ACTION PLAN

for a BSR wide ELIAS Implementation

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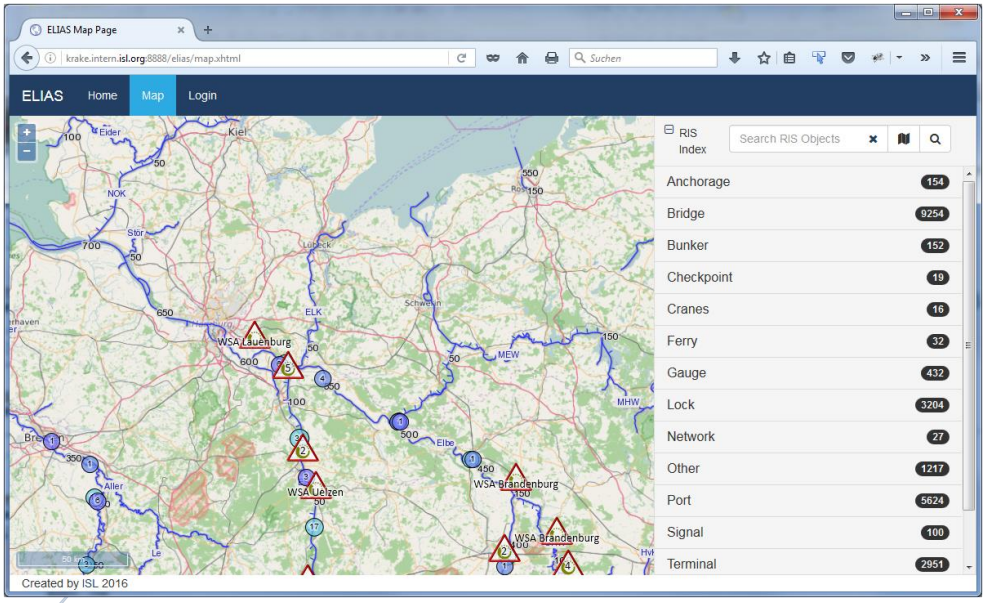

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EMMA – Report

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1 GENERAL BACKGROUND

ELIAS is an IT system developed in the framework of the BSRP VB Interreg project EMMA. It is a map-based web application providing static and basic status information on inland waterways. The system is making use of existing digital information from official waterway administration servers, partly real time updated. Wherever possible, RIS standards have been applied. In detail following information is gathered and free to access to any user:

- Electronic navigational chart overlay (iENC)
- Position of locks, bridges, gauges, bunker stations, etc.: European RIS Index
- Notices to Skippers (NtS): Integrated via NtS-WebService.
- Real time water levels - provided by German waterway authorities (WSV)
- Dynamic traffic situation: traffic density (no of vessels per section) & traffic flow (vessel speed per section)
- Lock passage statistics (lock passage time = waiting time + lockage time

Thus, the IT system collects and aggregates a number of data sources from existing River Information Services (RIS) and displays the information in the integrated web application called ELIAS.

The public portal will display relevant information on: infrastructure, “Notices to Skippers”, water levels, forecasted waiting times at locks, situation in ports (sea/inland) to demonstrate the logistics aspect: support planning and monitoring of intermodal chains (assumed that relevant data are provided by ports/ terminals).

ELIAS functionality has been successfully tested in North-East Germany. The implemented ELIAS tool can be used free of charge at: https://elias.isl.org/index.xhtml

This report describes necessary steps in different BSR countries for a potential BSR wide implementation.

Following link provides you with an overview on data sources and interfaces to allow interested parties to re-built such a system on own IT infrastructure: http://www.project-emma.eu/content/23-it-prototype-documentation-elias

2 IMPLEMENTATION STEPS

The DIRECTIVE 2005/44/EC of the European Parliament and the council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the Community sets the framework for all member states. In general the implementation of RIS is obligatory to member states. Anyhow, not all inland waterways are covered by the EU Directive as Article 2 describes:

Article 2

Scope

1. This Directive applies to the implementation and operation of RIS on all inland waterways of the Member States of class IV and above which are linked by a waterway of class IV or above to a waterway of class IV or above of another Member State, including the ports on such waterways as referred to in Decision No 1346/2001/EC of the European Parliament and of the Council of 22 May 2001 amending Decision No 1692/96/EC as regards seaports, inland ports and intermodal terminals as well as project No 8 in Annex III ([3]). For the purposes of this Directive, the Classification of European Inland Waterways set out in UNECE Resolution No 30 of 12 November 1992 shall apply.

2. Member States may apply this Directive to inland waterways and inland ports not referred to in paragraph 1.

Figure 1 - Directive 2005/44/EC Article 2, source: DIRECTIVE 2005/44/EC

The following map by UNECE illustrates the European Inland Waterway Network and classification of inland waterways according to above mentioned directive.

According to that, Germany, Lithuania and Poland should follow the RIS Directive and set-up adequate infrastructure along main inland waterways.


Dahme-Wasserstraße
Lake Ladoga
Ладожское озеро
Saimaa Canal
Сайменский канал
Saint-Petersburg
Санкт-Петербург
Neva
Нева
FINLANDE
ФИНЛЯНДИЯ
SWEDEN
SUEDE
ШВЕЦИЯ
Södertälje C.
Trollhätte C.
ESTONIA
ESTONIE
ЭСТОНИЯ
Chudskoye Lake
Чудское озеро
LATVIA
LETTONIE
ЛАТВИЯ
LITHUANIA
LITUANIE
ЛИТВА
Kurshskiy Zaliv
Куршский залив
Nemunas
Неман
Pregel
Преголь
Zalew Wiślany
Вислинский залив
BELARUS
БЕЛАРУСЬ
Nord-Ostsee (Kiel) Kanal
Elbe
Oder
Wisła
Bug
Notec
Warta
Dneprovsko-Bugskiy Kan.
Днепровско-Бугский К.
Pripyat
POLAND
POLOGNE
DENMARK
DANEMARK
ДАНИЯ

Waterway type Type de voies navigables Тип водных путей	Waterway class Classes de voies navigables Класс водных путей		Designation Dénomination Наименование	Motor vessels and barges – type of vessel: general characteristics Automoteurs ou chalands – type de bateau : caractéristiques générales Самоходные суда и баржи – тип судна: общие характеристики				Pushed convoys – type of convoy: general characteristics Convois poussés – type de convoi : caractéristiques générales Толкаемые составы – тип состава: общие характеристики					Min. height under bridges Hauteur minimale sous les ponts Миним. высота под мостами	Symbol on maps Symboles sur les cartes Обозначение на карте
				Max. length Longueur max. Максим. длина	Max. beam Largeur max. Максим. ширина	Draught Tirant d'eau Осадка	Tonnage Tonnage Тоннаж		Length Longueur Длина	Beam Largeur Ширина	Draught Tirant d'eau Осадка	Tonnage Tonnage Тоннаж		
				L(m)	B (m)	d (m)[7]	T (t)		L(m)	B (m)	d (m)[7]	T (t)	H (m)[2]	
of regional importance d'intérêt régional Регионального значения	west of Elbe à l'Ouest de l'Elbe к западу от Эльбы	I	Barge - Péniche - Баржа	38.50	5.05	1.80-2.20	250-400						4.00	
		II	Kampine - Campinois - 'Кампин'	50-55	6.60	2.50	400-650						4.00-5.00	
		III	Gustav Koenigs - 'Густав Кёнигс'	67-80	8.20	2.50	650-1000						4.00-5.00	
	east of Elbe à l'Est de l'Elbe к востоку от Эльбы	I	Gross Finow - 'Гросс Финоу'	41	4.70	1.40	180						3.00	
		II	Type BM-500 - Типа БМ-500	57	7.50-9.00	1.60	500-630						3.00	
		III	[6]	67-70	8.20-9.00	1.60-2.00	470-700		118-132	8.20-9.00	1.60-2.00	1000-1200	4.00	
of international importance d'intérêt international Международного значения		IV	Johann Welker - 'Йоганн Велкер'	80-85	9.50	2.50	1000-1500		85	9.50[5]	2.50-2.80	1250-1450	5.25/7.00[4]	
		Va	Large Rhine vessels-Grands rhénans-большие рейнские	95-110	11.40	2.50-2.80	1500-3000		95-110[1]	11.40	2.50-4.50	1600-3000	5.25/7.00/9.10[4]	
		Vb							172-185[1]	11.40	2.50-4.50	3200-6000		
		VIa							95-110[1]	22.80	2.50-4.50	3200-6000	7.00/9.10[4]	
		VIb	[3]	140.00	15.00				185-195[1]	22.80	2.50-4.50	6400-12000	7.00/9.10[4]	
		VIc							270-280[1] 195-200[1]	22.80 33.00-34.20[1]	2.50-4.50	9600-18000	9.10[4]	
		VII						[8]	285	33.00-34.20[1]	2.50-4.50	14500-27000	9.10[4]	

Figure 2 - Map of the European Inland Waterway Network, source: UNECE (extract)

In Central Europe implementation of interoperable RIS will provide information for navigation and operations. However, one must consider that in Scandinavia (e.g. Sweden and Finland) no RIS services neither infrastructure exist but similar Vessel Traffic Services (VTS) systems, Automatic Ship Identification (AIS), Smart Fairway Applications and single window data sharing systems are in operation. These systems are used in marine traffic.

In BSR countries, such as the Nordics, inland waterways are connected to sea rather than other inland waterways. Seagoing vessels like river-sea ships are used in addition to inland barges. A separate RIS system for inland navigation is probably not being installed, especially as river-sea shipping plays a more dominant role in these waterways and duplication of similar systems is not productive.

Thus, some similarities to RIS services exist but it's obvious that a prototype implementation in Scandinavia has to consider available VTS information rather than RIS information.

This results in the below clustering of countries to present custom made Action Plans linked to VTS or RIS application development and ELIAS system implementation.

2.1 Background to VTS in Scandinavia

Vessel Traffic Service (VTS) is the general term for navigational assistance services in a determined area, a VTS area. The VTS can offer three different service levels to merchant vessels within the area: Information Service (INS), Traffic Organisation Service (TOS), and Navigational Advice and Assistance Service (NAS).

The information service (INS) provides information relevant to safe navigation, e.g., hydro meteorological information, or upcoming vessel meetings, to the vessels in the VTS area. The VTS operator uses the VHF to transmit the information making it public to all participating vessels in the area. The traffic organisation service (TOS) is a service intended to support the efficient flow of traffic in the

VTS area. Information transmitted as part of TOS might concern berth clearances, arrangements regarding lock times, speed limits, or other information that can be used to organise traffic. Navigational assistance (NAS), the third service level that can be offered by a VTS centre, concerns the active support of the decision making process of a bridge team. A VTSO can provide NAS through transmitting advices, including the positions of other traffic, a vessel's course and speed, or warnings to a specific vessel. In comparison to INS, NAS signifies active participation in a bridge team's navigation process. The VTSO does not only transmit information, but also closely monitors its effect.[1]

According to EU Regulation (EC No 414/2007) **inland vessel traffic services** are a service, implemented by a competent authority, designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with the traffic and to respond to traffic situations developing in the VTS area.

VTS should comprise at least an information service and may include others, such as navigational assistance service, or a traffic organisation service, or both, defined as below:

- an information service is a service to ensure that essential information becomes available in time for on-board navigational decision-making,
- a navigational assistance service is a service to assist on-board navigational decision-making and to monitor its effects. Navigational assistance is especially of importance in reduced visibility, or difficult meteorological circumstances or in case of defects or deficiencies affecting the radar, steering or propulsion. Navigational assistance is given in due form of position information at the request of the traffic participant or in special circumstances when deemed necessary by the VTS operator, using technologies such as GNSS/Galileo,
- A traffic organization service concerns the operational management of traffic and the forward planning of vessel movements to prevent congestion and dangerous situations, and is particularly relevant in times of high traffic density or when the movement of special transports may affect the flow of other traffic. The service may also include establishing and operating a system of traffic clearances or VTS sailing plans or both in relation to priority of movements, allocation of space, mandatory reporting of movements in the VTS area, routes to be followed, speed limits to be observed or other appropriate measures which are considered necessary by the VTS authority.

A VTS should at all times be capable of generating a comprehensive overview of the traffic in its service area combined with all traffic influencing factors. The VTS should be able to compile a traffic image, which is the basis for its capability to respond to traffic situations developing in its service area. The traffic image allows the VTS operator to evaluate situations and make decisions accordingly. Data should be collected to compile the traffic image. This includes:

- data on the waterway situation, such as meteorological, hydrographical and hydrological conditions and the operational status of aids to navigation;

[1] IALA Vessel Traffic Manual 2012 (5 ed.): International Association of Marine Aids to Navigation and Lighthouse Authorities.

- data on the traffic situation, such as vessel positions, movements, identities and intentions with respect to manoeuvres, destination and routing;
- data of vessels in accordance with the reporting requirements and if necessary any additional data, required for the effective operation of the VTS.

Where present, VTS are part of river information service. Within RIS, Inland VTS belongs to the group of traffic management services with the emphasis on information service and traffic organisation.

2.2 Background to RIS in Central Europe (Germany, Lithuania, Poland)

RIS key technologies have a central position in the services to be provided; these key technologies are:

- **Inland ECDIS**: With Electronic Navigational Charts (ENCs) and inland electronic chart display and information systems for inland navigation (inland ECDIS) skippers are able to plan their voyage ahead;
- **Vessel Tracking and Tracing (Inland AIS)**: similar to and compatible with maritime navigation inland automatic identification system (AIS) on board of inland vessels allows for vessel tracking and tracing on inland waterways. Through AIS transponders data concerning tactical traffic information can be broadcasted and received;
- **Notices to Skippers**: Notices to Skippers are standardised messages for skippers containing fairway information allowing traffic management as well as voyage planning.

These RIS technologies are called key RIS technologies because they are considered technologies that are pivotal for the realization main RIS Categories or Services. Each of these key technologies will be discussed more in detail in four subsections below. The basis of the technologies is described in the Annex I of the RIS Directive which forms the basis of also some of the reference data.

It should be noted, however, that in order to operate properly and efficiently with these RIS key technologies two (second order) supporting services were built. These are a RIS references data (including RIS Index) and the Hull data base. These tools/ services are key elements in the RIS standards and are an important link between the various RIS-services and are described below in more detail.

Inland ECDIS is the standard for ECDIS on inland shipping routes as established by the Central Commission for Navigation on the Rhine (CCNR), the Danube Commission (DC), the European Community (EC) and the United Nations Economic Commission for Europe (UN/ECE). The standard provides a uniform basis for the use of electronic inland navigation charts and for the use of applications like Inland AIS transponders or other methods of identifying, tracing and tracking of vessels on inland waterways. It contains the technical and operational requirements, testing methods and required test results for Inland ECDIS applications. Inland ECDIS uses the specifications of the maritime ECDIS and supplements them, but does not amend them.

Vessel Tracking and Tracing (Inland AIS): Inland AIS are vessel tracking and tracing services similar to maritime navigation. An automatic identification system (AIS) on board of inland vessels allows for vessel tracking and tracing on inland waterways. Through AIS transponders data concerning tactical traffic information can be broadcasted and received. It supports on-board navigation, shore-based traffic monitoring as part of Vessel Traffic Services (VTS) and other tasks such as calamity abatement. Inland AIS and maritime AIS are compatible. All data transmitted can be received by both maritime and Inland AIS devices to be visually displayed and analysed. However, specifically Inland AIS information is only transmitted and assessed by Inland AIS devices.

Vessels, equipped with AIS, transmit and receive information automatically on a periodical basis from other ships equipped with AIS. This information regards the vessel and its current nautical data:

- Identity of the ship;
- Its exact position;
- Its course and speed;
- Other ship-specific data.

AIS shore stations within VHF radio range can also receive these data and in turn broadcast navigation-related information to vessels.

AIS is an additional source for navigation-related information. AIS does not replace navigation-related services such as tracking by radar and VTS, but in fact supports them. The strength of AIS lies in the detection and tracking of those craft fitted with it. AIS and radar complement one another due to their different characteristics.

Notices to Skippers are standardised messages for skippers containing fairway information and other weather/ environment related information allowing traffic management as well as voyage planning. They provide the facility to issue the following messages in a standardized format:

- Fairway and traffic related message means a notice, which provides information about a fairway section or an object.
- Water level related message means a notice, which provides information on the water level, the least sounded depth, the vertical clearance, the barrage status, the discharge, the regime, the predicted water level, the least sounded predicted depth or the predicted discharge.
- Ice message means a notice, which provides information on the ice situation.
- Weather related message means a notice, which provides information on the weather situation. (The states are not required to provide weather data.)

The international Standard for Notices to Skippers provides a standardized data format, which can be used for publishing notices to skippers on the internet (pull-services) or for distribution by e-mail (push services). The content of the messages is encoded in an XML-file. This file can be used by software applications like voyage planning or Inland ECDIS applications on board of a vessel or by internet sites.

The equivalent service in the maritime VTS context is “Notices to Mariners” (NtM). These notices advise mariners of important matters affecting navigational safety, including new hydrographic information,

changes in channels and aids to navigation, and other important data. Over 60 countries, which produce nautical charts, also produce notice to mariners. However, there is no standardised data interface allowing the automatic processing of these notices. Implementation of a data-retrieval-service would therefore have to be individually tailored to the national systems.

The RIS reference data include data of the entire inland waterway network, for instance the location of locks, bridges and ports. These data are generated by the national authorities and skippers need the data in RIS applications. Within the PLATINA project and in cooperation with national authorities' data management procedures have been defined as well as the development of the European Reference Data Management Service/ERDMS (a reference management tool). This tool supports the harmonised generation of Reference data as the data can be downloaded from one central point. This service provides a central database, a web service application for maintaining RIS reference data, which is used by various RIS-systems in the inland shipping sector across Europe. The exchange of computerised data between the RIS users and the RIS services is facilitated by the use of the codes and references. The RIS Index is a list of (ISRS) location codes with additional information on the objects like their characteristics (name, fairway….), restrictions (available depth, clearance etc.), operating times etc. and is part of the reference data. The exchange of data in connection with River Information Services (RIS) is of course dependent on the correct usage of standard codes. The need to ensure common understanding of data exchanged throughout Europe, with many different languages and many different legal regimes leads to a strong requirement to encode the data in a common and accepted standard manner. The countries applying RIS are obliged to identify the objects. This has led to the need to develop a European wide encoded harmonized list of objects, which is called the RIS index.

There is no equivalent to a central RIS index in the marine VTS environment. It would be possible however to use the RIS index nomenclature to build an index of the relevant waterway infrastructure objects.

The hull database is another important link between the various RIS services. In the EU research project COMPRIS the consortium came to the conclusion that a unique identifier for vessels is necessary for the implementation of RIS. Within the EU Directive 2006/87/EC, the RheinschUO and EC regulation 164/2010 a minimum set of hull data to be exchanged among vessel certification and RIS authorities has been established. Later the Commission Directive 2013/49/EU amended the Directive 2006/87/EC by introducing the obligation to report to the EHDB. The European Hull Database (EHDB) has been facilitating the data exchange. The hull database serves two main purposes:

- providing information on vessels with a unique European Vessel Identification number (ENI) and their certificates;
- providing a possibility to check whether a vessel has already an ENI.

In developing and implementing RIS, the authorities and enterprises involved were faced with the challenge of integrating the various RIS building blocks into a common architecture that offers some degree of consistency and synergy across applications. To achieve this, comprehensive international *Guidelines and Recommendations for River Information Services* were defined. These Guidelines and recommendations have been included in Regulation (EC) No 414/2007 of the European Commission. Since than a common standard to follow has been set and can be taken to compare technical availability of key RIS technologies. Following sections provides an overview on the technical availability of the key RIS technologies in different BSR countries. It is the minimum requirement to operate IT systems such as ELIAS.

VTS is based on maritime international standards set by the World Association for Waterborne Transport Infrastructure (PIANC) and International Convention of Safety Of Life At Sea (SOLAS) by the International Maritime Organisation (IMO) and IMO itself. VTS has a longer lasting history and by that implementation is advanced. Anyhow, new technologies such as Smart Fairway applications can increase benefits of services to customers.

Missing RIS/VTS technologies should be implemented by the responsible bodies in the member state to follow EU regulation. The following chapter provide an overview in missing technologies to be implemented.

2.3 Action Plans

2.3.1 Scandinavia (VTS)

Finland

Finland is a country with about 16,200 km coastal routes and inland waterways, of which are about 4,000 km used commercially. The most important fairway is the Lake Saimaa area with a length of about 772 km and 1,200 vessels calling per year.

Finland signed the European Agreement on Main Inland Waterways of International Importance (AGN agreement), but did not ratified it.

Table 1 - Service Availability

	Notices to Skippers/Mariners	**AIS**	**ENC**	**RIS Index**	**Hull Database (IMO)**
Availability	Yes	Yes	Yes	No	Yes
Remark					

Actions required to achieve technical availability of key RIS technologies

To improve usability of the Saimaa Canal there are plans to create a “one stop shop” for those using the Canal. This stands for an information platform called “Saimaa portal”

Overall significant amount of information concerning the Canal is available. The challenge is that information is scattered in number of sources. Therefore, there is need for a joint platform which would make use of already existing information.

Finland decided to update their IT system according to EMMA findings and its IT prototype. Smart Fairway applications will be extended to increase useful data integration in the public system and by that easing and safety of shipping. The Finnish Transport Agency is currently developing a mobile application based on the “Saimaa portal”. The so called LiviApp has been designed for mobile devices and is currently being tested. The app will contain information of interruptions and delays in inland waterway traffic.

- Notices to Skippers / Mariners: Implement an interface to the national system
- RIS Index: Collect and encode information on relevant infrastructure objects into a regional reference data collection

Sweden

Sweden implemented the EU Directive 2006/87/EC (a set of rules and regulations dictating technical and operational requirements for ships engaged in inland waterway traffic) and by that opened the market for inland navigation just a couple of years ago. As such, Sweden is in the phase of an emerging IWT market, which needs to be recognised very positive. Sweden’s status comes along with all the needs and challenges in setting up new regulations and creating a business environment for inland navigation for the first time.

Sweden did not signed nor ratified the European Agreement on Main Inland Waterways of International Importance (AGN agreement).

Table 2 - Service Availability

	Notices to Skippers/Mariners	**AIS**	**ENC**	**RIS Index**	**Hull Database (IMO)**
Availability	Yes	Yes	Yes	No	Yes
Remark					

Actions required to achieve technical availability of key RIS technologies

- Notices to Skippers / Mariners: Implement an interface to the national system

- RIS Index: Collect and encode information on relevant infrastructure objects into a regional reference data collection

2.3.2 Central Europe (RIS)

Completion of RIS Implementation: The most urgent activity that should be taken up is the improving/speeding up of the current RIS-implementation. The present RIS implementation in the EU is still incomplete and need to be completed. The RIS systems affecting the business environment of IWT operators will have to be harmonised, at least on the level of the corridors corresponding to the IWT operating areas. This will allow the IWT industry to benefit more from scale effects. Furthermore, increased supply chain visibility, security, safety and efficiency will make supply chains with IWT more attractive for shippers and forwarders and also increase the size of the market for suppliers of applications using RIS technologies.

Thus, the first priority is the improvement of the implementation of key RIS technologies on important inland waterways in order to enable cross border transport operations using RIS, since cross border transport is a major part of the overall transport performance by IWT. This activity will therefore help to increase the efficiency of the present RIS implementation. Following an overview of needed actions:

Germany

All requirements deriving from RIS legislation have been fulfilled in due time for German Waterways. Germany has not transposed the RIS legislation in public acts or regulations but the Directive was legally transposed with four internal decrees. German officials interpret the Directive that corresponding national regulations only have to be adopted if necessary. According to officials, this transposition has been accepted by the EU officials so far. NtS have been made available in time. AIS has been implemented recently and infrastructure is functional since beginning 2019. ERI has been implemented in time. ENCs are covering 95% of the relevant German waterways although there is no legal obligation yet to fulfil in this respect.

Germany signed the European Agreement on Main Inland Waterways of International Importance (AGN agreement), but did not ratified it.

Table 3 - Service Availability

	Notices to Skippers	**AIS**	**Inland ECDIS (ENC)**	**RIS index**	**Hull Database**
Availability	Yes	Yes*	Yes	Yes	Yes
Remark		**Submission of AIS data to 3rd parties is not*			

		functional at the moment. Expected in 2021			

Actions required to achieve technical availability of key RIS technologies

Technical availability of key RIS technologies is given and official data is being available for third parties in general. Due to national data protection laws and authorities capacity challenges, sharing of AIS data (ship positions) from authorities towards third parties is not functional at the moment, but expected in beginning 2021.

Thus, the action to implement is AIS data sharing to third parties.

Lithuania

The IWT network in Lithuania covers today about 260 km of navigable waterways. This is mainly the Kursiu Lagoon and the river Nemunas, the cities of Kaunas, Jurbarkas and Klaipeda are located in close distance to these waterways.

In 1997 the Republic of Lithuania signed European Agreement on Main Inland Waterways of International Importance (AGN agreement) and in 2000 the agreement was ratified. According to which inland waterways of the River Nemunas and the Curonian Lagoon from Kaunas to Klaipeda are inland waterway of international importance E41 (the length – 291.2 km). All navigation period along the E41way there has to be maintained indicators as it is defined by waterways network main standards and parameters description TRANS / SC.3 / 144 of the United Nations Economic Commission.

Table 4 - Service Availability[2]

	Notices to Skippers/	**Inland AIS**	**Inland ECDIS (ENC)**	**RIS index**	**Hull Database**
Availability	No	No*	No	No	n/a
Remark		*AIS signals available in Klaipeda seaport region (maritime)*			

[2] Information on the availability of NtS, Inland AIS and RIS index according to: http://www.ris.eu

Actions required to achieve technical availability of key RIS technologies

In Lithuania no key RIS technology has been established yet. The introduction of River Information Services (RIS) and their integration into a harmonized, Europe wide, RIS-system, is intended but not in place today. Thus, ELIAS technology cannot be applied accordingly.

- Generate an organisational structure (potentially within the Lithuanian Inland Waterway Authority) in charge for key inland RIS technology and services
- Design and publication of inland ECDIS charts
- Set up of adequate RIS infrastructure along main inland waterways
- Applying and following the RIS index (also in ECDIS). Collect and encode information on relevant infrastructure objects into a regional reference data collection.
- Developing and implementing Notices to Skippers services

Poland

Poland ratified the European Agreement on Main Inland Waterways of International Importance (AGN agreement) in 2017.

Poland is in the process of implementing the River Information Services (RIS) Directive on its waterways of international importance and addressing sections where the existence of a RIS system would be justified to improve the navigation's safety and efficiency.

The system currently covers inland waterways in an area from:

- Dąbie Lake from the border with the interim maritime waterway [9.5 km]
- Odra River from the town of Ognica to the Klucz-Ustowo Ditch i further as Regalica River to the Dąbie Lake [44.6 km]
- West Odra :
    - from weir in the town of Widuchowa (704.1 km Odry) to the border with interim maritime waterway [33.6]
    - Klucz-Ustowo Ditch connecting Odra East and Odrą West [2.7 km]
- Parnica River and Parnicki Ditchfrom the Odra West to the border with interim maritime waterway [6.9 km]

RIS system in Poland was implemented in 2013 in pilot phase and is covered about 100 km of Odra river. Full implementation of RIS is planned in 2020 that means RIS services will be available on about 240 km of Odra river. It also include the updates all services. All services are available for free and are not mandatory in Poland

- water level predictions;
- bridge clearance information,
- legal bulletin

- reports on incidents and accidents in the RIS-controlled area

Further waterways to consider would be the international waterway stretches of E40 and E70 waterway on the Polish territory. They include Vistula-, Notec- and Warta river.

Table 5 - Service Availability

	Notices to Skippers/Mariners	**AIS**	**Inland ECDIS (ENC)**	**RIS index**	**Hull Database**
Availability	Yes	Yes	Yes	Yes	Yes
Remark	*Notice to skippers are implemented in 2.0 standard.*	*Three AIS base stations are installed on area covered by RIS Odra system.* *There is no obligation of AIS transponders on vessel in Poland.* **Services are available on the river Odra from Szczecin area to Frankfurt (Oder).*	*Inland ENC's are produced in standard 2.3 and covered about 100 km of waterways. All cells are available for free. There is no obligation of ECDIS system in Poland.*	*RIS index is implemented in standard 1.0*	*Polish hull database was Implemented in 2014 on national level.*

Actions required to achieve technical availability of key RIS technologies

Technical availability of key RIS technology is given on parts of Odra river which links to the German waterway system. This allows ELIAS technology to highlight available RIS information of this river stretch.

Potential further actions:

- Roll-out of key RIS technology on its waterways of international importance