platina

platform for the implementation of NAIADES

Inventory of required RIS hardware and software on-board of vessels

FINAL

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Contents

INTRODUCTION

The development and implementation of RIS depends on many aspects, not in the least on the importance:

- For public authorities and business to use hardware and software applications that allow interaction.
- To allow skippers easy access to use River Information Services, i.e. suitable and affordable RIS hardware and software.

This PLATINA report presents an overview of hardware and software for accessing RIS services in Europe (part of PLATINA Task 5.2.1. – RIS implementation support) on-board on a vessel. To provide context, chapter 1 of the report identifies the River Information Services and its related technologies. In chapter 2, the generic list of required hard- and software on-board of vessels is presented. In chapter 3 explains the current situation, as experiences by the users, which does not allow specific requirements for RIS hard- and software on board of vessels to be described. In annex 1 a list of contacts relating ERI is provided.

To develop this report, PLATINA conducted research in the period February – November 2011.

Chapter 1 was based on the work of the PIANC working group 125 (on RIS), which proposed new Guidelines and Recommendations for River Information Services, update to its 2002 (Edition 1) and 2004 (Edition 2) in Spring 2011. The research for chapter 2 was conducted by VNF. Chapter 3 is based on inputs provided by the NL Bureau for Telematics Binnenvaart (BTB – business representatives).

1 RIS TECHNOLOGIES AND SERVICES

The RIS technologies related to the following services:

- Fairway Information, more in specific:

    o Electronic Navigation Chart (Inland ECDIS), available for all fairways of CEMT Class V and higher within 30 months after publication of the Commission Regulation on Inland ECDIS

    o Notices to Skipper (NtS), available in a standardized data format. This can be used for publishing NtS's on the internet or for distribution by e-mail. The content of the messages is encoded in a machine, language independent, readable XML-file.

- Traffic Information Services, more in specific:

    o Navigation systems – Inland ECDIS preferably in combination with DGNSS for own vessel positioning and Inland AIS for an improved tactical Traffic Information on the navigational display.

    o Land based systems – RIS/VTS centres and lock and bridge operation centres, mostly based on radar images monitoring including tracking facilities and information on Inland AIS networks.

- Traffic management, both for Vessel Traffic Services (VTT) and Lock and Bridge Management, executed by VTS centres, more in specific:

    o Permanent Shore based radar and AIS base stations

    o Fairway Information Services and tactical and strategic traffic images.

    o Electronic Reporting.

- Calamity abatement, executed by VTS centres or other shore based monitoring systems using

    o VHF or UHF transmitted information (and all other kind of modes of communication)

- Transport Logistics, more in specific providing services for:

    o Voyage planning: providing data on water levels and depth, berth availability, lock occupation (actual and predictions/forecasts) used e.g. for routing and stowage planning.

    o Fleet management: data in current position barges and status of operation (e.g. empty, loaded, in transit).

    o Event management: Tracking and Tracing technologies enabling operators to pass actual information on their transport schedules, i.e. inland waterway transport-based process data (e.g. vessel positions, passing waypoints and occurring deviations) as well as value added services (Event Management).

- o Port / Terminal management: Data for (sea and inland) ports and terminals on Estimated Time of Arrival (ETA) updates for e.g. transshipment operations, terminal resource management and pre- and post-haulages.

Numerous services relevant to RIS are already sustained particularly radiotelephone, traffic centres, Internet, and Inland ECDIS (Electronic Chart Data Information System).

2 DESCRIPTION OF REQUIRED HARDWARE AND SOFTWARE ON-BOARD OF VESSSELS PER TECHNOLOGY DOMAIN

The EU RIS Directive (2005/44/EC) covers the most important waterways in Europe (Class IV and more) and does not contain an obligation for all vessels to be fitted with certain equipment. This is in contrast with the maritime sector where equipment has to be certified (e.g. EN60945) and the RIS technology is to be based on the same technology. Thus, the equipment listed hereunder is not compulsorily for all the European vessels. Obligations do exist under national law in a number of countries and for the River Rhine (e.g. those mentioned under § 12.01 part 3 of the Rhine Police Regulation). It can be assumed that all vessels are equipped with at least a VHF radio. The following describes the equipment that is needed for a vessel to make use of River Information Services to its full extent.

2.1 VTT – Vessel Tracking and Tracing

Vessel tracking and tracing essentially know two functionalities:

- To provide vessels with the ability to 'look around the corner', i.e. to detect approaching vessels beyond visual and radar range.
- To provide information concerning the whereabouts of the vessel and – if desirable – information on cargo, consignments and equipment.

Part of this service (vessel whereabouts) can be fulfilled for example by GPS and Inland AIS. Other parts (cargo, consignments) can be fulfilled by electronic ship reporting (See 2.4).

For vessel tracking and tracing, all vessels have to be equipped with a GPS system (with its antenna) in order to know the position of the vessel on the waterway network electronically. The GPS may be the internal GPS of a certified AIS transponder (A class) or may be an external GPS connected to the AIS transponder. The AIS transponder is needed to send the position information to other vessels and to the competent authorities.

The list of the certified transponders, including the CCNR installation requirements, and certified transponder installation companies is available on the CCNR website: http://www.ccr-zkr.org/13020700-en.html.

2.2 NtS – Notices to Skippers

Notices to Skippers (NtS) are the standardised messages containing information on the status of the waterway, waterway infrastructure (locks, bridges, navigation marks, etc), water levels and weather. NtS can relate to the safety of navigation or to voyage planning and execution. In order to receive NtS, it is recommendable to use a computer with an Internet connection (like GPRS, WIFI, UMTs, etc) as most of those services are published online on the websites of the RIS-authorities respectively the RIS-providers.

Webpages for Notices to Skippers are being identified in table 1 and on http://www.ris.eu/services/enc_and_nts_distribution/nts_distribution

Table 1 Webpages for Notices to Skippers

Country	Webpage
Austria	www.doris.bmvit.gv.at
Belgium	For Flanders: http://nts.flaris.be/ For Wallonia: http://voies-hydrauliques.wallonie.be/opencms/opencms/fr/infos/RIS/fr/
Bulgaria	www.bulris.bg
Croatia	http://nts.crup.hr/
Czech Republic	www.lavdis.cz
France	www.vnf.fr
Germany	www.elwis.de
Hungary	www.nkh.gov.hu/Hajozas/Kozlem/HSZH/Lapok/Duna.aspx
Netherlands	www.risserver.nl

Country	Webpage
Rumania	http://www.roris.ro
Serbia	http://www.roris.ro
Slovakia	http://nts.slovris.sk
Switzerland	http;//www.port-of-switzerland.ch or http://www.elwis.de

Most Inland ECDIS viewers now offer the possibility to view NtSes in the chart at the appropriate location or in a list. Examples of software are:

- PC Navigo, Noordersoft.
- Tresco Viewer, Periskal.
- Navigis, Tresco Engineering.

If an Internet connection is not available or cannot be installed to date, the skipper can still receive the NTS information via fax or via nautical newspapers/magazines (e.g. in the Netherlands via Teletext).

2.3   Inland ECDIS

Inland ECDIS is a system for the display of electronic inland navigation charts and additional information. Its purpose is to contribute to safety and efficiency of inland navigation and thus also to protection of the environment. Simultaneously, Inland ECDIS is to reduce the workload when navigating the ship as compared to traditional navigation and information methods. Inland ECDIS provides also the basis for other River Information Services (RIS), e.g. Notices to Skippers and Inland AIS.

For Inland ECDIS in information mode, it is recommended to use a computer, which allows for a resolution of at least 1024x768 pixels to view the charts. Moreover, it is recommended to use software for displaying Inland ECDIS charts in line with the standard. If the Inland ECDIS is connected to a GPS it is possible to display the own ship's position automatically. If

the computer is connected to AIS, it is possible to display also the position and details of other vessels. It is also possible to connect the computer to a radar device to show the radar information as an overlay over the chart (navigation mode). For a more information on Inland ECDIS see the CCNR Leaflet on Inland ECDIS: http://www.ccr-zkr.org/files/documents/ris/leafecdis2008_e.pdf

Table 2 provides a list of Inland ECDIS compatible software available from several companies.

Table 2. List of companies providing Inland ECDIS compatible software

Company	Website	Open IENC import
Command & Control Technologies	http://www.cct-international.com	Yes
Innovative Navigation	http://www.innovative-navigation.de	With special license only
SevenCs AG & Co. KG	http://www.sevencs.com/	Yes
NoorderSoft	http://www.noordersoft.com	Yes
Orca Navigator Österreich	http://www.orcanavigator.de	Yes
Periskal Group	http://www.periskal.com	With special license only
Tresco Engineering	http://www.tresco.be	With special license only
YAHNAV	http://www.yahnav.nl	Yes
OpenCPN	http://www.opencpn.org	Yes

Several of these companies can also provide Inland ECDIS charts with their software (SENCS). Additionally, most of the available charts can also be found on the Internet as the authorities responsible for their creation have made them available on their websites in the open S-57 format (Inland ENCs). However, not all software allows importing these open format charts (see table 2)[1].

A list of Inland ENC's can be found on the websites identified in table 3 and on http://www.ris.eu/services/enc_and_nts_distribution/enc_distribution

Table 3. List of Inland ENC's per country

Country	Waterway authority	Webpage
Austria	Via donau	www.doris.bmvit.gv.at
Belgium	Flemish RIS portal	http://ris.vlaanderen.be/html_de/vaarkaarten/index.html
Bulgaria	EAEMDR	http://www.appd-bg.org/siteen/page.php?27
Croatia	vodniputovi	http://vodniputovi.hr/index.php?page=encCharts
	Sava Commission	http://www.savacommission.org/publication
	CRUP	http://www.crup.hr/index.php?page=encdownload
Czech Republic	Lavdis	http://www.lavdis.cz/index.php?pg=46&ln=cz

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[1] It should be noted that the three companies whose software needs an extra license to import open format IENCs together have the largest installed user base on board of commercial inland vessels in Europa. According to the companies very few skippers avail of this extra license.

Country	Waterway authority	Webpage
Germany	ELWIS	http://www.elwis.de/RIS-Telematikprojekte/Inland-ENC-der-WSV/IENC-Dateien/index.php.html
Hungary	VITUKI	http://www.vituki.hu/index.php?otion=com_remosi-tory&Itemid=89&func=finishdown&id=44
	PannonRIS	http://www.pannonris.hu/modules/ecdis/letoltes.php?lang=en
Netherlands	RIS portal Netherlands	http://www.risserver.nl/ENC
Rumania	Administration of the Lower Danube	http://www.afdj.ro/electronic_map.html
Serbia	Sava Commission	http://www.savacommission.org/publication
	Plovput	http://www.plovput.rs/odeljenje_ris_enc.htm
Slovakia	SVP	http://www.svp.sk/dunaj/default.asp?id=45&mnu=45
Switzerland	Port of Switzerland	http://port-of-switzer-land.ch/site/index.php?option=com_content&view=article&id=286&Itemid=93

2.4 ERI - Electronic Reporting International

The purpose of the standards for Electronic Reporting in Inland Navigation is to enable electronic data interchange (EDI) for reporting purposes to and between competent authorities and to facilitate electronic data interchange among partners in inland navigation, as well as with partners in the multi-modal transport chain involving inland navigation. For Inland ECDIS in information mode, it is recommended to use a computer to submit ERI messages; - a computer with Internet access is required.

Depending on the transport segment, the skipper will use a webpage to complete and submit his voyage and cargo information to the competent authority. This approach is mainly use in bulk transport where the cargo information is limited. For this reporting mode, a simple computer with an internet connection is sufficient.

Other transport segments require more sophisticated applications that have to be installed on the computer, i.e. stowage applications in order to make a stowage plan and to calculate the stability also include electronic reporting modules. For this reporting mode, a modern computer with an internet connection is required.

There are two commercial companies that provide software that include electronic reporting modules, being identified in table 4.

Table 4. List of commercial companies that provide software including electronic reporting modules

Company	Software Names	Website
Autena Marine	ContainerPlanner container stuwprogramma	http://www.autena.nl/
Lyrae	Stuwplan 2000	http://www.lyrae.eu/

Table 5. List of websites containing information about electronic reporting

Country	Waterway authority and other organisations	Webpage
Belgium	Flemish RIS portal	http://ris.vlaanderen.be/html_en/melden/index.html
Czech Republic	Lavdis	http://www.lavdis.cz
Germany	ELWIS	http://www.elwis.de/
Hungary	PannonRIS	http://www.pannonris.hu/
The Netherlands	BICS Website	http://www.bics.org and http://www.bics.nl
	Rijkswaterstaat	http://www.rijkswaterstaat.nl/water/veiligheid/scheepvaartverkeersbegeleiding/bics/index.aspx
	Bureau Telematica Binnenvaart	www.binnenvaart.org
Slovakia	SVP	http://www.slovris.sk/en/electronic-reporting/general-information/ http://www.slovris.sk/slovris/technicky-koncept/elektronicke-hlasenia/
Switzerland	Port of Switzerland	http://port-of-switzerland.ch/

Country	Waterway authority and other organisations	Webpage
Commissions	Sava Commission	http://www.savacommission.org/publication
	Platina (On behalf of the European Commission	Http://www.ris.eu
	Central Commission for the Navigation of the Rhine	http://ccr-zkr.org

In Annex 1, an overview is provided of contact addresses of the competent waterway authorities and organisations being responsible for provision of Electronic Reporting services in Inland Navigation. These organisations often offer services to submit electronic reports.

2.5   Econometers/voyage planning software

For this tool a computer with broadband Internet access is required in order to send Voyage-Plan messages and receive Notices to Skippers, to obtain water level information and to receive electronic chart updates. There are 4 companies that offer econometer, voyage planning or route planning software. These companies are being identified in Table 6.

Table 6. List of commercial companies that offer econometer, voyage planning or route plan-
ning software

Company	Website	Functionality
Technofysica	www.tempomaat.nl	Advanced econometer/fuel optimisation software
NoorderSoft	http://www.noordersoft.com	Advanced voyage planner with IENC support and econometer functionality
Periskal Group	http://www.periskal.com	IENC viewer with route planning option
Tresco Engineering	http://www.tresco.be	IENC viewer with route planning option[2]

2.6 Generic advise for the purchase of a computer hardware and software on-board of a vessel

Generic advise for purchase of a computer for RIS equipment on board of vessels:

- Use a PC or computer being not older than 3 years, running up-to-date software that is maintained by the manufacturer.
- Software to protect the computer (e.g. Virus scanner.)
- In case of integrated RIS systems follow the advise on system specifications of the nautical ICT specialist.
- Regularly update all software.
- Introduce a multiyear IT policy, covering system management, security, education, replacement etc.

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[2] Payed add-on

3 SPECIFIC REQUIREMENTS FOR HARDWARE AND SOFWARE ON-BOARD OF VESSELS

In generic terms, detailed requirements for RIS hardware and software on board of vessels are lacking. The major reasons, which have been mentioned, are:

- Variety of users.
  Skippers represent a wide range of users. Some have dedicated state of the art equipment on board of their vessels. Others use very basic equipment that is also used for other, non-RIS related purposes.

- Type of trade
  The equipment needs also vary with the trade vessels are operated in, e.g. container transport, dry bulk, tankers, dredging, passenger vessels, etc.

- Location.
  The requirements for the equipment can differ for the areas where one navigates.

- Financing.
  Many SME skippers have scarce resources available, whereby ICT investment should foremost relate to operational business processes (often not being considered RIS) - also combining various core functionalities like navigation, communication, administration and entertainment).

- New developments.
  Various RIS functionalities are realized through integrated ECDIS applications (expensive) or other electronic charts systems (cheaper). Through integration also NtS and AIS data (real time) can be presented in E-Charts. This is a new development, which should not be regulated, but rather left to the market as the market drives development and allows skippers to buy off the shelf.

- Tailor made services.
  For systems, which relate to pure navigation like Inland ECDIS plus radar overlay (navigation mode), system requirements are available (same for radar or AIS). For applications to be used in information mode (i.e. Inland ECDIS integrated with AIS and other RIS functionalities) a nautical ICT specialist advises on the suitable system configuration.

- External innovation is leading.
  External factors often define improvements on systems. In general, these are not dedicated RIS system improvements, but rather a development of which RIS can make use of, e.g. tablets instead of PCs.

ANNEX 1 CONTACT ADDRESSES OF THE COMPETENT WATERWAY AUTHORITIES AND ORGANISATIONS BEING RESPONSIBLE FOR PROVISION OF ELECTRONIC RE-PORTING SERVICES IN INLAND NAVIGATION

Hereunder the contact addresses of the competent waterway authorities and organisations responsible for provision of Electronic Reporting services in Inland Navigation are provided. These organisations sometimes offer services to submit electronic reports. When internet site is available this is indicated under the address (not included when an username and password is required)

Austria:
Bundesministerium für Verkehr, Innovation und Technologie
Oberste Schifffahrtsbehörde
Radetzkystrasse 2,
A-1030 Wien.
Bernd Birklhuber, Tel.: +43 (0)171 162 655 902, Fax: +43 (0)171-162655999,
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secretariaat@schelderadar.net
Internet: www.vts-scheldt.net

Bulgaria:
RIS authority: Maritime Administration
RIS provider: Bulgarian Ports Infrastructure Company

Czech Republic:
State Navigation Administration (RIS Operator in Czech Republic)
Jankovcova 4, Postal Box 28
CZ-170 04 Praha 7 - Holešovice
Tel.: +420 234 637 110, Fax: +420 283 871 514,
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www.slovris.sk/slovris/technicky-koncept/elektronicke-hlasenia/

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