

UNECE

River Information Services in the region of the Economic Commission for Europe



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Economic Commission for Europe

The Economic Commission for Europe (ECE) is one of the five United Nations regional commissions, administered by the Economic and Social Council (ECOSOC). It was established in 1947 with the mandate to help rebuild post-war Europe, develop economic activity and strengthen economic relations among European countries, and between Europe and the rest of the world. During the Cold War, ECE served as a unique forum for economic dialogue and cooperation between East and West. Despite the complexity of this period, significant achievements were made, with consensus reached on numerous harmonization and standardization agreements.

In the post-Cold War era, ECE acquired not only many new member States, but also new functions. Since the early 1990s the organization has focused on assisting the countries of Central and Eastern Europe, Caucasus and Central Asia with their transition process and their integration into the global economy.

Today, ECE supports its fifty-six member States in Europe, Central Asia and North America in the implementation of the 2030 Agenda for Sustainable Development with its Sustainable Development Goals. ECE provides a multilateral platform for policy dialogue, the development of international legal instruments, norms and standards, the exchange of best practices and economic and technical expertise, as well as technical cooperation for countries with economies in transition.

Offering practical tools to improve people's everyday lives in the areas of environment, transport, trade, statistics, energy, forestry, housing, and land management, many of the norms, standards and conventions developed in ECE are used worldwide, and a number of countries from outside the region participate in the work of ECE.

ECE's multisectoral approach helps countries to tackle the interconnected challenges of sustainable development in an integrated manner, with a transboundary focus that helps devise solutions to shared challenges. With its unique convening power, ECE fosters cooperation among all stakeholders at the country and regional levels.

Transport in the Economic Commission for Europe

The ECE Sustainable Transport Division is the secretariat of the Inland Transport Committee (ITC) and the ECOSOC Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals. The ITC and its twenty working parties, as well as the ECOSOC Committee and its sub-committees are intergovernmental decision-making bodies that work to improve the daily lives of people and businesses around the world, in measurable ways and with concrete actions, to enhance traffic safety, environmental performance, energy efficiency and the competitiveness of the transport sector.

The ECOSOC Committee was set up in 1953 by the Secretary-General of the United Nations at the request of the Economic and Social Council to elaborate recommendations on the transport of dangerous goods. Its mandate was extended to the global (multi-sectoral) harmonization of systems of classification and labelling of chemicals in 1999. It is composed of experts from countries which possess the relevant expertise and experience in the international trade and transport of dangerous goods and chemicals. Its membership is restricted in order to reflect a proper geographical balance between all regions of the world and to ensure adequate participation of developing countries. Although the Committee is a subsidiary body of ECOSOC, the Secretary-General decided in 1963 that the secretariat services would be provided by the ECE Transport Division.

ITC is a unique intergovernmental forum that was set up in 1947 to support the reconstruction of transport connections in post-war Europe. Over the years, it has specialized in facilitating the harmonized and sustainable development of inland modes of transport. The main results of this persevering and ongoing work are reflected, among other things, (i) in fifty-nine United Nations conventions and many more technical regulations, which are updated on a regular basis and provide an international legal framework for the sustainable development of national and international road, rail, inland water and intermodal transport, including the transport of dangerous goods, as well as the construction and inspection of road motor vehicles; (ii) in the Trans-European North-south Motorway, Trans-European Railway and the Euro-Asia Transport Links projects, that facilitate multi-country coordination of transport infrastructure investment programmes; (iii) in the TIR system, which is a global customs transit facilitation solution; (iv) in the tool called For Future Inland Transport Systems (ForFITS), which can assist national and local governments to monitor carbon dioxide (CO₂) emissions coming from inland transport modes and to select and design climate change mitigation policies, based

on their impact and adapted to local conditions; (v) in transport statistics – methods and data – that are internationally agreed on; (vi) in studies and reports that help transport policy development by addressing timely issues, based on cutting-edge research and analysis. ITC also devotes special attention to Intelligent Transport Services (ITS), sustainable urban mobility and city logistics, as well as to increasing the resilience of transport networks and services in response to climate change adaptation and security challenges.

In addition, the ECE Sustainable Transport and Environment Divisions, together with the World Health Organization (WHO)–Europe, co-service the Transport Health and Environment Pan-European Programme (THE PEP).

CONTENTS

Introduction	1
1. RIS objectives, services and stakeholders	3
1.1 Concept and objectives	3
1.2 RIS operational services (RIS services)	3
1.3 RIS technical services (RIS key technologies)	6
1.4 User groups and services (RIS stakeholders)	7
1.5 RIS enabled Corridor Management	7
2. Evolution of RIS	9
2.1 RIS origins.....	9
2.2 RIS development	11
3. ECE resolutions on RIS	15
3.1 Resolution No. 48 “Inland Electronic Chart Display Information Service”	15
3.2 Resolution No. 57 “Guidelines and Recommendations for River Information Services”	16
3.3 Resolution No. 58 “Guidelines and criteria for Vessel Traffic Services on Inland Waterways”	17
3.4 Resolution No. 63 “International Standard for Tracking and Tracing on Inland Waterways (VTT)”	18
3.5 Resolution No. 80 “International Standard for Notices to Skippers in Inland Navigation”	19
3.6 Resolution No. 79 “International Standard for Electronic Ship Reporting in Inland Navigation”	20
4. International regulatory framework for RIS	21
5. The strategic framework of the Economic Commission for Europe for the development of RIS	25
6. RIS: the way forward	27

List of figures

Figure I RIS operational services (RIS services)	4
Figure II RIS development in Europe	11
Figure III Trends in the development of RIS for the upcoming period	27

RIVER INFORMATION SERVICES IN THE REGION OF THE ECONOMIC COMMISSION FOR EUROPE

Introduction

The European inland waterway network of international importance spans over 29,200 km with over 400 major ports and terminals. Inland water transport is still a safe, multifunctional, reliable, economical and environmentally friendly mode of transport with untapped capacities that can be harnessed.

In the Economic Commission for Europe (ECE), the activities of Working Party on Inland Water Transport (SC.3) focus on developing inland water transport as a sustainable, resilient, intelligent, safe and efficient mode of transport, which is an integral part of inland transport networks. Increasing navigation safety is an element of high focus in the development of advanced information and communication technologies which include River Information Services (RIS).

Since 2001, SC.3 has developed and maintained a set of resolutions on RIS that is harmonized with the various resolutions, regulations and guidelines of the European Union, Central Commission for the Navigation of the Rhine (CCNR), the World Association for Waterborne Transport Infrastructure (PIANC), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and other international organizations.



Inland navigation on the Rhine near Koblenz (Germany).



Passenger vessel and telecommunications tower on the river Kovzha (Volga-Baltic waterway, Russian Federation).



The Head Ukrainian RIS control centre, Port of Odessa (Ukraine).

As of November 2021, SC.3 has adopted:

- Resolution No. 48
“Recommendation on electronic chart display and information system for inland navigation”
- Resolution No. 57
“Guidelines and Recommendations for River Information Services”
- Resolution No. 58
“Guidelines and Criteria for Vessel Traffic Services on Inland Waterways”
- Resolution No. 63
“International Standard for Tracking and Tracing on Inland Waterways”
- Resolution No. 79
“International Standard for Electronic Ship Reporting in Inland Navigation”
- Resolution No. 80
“International Standard for Notices to Skippers”.

The Working Party SC.3 encourages governments to apply provisions of the above-mentioned resolutions on national inland waterways to ensure a harmonized approach at the pan-European level. The full texts of the resolutions are available on the SC.3 web page at <https://unece.org/resolutions-1>.

For more information, please contact the secretariat at sc.3@un.org.

1. RIS objectives, services and stakeholders

1.1 Concept and objectives¹

RIS is formally defined as a concept of information services in inland navigation that supports traffic and transport management, including, wherever technically feasible, the interfaces with other transport modes. RIS is intended to improve the safety, efficiency and environmental performance of inland navigation towards a sustainable transport mode.

Specific objectives of RIS are also to:

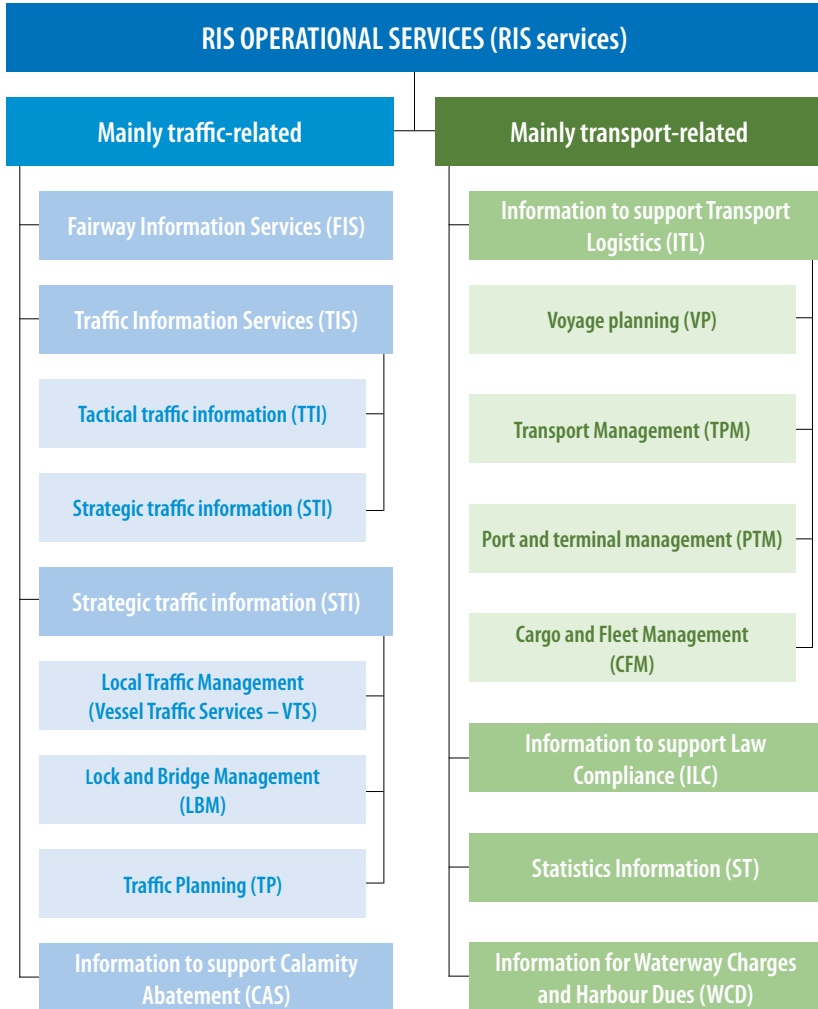
- Ensure that inland navigation a reliable, plannable and transparent transport mode in the multimodal transport chain
- Enhance navigation safety by reducing traffic, transport incidents and accidents, injuries and fatalities and by providing information for law compliance and statistics
- Enhance the efficiency of traffic and transport by optimizing the use of the capacity of waterways and vessels, the efficiency of ports and terminals, the resource management of the waterborne transport chain by enabling information exchange between vessels, locks, bridges, terminals and ports, by reducing transport costs, fuel consumption and increasing situational awareness of RIS users
- Contribute to environmentally friendly transport by reducing environmental hazards, including polluting emissions and spills, and by facilitating a smooth flow of traffic.

RIS are information from a fairway authority to other fairway authorities, waterway users and related logistic partners.

1.2 RIS operational services (RIS services)

According to the PIANC RIS Guidelines 2019, RIS operational services (formerly RIS services) include (a) mainly traffic related services and (b) mainly transport related services as shown on figure I.

¹ According to PIANC Guidelines and Recommendations for River Information Services, edition 2019.

FIGURE I*RIS operational services (RIS services)²*

² PIANC Guidelines and Recommendations for River Information Services, edition 2019.

Fairway Information Services (FIS)

contains the geographical, hydrological and administrative information related to the waterway infrastructure and fairways in the RIS area that is required by the RIS users to plan, execute and monitor a voyage. Fairway information is one-way information: shore to ship or shore to stakeholder's office.

Traffic Information Services (TIS)

provides information that supports the safety and efficiency of traffic and navigation on inland waterways.

Traffic Management Information (TM)

is the operational service that supports traffic management processes in inland navigation.

Information to support Calamity Abatement (CAS)

is the operational service that facilitates the actions necessary to limit the consequences of a calamity (or accidents and incidents).

Information to support Transport Logistics (ITL) is the operational service that supports transport logistic processes in inland navigation:

Information to support Law Compliance (ILC) is the information that facilitates legal compliance for the waterway users and supports relevant agencies responsible for inland navigation law enforcement.

Statistics Information (ST) is the information on traffic and transport in inland navigation that is required to support statistical processes.

Information for Waterway Charges and Harbour Dues (WCD) is the information needed to facilitate the calculation and collection of waterway charges and harbour dues.³



Telecommunications tower near the village of Annensky Most on the river Kovzha (Volga-Baltic waterway, Russian Federation).

³ PIANC Guidelines and Recommendations for River Information Services, edition 2019.

1.3 RIS technical services (RIS key technologies)

RIS technical services according to the PIANC RIS Guidelines 2019 are:

- Inland Electronic Chart Display and Information System (Inland ECDIS), based on the maritime ECDIS standards by IMO and the Electronic Nautical Charts (ENC) standardized by the International Hydrographic Organization (IHO), adapted to specific needs of inland navigation
- Notices to Skippers, based on the IMO/IHO World-Wide Navigational Warning Service (WWNWS), adapted to specific requirements of inland navigation
- Automatic Identification System (AIS) as standardized by the International Telecommunication Union (ITU) and the International Electrotechnical Commission (IEC). The performance standard for AIS was defined by IMO and developed by IALA. Inland AIS in Europe applies the same parameters and message structure as AIS Class A mobile stations according to IMO requirements, however, it extends the information content according to the inland navigation requirements. In view of their shared information content, Inland AIS and maritime AIS are compatible.
- Electronic Reporting International, mainly based on UN/CEFACT standards.

RIS technical services are based on technical and operational standards, which were initially defined and continuously updated by the International RIS Expert Groups. To ensure interoperability throughout the entire transport and logistics chain, the



River-sea oil tanker on the Svir (Russian Federation).

components of RIS technical services are aligned with applicable international standards and recommendations such as those issued by CCNR, IEC, IHO, IMO, IALA, International Organization for Standardization (ISO), ITU, PIANC, ECE and other relevant bodies.

1.4 User groups and services (RIS stakeholders)

Based on the information needs, RIS users can be divided in a number of different groups: skippers, RIS operators, lock, bridge and terminal operators, waterway authorities, operators in calamity centres, fleet managers, cargo shippers, consignors, consignees, freight brokers and supply forwarders.

The following categories of RIS stakeholders can be differentiated:

- Service consumers: RIS users in inland navigation operations – skippers, shipowners, lock operators, port and terminal operators, Vessel Traffic Services (VTS) operators, etc.;
- Governmental, regulatory and standardization bodies;
- Managers in inland navigation: fleet managers, waterway managers and water managers;
- Information providers: waterway authorities, fairway authorities (fairway surveillance, VTS personnel, lock operators, bridge operators, etc.);
- Service providers, e. g. RIS providers and rescue and emergency service providers.

1.5 RIS enabled Corridor Management⁴

To ensure that RIS is harmonized and standardized throughout the inland waterway network, the PIANC RIS Guidelines in 2019 introduced the concept of RIS Enabled Corridor Management, aimed at linking operational services together on a route or a corridor in order to provide a harmonized set of services to support skippers on their voyage on the network.



The Main-Danube canal in Bamberg (Germany).

⁴ PIANC Guidelines and Recommendations for River Information Services, edition 2019.

Corridor Management is defined as mutual operation services between fairway authorities, waterway users and related logistic partners in order to optimize the use of inland navigation corridors within a network of waterways.

The concept of Corridor Management can be recognized as the next step in the deployment of RIS that supports inland navigation as a transport mode in the international multimodal logistics chain.

2. Evolution of RIS

2.1 RIS origins

National stand-alone telematic services for inland waterways in Europe have been developed since the late 1980s, however, the project that paved the way for the development of the RIS concept is the “Inland Navigation Demonstrator for River Information Services” (INDRIS)⁵ of the European Union (1998–2000); it provided a set of open standards for information



Lock on the Rhine near Basel (Switzerland).

exchange among public authorities and inland shipping parties. The concept for RIS architecture was developed by the Thematic Network “Waterborne Traffic and Transport Management” (WATERMAN) (2000–2003). The technical, organizational and functional architecture of RIS was further developed in the project “Consortium Operational Management Platform River Information Services” (COMPRIS) of the European Union (2002–2005) and in other projects.

The role of RIS in strengthening the position of inland navigation within the transport chain has been recognized by international organizations (PIANC, ECE) and river commissions – CCNR, the Danube Commission, the Mosel Commission and the International Sava River Basin Commission. In 2002, Permanent Working Group 24 of the PIANC Inland Navigation Commission (InCom) developed the first Guidelines and Recommendations for River Information Services. The PIANC Guidelines were the basis for the relevant documents by CCNR and ECE:

- Guidelines and Recommendations for River Information Services, adopted by CCNR in 2002 (RIS Guidelines 2002) (followed by edition 2.0 in 2004 and edition 3.0 in 2012);
- Resolution No. 57 “Guidelines and Recommendations for River Information Services”, adopted by SC.3 in 2004 (revised in 2011).

⁵ <https://trimis.ec.europa.eu/sites/default/files/project/documents/Indris.pdf>.

In 2005, the European Union adopted Directive 2005/44/EC on harmonized RIS on inland waterways in the Community. In the overall European context, the development and formalization of RIS was seen as the model for other transport modes to advance towards a successful implementation of traffic and transport information services. In the domain of inland navigation, it was recognized for its importance in cross border information exchange.⁶



Container barges on the Nieuwe Waterweg in Rotterdam (the Netherlands).



Telecommunications tower and the GNSS reference station near the village of Ivanov Bor on the river Sheksna (Russian Federation).

In 2006, the first multinational Trans-European Transport Network project “Implementation of River Information Services in Europe” (IRIS Europe) was launched in the European Union, aimed at improving RIS across its nine member States. It continued with projects IRIS Europe II (2009–2011) and IRIS Europe III (2012–2014).⁷

The added value of RIS has received worldwide recognition. Technical standards such as Inland ECDIS, Inland AIS, Electronic Ship Reporting in Inland Navigation (ERI) and Notices to Skippers (NtS) have matured and were formally adopted in Europe.

⁶ PIANC Guidelines and Recommendations for River Information Services, edition 2019.

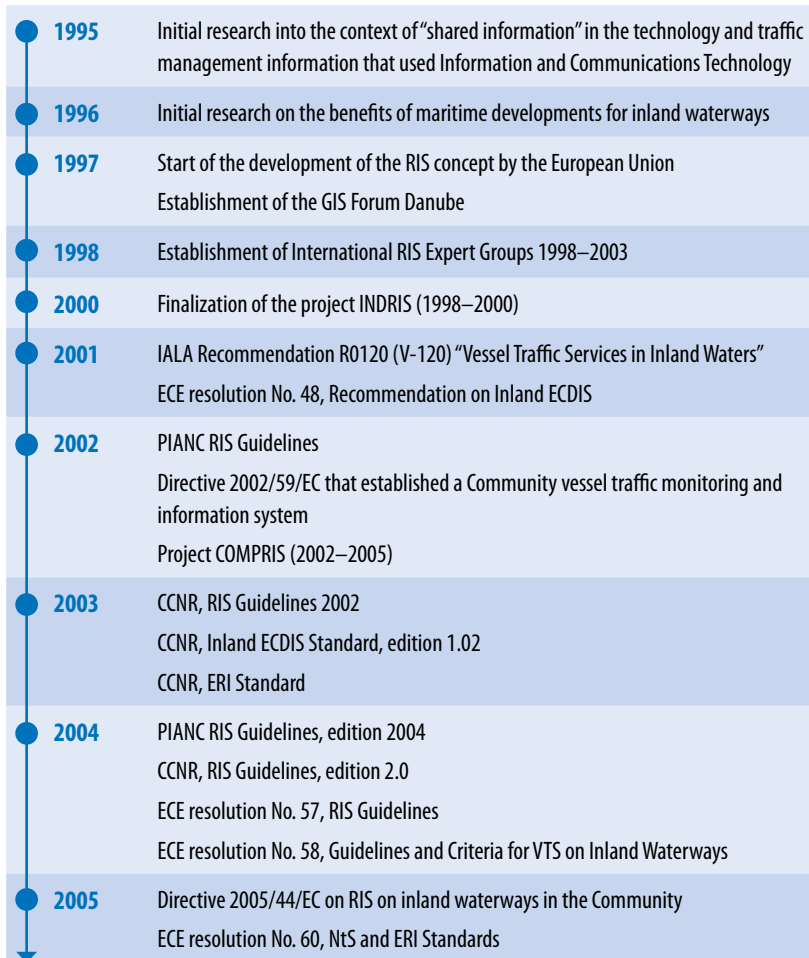
⁷ <https://ec.europa.eu/inea/en/ten-t/ten-t-project-implementation-successes/improving-safety-and-navigation-europe%E2%80%99s-inland>; <https://navigation.danube-region.eu/iris-europe-3-implementation-of-river-information-services-in-europe/>.

2.2 RIS development

Milestones in the development of RIS are set out in figure II below.

FIGURE II

RIS development in Europe



- 
- 2006** CCNR, Inland ECDIS Standard, edition 2.0
CCNR, ERI Standard, edition 1.2
CCNR Guidelines on VTS
ECE resolution No. 63, the International Standard for Tracking and Tracing on Inland Waterways (VTT Standard)
ECE resolution No. 48, Recommendation on Inland ECDIS, revision 1
Project IRIS Europe (2006–2008)
- 2007** Commission Regulation (EC) No. 414/2007 concerning the technical guidelines for the planning, implementation and operational use of RIS
Commission Regulation (EC) No. 415/2007 concerning the technical specifications for VTT systems
Commission Regulation (EC) No. 416/2007 concerning the technical specifications for NtS
CCNR, VTT Standard for Inland Navigation, edition 1.01
CCNR, International NtS Standard, edition 1.2.1
- 2008** CCNR, International NtS Standard, edition 2.0
- 2009** CCNR, International NtS Standard, edition 3.0
Project IRIS Europe II (2009–2011)
- 2010** Establishment of PIANC Permanent Working Group 125
The first Danube Information Service Conference (DISC)
- 2011** PIANC RIS Guidelines, edition 2011
CCNR, Inland ECDIS Standard, edition 3.0
ECE resolution No. 57, RIS Guidelines, revised
- 2012** CCNR RIS Guidelines, edition 3.0
CCNR RIS Strategy
ECE resolution No. 48, Recommendation on Inland ECDIS, revision 2
Project IRIS Europe III (2012–2014)

- 2013** CCNR, VTT Standard, edition 1.2
CCNR, ERI Standard
- 2014** CCNR introduced an obligation of fitting vessels with Inland AIS devices and Inland ECDIS devices or comparable electronic chart display devices on the Rhine
ECE resolution No. 63, VTT Standard, revision 1
ECE resolution No. 60 is replaced by resolutions No. 79, ERI Standard, and No. 80, NtS Standard
Project CoRISMa (RIS enabled European inland water transport corridor management), 2014–2015
- 2015** Establishment of the European committee for drawing up standards in the field of inland navigation (CESNI)
ECE resolution No. 48, Recommendation on Inland ECDIS, revision 3
- 2016** Project RIS COMEX (River Information Services – Corridor RIS Management Execution), 2016–2021
Establishment of the PIANC Working Group 156 “e-Navigation for Inland Waterways”
- 2017** Digital Inland Waterway Area (DINA) initiative, launched by the European Commission
- 2018** Commission Staff Working Document on Digital Inland Navigation
Commission Implementing Regulation (EU) 2018/1973 on the technical specifications for Inland ECDIS
Commission Implementing Regulation (EU) 2018/2032 concerning the technical specifications for NtS
- 2019** PIANC RIS Guidelines, edition 2019
Commission Implementing Regulation (EU) 2019/838 on technical specifications for VTT systems
Commission Implementing Regulation (EU) 2019/1744 on technical specifications for ERI
ECE resolution No. 48, Recommendation on Inland ECDIS, revision 4
ECE resolution No. 80, NtS Standard, revision 1
Permanent CESNI Working Group on Information Technologies (CESNI/TI)
International RIS Expert Groups are reorganized into CESNI/TI temporary working groups

2020	ECE resolution No. 63, VTT Standard, revision 2 ECE resolution No. 79, ERI Standard, revision 1
2021	Evaluation of Directive 2005/44/EC CESNI, European Standard for River Information Services (ES-RIS), edition 2021/1 Revision of IALA recommendation on VTS
2022 onwards	PIANC RIS Guidelines, edition 2022 Possible revision of Directive 2005/44/EC under the framework of NAIADES III action plan Information services in a synchro-modal transport domain and new challenges



Visit of the delegation of the Harlingen Maritime Academy to the Head Ukrainian RIS control centre, 19 April 2017.

3. ECE resolutions on RIS

3.1 Resolution No. 48 “Inland Electronic Chart Display Information Service”

Resolution No. 48 was adopted by SC.3 on 25 October 2001 at its forty-fifth session. As the first ECE recommendation on RIS, it was based on the standard developed by the International Inland ECDIS Expert Group which had adapted the existing ECDIS, originally developed for maritime navigation, with some distinct inland features to ensure compatibility with inland navigation.

Inland ECDIS is an on-board computer system which combines information from the Inland System Electronic Navigational Chart (Inland SENC) with additional information on the vessel's environment from other navigation sensors and displays the selected information on a single screen. Inland ECDIS also provides the basis for the integration of other RIS, e.g. Inland AIS and NtS. Inland ECDIS aims to contribute to the safety and efficiency of inland shipping by reducing the workload for the skipper while increasing the situational awareness.

Inland ECDIS is composed of hardware, software for the operating system and application software and can be designed for information or navigation mode, or for information mode only. In the information mode, Inland ECDIS is used to guide and to provide information about the waterway and not for navigation. In this mode, Inland



ECDIS equipment.

ECDIS receives data from positioning sensors and controls the vessel's own position against the background of an electronic chart. Inland ECDIS which can be operated in navigation mode is considered as a navigational radar installation.

In the navigation mode, Inland ECDIS can be used for conning the vessel with overlaid radar image. Data, as a minimum, is received from both the position sensor and the on-board radar installation. Currently, as a rule, Inland ECDIS is also connected to the shipborne AIS mobile station; other navigation sensors can be connected as an option.

The annex to resolution No. 48 was subsequently revised in 2006, 2012, 2015 and 2019. The fourth revision, adopted by resolution No. 96, is currently in force, based on edition 2.4 of the Inland ECDIS Standard and is harmonized with the Commission Implementing Regulation (EU) 2018/1973 of 7 December 2018 and the national provisions of member States.

The annex contains the technical specifications for Inland ECDIS (edition 2.4) and appendices with the Product Specification for Inland ENCs, the Status of the Presentation Library for Inland ECDIS, and the Product Specification for Bathymetric Inland ENC. The standard is available on the SC.3 web page at www.unece.org/DAM/trans/doc/2020/sc3/ECE-TRANS-SC3-156-Rev4e.pdf. The appendices are available in electronic format in English only on the SC.3 web page.

3.2 Resolution No. 57 “Guidelines and Recommendations for River Information Services”

Resolution No. 57 was adopted by SC.3 on 21 October 2004 at its forty-eighth session. Intended to establish a single pan-European approach to the planning, implementation and use of information services in inland navigation, the resolution aimed to ensure a high-level of safety, efficiency and fluidity of inland water traffic and the protection of the environment throughout the E waterway network.



Automated Ukrainian RIS post on the Dnieper (Ukraine).

The annex to resolution No. 57 is based on the PIANC RIS Guidelines and Recommendations. The guidelines in the annex were revised by SC.3 in 2011, following the revision of the PIANC RIS Guidelines, and adopted by resolution No. 73 on 14 October 2011.

The guidelines contain the main terms and definitions related to RIS which are also used in other SC.3 resolutions; RIS objectives, services and stakeholders; RIS key technologies; RIS services; recommendations on the implementation; and the structured approach for implementing RIS. Appendices contain the list of RIS Open Standards and RIS Information categories.

SC.3 has recommended that governments, intergovernmental organizations, regional economic integration organizations, river commissions and private entities base the planning, implementation and use of information services in inland navigation on the guidelines.

The development of the ECE RIS guidelines will include a revision based on the next edition of PIANC RIS Guidelines that is foreseen for 2022 or 2023.

The text of resolution No. 57 is available on the SC.3 web page at <https://unece.org/DAM/trans/doc/2012/sc3wp3/ECE-TRANS-SC3-165-Rev1e.pdf> and also contains Amendment No. 1.

3.3 Resolution No. 58 “Guidelines and criteria for Vessel Traffic Services on Inland Waterways”

Resolution No. 58 was adopted by SC.3 on 21 October 2004 at its forty-eighth session. It is based on the IALA Recommendation 0120 (V-120) “Vessel Traffic Services in Inland Waters”, that was adopted in 2001.

VTS are considered an element of the Vessel Traffic Management service provided by RIS. However, there is no obligation to include VTS in the scope of RIS, and VTS areas can overlap those covered by RIS, be organized outside the RIS area or established locally with the focus on traffic organization.

Guidance is provided for establishing VTS on inland waterways, in particular, where IMO Resolution A.857(20) is not applied, and aims at enhancing navigation safety in cross-border areas where two regulatory regimes exist, i.e. in estuaries, lakes and other areas where inland waterways connect with the sea and vessels cross the boundaries of responsibility of maritime and river administrations.



Telecommunications, RIS and VTS tower on the river Sheksna (the Russian Federation).

SC.3 recommended governments to take resolution No. 58 into account when developing, implementing and operating VTS on inland waterways where the application of IMO Resolution A.857 (20) was not considered appropriate.

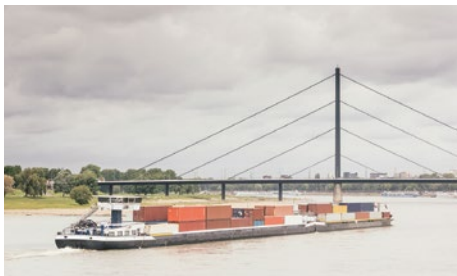
The new IALA Guideline on VTS in inland waters, approved in October 2021, which replaces IALA Recommendation 0120 (V-120), will require a substantive revision of resolution No. 58 and other relevant resolutions.

The guidelines are available at <https://unece.org/transport/standards/transport/guidelines-and-criteria-vessel-traffic-services-inland-waterways>.

3.4 Resolution No. 63 “International Standard for Tracking and Tracing on Inland Waterways (VTT)”

Resolution No. 63 was adopted by SC.3 on 13 October 2006 at its fiftieth session, and revised in 2014 and 2020. The second revision is based on the revised International Standard for Tracking and Tracing on Inland Waterways prepared by the International VTT Expert Group and published in the Commission Implementing Regulation (EU) 2019/838 of 20 February 2019 on technical specifications for vessel tracking and tracing systems, and repealing Regulation (EC) No. 415/2007. It has been harmonized with Recommendation ITU-R M.1371-5 and the application scope has been extended to maritime AIS and AIS classes A and B.

Vessel tracking means the function of maintaining the status information of the vessel, such as the current position and characteristics, and – if needed – combined with information on cargo and consignments. Vessel tracing means the retrieval of information on the whereabouts of the vessel and – if needed – information on cargo, consignments and onboard equipment. VTT systems



Container barge on the Rhine in Dusseldorf (Germany).

support the following services: Navigation, Traffic Information, Traffic Management, Calamity Abatement, Transport Management, Law Compliance, Waterway Charges and Harbour Dues, Fairway Information and Statistics.

This information exchange is supported by Inland AIS, a shipborne radio data system that enables the exchange of static, dynamic and voyage-related vessel data between shipborne AIS stations (mobile stations) and shore-based AIS stations.

Due to the application of VTT systems in mixed traffic areas with both inland and maritime navigation environments, such as sea ports and coastal areas, VTT systems are compatible with the maritime AIS (AIS Class A mobile stations as referred to in

Chapter V of the SOLAS Convention) to enable a direct data exchange between sea-going ships and inland waterway vessels.

The annex to resolution No. 63 contains VTT functions for inland vessels, Inland AIS Technical Specification, an overview of other mobile stations applied on inland waterways, and AIS Aids to Navigation in inland navigation. The standard is available at <https://unece.org/sites/default/files/2021-01/ECE-TRANS-SC3-176r2e.pdf>.

3.5 Resolution No. 80 “International Standard for Notices to Skippers in Inland Navigation”

Resolution No. 80 was first adopted by SC.3 in 2005 at its forty-ninth session as part I of resolution No. 60 “International Standards for Notices to Skippers and for Electronic Ship Reporting in Inland Navigation”. In 2014, SC.3 separated parts I and II and adopted the standard as resolution No. 80. The annex was revised in 2019, following the revision of the standard by the International NtS Expert Group and the adoption by Commission Implementing Regulation (EU) 2018/2032 of 20 November 2018. Amendment No. 1 to the standard was adopted in 2020.

NtS messages include four types of essential messages in a standardized format:

- Fairway and traffic related messages (information for fairway sections or objects and limitations relevant for safety, voyage planning and general information)
- Water related messages (the water level, bathymetric measurements, the vertical clearance, the barrage status, the discharge and the regime)
- Ice related messages (actual or predicted ice conditions)
- Weather related messages.

NtS ensure automatic translation of the most important content, using the standard vocabulary - the NtS Reference Tables. The messages are available in the 21 languages of the member countries of the European Union and in Croatian, Russian and Serbian.

The technical specifications for NtS provide rules for the data transmission of the fairway information in a standardized data format, which can be used for publishing NtS on the Internet (pull services) or for distribution by e-mail (push services). They facilitate the data exchange among NtS systems of different countries and towards other applications making use of NtS data, including Inland ECDIS.

The revised standard is available at <https://unece.org/transport/standards/transport/international-standards-notices-skippers-resolution-no-80-0>. The appendices are available in electronic format in English only using the same link.



Convoy on the Danube in Budapest.

3.6 Resolution No. 79 “International Standard for Electronic Ship Reporting in Inland Navigation”

Resolution No. 79 was first adopted by SC.3 in 2005 at its forty-ninth session as part II of resolution No. 60 “International Standards for Notices to Skippers and for Electronic Ship Reporting in Inland Navigation”. In 2014, SC.3 separated parts I and II and adopted the ERI standard as resolution No. 79. The standard was revised in 2020, based on the updated version by the International ERI Expert Group and published in the Commission Implementing Regulation (EU) 2019/1744 of 17 September 2019 on technical specifications for electronic ship reporting in inland navigation.

The purpose of the ERI standard is to enable electronic data interchange (EDI) for reporting purposes to and between competent authorities and to facilitate EDI among partners in inland navigation and in the multimodal transport chain. This standard describes the messages, data items, codes and references to be used in electronic reporting for RIS and is based on internationally accepted trade and transport standards and on internationally accepted classifications and recommendations. The Message Implementation Manuals aim to ensure a common understanding and usage of the ERI messages.

The revised standard contains parts on the UN/EDIFACT message structure, codes and references and is available at <https://unece.org/transport/standards/transport/international-standard-electronic-ship-reporting-inland-navigation>. The appendices with the Message Implementation Manuals are available in electronic format in English and French only.

4. International regulatory framework for RIS

The table below shows the correlation between the different regulatory frameworks for RIS applied in Europe as of November 2021.

TABLE
International regulatory framework for RIS in Europe

ECE	European Union	CCNR	CESNI
<i>Inland ECDIS Standard</i>			
Resolution No. 48, revision 4	Commission Implementing Regulation (EU) No. 909/2013 on the technical specifications for the electronic chart display and information system for inland navigation (Inland ECDIS) ⁸ Commission Implementing Regulation (EU) 2018/1973 of 7 December 2018 on the technical specifications for the electronic chart display and information system for inland navigation (Inland ECDIS) ⁹	Standard for Electronic Chart Display and Information System for Inland Navigation, edition 3.0	European Standard for River Information Services, edition 2021/1, Part I "Standard Electronic Chart Display and Information System for Inland Navigation"

⁸ OJ/L 258, 28 September 2013, p. 1–39.

⁹ OJ/L 324, 19 December 2018, p. 1–44.

ECE	European Union	CCNR	CESNI
<i>Guidelines and Recommendations for River Information Services</i>			
Resolution No. 57, revision 1	<p>Directive 2005/44/EC of 7 September 2005 on harmonised river information services (RIS)¹⁰</p> <p>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)¹¹</p>	Guidelines and Recommendations for River Information Services, edition 3.0	
<i>Guidelines and Criteria for Vessel Traffic Services on Inland Waterways</i>			
Resolution No. 58	<p>Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC¹²</p>	Guidelines and Criteria for Vessel Traffic Services on inland waterways, 2006	

¹⁰ OJ/L 255, 30 September 2005, p. 152–159.

¹¹ OJ/L 105, 23 April 2007, p. 1–34.

¹² OJ/L 208, 5 August 2002, p. 10–27.

ECE	European Union	CCNR	CESNI
<i>International Standard for Tracking and Tracing on Inland Waterways</i>			
Resolution No. 63, revision 2	Commission Implementing Regulation (EU) 2019/838 on technical specifications for vessel tracking and tracing systems and repealing Regulation (EC) No 415/2007 ¹³	Vessel Tracking and Tracing Standard for Inland Navigation, edition 1.2	European Standard for River Information Services, edition 2021/1, Part II "Standard Vessel Tracking and Tracing for Inland Navigation"
<i>Test Standard for Inland AIS</i>			
—	—	Test Standard for Inland AIS (editions 1.0, 1.01 and 2.0)	European Standard for River Information Services, edition 2021/1, Part III "Inland AIS Shipborne Equipment Operational and Performance Requirements, Methods of Test and Required Test Results (Test Standard Inland AIS)"

¹³ OJ/L 138, 24 May 2019, p. 31–69.

ECE	European Union	CCNR	CESNI
<i>International Standard for Electronic Ship Reporting in Inland Navigation</i>			
Resolution No. 79, revision 1	Commission Implementing Regulation (EU) 2019/1744 on technical specifications for electronic ship reporting in inland navigation and repealing Regulation (EU) No 164/2010 ¹⁴	Standard for Electronic Ship Reporting in Inland Navigation, edition 2013	European Standard for River Information Services, edition 2021/1, Part IV “Standard Electronic Ship Reporting in Inland Navigation”
<i>International Standard for Notices to Skippers in Inland Navigation</i>			
Resolution No. 80, revision 1 and amendment 1	Commission Regulation (EC) No 416/2007 concerning the technical specifications for Notices to Skippers ¹⁵ Commission Implementing Regulation (EU) 2018/2032 amending Commission Regulation (EC) No 416/2007 concerning the technical specifications for Notices to Skippers ¹⁶	International Standard for Notices to Skippers for Inland Navigation, edition 3.0	European Standard for River Information Services, edition 2021/1, Part V “Standard Notices to Skippers”

¹⁴ OJ/L 273, 25 October 2019, p. 1–182.

¹⁵ OJ/L 105, 23 April 2007, p. 88–253.

¹⁶ OJ/L 332, 28 December 2018, p. 1–181.

5. The strategic framework of the Economic Commission for Europe for the development of RIS

RIS are increasingly integrated for use in the inland water transport sector. RIS is a harmonized and interconnected information system, that provides real time data to users and authorities about the traffic and fairway conditions on a waterway, and about vessel positions and directions. Streamlined planning of vessel movements are, in this way, facilitated on the waterways. RIS not only increases safety on the waterways, but also increases the efficiency of transport across rivers and canals by adding functions such as RIS corridor management.

The role of RIS for inland navigation as one of the priorities for the forthcoming period was emphasized in the Wroclaw Ministerial Declaration “Inland Navigation in a Global Setting” of 18 April 2018, signed by eighteen Member States of the United Nations and supported by resolution No. 265 “Facilitating the Development of Inland Water Transport”, adopted by the Inland Transport Committee (ITC) on 22 February 2019.



The Neckar in Heidelberg (Germany).

The ECE White Paper on the Progress, Accomplishment and Future of Sustainable Inland Water Transport, endorsed by ITC in 2020, has set out policy recommendation No. 5 “Promote the development and pan-European application of RIS and other information technologies”. The recommendation provides for cooperation with other international institutions on the implementation of RIS and other information technologies, and for the regular updating of ECE resolutions on RIS. It also encourages other users of information technologies to facilitate inland water transport operations and inspections of inland vessels, and the development and promotion of the harmonized rules and criteria in this area.

RIS constitute an essential element of the updated ECE Road Map on Intelligent Transport Systems, launched at the eighty-third session of ITC in February 2021.

Furthermore, RIS are referred to in other ECE resolutions, which are maintained and constantly updated by SC.3, in particular:

- Resolution No. 21 “Prevention of pollution of inland waterways by vessels”, revision 2
- Resolution No. 24 “European Code for Inland Waterways” (CEVNI), revision 6
- Resolution No. 61 “Recommendations on Harmonized Europe-Wide Technical Requirements for Inland Navigation Vessels”, revision 2
- Resolution No. 90 “European Code for Signs and Signals on Inland Waterways” (SIGNI).

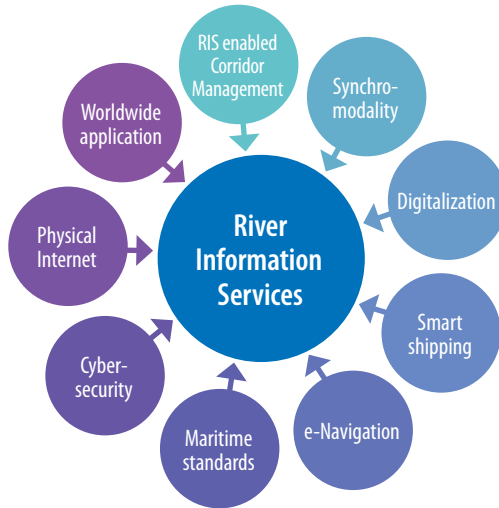


6. RIS: the way forward

Trends in the development of RIS for the upcoming period are shown in figure III.

Figure III

Trends in the development of RIS for the upcoming period



The background and perspectives for the evolution of RIS are laid down in:

- The PIANC RIS Guidelines 2019
- The NAIADES III action plan and, in particular, the ongoing work of the European Commission on the assessment of Directive 2005/44/EC
- Tasks of the Permanent CESNI Working Group on Information Technologies
- Progress by member States on implementing and developing RIS on their inland waterways.

Corridor management will enable the use of RIS not only as a safety management tool, but as an integrated system, that serves as a facilitator in the whole logistics chain, by enabling harmonized services across borders. This will be the next step in the deployment of RIS to support inland navigation as an important transport mode in the international multimodal logistic chain.

As set out in the PIANC RIS Guidelines 2019, the future of RIS use across the world will focus on new transport services in response to new manufacturing technologies and e-commerce processes. The new horizons will cover, but not be limited to:



Vessel on the Rhine.

- Synchromodality and the optimization of the whole transport and logistics chain
- The physical internet, intelligent cargo technology and optimization of cargo flows
- Digitization developments and electronic data exchange (DINA)
- Smart shipping and automated navigation on inland waterways
- RIS enabled Corridor Management (based on the outcome of the project RIS COMEX)
- e-Navigation for inland waterways and links between RIS and maritime e-Navigation
- Cybersecurity and protection of data
- Coordination with the maritime sector and interaction between inland waterway and maritime transportation
- Development of training and qualification standards.

River Information Services in the region of the Economic Commission for Europe

The Publication “River Information Services in the region of the Economic Commission for Europe” gives an overview of the concept of River Information Services (RIS) on European inland waterways, its origins, evolution and the way forward. It highlights the RIS objectives, basic components, functions and the key stakeholders. Focus is made on the international regulatory basis, the ECE strategic framework in this field and trends in the development of RIS for the upcoming period.

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