administrator, the administrator can configure the emergency receivers list by adding, deleting, modifying users to and from this list as the figure below illustrates
    - All users that are contained in this list get all received emergency reports notified to their user account or to a defined e-mail address

Figure 62: Management of Calamity Abatement Distribution List

Notification of emergency reports:

- Whenever the system receives an emergency report from an authorised user or from a foreign system, the emergency report is notified to the persons listed on the receivers list
- When an emergency report was created and sent to the system by a national user, the system notifies the emergency report to the additional receivers as specified by the user within the creation of the report in addition to the persons listed on the receivers lists that is maintained by the administrator
- For international RIS data exchange functionality, incoming emergency messages are also notified to the RIS centre of the country of the involved vessel(s)

Reception of notified emergency reports by user:

- There are two possibilities how a user can receive a notified emergency report:
    - Receive the report via e-mail
    - Receive the report via the graphical user interface in the “push of data” screen as the figure below illustrates. In this screen the user has an overview on the received emergency reports and can click on a specific report to see the details. Furthermore, filtering functions are implemented in order to allow the user to search for specific reports.

Figure 63: Push of Data on Electronic Reporting Web GUI

6.9 SWP 3.3 Feasibility study on Collision Avoidance

Responsible Member State: Austria

The Commission Staff Working Document on the NAIADES Action Plan points out that “at present, inland shipping is responsible for roughly 80% of all transported hazardous goods in Europe. This is due to the exemplary safety record of inland navigation. Safety levels can nevertheless still be improved. Safety measures should be concentrated on on-shore measures (traffic information and management), on-board measures (navigational equipment and vessel design), the interface vessel-shore, regulatory measures (the revised ADN rules), as well as measures aimed at training and education.”

The prime objective of the feasibility study on collision avoidance is the determination of additional measures for RIS systems in order to reduce incidents and accidents. The investigation is focused on preventive measures for collision avoidance rather than on measures for calamity abatement (e.g. electronic reporting) and on accident abatement instead of services for enhancing the comfort of RIS services (e.g. automatic identification of barges).

In the first step, the different measures to ensure safety in shipping were identified on basis of a literature search. Hahne, Galle and Baldauf classified the measures for risk limitation into the following categories:

- Measures witch have affect on the subjective behaviour
    - On-board safety systems (including on board RIS Systems)
    - Land-based engineered safety systems (including on shore RIS Systems)
- Measures for damage limitation
    - Ship-construction-based engineered safety systems
    - technical- organisational measures
    - Economical- humanitarian measures

The further research of the study focused on the on-board and on-shore RIS Systems.

As a second step, the accident database of the Austrian Supreme Navigation Authority (OSB) was analyzed. This database is kept by the OSB and records all accidents since 2002. For the feasibility study, the data of accidents between 2002 and 2006 were used. In general 187 accidents were registered on the Austrian Danube within the considered time frame. These accidents were classified into the following categories:

- Collision
- Grounding / Stranding
- Fire / Explosion
- Personal Injury while operating a ship
- Loss of equipment or cargo
- “No accident” (but nearly)
- Capsizing
- Others

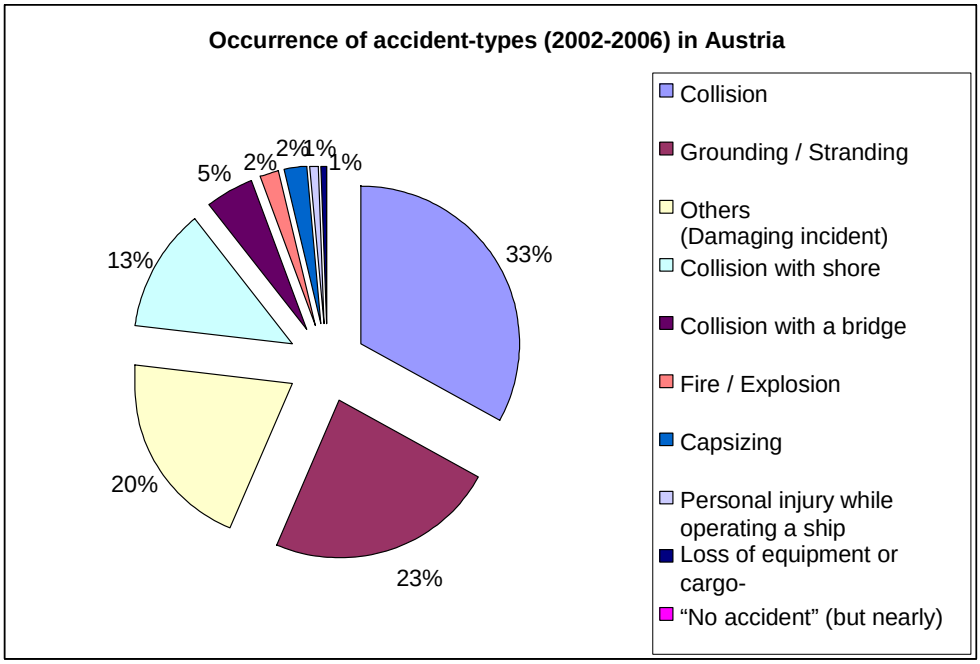


Figure 64: Occurrence of accident types in Austria

Occurrence of accident-types

The figure above displays the occurrence of accident-types between 2002 and 2006. It can be seen that collisions are the most common accident-type. Overall it has to be mentioned, that also collisions with locks are included in the classification collision. The second common accident type is grounding and stranding.

The database was also in order to determine cluster points of accidents. It turns out that depending on each kind of accident different cluster points are given. In the area of Vienna, an accumulation in the can be identified, which is caused by the higher traffic. As for stranding and groundings an accumulation in the free flowing river stretch between Vienna and Bratislava can be detected, which is due to the variation of the fairway in the free-floating sections of the Danube.

In the following, the root causes for all types of accidents were classified. In the following figure, the failure analysis for collisions is displayed.

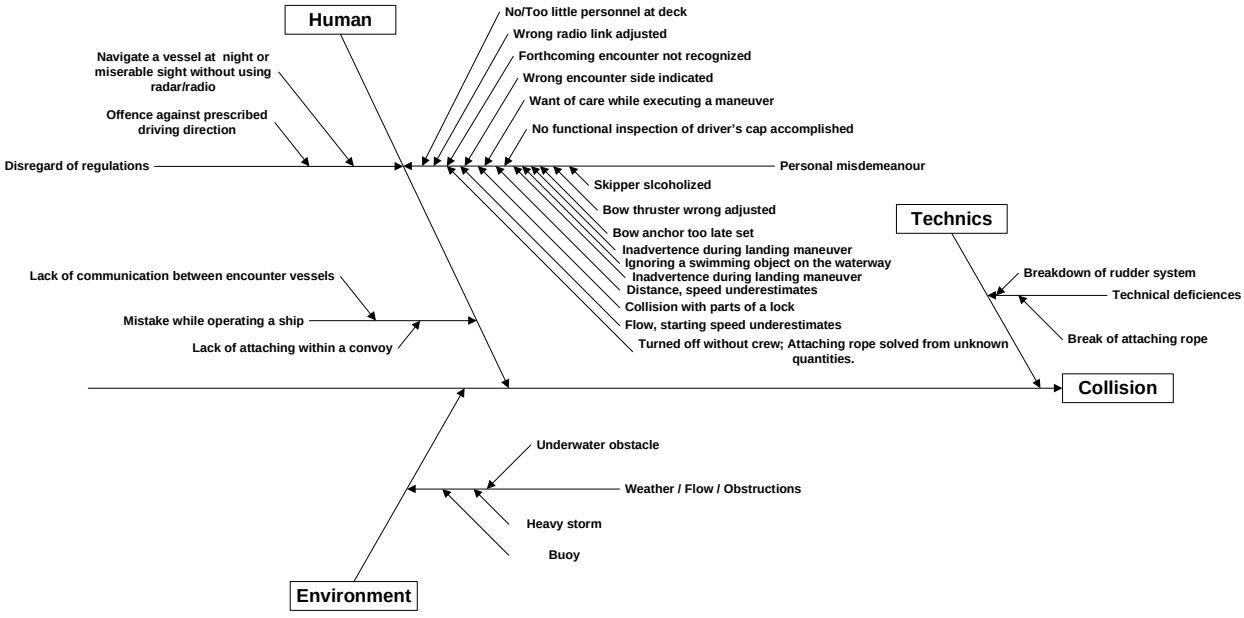


Figure 65: Failure analysis for collisions

As human errors were the most pre-dominant one leading to a collision, an error list was drawn up to determine the pre-dominant types of human errors:

- Navigation outside of the fairway channel occurred most frequently (20 times)
- Skippers intoxicated occurred second but most frequently (4 times)
- Crew regulations not observed occurred third but most frequently (3 times)

As next step, typical accidents were analyzed and how installed RIS systems could have helped:

- Scenario 1: Stranding at entrance of port
- Scenario 2: late detection of manoeuvres of other vessel
- Scenario 3 : collision with other vessel due to manoeuvre
- Scenario 4 : collision of bridge due to bad weather

The analysis concluded that those accidents could possibly have been avoided by means of AIS, Inland ECDIS Charts and heading systems on board of vessels and the authorities provided water-level information, Notices to Skippers and Electronic Navigational Charts including depth data. As a pre-condition, the following amendments in terms of shore-based infrastructure/services can be recommended:

- Electronic Navigational Charts: In Austria Inland Electronic Navigational Charts are provided at the website of via donau. Improvement on Inland Electronic Navigational Charts depth data distribution mechanism is required to provide more actual depth data to the skippers. In addition, the provision of water level models in shallow water sections and at “low” bridges is recommended.
- AIS land infrastructure: The implementation of AIS land infrastructure is recommended for all waterways of class Va and higher and at points of higher accident risk. In addition AIS repeater stations are recommended in stretches with limited radar coverage.
- Notices to Skippers: The provision of water level and water level models is recommended.
- In addition, new services such as entry guidance to the locks similar to the integrated landing system in air-transport should be looked into. Such systems might require an additional set of sensors and a model of the navigational characteristics of the vessel.

In terms of RIS Services/Systems on board of the vessels, the following conclusions can be drawn:

- Heading Device and AIS transponder: Traffic information provided by AIS including heading information shall be made available at least for all vessels with a length greater than 20 metres and/or greater than 12 persons on board.
- Electronic Navigational Charts and Notices to Skippers: It is recommended to implement all devices on board of the vessels, so that Inland Electronic Navigational Charts and Notices to Skippers can be provided to the skippers.

7 WP 4 – Coordination Corridor VII, Rhine, Seine and Baltic

Responsible Member States: The Netherlands, Austria

7.1 WP 4 Introduction and Summary

7.1.1 Main objectives and outcomes of WP 4

The subject of WP 4 was "Coordination in Corridor VII (Candidate and 3rd Countries) and Rhine, Seine and Baltic countries" and dealt with knowledge transfer on RIS implementation, the provision of guidelines for RIS implementation and the supporting and monitoring of RIS projects in EU co-financing schemes. The main objectives of WP4 were to:

- Exchange key experts for the transfer of RIS know-how in the Danube and Rhine-Seine-Scheldt region
- Elaborate a guideline for reference specification for implementing RIS according to the RIS Directive
- Support and cooperate with RIS related activities outside the project

7.1.2 Work approach

The seamless integration of inland waterway transport into modern industrial supply chains demands inland navigation to improve its services, reliability, ability to plan, flexibility and traceability of operation resulting in increased safety and efficiency of inland navigation. One major requirement to reach these goals is international coordination of different RIS relevant initiatives. Thus WP 4 focused on cooperation and coordination in the Danube region as well as in the Rhine-Seine-Scheldt region mainly among the governmental stakeholders responsible for RIS implementation.

7.1.3 Results of WP 4

Within WP 4, the following main results were achieved:

- Indicated knowledge transfer and exchange, based on gained experiences, to support RIS implementation in other countries through training of key experts
- Elaborated guidelines for reference functional specification for Fairway Information Services and Traffic Information Services
- Support to coordinated implementation of RIS projects in Croatia, Serbia and Ukraine through support of the competent authorities

Details on the results are provided in the following subchapters.

7.2 SWP 4.1 Knowledge Transfer on RIS Implementation in the Danube countries

Responsible Member States: Austria, the Netherlands

7.2.1 Main objectives and expected outcomes of SWP 4.1

In order to support the implementation of RIS alongside the inland waterway network in Europe, the proper knowledge must be available at the involved governmental and commercial stakeholders of RIS. During IRIS Europe selected key experts, who have worked for governmental stakeholders (ministries of transport, waterway and traffic authorities, RIS providers, RIS authorities, etc) were invited to an expert visit to via donau, which lasted for 2 – 5 days. In some cases via donau was required to give trainings to the experts in the country of the respective organisation, mainly due to travel or budget constraints of the organisation interested in the knowledge transfer.

After this knowledge transfer to the key experts, an increasing speed of evolving RIS is to be expected for the future, and could already be observed during IRIS Europe (e.g. study visit of VNF employee at via donau).

7.2.2 Work approach

Depending on the duration of the traineeship of the related experts, the following topics were covered:

- Organisational structure of a RIS Provider (example via donau, Austria)
- International and national legal basis for provisions of River Information Services
    - International: EU RIS Directive, 2005/44/EC
    - National: e.g. Austrian Inland Waterway Act
- Transport development related activities of a waterway management organisation
    - Development of ports, terminals
    - Development of innovative logistics solutions with inland navigation in the main haulage (e.g. container liner services on the Danube)
- Inland Navigation related support activities on European level
    - NAIADES – Action plan of the European Commission for the promotion of Inland Waterway transport in Europe
- Relevant European projects with main focus RIS development and pilot implementation:
    - IRIS Master plan – Master plan for the implementation of RIS in Europe (TEN-T)
    - DaTraM – Dangerous cargo transport monitoring on inland waterways (TEN-T)
    - DoRIS – Donau River Information Services (TEN-T)
    - IRIS Europe – Implementation of RIS in Europe (TEN-T)
    - INDRIS and COMPRIS (EU FP4 and FP5)
- Introduction to RIS standardisation and RIS key technologies
    - Tracking & Tracing (Inland AIS)
    - Notices to Skippers (NtS)
    - Electronic Chart Display and Information Systems (Inland ECDIS)
    - Electronic reporting of cargo and voyage related information (ERI)
- Practical demonstrations of RIS implementations and RIS technologies
- Lock operation and lock management on rivers
    - Visit of a river lock (e.g. in Austria)
    - Demonstration of lock management pilot implementation (e.g. in Austria)
- Operational considerations and experiences for RIS provision and operation

7.2.3 Results of SWP 4.1

The following organisations and key experts were trained by via donau in Austria:

Organisation	Country of organisation	Amount of experts from organisation	Duration of training	Specific topics covered
VNF – Voies Navigables de France	France	1	19.06. – 23.06.2006 (5 days)	Inland Navigation development, River Information Services, Project management and administration
WenZ NV	Belgium	1	02.10. – 03.10.2006 (2 days)	River Information Services
Promotie Binnenvaart Vlaanderen	Belgium	1	02.10. – 03.10.2006 (2 days)	River Information Services
De Scheepvaart	Belgium	3	02.10. – 03.10.2006 (2days)	River Information Services
fks Formal & Knowledge Systems	Belgium	1	02.10. – 03.10.2006 (2 days)	River Information Services
Executive Agency Maritime Administration	Bulgaria	4	27.11. – 01.12.2006 (5 days)	Inland Navigation development, River Information Services, Calamity abatement, Waste management
Serbian Customs Administration	Serbia	2	06.12. – 07.12.2006 (2 days)	River Information Services, Customs cooperation within RIS
PLOVPUT - Serbian Waterway Administration	Serbia	1	06.12. – 07.12.2006 (2 days)	River Information Services, Customs cooperation within RIS
Ministry Of Transport Maritime Administration	Bulgaria	2	22.01. – 23.01.2007 (2 days)	River Information Services (mainly Notices to Skippers, Electronic reporting)

Table 32: Key experts trained by via donau in Austria

The following organisations and key experts were trained by via donau in Odessa (Ukraine):

Organisation	Country of organisation	Amount of experts from organisation	Duration of training	Specific topics covered
• Waterway Administration • Ministry of Transport • Odessa Maritime Academy • Russian River Register	Odessa, Ukraine	15	05.12. – 07.12.2007 (3 days)	River Information Services

Table 33: Key experts trained by via donau abroad

The following table provides an example of a detailed training programme, which was applied for the expert visits at via donau:

Date	Start	End	Responsible	Topics
19.06.2006	09:00	10:00	via donau expert	Welcome
	09:00	10:00		Connection of PC to via donau Network
	10:00	11:00		Welcome from Head of Transport Management
	11:00	12:00		Introduction to Activities
	13:00	13:30		Welcome from Managing Director of via donau
	13:30	14:00		via donau organisational Structure (Review Waterway Act)
				EU RIS Directive
	14:00	15:00		Introduction to Activities of Transport Development Division (Development of Ports and their IT Systems, Container Liner Services,…)
	15:00	16:00		via donau internal jour fixe
	16:00	18:00		IRIS Master Plan (Review Draft Final Report)
				Dangerous Cargo Transport Monitoring (Review Project Application, Political support letters, Description of Work, final reports)
				IRIS Europe Work Plan
20.06.2006	09:00	12:00	via donau expert	DoRIS (Review Tender Specification, DoRIS Folder, DoRIS CD)
	13:00	16:00		Visit including live demo of DoRIS Centre (Inland AIS Standardisation, DoRIS webinterface,…)
	16:00	17:00		Support program for provision of RIS Equipment for fleet operators/skippers
	17:00	18:00		Elaborate letter of support for Systeme Information Fluviale (if required)
21.06.2006	09:00	10:00	via donau expert	Cost Statement of DaTraM, DaTraM Webinterface
	10:00	11:00		NAIADES, Austrian National Action Plan
	11:00	12:00		INES, e-learning platform
	12:30	14:00		Electronic Reporting/Hull Data/Network Data/NtS/Standardisation - Part I
	14:00	15:30		Lock Management Solution for Austria (Current Status and Next Steps)
	15:30	17:00		Inland ECDIS Charts for Austria, Geographical Information Systems, GIS Forum and its projects
	17:00	18:00		Questions/Answers
22.06.2006	09:00	12:00	via donau expert	Visit to the Lock of Freudenau
	13:00	16:00		Visit to the MS Vindobona (Inland ECDIS viewer with radar map matching)
				Electronic Reporting/Hull Data/Network Data/NtS/Standardisation - Part II
	16:00	18:00		Open questions
23.06.2006	09:00	10:00	via donau expert	Set up of DoRIS Operation (Challenges)
	10:00	11:00		Set up and Operational Cost of AIS Infrastructure
	11:00	15:00		Open questions
	15:00	15:30		Farewell

Table 34: Example of training programme at via donau

The knowledge transfer on RIS implementation, based on trainings of key experts, showed very good results and proved to be an efficient method of providing organisations throughout Europe with basic know-how about the initial steps to be taken for RIS implementation in their countries. The whole concept of River Information Services shows an increasing level of complexity, also due to the level of maturity of the RIS related standards and regulations. Thus it was a very important task of the SWP 4.1 to provide on one hand a general overview of RIS including all the required components, on the other hand it was significant to share detailed key expertise in RIS related technologies and their implementation. It is recommended to continue the knowledge transfer on RIS implementation in the future based on key-expert exchange programmes, enabling those countries to catch up with the high speed of RIS development and implementation, which joined the RIS community in a later stage.

7.3 SWP 4.1 Knowledge Transfer on RIS Implementation in the Rhine-Seine and Baltic countries

Responsible Member States: Austria, the Netherlands

7.3.1 RIS training programme

In the context of IRIS Europe a knowledge transfer training programme has been developed by the Centre for Transport and Navigation to provide trainees more practical experience with inland navigation and in special with practical RIS experience. A pilot programme was provided as try-out to amongst others the project manager of IRIS Europe and is in future available for follow up trainees. The programme consisted of **5 parts**:

1. Container terminal and River information Services with focus on planning

One of the biggest container terminals in the port of Rotterdam has been visited in order to provide information on the planning of maritime and inland container terminals. The visit led to a pilot in the Netherlands on the integration of voyage planning (ship based), lock planning and terminal planning. The pilot will be executed on the route Rotterdam-Antwerp with the cooperation of several terminals and container vessels and is focussed on the proof of the many benefits of RIS for planning for public and private sector.

2. Chemical tankers and their use and benefits of RIS services.

A trip has been made with a chemical tanker from Rotterdam to Antwerp highlighting the special requirements, rules and regulations related to this kind of transport/the transport of dangerous cargo. In this respect to benefits of RIS equipment and services – in a cross border environment – could be learned and discussed under practical circumstances.

3. Relations maritime Vessel Traffic Management and RIS centres

In order to learn from the maritime world a visit has been arranged to the Maritime Rescue Coordination Centre (MRCC) in Zeebrugge. This centre is recently realised and provides a very sophisticated view on modern VTM equipment and provides for the RIS environment up to data information on the operation of AIS network technology and the interactions in the SafeSeaNet environment. In relation to RIS centre operations the visit to the MRCC provided information on the bottlenecks with respect to the manning of the Centre and training and education of operators.

4. Calamity abatement in the Port of Rotterdam including security provisions.

The training programme included a visit to the World Port Centre in Rotterdam to learn about their experience on calamity abatement in a complex port environment with many stakeholders and a very diverse responsibility pattern. The visit included an explanation of the measures that have to be taken nowadays in the maritime and seaport environment. The RIS community have to be prepared on preparing as early as possible similar services to the inland navigation world while it will be unavoidable that in the near future similar measures will be mandatory.

5. Maritime and RIS architecture

Based on, amongst others, the RIS architecture, the maritime world is developing the Maritime architecture. In order to learn from this development and for future integration the programme included an interaction with the experts on Maritime architecture.

7.4 SWP 4.2 Reference functional specification

Responsible Member State: Austria

7.4.1 Main objectives and expected outcome

The main objective of this SWP was to elaborate and provide a “Guideline for the elaboration of functional specifications” for the implementation of a RIS system, inline with the provisions in the RIS Directive 2005/44/EC and the Commission Regulations concerning the technical specifications for RIS as referred to in Article 5 of Directive 2005/44/EC.

The expected outcome was a functional description of a reference RIS system including the following components:

- RIS Centre
- Tracking & Tracing infrastructure (based on Inland AIS Standard)
- Electronic Reporting infrastructure (based on ERI Standard)
- Hull Database infrastructure (based on provisions of Directive 2006/87/EC and Directive 2008/87/EC)
- National and International Data Exchange infrastructure (based on IRIS Europe project standard on international RIS Data Exchange)
- Notices to Skippers infrastructure (based on NtS Standard)
- User Interface(s)

The guideline as Deliverable of SWP 4.2 was structured in such a way that organisations starting with the implementation of RIS can get a general overview of typical RIS infrastructures and components. The guideline was structured as follows:

- Introduction
- Functionality
- System Architecture
- Users
- Relevant standards and regulations

7.4.2 Approach

According to the provisions in the EC Decision and the IRIS Europe workplan it was the sole responsibility of Austria to elaborate the guideline for the functional specification. Based on the experiences of Austria gained from specifying, tendering, implementing and testing several RIS infrastructures, systems and services, the guideline for functional specifications was elaborated on a general level in order to avoid any limitations and provide implementing parties the possibility to amend the specifications, and to add specific requirements and additional functions for customised infrastructures.

7.4.3 Summary, conclusions and recommendations

The elaborated guidelines for reference specifications for RIS systems provide a good overview on a possible RIS reference system, its segments and the main infrastructure (systems, components, functions). It is clearly stated that these guidelines do not substitute necessary detailed expert knowledge on the individual infrastructures for the creation of detailed tender specifications but provide a solid basis for it, especially to support responsible parties (e.g. RIS provider) to get an overview and to define their basic requirements on a RIS system to be specified and implemented.
The guideline must be seen as a first attempt to elaborate a comprehensive outline for functional specifications characterising a RIS system. It must be clear that the Technical Specifications for RIS as referred to in Article 5 of Directive 2005/44/EC allow different interpretations, on how infrastructures and services can be implemented on national level. Thus it is of utmost importance that the results of IRIS Europe on the “Guideline for the elaboration of functional specifications” are used as a starting point for future projects and initiatives dealing with Reference technical and functional specifications of RIS systems.

7.5 SWP4.3 Implement and monitor RIS Projects in EU co-financing Schemes

Responsible Member State: Austria

7.5.1 Main objectives and expected outcome

The main objective of this SWP was to support the competent authorities for RIS of third and candidate countries (Bulgaria, Croatia, Romania, Serbia and Ukraine) in the Danube region in implementing traffic related RIS Services by means of EU co-financed programmes (Phare, IPA, Interreg, CARDS, etc). After the public procurement of the RIS Systems and Services in Croatia, Serbia and Ukraine, all activities were monitored at a regular basis.

7.5.2 Approach

IRIS Europe members supported the competent authorities in the preparation and implementation of the national RIS projects by means of information exchange on e.g.

- Their transpositions of the EU RIS Directive into national law
- Bilateral workshops in the candidate and third countries
- Provision of specifications on national RIS Systems, etc.

Representatives of the competent authorities of these countries served as observers of the project and participated in the IRIS Europe Steering Committee, Coordination Meetings and Task Force Meetings at a regular basis. They brought in their national requirements in the discussions of IRIS Europe and were informed on the current status of RIS in other countries. Their participation in the meetings enabled these authorities to prepare the system specifications and implementations in a way that these conform to the related activities in the other European countries.

7.5.3 Results of SWP 4.2

At the end of 2008, the status of RIS in the countries downstream of Hungary can be summarized as follows:

7.5.3.1 Bulgaria

The BulRIS Project represents the national part of the Pan European System for assuring effective and safe navigation on inland waterways. BulRIS was integrated in the Sectoral Operational Programme for Transport 2007-2013 and was decided to be financed under the Structural and Region Funds.

The establishment of BulRIS will be performed in 3 separate stages:

- First Phase (2007-2009) - foresees investment which will allow, by the end of 2009, the minimum requirements of the EU RIS Directive to be fulfilled and infrastructure for the further deployment of the services to be built up. This stage includes feasibility studies, drafting of the system, tender documentation preparation, tender procedures launching and establishment of the basic infrastructure. Currently 3 key tenders procedures are planed, which relate to the establishment of the telecommunication infrastructure, the establishment of the information system and the construction of the RIS Centres
- Second Phase (2009-2011) - intents enhancement of the volume of the services and the system, introduction of new sensors like radars, television and thermo vision cameras, automatic measurement of the river levels and incorporation of new functions of the information system.
- Third Phase (2011-2013) - will focus on achievement of the capacity of the system by meaning of services and users, introduction of new high technologies, elaboration of long term forecasts, full automation and modelling of the transport processes, including the logistic chain.

7.5.3.2 Croatia

The Croatian Ministry of Transport assigned CRUP with the implementation of RIS in Croatia in a series of national projects. Since 2001, CRUP experts participated in the RIS standardisation and

deployment projects. This provided the basis for the rapid RIS Implementation, which was financed primarily with national funds, but also co-financed by EU-Programmes such as INTERREG IIIA HR-HU:

- CRUP set up a RIS test centre, which focused on traffic monitoring by means of AIS, the provision of Inland ECDIS Charts and the provision of Notices to Skippers. All systems conform to the RIS Standards respectively the technical specifications of the EU RIS Directive.
- Experts from CRUP contributed actively to IRIS Europe. CRUP´s experts not only participated in RIS Coordination and Task Force Meetings, but also implemented the data gateway and contributed to the tests of data exchange.

7.5.3.3 Romania

River Information Services were implemented in several different steps

- The preparation of the tender documentation for the completion of the technical specification and preparation of the tender dossier for the procurement in 2003/2004 financed under the Phare co-financing scheme.
- The first phase of RIS in Romania (RoRIS Phase I), which was financed under the Phase co-financing scheme in 2005/2006, focused on the following items:
    - VHF, Radio Communications Network (with ATIS and voice recording)
    - VTS with radar
    - CCTV and Infrared System
    - Automatic Identification System AIS (maritime and inland)
    - DGPS IALA System
    - Inland ECDIS
    - Notices to Skippers
    - Electronic Reporting
- The second phase (RoRIS Phase II) is the completion of RIS Services on the Romanian Danube. This project was integrated in the Sectoral Operational Programme for Transport 2007-2013 and was decided to be financed under the Structural and Region Funds. The execution of RoRIS Phase II is planned for 2009/2010 and it focuses on the following elements:
    - Full VHF and AIS coverage of the Romanian sector
    - Up-grading of software applications, in particular Notices to Skippers and Electronic Reporting
    - Concentrating the activities in the regional RIS centres
    - Exchange of data with other national RIS providers

7.5.3.4 Serbia

The Directorate for Inland Waterways of the Republic of Serbia (Plovput) was active in RIS Implementation Projects since 2001. This assured knowledge exchange among the Serbian and other European authorities. Plovput included the modernisation of inland navigation through development of River Information Services (RIS) in their strategic guidelines and transposed major elements of the RIS Directive into Serbian legislation. Plovput provided Inland ECDIS Charts of all Serbian navigable waterways, set up a RIS test centre with AIS coverage of a significant portion of the River Danube and provided Notices to Skippers. For the implementation of all RIS Services, the most recent RIS Standards, respectively technical specifications of the RIS Directive were followed.

In 2007, the European Agency for Reconstruction (EAR) decided to launch the full-scale implementation of River Information Services in 2 steps.

- Step 1 - The preparation of the tender documentation for the full scale RIS Implementation on the Serbian Danube: The project provided the Serbian administration with the complete tender documentation in order to allow the procurement of a proper River Information Services system, its implementation and operation for the Serbian stretch of the Danube complying with EU RIS Directive (2005/44/EC). Step 1 is expected to be finalized by the end of 2008.
- Step 2 - The full scale RIS Implementation according to the specifications of Step 1: Step 2 shall mainly deal with the fulfilment of the requirements to provide RIS Services as specified in the EU RIS Directive, to complete AIS coverage and to set up a vessel equipment programme for all governmental and approximately 130-150 commercial vessels. Step 2 is planned for the timeframe between 2009 and 2011.

7.5.3.5 Ukraine

The Ukrainian authorities assigned experts to participate in RIS standardisation and RIS development project in 2002. As a consequence, these experts know the RIS deployment very well. Due to budget restriction, the absence of EU funds for the implementation of RIS and due to the restructuring of the Ministry of Transport, the RIS deployment focused on Electronic Navigational Charts and vessel traffic service for the maritime Danube.

At present, the situation is as follows:

- Electronic Navigational Charts are available for the Ukrainian Danube
- Notices to Skippers and Electronic reporting are in preparation
- Vessel Traffic Management and Information Systems (VTMIS) are provided on maritime Danube
- Tactical traffic information is installed at one Vessel Traffic Service (VTS) Centre

7.5.4 Summary and conclusions

Summing up, the cooperation within IRIS Europe supported the administrations in charge in preparing pilot systems and allocated the budgets in EU co-financing schemes. In Serbia, Romania and Bulgaria, (at least) RIS pilot systems are implemented, the full scale implementation of RIS in these countries is planned within the next 3 years. In Croatia, RIS implementation is very much advanced. The cooperation as cooperation partner within IRIS Europe assured the harmonized development. In the Ukraine, pilot systems were implemented, but full scale RIS Implementation is under preparation, financial support from the EU would support this.

8 WP 5 - Open Issues on Harmonisation and Standardisation

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands, France, Belgium

8.1 WP 5 Introduction and Summary

8.1.1 Main objectives and outcomes of WP 5

The subject of WP 5 was “Open issues on harmonisation and standardisation” and dealt with the RIS architecture, training and education of River Information Services for the skippers and the analysis of environmental impacts of RIS implementation throughout Europe as a result of the IRIS Europe project.

The main objectives of WP 5 were to:

- Align the existing COMPRIS functional RIS Architecture with the European ITS Framework Architecture by means of measures such as the definition of harmonized roles for governmental RIS Users
- Elaborate a strategy for training and education of RIS related topics for governmental and commercial RIS users
- Assess environmental impacts of the project especially with relation to the ‘Water-Framework-Directive’ and to ‘Natura 2000’

The following main results were achieved in WP 5:

- Definition of roles for logistical and governmental RIS Users
- Outlined training courses for relevant RIS users in inland navigation
- Identified environmental impacts of the measures to be executed within this project

8.1.2 Results of WP 5 in short

Especially in the frame of the specifications for the international RIS data exchange, as laid down in the RIS Data Exchange Reference documentation, it was identified that harmonised access rights for users throughout Europe can only be implemented by means of a role based authorisation mechanism. Therefore one of the first activities of the IRIS Europe Task Force on international RIS data exchange was to elaborate and agree on the governmental roles, and to make a proposal for the commercial / logistics roles. In a next step the RIS providers together with the RIS authorities assigned access rights on data field level for the governmental users, which are described in detail in the RIS Data Exchange Reference Documentation and also serve as an annex to the Technical and Administrative Agreement. For defining the access rights for the logistics user, a specialised logistics task force was established, consisting of representatives of the inland navigation branch organisations. A detailed definition of the governmental / logistics roles can be found in the SWP 5.1 report and can be seen as the major contribution of IRIS Europe to the RIS architecture.

In SWP 5.2 a concept for training and education of River Information Services was elaborated, based on the needs and requirements of the inland navigation sector. Originally SWP 5.2 should establish a RIS training concept for all European countries that have RIS implemented. After a first analysis of previous results related to training and education for RIS it was identified that no user need analysis was available. It was decided to perform the initial user needs analysis in Austria, because of the high penetration of RIS equipment on vessels navigating on the Austrian section of the Danube. It is evident that the training and education concept in SWP 5.2 resulting from the user needs analysis can be applied on European level, due to its modularity and completeness in covering all available RIS technologies. The possible diversity of user needs in other countries can be covered by a suitable choice of training modules, as indicated in the training and education concept.

The Waterway Framework Directive (2000/60/EC), the Bird’s and Habitat Directive and the European Impact Assessment Directive demand that all measures to improve inland navigation are to be critically reviewed in view of the ecological impact of the measures. This was done within SWP 5.3 “Environmental Impacts”. The SWP only had to assess the environmental impact of the measures, set

in direct relation to this project. The potential effects of increase/decrease of inland navigation traffic are not considered to a full extent. All partner countries with EU co-funding in IRIS Europe performed an analysis of the environmental impacts, comprising Austria, Slovakia, Hungary, The Netherlands, France (done within the framework of the SIF TEN-T project) and Belgium (Flanders).

8.2 SWP5.1 RIS Architecture

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands

8.2.1 Main objectives of SWP 5.1

The main objective of SWP 5.1 is the definition of roles for governmental and logistical RIS Users. The expected outcomes:

- Identify user roles necessary for the implementation of the user rights management within the national and international exchange of RIS data
- Review existing user roles as defined within the COMPRIS project and identify necessary amendments
- Elaborate definitions for the identified user roles on basis of the existing definitions
- Get feedback and agreement on the defined user roles from the participants of the technical RIS data exchange task force as well as the logistics task force

8.2.2 Results of SWP 5.1

The table below illustrates the achievement of the expected outcomes of SWP 5.1:

	Status			
Activities in SWP 5.1 related to RIS architecture	**AT**	**SK**	**HU**	**NL**
Identification of user roles necessary for the implementation of the user rights management within the national and international exchange of RIS data	√			
Review of the existing user roles as defined within the COMPRIS project and identify necessary amendments	√			
Elaboration of definitions for the identified user roles on basis of the existing definitions	√			
Agreement on the defined user roles	√			

Table 35: Results of SWP 5.1

Identification of user roles:

The motivation for the elaboration and exact definition of the user roles arose out the decision to implement a role-based access rights mechanism for all users participating in the national and international exchange of RIS data. It is a pre-condition that all countries participating in the international exchange of RIS data have implemented and defined exactly the same individual user roles in order to ensure appropriate filtering of data to which a user of a certain user role has no access.

Review of existing user roles definitions and elaboration of user roles definitions:

The basis for the elaboration of the user roles was the already existing user roles definition of the COMPRIS project. First of all, all inland navigation related actors where listed and compared to the COMPRIS definition. It was found out that a high number of the existing COMPRIS definitions are appropriate and those were kept. In some cases new user roles had to be defined or existing ones had to be redefined.

Agreement on defined user roles:

The elaborated draft of the amended user roles definitions was distributed to the project partners for gathering feedback and to come to an agreement on the roles focusing on the international exchange of RIS data as priority. As a consequence the defined user roles were agreed among the participants of the technical RIS data exchange task force and form the basis for the national Access Rights Matrices. Furthermore the logistics task force reviewed and provided their input for the final version of the defined user roles.

8.2.3 Outcome

The following user roles have been identified and agreed within the RIS Data Exchange Task Force and the Logistics Task Force of IRIS Europe for the definition of the access rights of users within the international exchange of RIS data and therefore are seen as the agreed output of the project.

Priority roles used for the pilot implementation of the national and internal exchange of RIS data:

Code	Agreed Roles	Definition
TCA	Technical Certification Authority	Competent authority for the issuing of the Community Inland navigation certificates in accordance with article 9 of directive 2006/87/EC
RIP	RIS Provider	Being the organisation or organisational unit assigned to operate the RIS-System and to provide RIS-Services as defined in Directive 2005/44/EC
REP	Rescue and Emergency service Provider	Responsible for the search and rescue and emergency services (deals with a calamity and takes care of the people, animals, cargo and vessel involved) (COMPRIS)
LCI	LEA for Cargo Inspection	Performs cargo inspection (customs, veterinary, phytosanitary) and detects and fines / summons violations (COMPRIS)
LIC	LEA for Immigration Control	Performs immigration control and detects and fines / summons violations. (COMPRIS)
LTR	LEA for Traffic Rules	Detects and fines / summons violations of traffic rules (COMPRIS)
AIB	Accident and Incident investigation Body	Independent body or entity responsible for investigations on the causes and possible consequences of accidents and incidents within inland navigation and other modes of transport (based on Directive 94/56/EC and its revisions) with the purpose of elaborating recommendations for the prevention of similar accidents and incidents in the future. The investigations must not aim at the clarification of questions of guilt and liability of accidents and incidents. Next to the elaboration of investigation reports the creation of anonymous accident and incident statistics might be the task of this body or entity
OSD	Organisation in charge of collecting Statistical Data	Collects, processes and distributes statistical data (COMPRIS)

FLM	Fleet Manager	Controls a fleet of one or more vessels and puts these vessels a the disposal of freight brokers to transport cargo at charge (COMPRIS)
CAT	Competent Authority for Traffic Management	Controls the access to the control area, monitors the movements of specific vessels and their cargo (target groups) in this control area and supports Rescue and Emergency Service Providers with detailed information in case of emergencies and calamities (COMPRIS)
LOP	Lock Operator	Monitors and controls the smooth and safe progress of traffic around a and through a lock and is responsible for the locking process in itself
TOP	Terminal Operator	Controls a set of one or more terminals and puts these terminals at the disposal of terminal operators to transhipcargo from one conveyance to another (COMPRIS)
POP	Port Operator	Commercial user responsible for the commercial business within the port. Supplies the port and therefore monitors the condition of the port infrastructure, collects dues for the use of the port infrastructure (for transhipments and transport), plans and executes construction works and assists with calamity abatement (COMPRIS)
PAU	Port Authority	Official Authority responsible for traffic safety and traffic management in the port

Table 36: Priority roles used for data exchange pilot implementation in IRIS Europe

Additional roles are to be defined and implemented in a later stage when the pilot implementation has been proved:

Code	Agreed Roles	Definition
SKI	Skipper	t.b.d. - Navigating skipper: Navigates the vessel on voyage plan instructions of the master in charge (*COMPRIS*)
PED	Person entitled to dispose	t.b.d.
SHO	Ship owner	t.b.d.
CAO	Cargo owner	t.b.d.
COE	Consignee	t.b.d.
COR	Consignor	t.b.d.
BOP	Berth operator	t.b.d.
AMB	Ambulance	t.b.d. - Rescue and Emergency Service Providers: Responsible for the search & rescue and emergency services (deals with a calamity and takes care of the people, animals, cargo and vessel involved) (*COMPRIS*) - Emergency Service / Salvage service: Assist search & rescue and emergency services (*COMPRIS*)

FBR	Fire brigade	t.b.d. - Rescue and Emergency Service Providers: Responsible for the search & rescue and emergency services (deals with a calamity and takes care of the people, animals, cargo and vessel involved) (*COMPRIS*) - Emergency Service / Salvage service: Assist search & rescue and emergency services (*COMPRIS*)
EAU	Environmental authority	t.b.d. - Law Enforcement Agency for Pollution of the Environment: Observes pollution to the environment and detects and fines / summons violations (*COMPRIS*)
FWD	Forwarder	t.b.d. - Supply Forwarder: Is responsible on behalf of the shipper for the organisation of the physical transport of the goods that should be exchanged. The supply forwarder offers cargo to transporters on behalf of the shipper (*COMPRIS*)
FRB	Freight broker	t.b.d. - Is responsible on behalf of the transport supplier for the physical transport of the goods to be executed. The freight broker offers transport capacity to shippers on behalf of the transport supplier and is this way mediator between supply forwarder and master in charge (*COMPRIS*)
SHA	Shipping agent	t.b.d.
WWM	Waterway manager	t.b.d. - Supplies the fairway and therefore monitors the condition of the waterway infrastructure, collects dues for the use of the waterway infrastructure (for transport), plans and executes construction works and assists with calamity abatement (*COMPRIS*)
WMG	Water manager	t.b.d. - Supplies a certain water level and therefore monitors the water quality and quality and balances the water level where possible (*COMPRIS*)

Table 37: Additional roles as subject for future consideration

It is expected that the user roles definitions might be amended and further user roles will be identified and need to be defined based on operational experiences of (pilot) implemented RIS services and additional needs out of future services.

8.3 SWP5.2 Training and Education

Responsible Member States: Austria, Slovakia, Hungary

Based on the definition of the IRIS Europe sub work package 5.2 a concept for training and education of River Information Services was established.

The definition of the sub work package of the IRIS Europe Work plan demands to establish a training concept for all European countries that have implemented RIS.

The following chapters describe:

- the resulting concept for training and education from the evaluation of the interviews,
- the training requirements are pointed out.
- European approach towards training and education of River Information Services.

8.3.1 Concept for Training and Education

The analysis of interviews showed a strong need, from the inland navigation sector, for RIS trainings. According to this a concept for training and education of inland skippers was elaborated. Concerning this project the target group are the skippers of the inland navigation companies. Regarding to this in-depth analysis the target group is separated into two parts; on the one side are the skippers and on the other side are the students still in apprenticeship to become skippers.

In the following chapters:

- a concept for training, which is divided into the
    - River Shows and the
    - Training Modules and
- a concept for education is introduced.

8.3.1.1 Concept for Training

A concept for training and education was established, arranged in two stages for the duration of five years. The first stage is to give the user an insight in RIS and the second stage is on an already higher level. It is thought to be some kind of advanced course with different training modules. On the one side there will be River Shows to give a general overview and an explanation on the system RIS, its technologies and services and on the other side the technologies will be separated into modules to give a specific education on the system.

The River Shows and the Modules are two totally different things. One can attend a technology module, e.g. Inland ECDIS, without ever having attended a River Show. For the precise module training previous knowledge in the field of River Information Services would be preferable though.

At the end of the trainings, after five years, all of the skippers and inland navigation companies should be experts in the field of River Information Services. Therefore only trainings for future technologies, maybe value added services, will be offered. The River Shows and the basic modules for AIS, ECDIS, NtS and ERI shall be disposed for that reason. Five years are long enough for everybody to participate in trainings.

The River Shows and the Modules are explained in the following points.

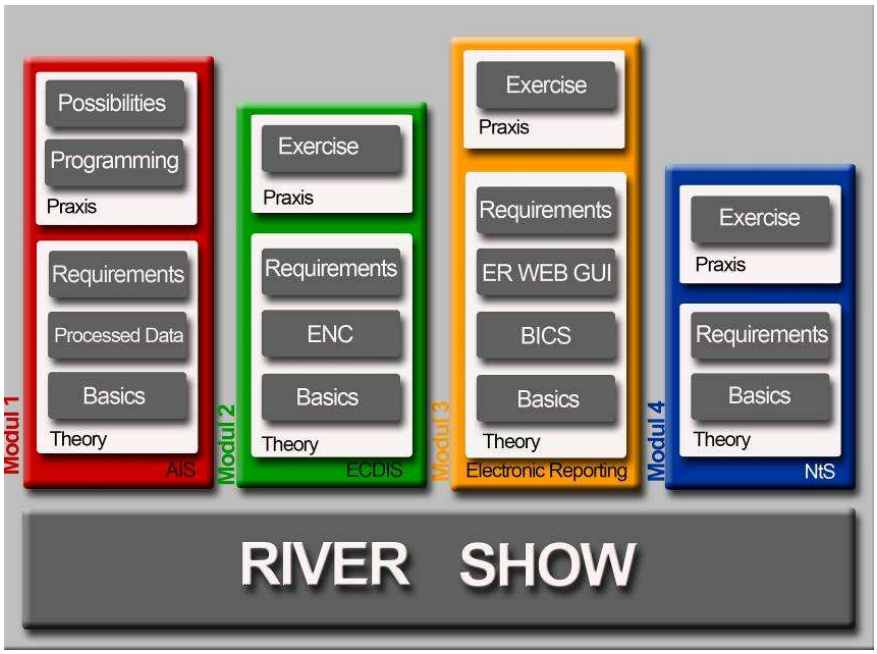


Figure 66: Concept for Training and Education

8.3.1.1.1 River Shows

The majority of the RIS users don't know what kinds of opportunities RIS offer. This is one of the biggest problems in the field of RIS. Skippers don't know much about the different technologies on the market and don't know how to handle the technologies available on their vessels. This results from the poor information, given in advance, according to RIS. Therefore it is considered to establish, so called "River Shows". These River Shows shall give the users a good and tight overview, in terms of presentations, on RIS. In these presentations the system as a whole shall be introduced with all the advantages it brings for the inland navigation. In addition the technologies and the different services offered by them will be explained. After the user will be familiarized with River Information Services the different opportunities (f. e. the linking of the AIS Transponder with the ECDIS Viewer- tactical traffic image) RIS implicate will be pointed out. Once again, the River Shows are only used for a first clarification of facts, to give the skippers a general idea of River Information Services.

The River Shows are intended to last for at least two years. The duration depends on the interest of the concerned companies. Companies are not required to attend a River Show before the deepening of the different technologies, as given in training modules, can be taken.

8.3.1.1.2 Training Modules

The modules are planned to give the skipper a precise theoretical and practical training in the different kinds of RIS technologies (AIS, ECDIS, ERI and NtS). The four River Information Services technologies are separated into different training modules.

This modular approach was chosen because of:

- The trainings were arranged in modules, because modules can be adopted by all the European countries that have RIS implemented. For that reason modules are the best solution to the problem. Modules can be created individually regarding to the integrated technologies in the country. Moreover the concerning states just have to create own course modules which can be based on the drafted ones in this thesis.
- It is essential to arrange flexible trainings, since the working conditions of the target group are not the easiest to organize courses. Skippers don't have much time available for trainings and because of the fact that it is not easy to reach students as well, training modules were made.
- In addition the education to become a skipper varies from European state to state. To become an inland skipper, in Austria one has to make an apprenticeship at an inland navigation company. In the western part of Europe this is basically the same. (e.g. the Netherlands and

Germany). However this is not the same with the eastern part of Europe. In Eastern Europe the education standard for skippers is on an academic level. With training modules it will be no problem to adapt the courses based on the personal needs. Responding to the above mentioned education situation in the inland navigation it was the best to make modules, because of the different educational standards all over Europe.

- Other than this, not every vessel has the same equipment. Most of the vessels are only poorly equipped with partly old technologies. Therefore modules were selected, to educate the captains, because modules can be created separately meaning that they don't have to be based upon each other. So it is possible for the skippers to attend any kind of course they want to without needing any special kind of technology they don't have available.

The module trainings are considered to last for the duration of three years. Basically they are intended to start after the River Shows are concluded. However if a company is already familiar with the RIS system as a whole, it won't be a problem to make courses concerning the technology in advance.

Module trainings in Austria for example will be arranged at via donau RIS demonstration center in Vienna. For sure it will be a possibility to organize trainings at different locations along the Danube as well, but this is not deliberated yet. First of all it has to be identified if the River Shows are attractive to the people and especially if the concept of touring with the River Shows along the main waterways (e.g. the Danube) is appealing.

8.3.1.2 Concept for Education

For the apprentices it is thought, that they also attend River Shows and the different kinds of training modules. When the period of trainings is over, also the professional schools for inland navigation have to integrate River Information Services in their curriculum. It is not intended to act as an own subject. RIS shall be a part of the whole education, like inland navigation wouldn't be the same without River Information Services.

8.3.2 Structure of Trainings

8.3.2.1 River Shows

The example below illustrates how a River Show in Austria could look like.

River Show Agenda	Target Group	Learning Target	Arrangement of Presentations	Definition	Remarks	Duration in Days
River Shows	Skippers	• Basics and benefits of DoRIS • Why it is important to have a system like DoRIS • Technical concept of DoRIS- how the data exchange works • What technologies and services DoRIS offers • Possibilities with AIS • Importance of different technologies- importance of AIS • Importance of ECDIS- why the transponder without ECDIS is no benefit for the user- tactical traffic image • No Big Brother effect • Requirements for the technologies	Introduction *Presentation*	Introduction- Getting to know Donau River Information Services • Basics on DoRIS➔ short introduction to DoRIS. o Why Donau River Information Services o Targets of DoRIS o General Benefits of DoRIS • Technical concept of DoRIS o Tasks of DoRIS ▪ Generation of traffic data ▪ Transfer of traffic data ▪ Display data on ECDIS ➔ tactical traffic image o Development of Donau River Information Services ▪ ship segment, shore segment, operator segment, external segment	For the presentation of the RIS Services it is extremely important to point out the associations between the technologies and the services. "Statistics" and "Waterway charges and port dues" may be optional. It might be interesting for the skippers to hear something about these points, but if they don't care, it is not mandatory.	1
		• Where to get the technologies from, etc.	Technologies and Services *Presentation*	DoRIS Technologies, Services and Users • Interface Service, System • DoRIS- Technologies, Description of the DoRIS Technologies o Inland AIS o Inland ECDIS o ERI o NtS • Overview of DoRIS Services and Functions, Description of the DoRIS Services o Traffic Information Service o Traffic Management o Calamity Abatement Services o Statistics o Port and Terminal Management DoRIS– User Groups, Identification of governmental authorities as well as commercial user		
			Equipment *Demonstration*	Equipment • Different kinds of DoRIS equipment o Minimum- Transponder o Regular- Transponder and ECDIS o Navigation- Transponder, ECDIS and Radar • Requirements for the equipment concerning DoRIS.		

Figure 67: Structure of exemplary River Show

8.3.2.2 Training Modules

Training Modules	Target Group	Learning Target	Arrangement of modules	Definition	Remarks	Duration in days
AIS Module 1	Skippers	• Basics and benefits of AIS • Opportunities regarding AIS • Different modes of operation • Interpretation of data delivered through AIS • Provider of AIS and other important facts • Opportunities to use AIS • Transponder settings • Retrieving of data and programming of the Transponder • Requirements for AIS • Approaches in case of problems with the transponder	Introduction- Basic Application *Presentations*	<u>Basics</u> • What is AIS • How AIS works o Different modes of operation ▪ Monitoring of traffic ▪ Sending of messages ▪ Retrieving of data ▪ Etc. • Targets and users of AIS • Benefits of AIS <u>Processed data via AIS</u> • Different kinds of data concerning AIS • Safety related Information • Data content of AIS- data sent via AIS o Existing Messages o Available Messages • Importance of sent data • What kinds of information can be found on the AIS Transponder- What data does he display • *Demonstration*: Look and feel AIS data displayed on the transponder and the benefit for the skipper	Demonstrations in the introduction part, this applies for all training modules, are used to show the trainee what the technology looks like. Maybe how the graphical user interface of the Electronic Reporting platform looks like or for example how the NtS Website is arranged. Demonstrations are only made by the trainer and are not thought as an exercise.	1
			Requirements *Presentations*	<u>Requirements on Board</u> • Requirements for AIS o Power supply • FAQs Transponder o Supplier of transponder ▪ Costs for the transponder <u>Possibilities with AIS</u> • Opportunities- connection with ECDIS- demonstration of tactical traffic image only with ECDIS o Navigation in combination with ECDIS and Radar		
			Praxis *Exercise*	<u>Transponder Programming</u> • Explanation of the displayed data on the transponder • Transponder settings o Brightness o Change from bends to km etc. • Retrieving data and programming of transponder o What to do before the journey o What to do when the journey starts o What to do during the journey o What to do at the end of the journey o What to do at mooring • Sending and receiving of SRMs <u>What to do in case of problems?</u> • Troubleshooting		

Figure 68: Structure of exemplary AIS Training Module

NtS Module 4		• Basics and benefits of NtS • Different kinds of NtS- FTM, WRM, ICEM, WERM • Basic requirements to use NtS on board • Retrieving NtS: internet • Retrieving NtS: e-Mail • Retrieving and displaying NtS ECDIS • Retrieving and using NtS for voyage planning • Approaches in case of problems with the Notices to Skippers	Introduction- Basic Application *Presentations*	<u>Basics</u> • What are NtS • How NtS works o Suppliers of NtS • Targets and users of NtS • Benefits of NtS <u>Kinds of NtS</u> • FTM, WRM, ICEM, WERM o Information content and area of application • *Demonstration*: Look and feel of Notices to Skippers displayed in Inland ECDIS Viewer and benefit for the skipper • *Demonstration:* From the actual event (e.g. blockage of fairway due to construction works) to the information on board		1

			Requirements *Presentation*	Requirements on board • Hardware • Software required for different levels of NTS functionality o Internet browser o E-mail client o Inland ECDIS Viewer o Voyage planning application		
			Praxis *Exercise*	Methods for distributing and presenting NtS • Retrieving NtS – internet (example www.doris.bmvit.gv.at) – PULL service o meaning of search parameters o benefit of language independency • Retrieving NtS e-Mail o Signing in for NtS o Format Fulltext, Codeformat, XML. o Signing out for NtS • Retrieving and displaying NtS directly in *Inland ECDIS* Viewer (functionality depending on product) o Symbols in the electronic navigational chart (ENC) o Display and meaning of NtS information displayed in the ENC • Retrieving and using NtS in voyage planning application (functionality depending on product) o Example of a voyage from Rotterdam to Constanta, and how up to date information provided by NTS can influence your voyage What to do in case of problems? • Troubleshooting		

Figure 69: Structure of exemplary NtS Training Modules

8.3.3 RIS education and trainings in Europe

As the project definition demands, a training concept for skippers concerning River Information Services has to be established. The above-mentioned training concepts and requirements are all based upon one member state, in this case reflecting the Austrian inland navigation situation. However this training concept is adaptive to all European countries. According to this project, an analysis of the Austrian inland navigation conditions regarding to the RIS acceptance and the acceptance of trainings was made. Based on this analysis a concept for training and education was established.

The training concept consists of two parts, the River Shows and the Module Training. Both can be adapted without any problems by the IRIS Europe partners.

First of all an analysis of needs concerning skippers and River Information Services has to be made for all countries. Only with an analysis of needs the developer of the trainings can respond to the requirements of the skippers to 100%. However if the developer has not enough time to make an analysis of needs, the concept for the River Shows and the Modules can be taken and based upon this draft, a concept regarding to the implemented technologies of the country can be established.

For the training requirements it would be good though to make an analysis, because then the best times for trainings and other issues could be figured out.

Implementation of the River Shows

According to the RIS systems and RIS services the country offers, the River Shows have to be created. For example, one can take the agenda of the River Shows that is based on the Austrian RIS implementation and just adapt it to their national requirements.

Implementation of training modules

The same applies for the modules. Concerning the systems, a country offers, the modules just have to be adapted. For most of the systems the part with the basics can be applied and only the exercises have do be created individually. However the concept for the modules set a good example for the developer to know what the trainings should look like.

8.4 SWP5.3 Environmental Impacts in Slovakia

Responsible Member State: Slovakia

The Act No. 24/2006 Coll. on Environmental Impact Assessment and in amendments to some acts ensures the procedure of the expert and public assessment of environmental impact of proposed activities before the decision.

8.4.1 Basic data about preliminary environmental study

Preliminary environmental study takes into account implementation of river information services (RIS) namely AIS infrastructure built up on the Slovak part of Danube waterway – from km 1872,7 - 1708,2, from Devín to Štúrovo. The infrastructure consists of 4 base stations (Bratislava, Gabčíkovo, Komárno and Štúrovo) and the RIS Centrum at premises of State Navigation Administration (SPS) in Bratislava. Each base station consists of transponder, antenna and controller. The whole system is interconnected via Internet.

Preliminary environmental study of the project „Pilot implementation river information services on the Danube in the Slovak Republic with regard to its accompanying activities (in particular location of AIS base station sites on four places) was done according to the Act No. 24/2006 Col. of the National Council of the Slovak Republic on Environmental Impact Assessment *(Annex No. 8, Chapter 13. "Transport and telecommunication projects and installations", item number 15. "Installations for radio and television transmitters").*

Item No.	Activity, facilities and installations	Threshold values	
		Part A (compulsory)	Part B (screening)
15.	Installations for radio and television transmitters		from 500 kW output capacity

Table 38: Values of the activities requiring the environmental impact assessment of their effects according to the Act No. 24/2006 Col. of the National Council of the Slovak Republic on Environmental Impact Assessment

Due to the lower values of the output power of an AIS transponder – shore base station - lower than threshold values – see table above - does not come under screening.

All base stations with AIS transponder of the shore segment were supposed to be mounted on existing buildings inside built-up areas of cities Bratislava, Komárno a Štúrovo. The shore base station Gabčíkovo was supposed to be installed on the roof of lock tower at the dam and the hydroelectric power plant Gabčíkovo.

Shore base stations are situated outside of protected areas falling under special regulations (according to the Act No. 543/2002 Coll. on Protection of the nature and landscape) and outside of areas of a significant environmental burden. The same is valid for mobile transponders supposed to be installed on ships in international navigation.

It is supposed that on the Danube waterway all navigating ships will be (in the near future) equipped with AIS transponders.

Technical data of AIS transponders (output power and frequency) of the shore and the ship segment of the project are distinctly lower than threshold values determined by the Act No. 24/2006 Coll. on Environmental Impact Assessment – Part III Assessment of proposed activities.

8.4.2 Conclusions

Preliminary environmental study together with application for approval was submitted to the authority responsible for environmental issues, in this case to the District Environmental Office "Krajský úrad životného prostredia" in Bratislava). This authority issued statement that EIA is not required for the project IRIS Europe on the Slovak part of the Danube waterway according to Act No 24/2006 Coll. on Environmental Impact Assessment and on amendments of some acts.

8.5 SWP5.3 Environmental Impacts in Hungary

Responsible Member State: Hungary

IRIS Europe has many positive impacts on the environment. The safety, efficiency and security of the transport system can be improved with this project. This will lead to more transports with the environmentally friendly mode of transport “inland navigation”. The implementation of such services will reduce congestion on inland waterways, because arrival times at certain points can be optimised, and due to this possible emissions will decrease.

In addition to the Waterway Framework Directive (2000/60/EC), which entered into force on 22 December 2000, the Bird’s and Habitat Directive and the European Impact Assessment Directive, demand that all measures to improve inland navigation are to be critically reviewed in view of the ecological impact of the measures.

The physical interventions in the framework of IRIS Europe in Hungary are limited. In those cases where physical interventions are necessary, antennas are mostly mounted to already existing masts (e.g. the masts of the GSM network operators) or on buildings in the vicinity of the river. At most of these locations, other antennas had already been installed, so the additional physical intervention can basically be neglected. On the contrary, IRIS Europe will aim at the preparation of telematics services for increased safety, efficiency and security, and moving inland navigation to a sustainable way of transport. These services will contribute to the promotion of inland navigation, an environmentally friendly mode of transport in itself. The implementation of such services has the potential to reduce the number of accidents, congestion on inland waterways and this way reduce possible emissions, oil spills and enhances the monitoring of proper waste disposal.

Within the IRIS Europe project the following planned work is of relevance in the context of development and implementation of services, applications and systems and therefore might be potentially of interest for an environmental impact analysis within Hungary:

SWP	SWP Name	Type of work	Infrastructure set up
1.2	Pilot amendment in Hungary	Pilot Implementation	Yes
1.4	Traffic Information Data Exchange	Pilot Implementation	Yes
1.6	Subsidy Programme for RIS Equipment	Study	No
2.2	Electronic Reporting, Pilot Development / Implementation in Hungary	Pilot Implementation	Yes
2.5	Electronic Reporting, Cross-Border Services Pilot Implementation and Testing	Pilot Implementation	Yes
2.6	Hull Database Specification and Development	Study	No
2.7	Hull Data Exchange Pilot Implementation	Pilot Implementation	Yes
3.1	Waste Management Service	Study	No
3.2	Calamity Abatement Service	Pilot Implementation	No

Table 39: Types of work in IRIS Europe - Hungary

In the course of IRIS Europe major infrastructure has not been set up (only PCs, laptops and on-board AIS equipment), but for the future the consideration of the following environmental aspects has to be made (same as experienced and fulfilled during the DaTraM project):

Period of installation

In the course of equipment installation, no impact and/or products damaging or polluting the environment are generated in connection with air purity, rainwater, soil pollution, and radiation.

Period of operation

In the course of the operation of radio technology equipment, the energy containing useful information and to be emitted through the antenna can be considered as 'pollutant' environmentally; besides, the heat quantities dissipated by the equipment can be considered as waste. As regards the location of the VHF antennas installed, their complete separation is not ensured; on board the ships, no unauthorized personnel can get into the immediate proximity of the antennas.

In the cases included in the design, the emitted electromagnetic field intensity is below the value specified in the applicable standard (Decree 63/2004 (VII.26.) ESZCSM), therefore no deleterious environmental impact needs to be accounted for.

Waste

The waste generated in the course of installation works must be removed from the premises after completion of the works. The waste generated in the course of installation can be considered as household waste (wood, paper, small amounts of metal, plastic), therefore it does not require special treatment.

Summary

This design chapter and the technical designs serving as a basis expressly state that radio connections do not result in any deleterious environmental impact in case of the planned design, neither in the course of installation nor in the course of operation.

No special environmental solutions are required to be designed.

The installer must provide evidence of compliance with the labour safety and environment protection requirements applicable to the facility completed in the form of a written statement and by documents prescribed in other regulations after finishing the works.

8.6 SWP5.3 Environmental Impacts in Austria

Responsible Member State: Austria

8.6.1 Main objective

The environmental impacts of the projects initiated under the framework of IRIS Europe are identified and assessed in a report on SWP 5.3. Measures set in direct relation to IRIS Europe are considered but not the potential effects of increase/decrease of inland navigation traffic as these are considered to be small.

In Austria, IRIS Europe builds on infrastructure set up within the TEN-T funded project DoRIS – Donau River Information Services. Therefore the environmental impacts of DoRIS and IRIS Europe were analyzed.

8.6.2 DoRIS impact on the environment in Austria

Within DoRIS, the following infrastructure was set up:

- 23 AIS base stations, whereas 22 were installed on existing antenna masts or buildings and only one antenna was completely new constructed
- 9 work stations (PCs) at the Austrian locks
- 9 back-up server at the Austrian locks
- 12 work stations (PCs) at relevant authorities
- 14 mobile work stations (Laptops)

- 3 server for the operational RIS Centre located at the offices of via donau
- 4 workstations for the operation of the DoRIS system located at the offices of via donau
- 27 Inland AIS Transponders installed on relevant authority vessels
- 27 work stations installed on relevant authority vessels

The applicable national and regional environmental laws as well planning and regulations, needed for the implementation of RIS, are presented in the report on SWP 5.3. The analysis shows that – with all possible additional requirements of the regional administration being fulfilled – none of the planned physical interventions violates environmental requirements.

8.6.3 IRIS Europe impact on the environment in Austria

In the following work packages relevant infrastructure was set up:

- SWP 1.4: Traffic Information Data Exchange
    - By the fact that the necessary AIS Infrastructure in Austria is already set up within the DoRIS project, an additional server (IRIS Europe productive server) was implemented in the Austrian national RIS Centre within IRIS Europe in order to manage the exchange of the relevant data.
- SWP 2.3: Electronic Reporting, Pilot Development / Implementation in Austria
    - For the electronic reporting infrastructure functionality was added to the IRIS Europe productive server in the Austrian national RIS Centre in order to store and process relevant data received via already existing infrastructure (Internet, GPRS, etc.)
- SWP 2.5: Electronic Reporting, Cross-Border Services Pilot Implementation and Testing
    - This SWP is based on the infrastructure provided within SWP 2.3 and therefore no additional infrastructure is set up.
- SWP 2.7: Hull Data Exchange Pilot Implementation
    - For the exchange of relevant Hull data an additional server was implemented in the Austrian national RIS Centre for the storage and processing of relevant information.
- SWP 3.2: Calamity Abatement Service
    - For the provision of relevant information out of the Austrian RIS system to the relevant organisations in case of calamities functionality was added to the IRIS Europe productive server in order to be able to store, process and provide the relevant data.

All other SWPs of IRIS Europe have either the character of a study – elaborating possible future RIS services – or are limited to organisational or administrative issues.

8.6.4 Summary

The physical interventions in the framework of IRIS Europe in Austria are limited. In the DoRIS project where physical interventions were necessary, antennas were mostly mounted to already existing masts (e.g. the masts of the GSM network operators) or on buildings in the vicinity of the river. At most of these locations, other antennas had already been installed, so the additional physical intervention can basically be neglected. In 5 out 23 cases the installation of antennas was subject to the federal nature protection laws. Approval under nature protection law was given in all of these cases with a limited number of conditions. These conditions could be fulfilled without problems (e.g. in terms of landscape-compatible colour of the antenna). As is confirmed by the official approval by the responsible administrations, the implementation of the proposed measures in the framework of IRIS-Europe will therefore not have detrimental effects on the environment.

On the contrary, IRIS Europe aimed at the preparation of telematics services for increased safety, efficiency and security. These services contribute the promotion of inland navigation. The implementation of such services has the potential to reduce the number of accidents, congestion on inland waterways and this way reduce possible emissions and oil spills and enhances the monitoring of proper waste disposal.

8.7 SWP5.3 Environmental Impacts in the Netherlands

Responsible Member State: The Netherlands

8.7.1 Introduction

Within the IRIS Europe project the following work is of relevance in the context of development and implementation of services, applications and systems in the Netherlands. Therefore they are potentially of interest for an environmental impact analysis:

SWP	SWP Name	Type of work	Infrastructure set up
2.6	Hull data specification and development	Pilot Implementation	Yes
2.7	Hull Data Exchange Pilot Implementation	Pilot Implementation	Yes
3.1	Waste Management Service	Study	Yes
3.2	Calamity Abatement Service	Pilot Implementation	Yes

Table 40: Workpackages with possible environmental impacts in the Netherlands

The RIS implementation in the Netherlands, however outside the scope of the IRIS Europe project, is a programme initiated two years ago to facilitate and manage the process of adopting the RIS concepts. The following infrastructure set up is envisaged:

- **FIS Portal**: This is a **server** is currently in operation enabling users to access Traffic related information. It contains geographical information (Inland ENCs) and up-to-date information such as water related messages, notices to skippers, ice messages and weather forecast;
- **ENC production**: Contains all waterways of class IV and higher. Full operation towards the end of 2008 including the operational management;
- **AIS shore based infrastructure**: Business plan is approved. Phase 1 is scheduled in first Quarter of 2009;
- **AIS on board**: This programme envisages the installation of 8000 vessels that uses the Dutch inland waterways with AIS stations. A number of pilots are under preparation for execution in 2008;
- **IVS90**: Replacement of the current monitoring and reporting inland shipping system. First preliminary study is to commence in the forth quarter of 2008;
- **ERI:** Implementing the internationally agreed standard for Data exchange for shipping.

8.7.2 IRIS Europe topics for the Netherlands

8.7.2.1 International data exchange including Hull Data specifications and implementation

The IRIS Europe project has focussed to a large extent on cross-border information services and the therefore necessary procedures for the exchange of RIS information. These cross border information services contain:

- International exchange of AIS Data;
- International exchange of vessel ‘Hull Data’;
- International exchange of data included in electronic reports of the voyage of a vessel and its cargo.

This project has defined the project standard on international data exchange in the RIS Data Exchange Reference Documentation. The reference documentation consists of a description of the technical solution for international data exchange:

The implementation, in the Netherlands, of the agreed technical specification of the International Data Exchange has taken place within the current Dutch infrastructure with the provision that the International data exchange processes including user roles and access rights, network and security settings and the internationally defined interfaces are strictly adhered to.

For the exchange of relevant Hull data the **Hull server** is implemented in the Dutch national RIS Centre for the storage and processing of relevant information.

This is a software acquisition, which will have no negative impact on the environment in the Netherlands.

8.7.2.2 Waste Management

Waste Management in Europe is governed by a number of treaties. In the Netherlands this is restricted to the **Waste management treaty.**

The Shipping Waste Treaty is an agreement between the Netherlands, Belgium, Luxemburg, Germany, France and Switzerland wherein each country has made individual agreements on how to deal with oil and greasy waste streams, washing water, loading remains, dirt water, household wastewater, household garbage and small hazardous waste in inland shipping.

The treaty was signed in 1996 and has come into force recently. The treaty consists of the following three parts:

- Part A: Waste containing grease and oil;
- Part B: Cargo-related waste;
- Part C: All other waste.

The Services offered by RIS at present or in the near future are first and foremost related to safety considerations on the European waterways, but can also support waste management. AIS, inland ECDIS charts and NTS (notice to the skippers) are examples of such services. AIS can be used to point out the location of the nearest waste-collecting vessel (bilge boat). Inland ECDIS charts can be used to point out locations of waste collection including their capacity and opening hours. The Notices to Skippers standard can be used to give information about the availability of collection points.

In the Netherlands, the implementation of the RIS related Waste Management findings do not involve any structural or physical changes, which may have impact on the Environment. Monitoring and controlling waste management require the extension of the use of RIS services. These findings may involve software extensions and the development of interfaces to existing systems. For the Netherlands these aspect will not have any detrimental effect on the Environment. On the contrary it will positively enhance the Waste Management process in providing up-to-date and accurate relevant information.

8.7.2.3 Calamity Abatement Support

RIS incorporates many services. One of them is the Calamity Abatement Support (CAS) module, which should facilitate the data transfer between people involved in tackling the incident or accident. Hence, this can be on both a national and international scale. CAS not only realises the data flow, but it also determines what information to be sent based on a classification of the calamity. Structured logging of information is performed as well and aims at facilitating the data collection for the reconstruction of the calamity.

Different European countries (Austria, Belgium, Hungary, Netherlands, Romania, and Slovakia) have contributed to set up best practices for this CAS module. Additionally, literature has been reviewed with respect to different accident/incident classification systems.

The Netherlands has currently a specific Calamity Abatement Support Module, for the registration of an accident/incident and dissemination to the relevant calamity abatement force, available.

The findings as stipulated in the results of the study are of procedural natures. They present no negative impact on the environment. On the contrary the implementation of CAS will enhance the calamity abatement process by providing real-time information to emergency services during the occurrence of a calamity.

8.7.3 Environmental impact of RIS implementation in the Netherlands

The provision of telematics information services to support traffic and transport management (River Information Services - RIS) will compensate the current information weakness of inland waterway transport. The deployment of RIS on the European inland waterway network will improve safety,

efficiency and environmental friendliness of inland navigation and in this way contribute towards modal shift from road to waterborne transport.

The implementation of RIS in Europe will further enhance the environmental friendliness of inland navigation. Therefore, RIS will significantly contribute to the achievement of environmental goals (such as defined in the Kyoto Protocol). In addition, RIS will contribute significantly to the re-balancing of modal shares, and hence support sustainability of the European freight transport system.

The implementation of RIS in The Netherlands will be fully in line and will even go beyond the obligations as defined in the RIS Directive. Full implementation is however foreseen outside the scope of IRIS Europe. The environmental impact of IRIS Europe is for the Netherlands restricted but positive.

Below is a table summarising the impact of introducing the results of IRIS Europe and RIS in wider extend in The Netherlands:

Topic	Type of detrimental effect on the environment	Comments
Hull Data specification and Hull data exchange	None	It involve the exchange of standardised data
Waste Management	None.	Have actually a positive effect as the information becomes rapidly and correctly available
Calamity abatement	None.	Positive effect as the single point of operation during calamity provide actual and real-time information
Implementation of RIS in the Netherlands	None	The only aspect, which may qualify for some of environmental negative impact, is the introduction of a number of (new) antennas to cover the monitoring of AIS network. Studies in other European countries suggest a negligible level of impact on environments due to the introduction of these antennas

Table 41: Types of works and their effect on the environment in the Netherlands

8.8 SWP5.3 Environmental Impacts in Flanders

Responsible Member State: Belgium

8.8.1 Introduction

Flanders is involved in the IRIS project via Sub Workgroup Package 3.2. In fact, the main task of Flanders is to lead SWP 3.2 “Calamity Abatement Services” as work package leader.

It is crystal-clear that the implementation of RIS in Europe will trigger a number of positive consequences: the monitoring system will contribute to a safer and even better synchronized shipping traffic, mainly thanks to the use of the high-tech applications and other data transmission systems.

CoRIS, which coordinate the implementation of RIS in Flanders, has also investigated to what extent these beneficial interventions also have a drawback.

Are there any damaging consequences for environment and/or living conditions?

This investigation resulted in the following conclusions:

The use of high-tech information systems will most definitely result in a considerable improvement of the guiding of inland shipping, without any negative impact on the environment or downsides for living conditions. Instead, the implementation of CAS will reduce negative impacts on the environment by acting very quick and accurate in case of a calamity.

8.8.2 Calamity Abatement Services: Best practices

This study aims to give an overview of the existing procedures, information needs and available and desirable data in the different participating countries. The task of a RIS-centre is to inform all involved actors in time and in a correct and efficient way. A RIS-operator will never coordinate a calamity, but will offer support by providing fast and correct information to the actors on the field. In this way, the impact of calamities as well as the number of obstructions that result from this can be reduced.

The ultimate aim must be however to map calamities in detail at all times and to act upon them in a meticulous way. To that extent, a European uniform classification system is used, enabling any partner to name in a uniform way a well-defined calamity (for example oil-pollution) by using standard parameters such as degree of seriousness and the involved risk (be it direct or indirect), e.g. the calamity is life-threatening for the concerned, other shippers or people living in the neighbourhood.

8.8.3 Conclusion

The physical interventions in the framework of IRIS Europe in Belgium (Flanders) are not applicable, since the contribution of Flanders is limited to carry out a feasibility study, resulting in a best practice on a European level.

8.9 SWP5.3 Environmental Impacts in France

Responsible Member State: France

8.9.1 Introduction, main objectives

IRIS Europe has many positive impacts on the environment. The safety, efficiency and security of the transport system can be improved with this project. This will lead to more transports with the environmentally friendly mode of transport “inland navigation”. The implementation of such services will reduce congestion on inland waterways, because arrival times at locks can be optimised, and due to this possible emissions will decrease.

The applicable national and regional environmental laws as well planning and regulations, needed for the implementation of RIS, are presented in this report.

All necessary measures initiated in the framework of IRIS-Europe – as well as those needed for the implementation of SIF Seine-Scheldt project in France were described in the “Iris Environmental Impact analysis activities in France” report. The main point of the document is detailed below.

8.9.2 Positive aspects for the environment

Based on the actions from the SWP2.4 and SWP1.3., consisting on lock deployment for a global management, and international data exchanges,; Lock keepers will be aware of all vessels arrivals because the information will be sent automatically by the other lock of from the neighbouring country when the vessel is crossing the lock or the border. The consequences for environment are:

Optimizing locks management, decreasing water consumption

- At first, this information will help him in his job to optimize the lock management, especially concerning water resource management that becomes a big problem especially in summer period where the water becomes more and more rare and need to be economized. The chamber of the lock is less often emptied than before without any vessel inside.
- Obtaining an overview of the traffic is an important tool which can help him during the decision on :
    - how to position the lock (low level of water, high level)
    - Does he have to wait for another vessel very close to the vessel entering inside the chamber, instead of two locks manipulation?

Homogenous speed for vessels, decreasing fuel consumption, limiting CO2 emission, optimizing Vessel Use and planning

- At second the fact that the lock keeper optimize his lock management offer a better service to the skippers that are limited in their waiting time in front of the lock
    - The fuel consumption is reduce, automatically the CO2 emission is reduced also
    - The life of the motor is extended because of a better use (we have to know that in most of the time when a waiting tile is under 20 minutes, skippers don't want to stop the motor to avoid a new start engine, which very bad for the duration of it)
    - The waiting time will be reduced ant this will optimize each voyage and the durations are decreasing.

      The vessel arrives sooner, and could be re used sooner too. The vessel use becomes better and better, and offers more possibilities to the skipper for having a new contract faster.

The Environmental Impact Assessment (EIA) Directive requires that "Member States shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects".

The EIA Directive requires that direct and indirect effects of a project on the following factors shall be identified, described and assessed:

- human beings, fauna and flora;
- soil, water, air, climate and the landscape;
- material assets and the cultural heritage;
- the interaction between the factors mentioned in the first, second and third indents".

8.9.3 Conclusion

The implementation of RIS does not cause significant effects on the environment no Environmental Impact Assessment is required. The environmental impacts of the required infrastructural measures in France are all assessed under national French law: for instance, the environmental compatibility of infrastructural measures implemented is certified by the approval under the "Environmental Code" (Environment protection law) in France.

Experiences from IRIS Europe show that measures as proposed in French implementation only cause insignificant environmental impacts, which can moreover be overcome relatively easy (e.g. adapt

colour of antennas). (Reference: TEN-T project IRIS Europe – Implementation of River Information Services in Europe, Report: SWP 5.3 Environmental Impacts[6]).

The different aspects below have been taken into account to be sure that no impacts were caused:

- Birds and habitat directives
- Water Framework directive
- Environment protection law in France
- Nature protection law of France
- National park laws
- Natural Zones of Floristic and Faunistic Ecological Interest
- Zones of protection of the architectural, urban and landscape heritage
- Natura 2000 Zones
- French laws relatives to construction of new infrastructure

All specific articles of the French laws concerning all these aspects are specified and mentioned in the Environmental impact analysis document.

[6] Downloadable under www.iris-europe.net, public download area

9 WP 6 – Project Management

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands, Belgium, France

9.1 WP 6 Introduction and Summary

9.1.1 Main objectives and outcomes of WP 6

IRIS Europe WP 6 covered all aspects related to the overall management of the project, the dissemination of project results to stakeholders outside the project consortium, the liaison and coordination with the EU RIS Committee and the liaison with RIS related project initiatives, like for example Shortsea XML or MarNIS.

The main objectives of WP 6 were to:

- Manage and control the timetable and the expenses within the project
- Coordinate the activities within the project
- Disseminate and exploit project results external to the project
- Coordinate the activities of the project with relevant activities outside the project
- Disseminate results to the RIS Committee and the European Commission

9.1.2 Results of WP6

The main objective of SWP 6.1 “Project Management” was to manage the project, with the primary task to control results of the project versus spent resources and time schedule compared to the workplan and to set corrective actions if required. As IRIS Europe was a multi-national project, the main responsibility laid upon the beneficiaries in the individual Member States. In order to ensure a harmonised approach, a project management team was set up (details see next chapter), also because of the fact that there were no dedicated WP-leaders in the project. One main project management instrument was introduced for the coordination between the European Commission, Project Management Team, Beneficiaries and organisations in charge of executing the work by means of regular coordination meetings, which were held in time intervals of approximately 3 months. Within the coordination meetings mainly technical and organisational decisions were made. For decision support between the Beneficiaries of the Member States and the European Commission, regular Steering Committee meetings were held in time intervals of approximately 6 months.

In addition to the project management, the organisation in charge of SWP6.1 ensured that in those countries, where neither the RIS authority, nor the RIS providers were project partners, at least one representative from these countries participated in the technical work of the Expert Groups for River Information Services and in their taskforces.

The objective of SWP 6.2 “Dissemination” was to disseminate the results of the project to the national and international stakeholders. This was done by means of the following measures:

- Stakeholder Group Meetings
- Presentation at conferences
- Overall Project homepage and national project websites
- Leaflets, Folders

All project partners were responsible for dissemination of IRIS Europe results to their national stakeholders, and to utilise appropriate means for dissemination of results. Chapter 9.6 “Dissemination” gives some examples of dissemination measures performed within the project.

In SWP 6.3 “Liaison with national and EU initiatives in Corridor VII” an intensive cooperation with related projects was foreseen. This related to the following topics, issues, projects in the field of:

- Maritime navigation, traffic management, security
- Intermodality, Short Sea Shipping, Telematics for road and rail transport
- Organisational environment of fairway and traffic authorities and RIS providers

Several activities were carried out in order to liaise with national and European initiatives in Corridor VII; a selection of the key activities is presented in chapter 9.7 “Liaison with national and EU initiatives in Corridor VII”.

9.2 SWP 6.1 Project Management Structure

Within IRIS Europe several coordination instruments were used in order to guarantee a stable and sustainable exchange of information on country and partner level. These instruments differ between countries and partners involved and consider both strategic and operative working activities.

The activities executed by cooperation partners in IRIS Europe are not considered contractually binding, as no EU co-financing was associated with these activities.

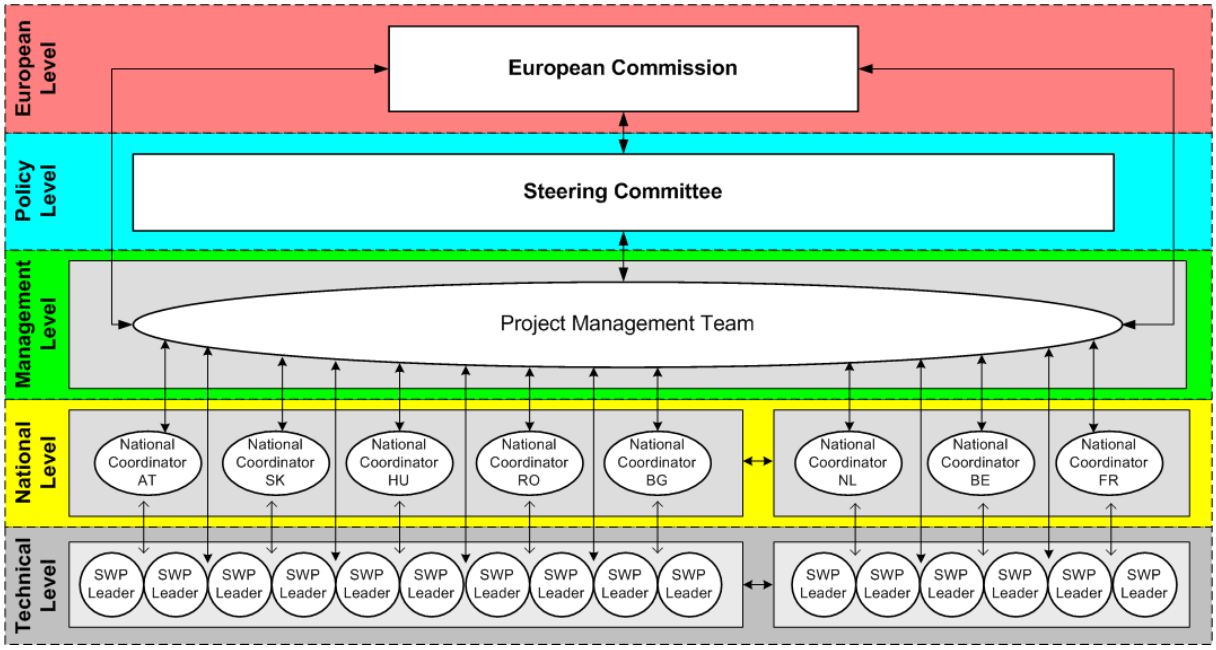


Figure 70: IRIS Europe project organisation chart

	Coordination instrument	Responsibilities
European Level	European Commission Project Officer (EC) TEN-T Executive Agency Project Officer (TEN-T EA)	The European Commission Project Officer (Ms. Astrid Schlewing) is the European Commission delegate and represents the interface between the EC, the TEN-T EA and the IRIS Europe consortium. The TEN-T EA Project Officer (Mr. Koen Bois d’Enghien) reports every decision from EC such as deadlines, guidelines and recommendations to the project management team and the project beneficiaries of the Member States. He monitors the project progress and approves all the reports delivered by the project consortium.

Policy Level	Steering Committee (SCOM)	The Steering Committee (SCOM) of IRIS Europe is the highest governmental body in charge of the project. The Steering Committee oversees the progress of the project. The Steering Committee of IRIS Europe is composed of the national beneficiaries who are in most cases also the national delegates to the RIS Authority according to the 2005/44/EC (EU RIS Directive) of the involved countries of IRIS Europe. The Steering Committee Meetings took place once in 2006, twice in 2007, twice in 2008 and will take place once again in 2009. Major management decisions are taken by the Steering Committee with relation to IRIS Europe. The project management team will be invited to the Steering Committee Meetings.
Management Level	Project Management Team	The project management team is subordinated to the Steering Committee of IRIS Europe. The members of the project management team are responsible for monitoring the progress at a strategic level and can give advices to the national coordinators or SWP Leaders. The Austrian members of the project management team (Mr. Andreas Bäck until July 2008, Mr. Mario Sattler as of August 2008) communicates with the European Commission Project Officer, the TEN-T EA project officer and the Steering Committee on regular basis and spreads the information/advices to the colleagues in the project management team and the national coordinators. By default, the Dutch members (Mr. Cas Willems and Mr. Jos van Splunder) of the project management team have a special responsibility towards the SWPs lead by experts from the Rhine-Seine region. By default, the Austrian member of the project management team has a special responsibility towards the SWPs lead by experts from the Danube region. The project management team can re-shuffle the responsibilities towards individual SWPs. Meetings: Regular Coordination meetings, Project Management Team meetings and meetings with national coordinators were held on demand.

National Level	National Co-ordinators	The National Co-ordinators deal with coordination and the follow up of all national activities regarding timetable, budget, and milestones at a tactical level. Moreover, they are responsible that the SWPs are executed according to the workplan and reports and/or contributions to these of their country are elaborated. The Austrian, respectively the Dutch members of the project management team, support the national coordinators in case of national issues in their region. Furthermore it must be ensured that the national coordinators report to and coordinate with the national Beneficiaries. Meetings: Regular Coordination meetings, Steering Committee meetings were held on demand.
Technical Level	SWP (Sub Work package) Leaders	The SWP Leaders are responsible for the execution of the SWP according to the workplan and the documentation of the results. The SWP leaders are determined for each sub work package at the sub work package level. Should it not be evident, the project management team shall make a decision on SWP lead. Meetings: Regular status meetings, Coordination meetings were held on demand.
Standardisation Level	RIS Expert Groups (independent, supporting the RIS Committee and the CCNR in standardisation of RIS technologies)	The RIS Expert Groups were established to standardise and harmonise the RIS key technologies. Within IRIS Europe, these are used to disseminate the results to other countries, which are not involved in the project (e.g. Germany). This applies to the RIS Expert Groups Electronic Reporting International, Notices to Skippers, Tracking & Tracing and Inland ECDIS. Meetings: Regular Expert Group meetings, most of the time twice a year.

Table 42: Coordination Instruments and their responsibilities

9.3 SWP 6.1 Liaison with Motorways of the Sea and Short Sea Shipping

9.3.1 Introduction

Maritime safety, efficiency, security and protection of the environment are inextricably linked. Supported by the European Commission (EC) Green Paper “Towards a future Maritime Policy for the Union”, a requirement has been clearly identified for coherent, transparent, efficient and simplified solutions supporting cooperation, interoperability and consistency between member States, systems and sectors, and placing emphasis on promoting the role of the maritime industry.

The EC is promoting the development of E-Maritime, a meeting of services and systems, in response to the need for a more transparent and harmonized approach within the maritime sector in general in order to secure its position as a leading transport mode.

In the Freight Transport Action Plan of the European Commission (COM (2007) 607 final) the following statements derived from this action plan are of relevance for the RIS developments and standardisation processes in the future:

- There is a need for the implementation of a system for maritime exchange of information from ship to shore, shore to ship and between all stakeholders. Services such as SafeSeaNet, LRIT and AIS, will facilitate safer and more expedient navigation and logistics operations, thereby improving maritime transport's integration with other transport modes ("e-maritime").
- Standards are required for information flows to ensure the integration and interoperability of modes at data level and provide an open and robust data architecture primarily for business-to-administration and administration-to administration data flows.
- The regulatory framework for the standardisation of functional specifications for a single interface for the provision and exchange of business-to-administration and business-to-business information.
- An EU Policy paper on eMaritime has to become available in 2009.

9.3.2 eMaritime, MarNIS and River Information Services

It is evident that the Commission includes Inland Navigation – and as such River Information Services - in the eMaritime developments. This can also be concluded of the following figure as part of a presentation on eMaritime by Mr Pipitsoulis of DG TREN given during an Advisory Board meeting of the MarNIS project.

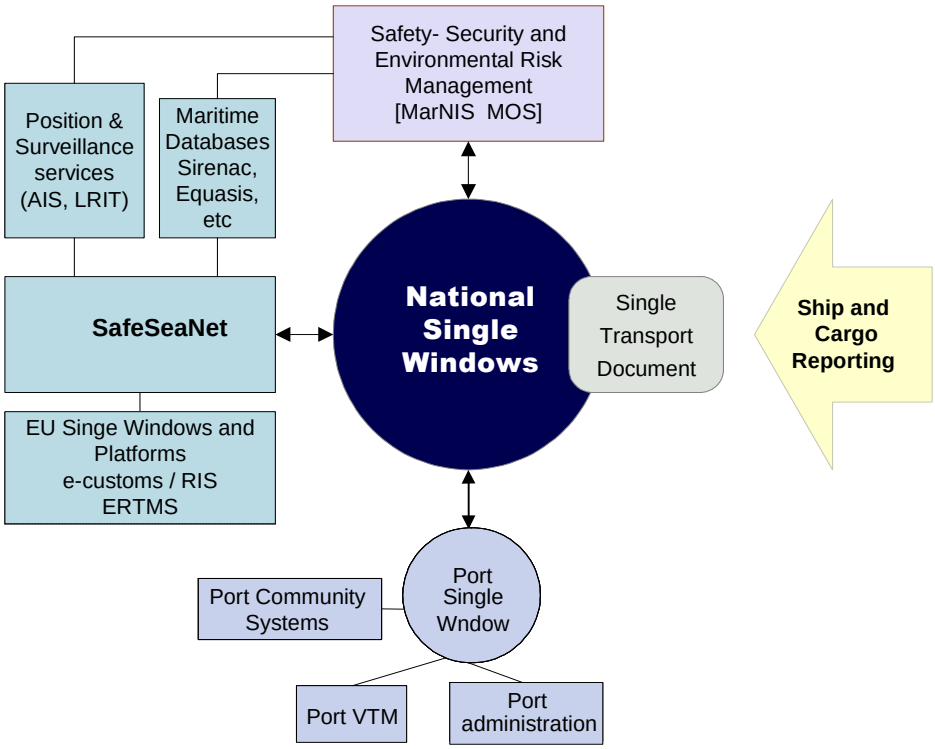


Figure 71: Key A2A/A2B e-Maritime Applications (presentation of Mr. Pipitsoulis EC DG TREN)

The time is right for the RIS community to get involved in this development, as the next steps of this eMaritime development are – according to the EC - in the coming years:

- Development of a shared vision, agreement on principles, approach, targets and stakeholders engagement processes
- Identification of impacts; tangible economic, social and environmental benefits
- Identification of organisational, business, regulatory and legal considerations
- Identification of key e-Maritime applications
- Interoperability issues and strategies
- Roadmap and implementation strategy

The IRIS Europe project has been connected to the EC co-funded 6th Framework project MarNIS (Maritime Navigation and Information Services) which is contributing to the development of E-Maritime of DG TREN. The focus of this project is placed on the improved exchange of information and provision of services and the required infrastructure to meet the requirements placed on both the authority and business level. The stakeholders may include on the one hand the ship itself, together with the ship owner, operator and agent, and on the other hand shore-based entities, including maritime authorities (e.g. Search and Rescue (SAR), coastal and port), related authorities (e.g. customs and immigration) and commercial parties within the port sector.

MarNIS proposes means to put an end to present fragmentation of measures in place through the development of a concept where resources, systems and services are organised and strengthened into one coherent set of measures.

Developments have led to the MarNIS concept which, through its integrated approach, allows for safer and more efficient shipping, whilst supporting the protection of the environment and facilitating the need for security, thereby meeting the requirements of policy makers, authorities, ports and related industries.

The MarNIS concept is developing means whereby the Master is only required to report once, all other updates are being fed automatically into the information messaging structure and passed on to the relevant authorities. Early reporting leads to improved planning for ports and related nautical services through enhanced traffic organisation services and the integral traffic plan. A messaging structure designed to involve all authorities, not only maritime, is under development so that the passage of a ship may be as safe, efficient and secure as possible whilst rendering less threat to the environment as a consequence of incidents.

At the heart of the MarNIS concept is the information and information exchange structure. Simplification of reporting requirements and the creation of interoperability between different member State systems and sectors provide for coherence, transparency and efficiency. Based on the single reporting from the Master and/or agent all processes can begin.

Elements of the eMaritime/MarNIS infrastructure

- **Vessel and agent:** Under current Directives and various regulations and rules, the Master is faced with a tremendous reporting burden, often having to send the same information numerous times to numerous different authorities. In the MarNIS concept the Master is required to report once through the port notification to the port of destination. All relevant authorities and services are then provided with required information through the National Single Window.
- **Authorities:** Authorities requiring information from waterborne traffic and transport are numerous and fall under the traditional authorities, such as port, coastal, search and rescue and pollution, or other authorities such as security, customs, immigration, health and border control. Each currently makes use of their own means for maritime information management and would benefit from increased access to data and interoperability. The MarNIS concept provides for a harmonised and coherent system for the exchange of all relevant information.
- **SafeSeaNet++ (SSN++):** SafeSeaNet currently acts as an index server, allowing the authorized user to find information on notifications, cargo manifests, voyage history and incident history. Basic data is held within the SSN system whilst contact points are provided for further information on, for example, dangerous or hazardous goods. The MarNIS concept envisages an expansion and strengthening of the role of SSN into the so-called SSN++, providing a more efficient service through connections to the National Single Windows (NSW) and more added-value through generation of notifications to coastal authorities on ships likely to pass through their areas of jurisdiction.
- **National Single Window (NSW):** Under MarNIS, each member State maintains a National Single Window, receiving notifications from ships intending to enter a port in it's waters and ensuring the directed distribution of derived messages to the port, other authorities (such as customs, immigration etc.) as well as handling requests for information or clarification. The NSW is the contact point for SSN++ and ensures that the appropriate information is in the first place made available within the index server and secondly available to requesting authorities from other member States.

- **Port Commercial Community Systems (PCCS):** The considerable investment that ports and their communities have made in systems aimed at the facilitation of information exchange should not be ignored but embraced in the overall MarNIS concept. To this end the so-called MarNIS Node allows for communication between different PCCS in different ports as well as "feeding" the PSW with the required information.

9.4 SWP 6.1 Liaison with European RIS Platform

After the finalisation of the EU Research Project INDRIS, the involved waterway and traffic authorities decided to set up an informal working group of policy makers, called European RIS Platform. This body discussed RIS strategies on political and administrational level.

During the lifetime of IRIS Europe, the European RIS Platform convened several meetings (e.g. on 26.4.2007 in Prague). Selected representatives of IRIS Europe participated in those meetings of the European RIS Platform and reported on the progress of IRIS Europe. This way, the results of IRIS Europe could be disseminated also to the European RIS Platform.

9.5 SWP 6.1 Liaison with RIS Committee

The role of the RIS Committee is defined in Article 1 of the EU RIS Directive: "This Directive provides a framework for the establishment and further development of technical requirements, specifications and conditions to ensure harmonised, interoperable and open RIS on the Community inland waterways. Such establishment and further development of technical requirements, specifications and conditions shall be carried out by the Commission, assisted by the Committee referred to in Article 11."

The main objectives of the liaison with the RIS Committee were the following:

- To inform the members of the RIS Committee, in particular those who did not contribute to the IRIS Europe Steering Committee, on the current status of IRIS Europe. This was required during the first 2 years of the project in order to disseminate the project results to the European authorities in a better way.
- To obtain the latest information on the activities of the RIS Committee, in particular the status of the foreseen technical specifications, which are relevant for the pilot implementations of IRIS Europe.

During the project lifetime of IRIS Europe, four RIS Committee meetings were convened. IRIS Europe was represented during 3 out of 4 RIS Committee meetings.

- The 3rd meeting of the RIS Committee was convened in Brussels on 24.11.2006. Andreas Bäck was invited as head of the project management team to present the current status of IRIS Europe. His presentation focused on the foreseen approach for the implementation of the national and international data exchange. The recommendations included the following items:
  - A legally binding agreement for international RIS Data Exchange especially considering data privacy should be established
  - A technical specification of international interfaces should be prepared
  - Performance Standard for RIS Services should be prepared.
- The 4th meeting of the RIS Committee was convened in Brussels on 30.10.2007. Andreas Bäck reported on the status of IRIS Europe. Besides providing a status report on the implementation of the national and international data exchange, the presentation included items, which possibly are subject for European harmonisation:
  - International Data Exchange (technical, legal and organisational)
  - Minimum datasets to be provided by the RIS Provider and by the skippers
  - European Services (technical, organisational, financial)

  The recommendation to regulate international data exchange was taken up by the RIS Committee by the inclusion of this subject in the work programme for 2008.

In summary, it can be said that the liaison with the RIS Committee was an important element in disseminating the project's results to the relevant European authorities as well as to provide recommendations on next steps for the further development and implementation of River Information Services in Europe.

9.6 SWP 6.2 Dissemination

Responsible Member States: Austria, Slovakia, Hungary, the Netherlands, Belgium, France

9.6.1 Main objective and outcomes of WP 6.2

The objective of this SWP was to disseminate the results to the national and international stakeholders by taking the following measures:

- Stakeholder Group Meetings: Every national organisation in charge of implementing the project organised meetings with the national commercial and governmental stakeholders. Such meetings were held at a regular basis throughout the duration of the project. During the meeting, the status of the project as well as related national and international activities in the field of River Information Services were communicated.
- Presentation at conferences: In order to disseminate the results of the project to a broader international scientific community, presentations at conferences were held. In general, via donau and its partners took care specifically of the dissemination in the Danube region, DVS and its partners took care specifically of the dissemination in the Rhine/Seine/Scheldt region.
- Project homepage: In order to disseminate the status of the project, a project website was set up and maintained by via donau. This website communicates the main objectives, the current status, project partners and their contact details of the project. In a later step the project website was extensively enhanced in order to provide a maintenance platform for the provisions for the international RIS data exchange, including the Technical & Administrative agreement and the RIS Data Exchange Reference Documentation. The project homepage serves as a one-stop-shop for all IRIS Europe project partners, also for downloading and providing project related reports.
- Leaflets, Folders: The dissemination of results by means of printed (leaflet) and other electronic material (multimedia, internet, email) was performed.

9.6.2 Overview of results of WP 6.2

List of attended conferences including presentations of IRIS Europe:

In total IRIS Europe was presented at 23 international conferences or events.

	Date	Title of Conference / Event	Location	Organiser
2006	22.01. - 26.01.	Transportation Research Board - 85th	Washington DC, U.S.A.	Transportation Research Board
	15.02. - 17.02.	GIS Workshop 4	Belgrade, Serbia	GIS Forum Donau
	15.05. - 16.05.	31st PIANC Congress	Estoril, Portugal	PIANC
	16.05. - 19.05.	3rd International Conference Maritime Transport	Barcelona, Spain	Technical University of Catalonia
	21.06. - 22.06.	DG TREN Days	Brussels, Belgium	European Commission
	08.10. - 12.10.	ITS World Congress London	London, United Kingdom	ERTICO
	18.10. - 19.10.	Danube Summit	Budapest, Hungary	EWP Communications
	09.11.	4th International Fair of Logistics	Novi Sad, Serbia	University Novi Sad
	07.11. - 08.11.	DISC 2006	Budapest, Hungary	GIS Forum Donau
	15.11.	FRAME Forum Meeting	Vienna, Austria	FRAME Consortium
2007	10.01. - 13.01.	Yangtze Summit Wuhan	Wuhan, China	China
	22.01. - 24.01.	Transportation Research Board - 86th	Washington DC, U.S.A.	Transportation Research Board
	10.05. - 11.05.	TEN-T Infodays	Brussels, Belgium	European Commission
	26.06. - 27.06.	EIWN 2007 Conference	Visegrad, Hungary	Budapest University of Technology
	10.09. - 13.09.	GIS Forum St. Petersburg	St. Petersburg, Russia	GIS Forum Donau
	16.09. - 19.09.	Smart Rivers 2007 Conference	Louisville, U.S.A.	PIANC USA
	05.10. - 06.10.	POWA 2007 Conference	Vukovar, Croatia	University of Zagreb and Osijek
	23.10. - 24.10.	DISC 2007	Bratislava, Slovakia	GIS Forum Donau
2008	13.01. - 17.01.	Transportation Research Board - 87th	Washington DC, U.S.A.	Transportation Research Board
	27.05. - 31.05.	ICTR Conference	Athens, Greece	University of Athens
	14.10. - 15.10.	TEN-T Days 2008	Brussels, Belgium	European Commission
	11.11. - 12.11.	DISC 2008	Hamburg, Germany	GIS Forum Donau
	18.11. - 19.11.	eNavigation Conference	Seattle, U.S.A.	Pacific Maritime Magazine

Figure 72: List with conferences with IRIS Europe presentations

IRIS Europe Homepage (www.iris-europe.net):

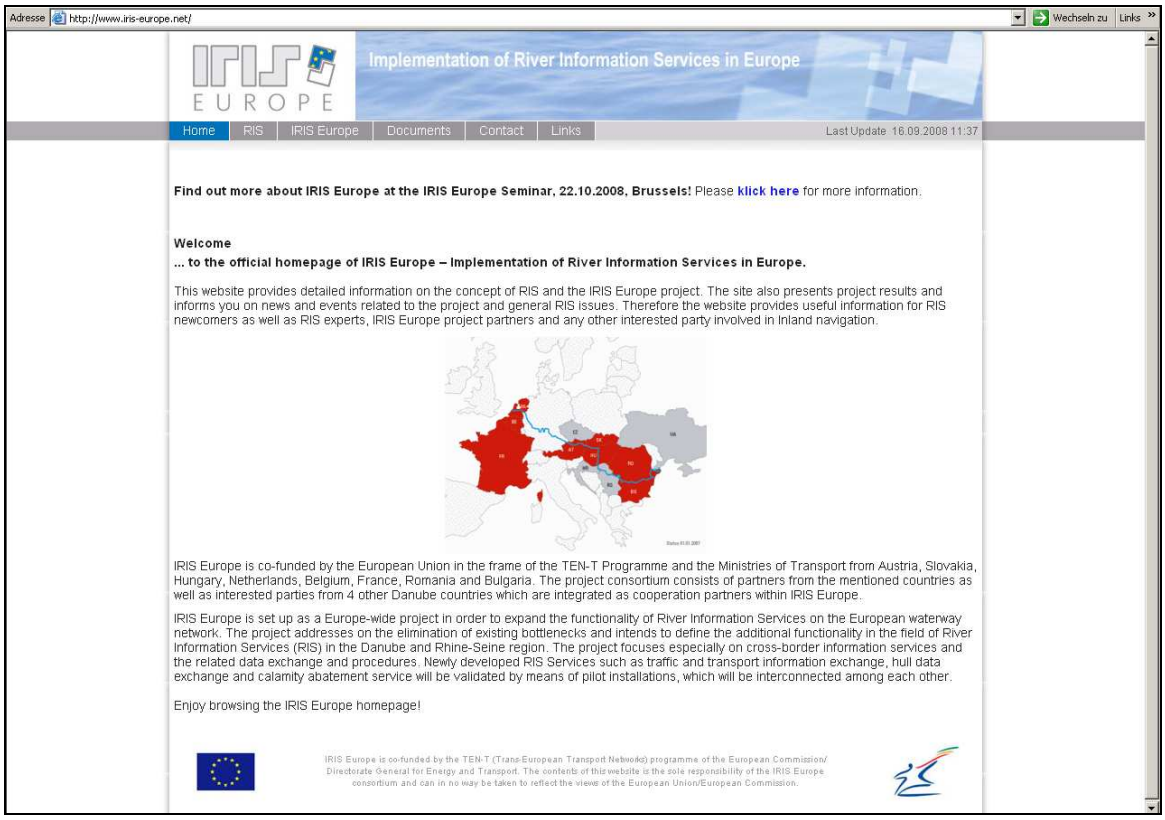


Figure 73: Screenshot IRIS Europe HP (1)

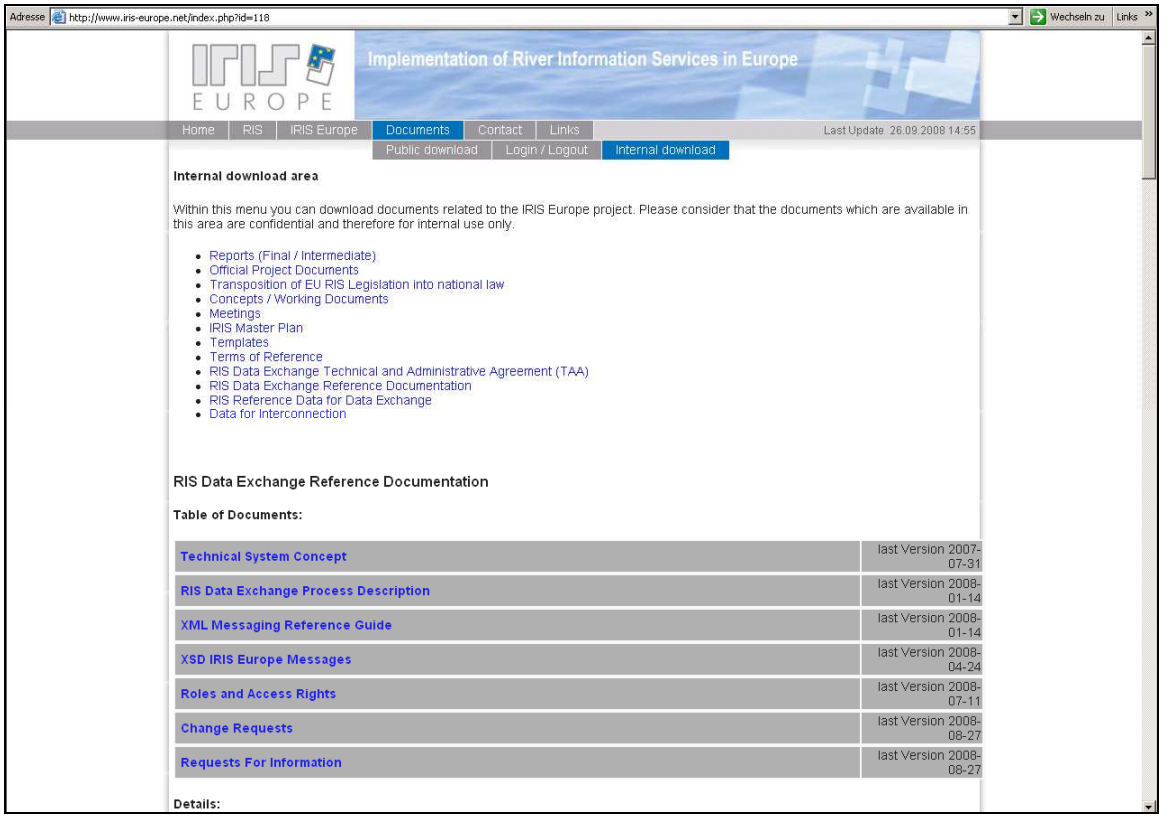


Figure 74: Screenshot IRIS Europe project Homepage, internal area (1)

IRIS Europe Project Folder

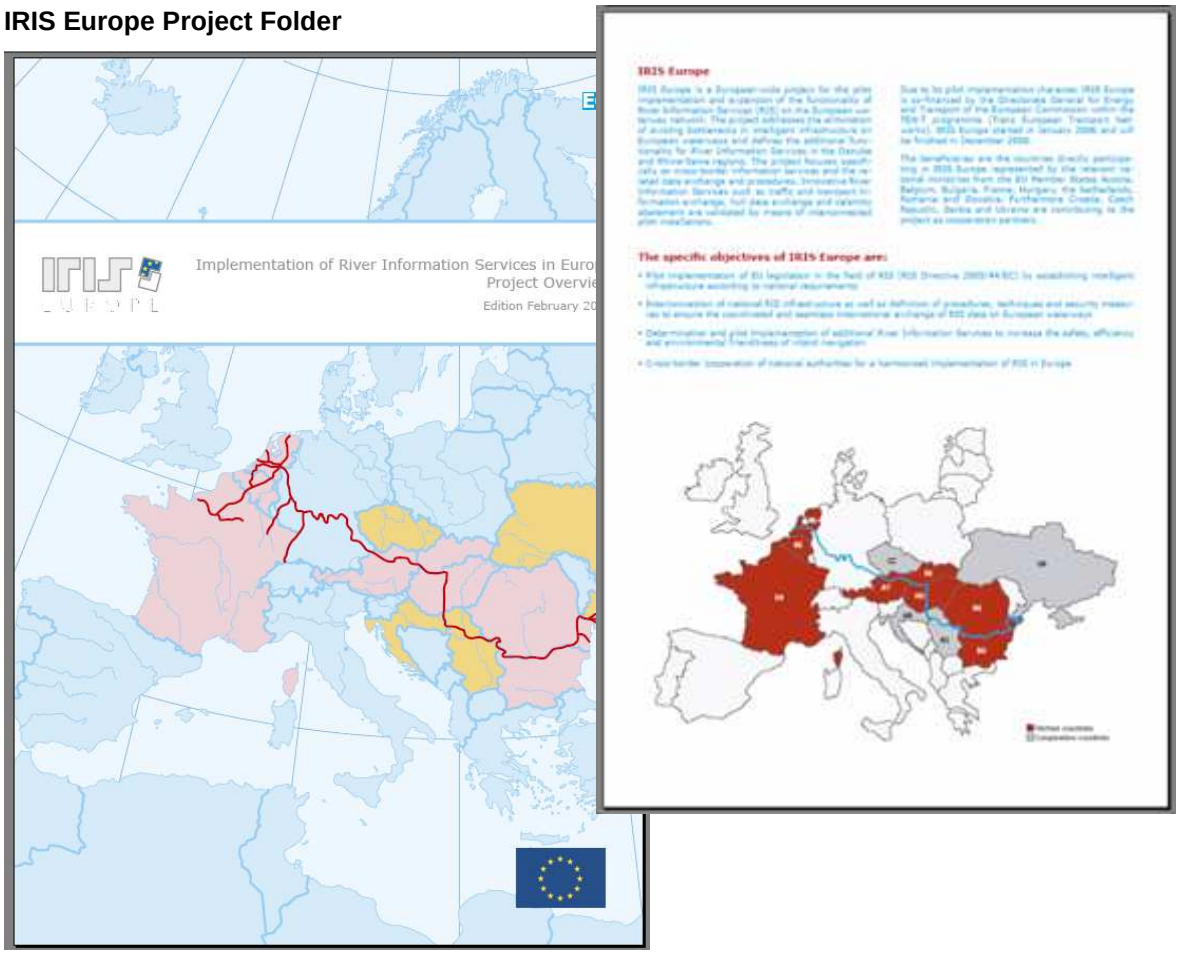


Figure 75: IRIS Europe project folder (4 pages)

IRIS Europe Seminar

Apart from various presentations during conferences[7], the Management team of IRIS Europe convened an IRIS Europe Seminar on International Data Exchange for River Information Services (RIS) on 22 October 2008 at the Crown Plaza Hotel in Brussels. During the Seminar, keynote speakers presented the conclusions of the IRIS Europe project and the latest developments on international data exchange in the field of River Information Services (RIS) for the future of inland navigation.

The invitation and the programme are given in Figure 76.

[7] See the attached list of conference presentations (page 183)

IRIS Europe is an EU project commissioned under the TEN-T (Trans-European Transport Networks) Programme. Its main objective is to contribute to the harmonized implementation of River Information Services on basis of the EU RIS Directive 2005/44/EC in order to improve safety, efficiency and environmental friendliness on European inland waterways. IRIS Europe has led to the pilot implementation of RIS infrastructure and RIS services on the European level. The project is expected to be finalized by the end of 2008.

The IRIS Europe partners from France, Belgium and The Netherlands are organising a seminar during which several speakers will present the conclusions of the IRIS Europe project and the latest developments on international data exchange in the field of RIS Services for the future of inland navigation. The Management team of IRIS Europe and the organising partners are looking forward to greeting you on this seminar!

Date: 22 October 2008

Venue: Crowne Plaza Hotel Brussels Europe, Wetstraat 107/ Rue de la Loi 107, Brussels

Time: 10:00 - 16:30

Please register at www.iris-europe.net/registration

More information on the IRIS Europe project and a detailed agenda of the seminar are available on the internet site of IRIS Europe at www.iris-europe.net

We hope to meet you at the IRIS Europe Seminar,
The Management team of IRIS Europe
Mario Sattler (via donau, Austria)
Jos van Splunder (Rijkswaterstaat, The Netherlands)
Cas Willems (Rijkswaterstaat, The Netherlands)

A project implemented by the IRIS Europe Consortium

This project is co-funded by the European Commission / DG-TREN / TEN-T

Figure 76: Invitation and Program of IRIS Europe Seminar on International Data Exchange for RIS

Agenda of the Seminar International Data Exchange
River Information Services
22 October 2008, Brussels

10:00 Welcome coffee

10:30 Welcome by the chairman

10:40 Opening by Mr. C. Willems (RWS – DVS)

11:00 Chairman of the IRIS Steering Committee Mr. C. Venema (RWS-SVC, chairman of the IRIS Europe Steering Committee)

11:20 Technical and Administrative Agreement on RIS data exchange by Mr. B. Bieringer (BMVIT)

11:50 The benefits of information management in European Ports by Mr. J. Lems (Harbourmaster Rotterdam and chairman European Harbourmasters Committee)

12:20 Lunch and live demonstrations

14:00 International RIS Data Exchange in IRIS Europe and experiences from pilot implementation by Mr. M. Sattler (via donau)

14:15 International Data Exchange in the 'digital' Transport Chain by Mr J. Tenhagen (European Shippers Organisation)

14.35 Outlook on future developments of the Waterway Authorities)
- by Mr. E. Luca (RWS Zeeland)
- by Mr. J. Torfs (NV de Scheepvaart)

15:05 Questions by the public

15:25 Reflections of the day by the chairman

15:35 Closure

Figure 77: Program of IRIS Europe Seminar on International Data Exchange for RIS

Mr. Bernhard Bieringer from the Austrian Federal Ministry for Transport, Infrastructure and Innovation (BMVIT) presented the outline for the legal basis on RIS data exchange (the TAA - Technical and Administrative Agreement).

Mr. Mario Sattler from via donau, reported on International RIS data exchange in IRIS Europe and the experiences gathered during the pilot implementation.

Mr. J. Lems from the Port of Rotterdam addressed the benefits of information management in European ports and pointed out the importance of an intermodal approach as important goal for the upcoming years. In this context Mr Willems addressed the audience with the development of eMaritime and the requirements towards the RIS community to ensure the integration and interoperability of River Information Services with Information Management in other modes of Transport.

Furthermore, Mr. José Laranjeira Anselmo of DG-TREN (Directorate General for Transport and Energy) introduced the master plan for the implementation of River Information Services (RIS) in the TEN-T Multi Annual Programme. Mr. Joris Tenhagen of the European Shippers Organisation introduced international data exchange in the “digital” transport chain as a requirement for the future.

Finally, the 90 participants were informed about the ongoing and future developments with respect to RIS of waterway authorities from consortium member countries Austria, Belgium, The Netherlands and France.

Slovakia contributed to the dissemination activities of the project IRIS Europe by following additional measures:

- Stakeholders' meetings and presentations:

  The most important stakeholder meeting was the workshop with live demonstration of the SlovRIS pilot system with participation of representatives from the Ministry of transport, post and telecommunications lead by the minister of transport Mr. Lubomir Vážny, inland water transport stakeholders and the media.

Figure 78: SlovRIS demonstration with Slovakian Minister of Transport

Left - Interview of the Mr. Vazny (Slovak Minister of Transport) in the Slovak RIS Centre for the main evening news in the Slovak national television Markiza. **Right** - representatives of the IRIS Europe project and the Slovak Ministry of Transport.

- Web site dealing with project IRIS Europe and general information about RIS (www.iris-europe.sk)

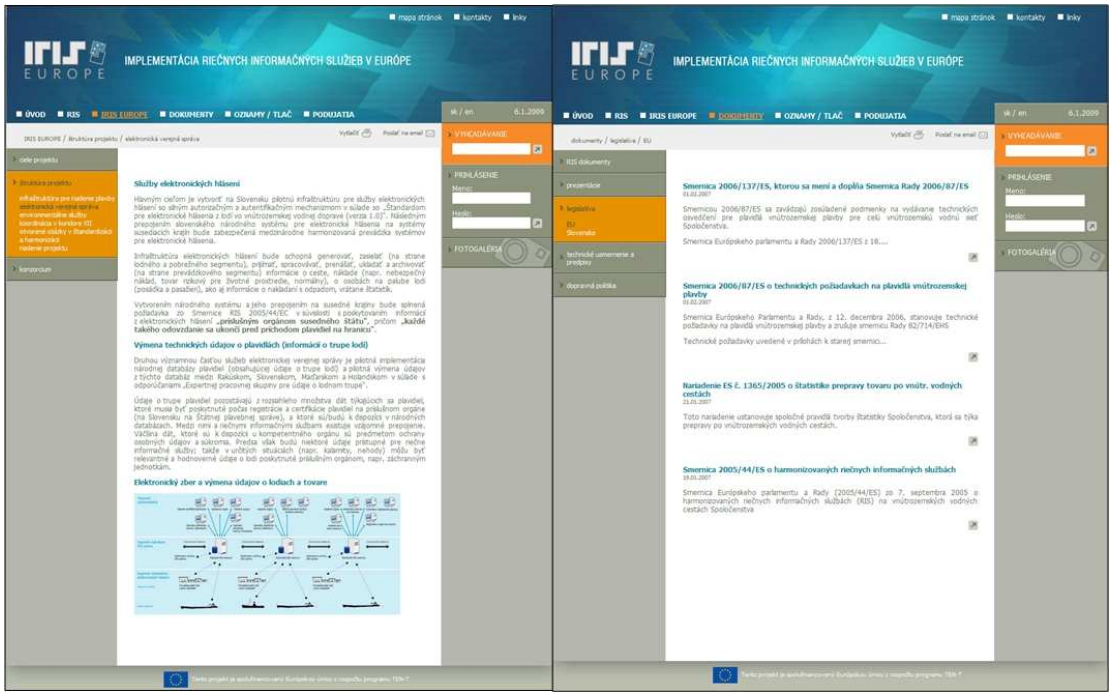


Figure 79: Web site dealing with the project IRIS Europe and RIS related information (in Slovak and English)

- Slovak version of the printed Newsletter introducing the project IRIS Europe and its objectives, focusing as well to the Slovak pilot implementations (December 2006)

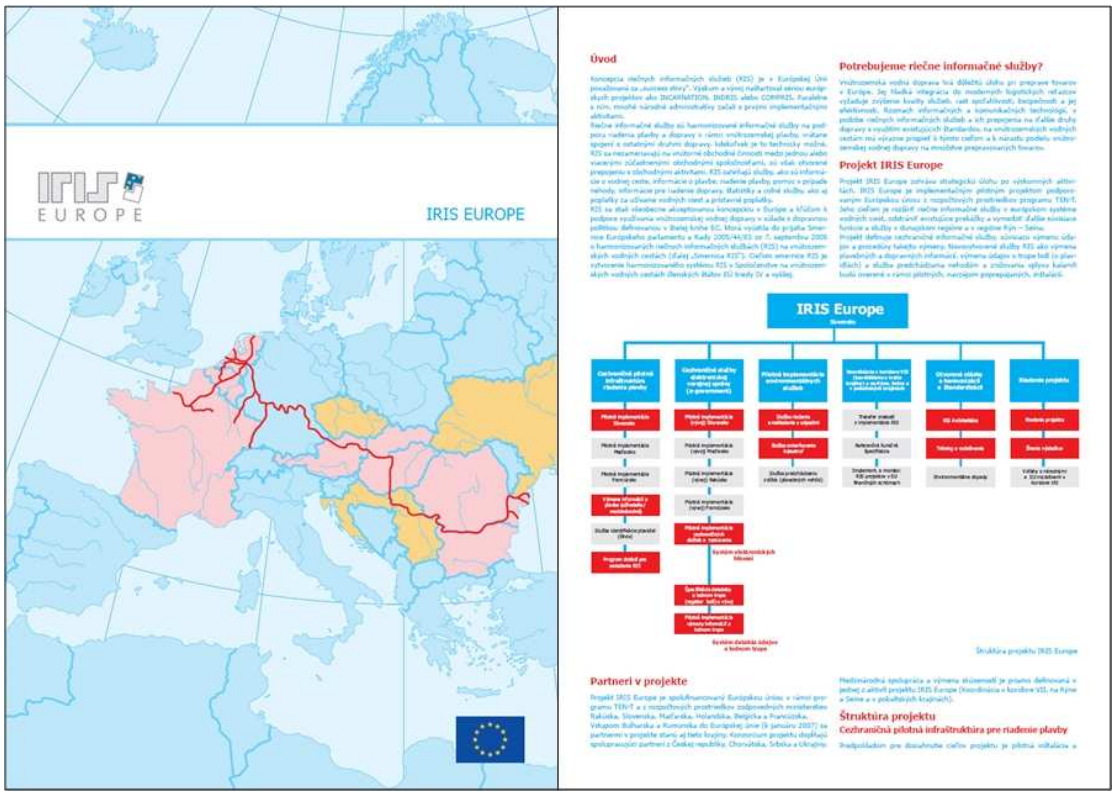


Figure 80: IRIS Europe project leaflet in Slovak language (December 2006)

9.7 SWP 6.3 Liaison with national and EU Initiatives in Corridor VII

In order to cross-fertilise the activities of the project, an intensive cooperation with related projects was foreseen. This relates to the following topics, issues and projects in the field of:

1. Maritime navigation, traffic management, security
2. Intermodality, Short Sea Shipping and telematics for road and rail transport
3. Organisational environment of fairway and traffic authorities and RIS providers

Several activities were carried out in order to liaise with national and European initiatives in Corridor VII; a selection of the key activities is presented within this report:

Maritime navigation, traffic management, security:

- Cas Willems brought into the project his maritime navigation and traffic management expertise. In January 2008, for instance, he presented the current state of affairs of the EU project MarNIS in the IRIS Europe Coordination Meeting. A delegation of via donau experts was trained in maritime information services in July 2006.
- In order to bring in the expertise from the implementation of SafeSeaNet, Reidar Kjennbakken, who is an expert of the European Maritime Safety Agency (EMSA), was invited to the IRIS Europe Coordination Meeting in Bratislava in February 2007 to present relevant projects of EMSA. This lead to information exchange on technical and legal solutions for the international data exchange.
- Developments related to security were followed throughout the entire project. Experts of IRIS Europe were informed about relevant activities such as the CCNR ad-hoc working group, developments towards supply chain security and relevant developments in the United States.

Intermodality, Short Sea Shipping and Telematics for road and rail transport:

- In order to follow the developments on ITS architecture, several workshops were attended by IRIS Europe experts (e.g. the FRAME Workshop in Ljubljana on 02.03.2006)

- Short Sea XML is a project for harmonisation of the information exchange focused on Short Sea Shipping. Due to the similarity in nature to the RIS data exchange, one project workshop and the closing conference were attended by IRIS Europe experts.
- In order to follow the developments in ITS, the road, rail and intermodal transport sector, IRIS Europe experts attended the conference “ITS Europe”, which took place in London between 8-12 October 2006. A special workshop on River Information Services was conducted during this workshop as well.

Organisation environment of the fairway and traffic authorities:

- The knowledge of the project environment is one of the key success factors. Within IRIS Europe, most European traffic authorities were represented. During the project, special attention was given to disseminate the results of the project with traffic authorities, which did not participate in the project (e.g. an IRIS Europe workshop with representatives from the German administration was conducted in Strasbourg on 20.03.2008).
- In order to liaise with fairway authorities of the Danube countries, IRIS Europe Experts participated in selected meetings of the GIS Forum Danube and presented IRIS Europe during those meetings (e.g. on 24.10.2007 in Bratislava).

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