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(Acts adopted under the EC Treaty/Euratom Treaty whose publication is obligatory)

REGULATIONS

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) referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the Community (¹), and in particular Article 5 thereof,

Whereas:

(1) In accordance with Article 1 of Directive 2005/44/EC, river information services (RIS) shall be developed and implemented in a harmonised, interoperable and open way.

(2) In accordance with Article 5 of Directive 2005/44/EC, technical guidelines for the planning, implementation and operational use of river information services (RIS), hereafter referred to as RIS guidelines, shall be defined.

(3) The RIS guidelines shall be based on the technical principles set out in Annex II to the Directive.

(4) In accordance with Article 1(2) of Directive 2005/44/EC, the RIS guidelines shall take due account of the work carried out by relevant international organisations such as PIANC, CCNR and UNECE. Continuity shall be ensured with other modal traffic management services, in particular maritime vessel traffic management and information services.

(5) In order to ensure a mutual understanding regarding the planning, implementation and operational use of RIS, the terms and definitions given in these RIS guidelines shall be used in further standardisation work and in application design.

(6) The RIS architecture given in these guidelines shall be applied when developing services, systems and applications.

(7) In planning RIS, a systematic procedure as described in these RIS Guidelines shall be followed.

(8) The guidelines, which are the subject of this Regulation, correspond to the current technical state of the art. Experiences gained from the application of Directive 2005/44/EC as well as future technical progress may make it necessary to amend the guidelines in accordance with Article 5(2) of Directive 2005/44/EC.

(9) The draft RIS guidelines have been examined by the Committee referred to in Article 11 of Directive 2005/44/EC.

(10) The measures provided for in this Regulation are in accordance with the opinion of the Committee referred to in Article 11 of Directive 2005/44/EC.

(¹) OJ L 255, 30.9.2005, p. 152.

HAS ADOPTED THIS REGULATION:

Article 1

This Regulation defines guidelines for the planning, implementation and operational use of river information services (RIS). The guidelines are set out in the Annex to this Regulation.

Article 2

This Regulation shall enter into force on the day following its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 13 March 2007.

For the Commission
Jacques BARROT
Vice-President

ANNEX

RIS guidelines

CONTENTS

ABBREVIATIONS

ADNR   Accord européen relative au transport international des marchandises dangereuses par voie de navigation intérieur du Rhin

AIS   Automatic identification system (transponder)

ARGO   Advanced river navigation

AVV   Adviesdienst Verkeer en Vervoer (The Netherlands)

BICS   Binnenvaart informatie en communicatie systeem (electronic reporting system)

CAS   Calamity abatement support

CCNR   Central Commission for the Navigation on the Rhine

CCTV   Closed circuit television

CEVNI   Code européen de voies de la navigation intérieure (European code for inland waterways), edited by UN/ECE

COMPRIS   Consortium operational management platform river information services (R&D project of the EU, 2003 — 2005)

D4D   Data warehouse for the River Danube

DGPS   Differential global positioning system

ECDIS   Electronic chart and display information system

ECE   Economic Commission for Europe of the United Nations

EDI   Electronic data interchange

EDIFACT   Electronic data interchange for administration, commerce and transport (UN/ECE Standard)

ENC	Electronic navigational chart
ETA	Estimated time of arrival
ETD	Estimated time of departure
ETSI	European Telecommunications Standards Institute
FI	Fairway information
FIS	Fairway information service
GLONASS	Global orbiting navigation satellite system
GNSS	Global navigation satellite system
GSM	Global system for mobile communication
HF	High frequency
HS Code	Harmonised commodity description and coding system of WCO
IALA	International Organisation of Marine Aids to Navigation and Lighthouse Authorities
IEC	International Electrotechnical Commission
IHO	International Hydrographic Organisation
IMDG Code	International maritime dangerous goods code
IMO	International Maritime Organisation
INDRIS	Inland navigation demonstrator of river information services (R&D project of EU, 1998–2000)
ISO	International Standardisation Organisation
IT	Information technology
ITU	International Telecommunication Union
LAN	Local area network
LBM	Lock and bridge management
OFS	Official ship number
PIANC	International Navigation Association
PTM	Port and terminal management
RIS	River information services
RTA	Required time of arrival
SAR	Search and rescue
SIGNI	Signs and signals on inland waterways, edited by UN/ECE
SMS	Short message service
SOLAS	International Convention on Safety of Life at Sea
SOTDMA AIS	Self organising time division multiple access AIS
STI	Strategic traffic information (image)
TCP/IP	Transmission control protocol/Internet protocol
TI	Traffic information
TTI	Tactical traffic information (image)
UMTS	Universal mobile telecommunication system
UTC	Universal time coordinated
VDL	VHF data link
VHF	Very high frequency
VTC	Vessel traffic centre
VTMIS	Vessel traffic management and information services (maritime navigation)
VTS	Vessel traffic services
WAP	Wireless application protocol
WCO	World Customs Organisation
WI-FI	Wireless fidelity
ZKR/CCNR	Zentralkommission für die Rheinschifffahrt

FIGURES

TABLES

1. INTRODUCTION

(1) The RIS guidelines describe the principles and general requirements for planning, implementing and operational use of river information services and related systems.

(2) They are equally applicable to the traffic of cargo vessels, passenger vessels and pleasure craft.

(3) They should be used in conjunction with international regulations, recommendations and guidelines, such as:

(a) Guidelines and Criteria for Vessel Traffic Services in Inland Waters (Inland VTS Guidelines), (world-wide), IALA recommendation V-120, June 2001, 2001;

(b) Regional Arrangement Concerning the Radiotelephone Service on Inland Waterways (Basel), 2000;

(c) technical specifications for Inland ECDIS as defined under the RIS Directive ([1]);

(d) technical specifications for vessel tracking and tracing systems, such as Inland AIS, as defined under the RIS Directive;

(e) technical specifications for electronic ship reporting in inland navigation as defined under the RIS Directive;

(f) technical specifications for notices to skippers in inland navigation as defined under the RIS Directive;

(g) Harmonised Commodity Description and Coding System of the WCO (worldwide);

(h) UN Code for Trade and Transport Locations UN/LOCODE (worldwide);

(i) EDIFACT Standard of the UN (worldwide);

(j) Standardised UN/ECE Vocabulary for Radio Connections in Inland Navigation (Europe), 1997.

(4) A number of concepts and standardisation proposals for river information services have been developed in the research and development project INDRIS of the European Union ([2]). These are:

(a) Guidelines and recommendations for RIS, 1999 (used as starting point for the RIS Guidelines by PIANC);

(b) Functional definition of the RIS concept, 1998;

(c) Standardisation of data communication (AIS, GNSS, Internet), 1999;

(d) Standards for tactical data exchange, communication and messages (Inland AIS), 1998;

(e) Standardisation of data, 1998:

— standards of codes (country, location, terminal, type of vessel, cargo),

— RIS scenarios (functions),

— data-interchange standards (EDIFACT, S-57 update mechanism);

(f) reporting databases, 1999.

(5) The concept for Inland ECDIS has been developed in the German ARGO ([3]) project in cooperation with INDRIS.

([1]) Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterway in the Community (OJ L 255, 30.9.2005, p. 152).

([2]) Results available on CD from the Transport Research Centre (AVV), Rijkswaterstaat, PO Box 1031, 3000 BA Rotterdam, The Netherlands.

([3]) The final report of 15 March 2003 on the ARGO test operation with depths information can be downloaded from the web page www.elwis.de under the rubric 'RIS-Telematikprojekte (ARGO)'.

(6) The concept for a RIS architecture has been developed by the WATERMAN (⁴) thematic network, an action under the Fifth Framework Programme for Research and Technological Development of the EU in the fields of VTMIS (maritime navigation) and RIS. Using these achievements, the RIS architecture has been elaborated comprehensively and in detail in the research and development project COMPRIS (⁵) of the European Union in 2003.

(7) When reference is made in this document to Inland ECDIS (and electronic navigational charts), Inland AIS (or vessel tracking and tracing systems in general), electronic ship reporting and notices to skippers, the technical specifications as defined under the RIS Directive are meant.

2. DEFINITIONS

The following terms are used in connection with river information services in these RIS Guidelines (see also some specific definitions in Chapters 4 and 5).

2.1. River information services (RIS)

River information services means harmonised information services to support traffic and transport management in inland navigation, including, wherever technically feasible interfaces to other transport modes. RIS aim at contributing to a safe and efficient transport process and at utilising the inland waterways to their fullest extent. RIS are already in operation in manifold ways.

Explanatory notes:

(1) RIS include interfaces with other transport modes, sea, roads and railways.

(2) Rivers in the context of RIS include all inland waterways and ports as defined in Article 2(1) of the RIS Directive.

(3) RIS is also the generic term for all individual information services to support inland navigation in a harmonised way.

(4) RIS collect, process, assess and disseminate fairway, traffic and transport information.

(5) RIS are not dealing with internal commercial activities between one or more of the involved companies, but RIS are open for interfacing with commercial activities.

2.2. RIS system

For the purpose of RIS, modern river information systems consist of one or more harmonised IT systems. An IT system (information technology system) is the totality of human resources, hardware, software, communication means and regulations in order to fulfil the task of processing information.

(⁴) Information available from the Transport Research Centre (AVV), Rijkswaterstaat, PO Box 1031, 3000 BA Rotterdam, The Netherlands.
(⁵) Results available from the Transport Research Centre (AVV), Rijkswaterstaat, PO Box 1031, 3000 BA Rotterdam, The Netherlands and www.euro-compris.org.

2.3. **RIS area**

The RIS area is the formally described area, where RIS are active. A RIS area may comprise the waterways in a geographical river basin, including the territories of one or more countries (e.g. in a situation where a waterway forms the borderline between two countries) (Figure 2.3).
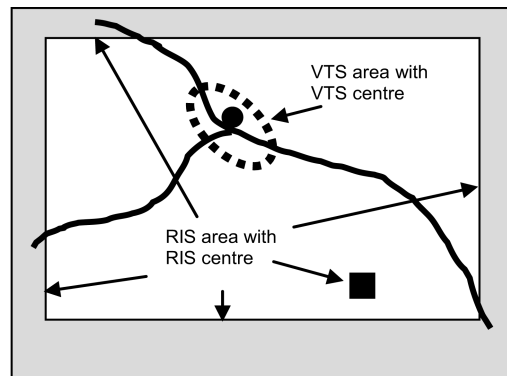

Figure 2.3.

Relation between RIS area and VTS area

2.4. **RIS centre**

A RIS centre is the place, where the services are managed by operators. A RIS may exist without a RIS centre (e.g. an Internet service, a buoys service). When ship/shore interaction in both ways (e.g. by VHF service) is intended, one or more RIS centres are needed. If a VTS centre or a lock exists in a RIS area, they may also be used as RIS centres. It is recommended to concentrate all services in a RIS area into one single RIS centre.

2.5. **Inland VTS**

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 organisation service is a service to prevent the development of dangerous vessel traffic situations by managing traffic movements and to provide for the safe and efficient movement of vessel traffic within the VTS area (Chapters 4.5 and 5.3.1).

Where present, VTS are part of river information services (Figure 2.3). Within RIS, Inland VTS belongs to the group of traffic management services with the emphasis on information service and traffic organisation (Chapter 4.5 and 5.3.1).

2.6. **VTS area**

A VTS area is the delineated, formally declared service area of a VTS. A VTS area may be subdivided in sub-areas or sectors.

2.7. **VTS centre**

A VTS centre is the centre from where the VTS is operated. Each sub-area of the VTS may have its own sub-centre.

2.8. **Competent authority**

The competent authority as referred to in Article 8 of the RIS Directive is the authority made responsible for safety, in whole or in part, by the government, including environmental friendliness and efficiency of vessel traffic. The competent authority usually has the tasks of planning, arranging funding and of commissioning of RIS.

2.9. **RIS authority**

The RIS authority is the authority with the responsibility for the management, operation and coordination of RIS, the interaction with participating vessels, and safe and effective provision of the service.

2.10. **RIS users**

The users of the services can be described in a number of different groups: skippers, RIS operators, lock/bridge operators, waterway authorities, terminal operators, operators in calamity centres, fleet managers, cargo shippers, consignors, consignees, freight brokers, and supply forwarders.

2.11. **Levels of RIS information**

River information services work on the basis of different information levels. Fairway information contains the data of the waterway only. Traffic information has the information on vessels in the RIS area. Traffic information can be divided into tactical traffic information and strategic traffic information. Traffic information is provided by traffic images.

There are three levels of information:

(1) Fairway information (FI) contains geographical, hydrological, and administrative information regarding the waterway (fairway) 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 office (users' office).

(2) Tactical traffic information (TTI) is the information affecting the skipper's or the VTS operator's immediate decisions with respect to navigation in the actual traffic situation and the close geographic surroundings. A tactical traffic image contains position information and specific vessel information of all targets detected by a radar and presented on an electronic navigational chart, and — if available — enhanced by external traffic information, such as the information delivered by an Inland AIS. TTI may be provided on board a vessel or on shore, e.g. in a VTS centre.

(3) Strategic traffic information (STI) is the information affecting the medium and long term decisions of RIS users. A strategic traffic image contributes to the planning decision capabilities regarding a safe and efficient voyage. A strategic traffic image is produced in a RIS centre and delivered to the users on demand. A strategic traffic image contains all relevant vessels in the RIS area with their characteristics, cargoes and positions, stored in a database and presented in a table or on an electronic map. Strategic traffic information may be provided by a RIS/VTS centre or by an office.

2.12. **Vessel tracking and tracing**

Vessel tracking means the function of maintaining 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 retrieving of information concerning the whereabouts of the vessel and — if needed — information on cargo, consignments and equipment.

Part of this service can be fulfilled for example by Inland AIS. Other parts can be fulfilled by an electronic ship reporting system.

3. PARTICIPATING VESSELS

    (1) Vessels navigating in a RIS area shall make use of mandatory services and are recommended to make use as far as possible of the information provided by RIS and relevant services.

    (2) Decisions concerning the actual navigation and the manoeuvring of the vessel remain within the responsibility of the skipper. Any information provided by the RIS cannot replace any decision made by the skipper.

    (3) Depending on the level of information available and on the requirements of the competent authority, the vessels (except pleasure craft) are recommended to be equipped step by step with (see Chapter 4.8):

       (a) a radio equipped for the simultaneous reception of inland navigation radio on two VHF channels (ship/ship and ship/shore);

       (b) a radar for the presentation of the traffic in the close surroundings of the vessel;

       (c) a PC with mobile communication facilities (GSM) for the reception of e-mail and Internet, and for electronic reporting;

       (d) an Inland ECDIS device with electronic navigational charts (ENCs);

          — in information mode,

          — in navigation mode (with radar overlay);

       (e) a vessel tracking and tracing system, such as Inland AIS, with position receiver (GNSS/Galileo) and radio transceiver using Inland ECDIS for visualisation.

4. RIS ARCHITECTURE

4.1. **General**

The idea of the thematic network WATERMAN (Chapter 1(6)) behind the development of the framework architecture for RIS was to translate policy *objectives* into specifications for application design. The RIS architecture should be defined in such a way that RIS applications will be produced to be efficient, expandable and able to interact with other RIS applications or applications for other modes of transport. RIS architecture development should lead to an integrated environment of RIS applications in a way that the performance, usefulness and efficiency of the applications will be enhanced.

River information services may be developed and redesigned according to Figure 4.1.
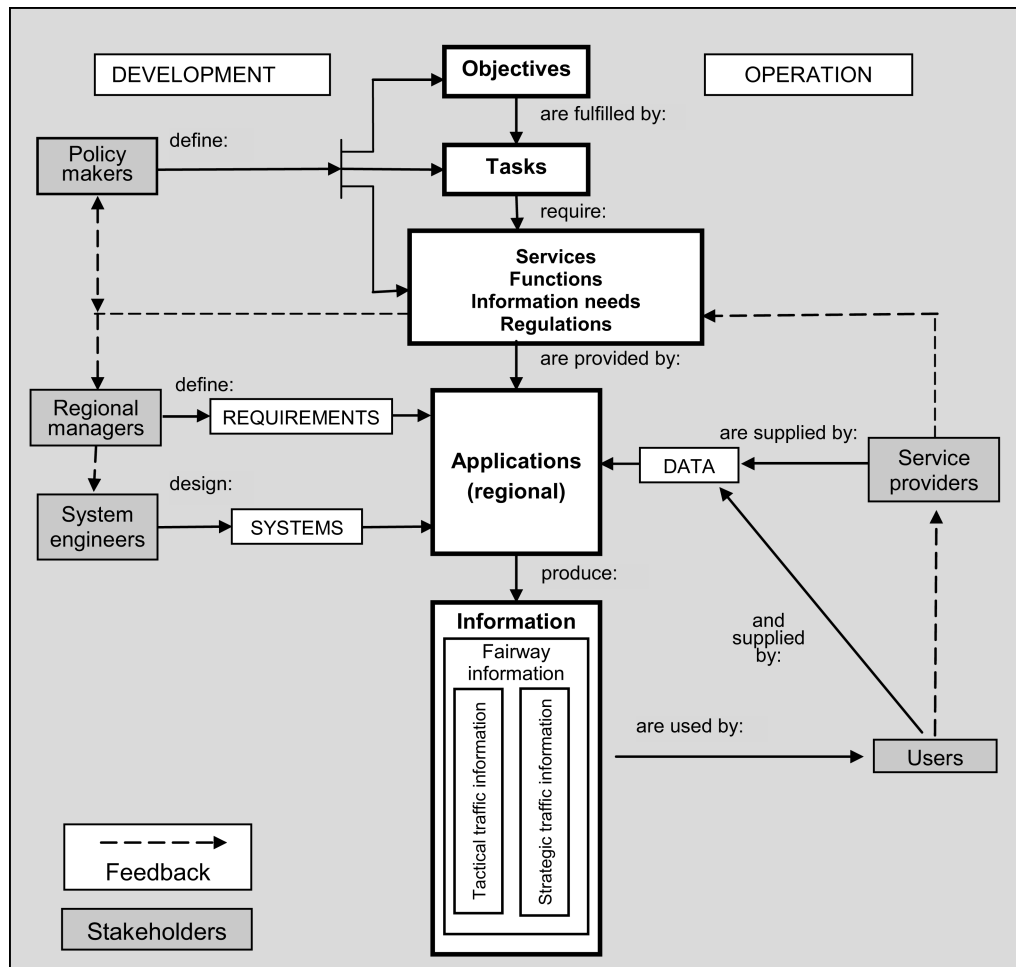
Figure 4.1.
RIS development and redesign

4.2. **RIS stakeholders**

RIS will be realised and kept operational by a set of cooperating stakeholders. The most important of them are:

4.2.1. *Policy makers*

Policy makers want the RIS to solve (or diminish) traffic and transport problems. One party of policy makers are the authorities responsible for safety on the waterways. Other policy makers, e.g. organisations of ship owners, want to provide transport/logistical information services to cargo shippers and terminal operators. The different groups of policy makers have their own policy objectives, tasks and ideas about the required services to achieve its objectives. Once the services have been selected, the functions and information needs with their restrictions and interactions for providing these services should be determined.

4.2.2. *Regional managers*

Regional managers control the RIS applications, e.g. waterway managers of the competent authority, traffic control managers, managers of search and rescue services, ship owners, and cargo shippers. They define requirements for applications with more detailed and accurate descriptions of the services and the functions, regarding local aspects or aspects of man/machine interface.

4.2.3. *System engineers*

System engineers prepare system specifications and integrate hardware and software components into system components. RIS and VTS suppliers, system integrators, and telecommunication operators will combine the system components into complete systems which enable RIS services.

4.2.4. *Service providers*

Service providers make and keep RIS operational and therefore they develop, maintain and operate the RIS applications. They control the autonomous applications and, where necessary, they provide the main input into the applications either by themselves or by RIS users.

4.2.5. *RIS users*

RIS users can be described as a number of different groups: skippers, RIS operators, lock/bridge operators, waterway authorities, terminal operators, operators in calamity centres, fleet managers, cargo shippers, consignors, consignees, freight brokers, supply forwarders.

4.3. **RIS objectives**

An objective is the description of intention. The objective may also be called the goal or aim. RIS have three main objectives:

(1) transport should be safe:

— minimise injuries,

— minimise fatalities,

— minimise voyage incidents;

(2) transport should be efficient:

— maximise throughput or effective capacity of waterways,

— maximise the carrying capacity of vessels (length, width, draught and height),

— reduce travel time,

— reduce workload of RIS users,

— reduce transport costs,

— reduce fuel consumption,

— provide efficient and economical link between transport modes,

— provide efficient harbours and terminals;

(3) transport should be environmentally friendly:

— reduce environmental hazard,

— reduce polluting emissions and spills due to accidents, illegal actions or normal operations.

These objectives should be met under the constraints that all RIS are supplied in a manner that is reliable, cost efficient and legally sound.

4.4. **RIS tasks**

River information services support a number of management tasks in inland shipping. These tasks are related to the objectives (Chapter 4.3) and performed in three different 'arenas':

— *transport logistics* where parties that cause the transport cooperate with parties that organise the transport (e.g. consignors, consignees, shippers, supply forwarders, freight brokers, fleet owners),

— *transport* where parties that organise the transport cooperate with parties that execute the transport (e.g. fleet owners, terminal operators, customers),

— *traffic* where parties that execute the transport (e. g. ship masters and navigators) cooperate with parties that manage the resulting vessel traffic (e.g. traffic manager, competent authorities).

The tasks are performed by different *actors* playing their *role* and being involved in *transport objects* and *transport processes*. One actor can be a stakeholder in one or more arenas at the same time. The activities of the actors are combined at *transfer points* and *transfer processes*. Figure 4.4.a gives an overview of all the relevant roles (and thus the stakeholders fulfilling these roles) responsible for traffic, transport and transport logistics in inland shipping. The tasks in Figure 4.4.a are also called *communal task*s in the sense that individual tasks of the involved roles have to be tuned to each other by mutually informing each other, by negotiation or — in some cases — by passing on directions. This overview is the basis for defining RIS (Source: COMPRIS: RIS architecture, reference model).

Figure 4.4.a.
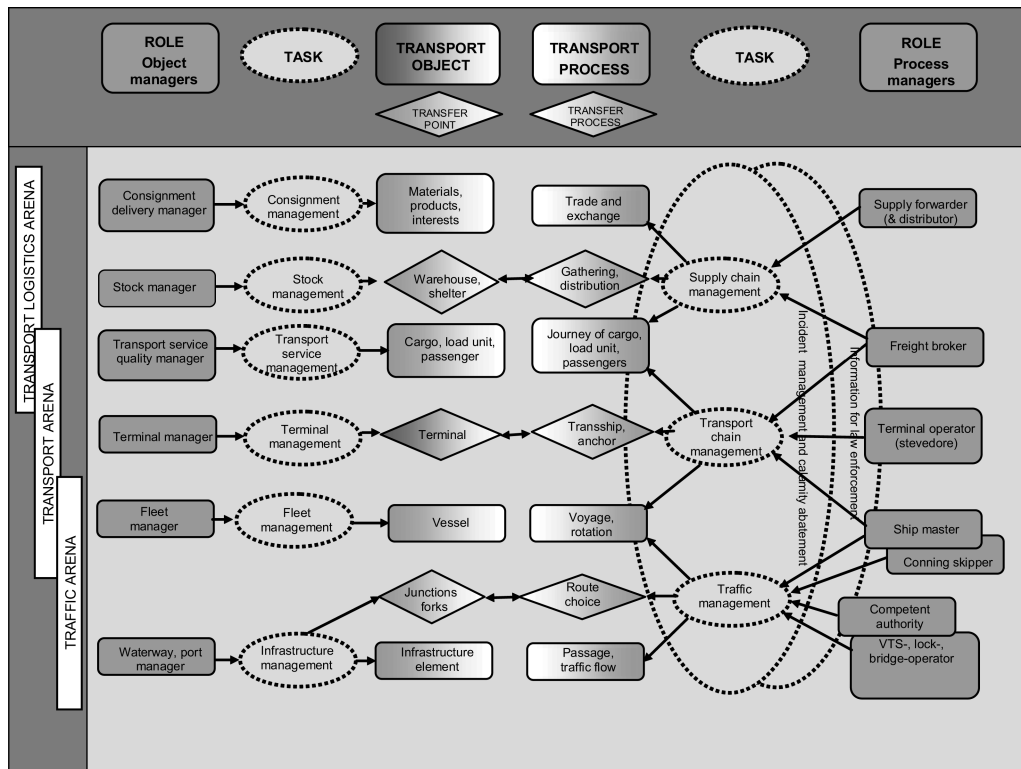
Figure 4.4.a.

Arenas, roles and management tasks in inland shipping

The management tasks allow deriving the following RIS in relation to the objectives, where one RIS service can fulfil one or more management tasks (Table 4.4.b):

Table 4.4.b.

Derivation of RIS

Objectives Chapter 4.3)	Management tasks (Figure 4.4 a)		RIS (Table 4.5)
Efficiency	Transport **object** related	Consignment management	ITL cargo management (5.d)
		Stock management	
		Transport service management	ITL outside the scope of RIS
		Terminal management	ITL terminal management (5.c)
		Fleet management	ITL cargo and fleet management (5.d)
Safety, environmental friendliness, efficiency		Infrastructure management	Fairway information service (1)
			Statistics (7)
			Waterway charges and harbour dues (8)
Efficiency	Transport **process** related	Supply chain management Transport chain management	ITL cargo and fleet management (5.d)
			ITL transport management (5.b)
			ITL inter-modal port and terminal management (5.c)
			ITL voyage planning (5.a)
Safety, efficiency	Traffic **process** related	Traffic management	Traffic information (2)
			Traffic management (3)
Safety, environmental friendliness, efficiency	**All** objects and processes	Incident management and calamity abatement	Calamity abatement support (4)
		Law enforcement	Information for law enforcement (6)

ITL = Information for transport logistics () = numbering in Table 4.5

The tasks in all RIS arenas are performed by the actors in cycles as shown in Figures 4.4.c and d. Moreover, the tasks may take place on an operational, tactical or strategic level (good examples are the tactical and strategic traffic information levels, defined in Chapter 2.11). This concept allows to draw for each individual task an *information processing loop* including the actions of the different actors. Every step in the information processing loop can be supported by river information services, which help the actor in his observations, evaluations, decisions, and actions. The information processing loop can be used to define the river information services (Chapter 4.5) and RIS functions (Chapter 4.6). An example for an information processing loop is given in Appendix A (COMPRIS: RIS architecture, information architecture).
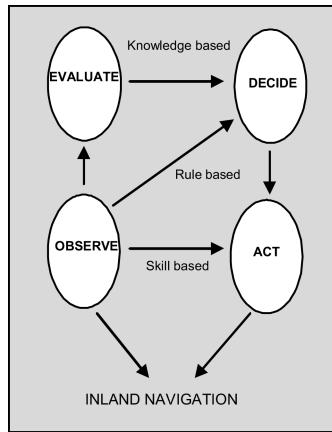
Figure 4.4.c

Elements of an information processing loop
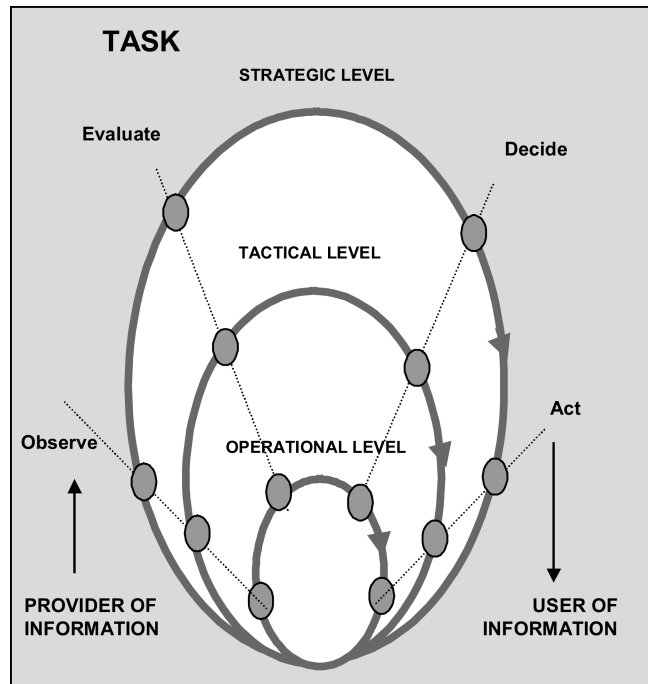
Figure 4.4.d

Information processing loop

4.5. **River information services**

A service provides and uses information. It supports the user in achieving an improvement in performance. Services are developed by development projects and initiatives (driven by stakeholders or by technology push). Services are the means for the user to achieve the objectives. The execution of a task can be enhanced by using one or more services.

River information services as identified in Chapter 4.4 are rearranged and subdivided according to Table 4.5.

Table 4.5

River information services

Mainly traffic related

1. **Fairway information service (FIS)**

    a) Visual aids to navigation

    b) Radiotelephone service on inland waterways

    c) Internet service

    d) Electronic navigational chart service

2. **Traffic information (TI)**

    a) Tactical traffic information (TTI)

    b) Strategic traffic information (STI)

3. **Traffic management (TM)**

    a) Local traffic management (vessel traffic services - VTS)

    b) Navigational support (NS)

    c) Lock and bridge management (LBM)

4. **Calamity abatement support (CAS)**

Mainly transport related

5. **Information for transport logistics/management (ITL)**

   a) Voyage planning (VP)

   b) Transport management (TPM)

   c) Intermodal port and terminal management (PTM)

   d) Cargo and fleet management (CFM)

6. **Information for law enforcement (ILE)**

7. **Statistics (ST)**

8. **Waterway charges and harbour dues (CHD)**

Abbreviations in Table 4.5 are used only to provide the connection to Table 4.6.

4.6. **RIS functions and information needs**

A RIS function is understood as a contribution to a service. The functional decomposition of river information services allows the allocation of information supply to user demand. Table 4.6 shows the connections between services (Chapter 4.5), functions (Chapter 4.6), users (Chapter 4.2.5) and information levels (Chapter 2.11). It also shows that in many cases the same function serves many participants in the transport process. Table 4.6 gives an example as a guide to anybody else and may remind the reader in making his/her own list.

Table 4.6.

Functional decomposition of river information services

No	RIS service *RIS sub-service* RIS function	Information level	Ship master	VTS operator	Lock/bridge operator	Waterways authority	Terminal operator	Calamity centre	Fleet manager	Cargo shipper
									User		
FIS	**Fairway information service**									
	Provision of information on:									
FIS.1	Geography of the navigation area and their updates	FIS	X	X	X	X		X	X	X
FIS.2	Navigation aids and traffic signs	FIS	X	X	X	X		X		
FIS.3	Water depths contours in the navigation channel	FIS	X		X	X	X	X		X
FIS.4	Long time obstructions in the fairway	FIS	X	X	X	X		X	X	X
FIS.5	Actual meteorological information	FIS	X	X		X		X		
FIS.6	Temporary obstructions in the fairway	FIS	X	X		X		X		X
FIS.7	Present and future water levels at gauges	FIS	X	X		X		X	X	X
FIS.8	State of the rivers, canals, locks and bridges in the RIS area	FIS	X	X	X	X		X		X

No	RIS service *RIS sub-service* RIS function	Information level	User							
			Ship master	VTS operator	Lock/bridge operator	Waterways authority	Terminal operator	Calamity centre	Fleet manager	Cargo shipper
FIS.9	Restrictions caused by flood and ice	FIS	X	X	X	X		X	X	X
FIS.10	Malfunctions of aids to navigation	FIS	X	X		X				
FIS .11	Short term changes of lock and bridge operating times	FIS	X	X	X	X				X
FIS .12	Short term changes of aids to navigation	FIS	X	X		X				
FIS.13	Regular lock and bridge operating times	FIS	X	X	X	X		X	X	X
FIS.14	Physical limitations on waterways, bridges and locks	FIS	X	X	X	X		X	X	X
FIS.15	Navigational rules and regulations	FIS	X	X	X	X		X	X	
FIS.16	Rates of waterway infrastructure charges	FIS	X			X			X	X
FIS.17	Regulations and recommendations for pleasure navigation	FIS	(X)			X		X		
TI	**Traffic information**									
TTI	*Tactical traffic information (short term related)*									
TTI.1	Presentation of own vessel's position	TTI	X		X					
TTI.2	Presentation of other vessels' positions	TTI	X	X						
STI	*Strategic traffic information (medium and long term related)*									
STI. 1	Presentation of fairway information (=FIS)	FIS	X			X		X	X	
STI. 2	Presentation of vessel's positions in large surroundings	STI	X		X	X		X		
STI.3	Medium and long term assessment of traffic situation	STI	X			X				
STI.4	Presentation of vessel's characteristics	STI	X		X	X	X	X		X
STI.5	Presentation of cargo's characteristics	STI	X		X	X	X	X		X
STI.6	Presentation of intended destination	STI	X	X	X	X	X	X	X	X
STI.7	Presentation of information on incidents/accidents in the coverage area	STI	X	X		X		X		
STI.8	Organisation and regulation of traffic flow	STI	X	X		X				
TM	**Traffic management**									
VTS	*Vessel traffic services (local)*									
VTS.1	Presentation of vessel's positions in large scale	TTI		X						
VTS.2	Monitoring of passing and manoeuvring arrangements	TTI		X						
VTS.3	Short term assessment of traffic situation	TTI		X						
VTS.4	Organisation and regulation of traffic flow in RIS coverage area	TTI		X						
NS	*Navigational support*									
NS.1	Information to pilots (navigational support)	TTI	X	X						

No	RIS service *RIS sub-service* RIS function	Information level	User							
			Ship master	VTS operator	Lock/bridge operator	Waterways authority	Terminal operator	Calamity centre	Fleet manager	Cargo shipper
NS.2	Information to tug boats (nautical support)	STI	X							
NS.3	Information to bunker boats, waste oil removal boats, vessel equipment firms (vessel support service)	STI	X						X	
LBM	*Lock and bridge management*									
LBM.1	*Lock/bridge operation*									
LBM.1.1	Presentation of actual status of lock/bridge process	TTI	X		X					
LBM.1.2	Presentation of short term planning of lock/bridge (ETAs/ RTAs of vessels, waiting places, lock/bridge positions)	TTI	X	X	X					
LBM.2	*Lock/bridge planning*									
LBM.2.1	Provision of ETAs of approaching vessels	STI			X					
LBM.2.2	Provision of information on medium and long term schedule of lock/bridge process	STI			X	X				
LBM.2.3	Provision of medium and long term RTAs of vessels	STI	X		X					
CAS	**Calamity abatement support**									
CAS.1	Information on incidents focused on traffic situation	TTI	X			X		X		
CAS.2	Assessment of the traffic situation in the situation of an incident	TTI				X		X		
CAS.3	Coordination of the assistance of patrol vessels	TTI		X		X		X		
CAS.4	Assessment of the possible effects of the accident on environment, people and traffic	TTI				X		X		
CAS.5	Presentation of information to patrol vessels, police boats, fire squad boats	TTI				X		X		
CAS.6	Initiation and coordination of search and rescue activities	TTI	X			X		X		
CAS.7	Taking measures on traffic, environmental and people protection	TTI				X		X		
ITL	**Information for transport logistics/management**									
VP	*Voyage planning*									
VP.1	Provision of information on port of destination, RTA at final destination, type of cargo	STI	X						X	X
VP.2	Provision of information on and presentation of the fairway network at different scales	STI	X						X	X
VP.3	Presentation of lock and bridge opening times and general waiting times	STI	X						X	X
VP.4	Presentation of long term weather information	STI	X						X	X
VP.5	Presentation of mid and long term prediction of water levels	STI	x						X	X
VP.6	Presentation of information on route characteristics with RTAs, ETAs, ETDs at waypoints	STI	X						X	X
VP.7	Presentation of information affecting travel information	STI	X							

No	RIS service / RIS sub-service / RIS function	Information level	User							
			Ship master	VTS operator	Lock/bridge operator	Waterways authority	Terminal operator	Calamity centre	Fleet manager	Cargo shipper
TPM	*Transport management*									
TPM.1	Provision and presentation of ETAs of vessels	STI	X	Ship supplier organisation Bunker organisation Repair organisation						X
TPM.2	Provision and presentation of voyage plans of vessels	STI	X							X
TPM.3	Provision of information on free loading space	STI	X							X
TPM.4	Monitoring of the performance of contracted transports and terminals		Freight brokers Transport service quality managers							
TPM.5	Monitoring unusual threats (like strikes, fall in water level) for the reliability of transport									
TPM.6	Match the transport and terminal performance with service levels agreed on									
TPM.7	Define adjustments to methods for voyage planning									
PTM	*Inter-modal port and terminal management*									
PTM.1	*Presentation of actual terminal or port status*									
PTM.1.1	Presentation of vessels waiting, being loaded/unloaded	TTI					X			X
PTM.1.2	Presentation of actual status of terminal process	TTI					X			X
PTM.1.3	RTAs of vessels, waiting places, positions		X				X			X
PTM.2	*Port or terminal planning*									
PTM.2.1	ETAs of approaching vessels	STI					X			
PTM.2.2	Medium and long term schedule terminal process						X			
PTM.2.3	Medium and long terms RTAs of vessels	STI	X				X			
CFM	*Cargo and fleet management*									
CFM.1	Information on fleet of vessels and their transport characteristics	STI							X	X
CFM.2	Information on the cargo to be transported	STI							X	X
ILE	**Information for law enforcement**									
ILE.1	Cross-border management (immigration service, customs)					X				
ILE.2	Compliance with requirements for traffic safety					X				
ILE.3	Compliance with environmental requirements					X				
ST	**Statistics**					X				
ST.1	Transit of vessels and cargo at certain points (locks) of the waterway					X				
CHD	**Waterway charges and harbour dues**		X		X	X				X

4.7. **RIS applications**

RIS applications are regional or dedicated uses of systems under specific requirements: local, functional, process-oriented. RIS application means the provision of river information services through dedicated systems. A single application can use one or more systems to provide a service.

4.8. **RIS systems**

A wide range of technical systems has been developed for RIS, most of them used for more than one service, function or application (Table 4.8):

Table 4.8.

Relation between services and systems

System	Fairway information	Traffic information — Tactical	Traffic information — Strategic	Traffic management — Vessel traffic services	Traffic management — Navigational support	Traffic management — Lock and bridge management	Calamity abatement support	Information for transport logistics — Voyage planning	Information for transport logistics — Transport management	Information for transport logistics — Inter-modal port and terminal management	Information for transport logistics — Fleet and cargo management	Information for law enforcement	Statistics	Waterway charges and harbour dues
Visual aids to navigation	x													
Radar reflecting aids to navigation	x			x										
Light signals	x			x		x								
Mobile phone (voice and data)	x				x	x	x	x	x	x	x	x		x
GNSS/Galileo for vessel positioning		x	x					x	x	x	x			
VHF radio	x	x	x	x	x	x	x	x		x		x		
Internet	x				x		x	x	x	x	x			x
Vessel based radar	x	x					x							
Shore based radar		x		x		x	x							
Shore based CCTV cameras		x		x		x								
Electronic navigational chart	x	x		x		x	x	x						
Vessel tracking and tracing system		x	x	x			x	x	x	x	x	x		x
Ship reporting system			X				x	x	x	x	x	x	x	x

5. RECOMMENDATIONS FOR INDIVIDUAL SERVICES

Because technology changes fast, the emphasis is laid more on services and less on technology dependent systems in this Chapter.

5.1. **Fairway information service (FIS)**

5.1.1. *General*

(1) Traditional means to supply FIS are e.g. visual aids to navigation, notices to skippers on paper, broadcast and fixed telephone on locks. The mobile phone using GSM has added new possibilities of voice and data communication, but GSM is not available in all places and at all times. Tailor-made FIS for the waterways can be supplied by:

(a) radiotelephone service on inland waterways;

(b) Internet service;

(c) electronic navigational chart service (e.g. Inland ECDIS with ENC).

These three FIS categories are dealt with in this Chapter. They are mainly based on the current situation, but for example notices to skipper may be supplied also via ENC service in the future.

(2) Types of fairway information are listed in Table 4.6.

(3) Fairway information contains static and dynamic as well as urgent information regarding the fairway. Static and dynamic information should be communicated on a scheduled basis. The urgent information needs to be updated very frequently and/or should be communicated on a real time basis (e.g. by voice VHF or electronic data interchange, Internet, WAP).

(4) Safety related fairway information should be provided by or on behalf of the competent authority.

(5) Fairway information for an international river area should be given by one single dissemination point provided with data from the concerned competent authorities.

(6) Provided safety related data should be certified by the competent authority.

(7) Values should only be given with an indication of the accuracy that can be attached to it.

(8) Fairway information services should be provided through the approved communication tools (e.g. notices to skippers via the Internet or by VHF) and be given tailor-made as much as practicable.

(9) In order to enable navigation in poor visibility by means of radar, the fairway should be equipped with radar reflecting top marks on buoys and beacons and with radar marks in front of bridge piles. The equipment of the fairway for radar navigation is the infrastructure task of radar reflecting aids to navigation. This task is related to, but not part of RIS. Therefore, it is not dealt with in these RIS guidelines.

5.1.2. *Radiotelephone service on inland waterways*

(1) The radiotelephone service on inland waterways enables the establishment of radio communication for specific purposes by using agreed channels and an agreed operational procedure (service categories). The radiotelephone service comprises five service categories:

(a) ship-to-ship;

(b) nautical information;

(c) ship-to-port authorities;

(d) on-board communications;

(e) public correspondence (service on a non-mandatory basis).

Of these five categories, only the first three are important for RIS. The radiotelephone service enables direct and fast communication between skippers, waterway authorities and port authorities. It is best suited for urgently needed information on a real time basis.

(2)　The radiotelephone service is based on the following rules and regulations:

(a)　Radio Regulations of the International Telecommunication Union ITU (worldwide);

(b)　Regional Arrangement Concerning the Radiotelephone Service on Inland Waterways (Basel, 6 April 2000);

(c)　Standardised UN/ECE Vocabulary for Radio Connections in Inland Navigation (UN Economic Commission for Europe No 35, 1997);

(d)　national inland waterway rules for navigation.

(3)　In the service categories ship-to-ship, nautical information and ship-to-port authorities, the transmission of messages should deal exclusively with the safety of human life, and with the movement and the safety of vessels.

(4)　Fairway information by voice in the nautical information (shore/ship) service category is recommended to be implemented:

(a)　for urgent information needing to be updated frequently and having to be communicated on a real time basis;

(b)　for dynamic information having to be communicated on a daily basis.

(5)　The urgent and dynamic information to be communicated by voice radio could concern for example:

(a)　temporary obstructions in the fairway, malfunctions of aids to navigation;

(b)　short-term changes of lock and bridge operation times;

(c)　restrictions in navigation caused by flood and ice;

(d)　present and future water levels at gauges.

(6)　The RIS area should be fully covered by the range of the VHF base stations for nautical information.

(7)　In the nautical information service category, information may be transmitted 'to all users' as:

(a)　scheduled reports on the state of the waterways incl. water level reports at the gauges at fixed times of the day;

(b)　urgent reports at special events (e.g. traffic regulations after accidents).

(8)　It should be possible for the operator in the RIS centre to answer specific questions of skippers on demand and to receive reports from skippers.

5.1.3. *Internet service*

(1)　An Internet service is recommended to be established for the following types of fairway information:

(a)　dynamic nautical information on the state of the waterways that needs to be communicated not faster than on a daily basis;

(b)　dynamic hydrographical information, as actual water levels, water level predictions, navigation channel depths (if available), ice and flood predictions and reports;

(c)　static information (e.g. physical limitations of the waterway, regular operating times of locks and bridges, navigational rules and regulations).

The abovementioned information shall be provided via notices to skippers or via Inland ECDIS for waterways of class Va and above.

(2) A standard vocabulary should be used for the notices to skippers in order to enable easy or automatic translation into other languages.

(3) For a dense and/or extended waterway network, the dynamic information may be organised in interactive databases (content management system) in order to enable easy access to the data.

(4) In addition to the Internet presentation, the notices to skippers may be mailed by:

(a) E-mail subscription to computers on board of vessels and in offices;

(b) SMS subscription to mobile phones;

(c) WAP pages to mobile phones.

(5) In order to facilitate route planning by the skipper, all fairway information needed for a route from port of departure to port of destination may be presented on one page on demand by the user.

(6) Notices to skippers via the Internet or via data exchange between authorities should be communicated in an agreed format in order to enable automatic translation in other languages.

(7) The requirements of the technical specifications for notices to skippers as defined under the RIS Directive shall be fulfilled.

5.1.4. *Electronic navigational chart service (Inland ECDIS)*

(1) Electronic navigational charts (ENC) as a means of presenting fairway information shall fulfil the requirements of the Inland ECDIS technical specifications as defined under the RIS Directive.

(2) The chart information to be used in Inland ECDIS should be the latest edition of information.

(3) If the ENC is intended to be used in the navigation mode of Inland ECDIS, at least the safety relevant geo-objects should be included into the ENC. The competent authority should verify the safety relevant information in the ENC.

(4) It is recommended to include all geo-objects of the object catalogue of the Inland ECDIS technical specifications into the ENC.

(5) It is recommended to include the water depths to the ENC (depths contours). The water depths may be related to a predefined water level or to the actual water level.

5.2. **Traffic information service**

5.2.1. *General*

Information concerning the traffic situation may be provided in two ways (Chapter 2.11):

(a) as *tactical* traffic information (TTI), using radar and — if available — a vessel tracking and tracing system such as Inland AIS with underlain electronic navigational charts;

(b) as s*trategic* traffic information (STI) using an electronic ship reporting system (e.g. database with ship and cargo data, reports by VHF or other mobile communication facilities — voice and data).

5.2.2. *Tactical traffic information (TTI)*

(1) Vessels should be equipped with radar in order to monitor all other ships in the close navigational surroundings of the skipper in poor visibility.

(2) A tactical traffic image on board (Chapter 2.11 (2)) should be enhanced at least by displaying the radar information and — if available — Inland AIS vessel information on an electronic navigational chart (ENC).

(3) The integrated display should be in accordance with the requirements for the navigation mode of the technical specifications for Inland ECDIS as defined under the RIS Directive.

(4) In the navigation mode of Inland ECDIS, the vessel's position should be derived from a continuous positioning system of which the accuracy is consistent with the requirements of safe navigation.

(5) The use of a vessel tracking and tracing system (such as Inland AIS) as an additional position sensor for detection of surrounding vessels should fulfil the requirements of the technical specifications for such systems as defined under the RIS Directive. The vessel information should be identified on the tactical traffic image, and other additional information on the vessels should be available.

(6) Tactical traffic information on shore is used also in local traffic management (e.g. VTS centres) (Chapter 5.3.1).

5.2.3. *Strategic traffic information (STI)*

(1) Strategic traffic information (Chapter 2.11(3)) should be established, when a permanent survey of the shipping situation in the RIS area is needed for medium term and long term decisions (e.g. for the emergency management at flood and ice).

(2) Strategic traffic information can be helpful to the following services:

    (a) lock and bridge management (calculation of estimated time of arrival — ETA — and required time of arrival — RTA);

    (b) voyage planning;

    (c) calamity abatement support (vessel and cargo data);

    (d) terminal management (calculation of ETA and RTA).

(3) For strategic information a ship reporting system (e.g. in connection with a RIS centre) should be established by the competent authority. The system has the task of collecting, verifying and disseminating the reported data.

(4) The STI should be delivered to RIS users (Chapter 2.10) on demand (Chapter 5.5 (7)) taking into account privacy regulations.

(5) Vessel and cargo data should be collected in a database. The database can be filled up by:

    (a) voice reporting via mobile phone;

    (b) voice reporting via VHF (Chapter 5.1.2 (6));

    (c) electronic reporting via on-board computer (e.g. BICS application) and mobile communication facilities (e.g. mobile phone data) or shore based computers and fixed communication lines for initial reports (vessel identity and cargo);

    (d) vessel tracking and tracing (e.g. by Inland AIS) for progress reports (vessel's position and ETA).

(6) Reports from inland vessels should fulfil the requirements of the technical specifications for Electronic Ship Reporting as defined under the RIS Directive.

(7) A possible composition of data sets for different services like lock and bridge management, calamity abatement support or terminal management is given as an example in Table 5.2.3.

Table 5.2.3.

Data set for ship reporting (example)

Static data of vessels in composition	
Type	MV
Name	Arcona
Official vessel No (for sea vessels IMO-No)	4,620,004

Length	110 m
Width	11,40 m
Variable data	
Number of crew on board	3
Position (by waterway and km)	Emmerich, km 857,0
Sailing direction	upstream bound
Number of vessels in composition	2
Length of composition	187 m
Width of composition	11,40
Draught	3,20 m
Next reporting point (lock/bridge, terminal)	Meiderich lock
ETA at reporting point with accuracy	17:30 ± 0:30
For each partial cargo	
Category of cargo	Chemical product
Harmonised system code of cargo	310 210
Loading point (UN location code)	Rotterdam
Destination point (UN location code)	Dortmund
Amount of cargo (tons)	2 800
Only if dangerous cargo	
Name of cargo	Na-Nitrit
Code of cargo	ADN, ADNR
Class	5.1
Package code	III
UN-No (if available)	1 500
Quantity of blue cones/lights	1

(8) A strategic traffic image on shore may be restricted to special types of vessels (e.g. extraordinarily big vessels, vessels with dangerous cargo, special transports, and special tug combinations).

(9) Data interchange should be established between neighbouring authorities. In case of neighbouring authorities in Member States which fall under the scope of the RIS Directive, the data interchange should be done electronically. In other cases and depending on the number of vessels involved, it should be done by telephone, fax, e-mail or electronic data interchange.

5.3. **Traffic management**

5.3.1. *Local traffic management (vessel traffic services — VTS)*

(1) Reference is made to the Inland VTS Guidelines of IALA (Chapter 1.3.a).

(2) A VTS centre for local traffic management by means of a tactical traffic image on shore (Chapter 2.11) should be established for the safety of navigation in difficult local situations and the protection of the surrounding human population and infrastructure from potential dangers of shipping. It emphasises on traffic organisation. The difficult local situations may be:

(a) narrow fairway and/or shoals,

(b) narrow bends,

(c) narrow and/or many bridges,

(d) fast water currents and/or cross currents,

(e) fairway with traffic regulations, e.g. one-way-traffic,

(f) conjunction of waterways,

(g) high traffic density.

(3) The tactical traffic image (TTI) is produced by collecting shore-based radar and vessel tracking and tracing information, and displaying the vessel information on an Inland ECDIS based on the technical specifications for Inland ECDIS and inland vessel tracking and tracing systems as defined under the RIS Directive. For a long river stretch and heavy traffic, the TTI may be enhanced by target tracking.

5.3.2. *Navigational support*

Navigational support is the generic term for some services to assist inland navigation.

In the traffic arena (Chapter 4.4), navigational support is provided by pilots to prevent the development of dangerous vessel traffic situations on board or in special circumstances on shore. Nautical support is provided by tug boats or boatmen to assist in safe navigation and mooring.

In the transport arena, vessel support services are services given to the skipper by e.g., bunker boats, waste oil removal boats, vessel equipment firms, and repair organisations.

5.3.3. *Lock and bridge management*

(1) RIS should optimise the traffic flow by:

(a) support of the lock/bridge master in short-term decisions for planning of the lock and bridge cycle by presentation of an electronic lock diary, by a database, and by registration of waiting times;

(b) support of the lock/bridge master in medium term decisions by data exchange with the neighbouring locks;

(c) support of the skipper by transmission of waiting times;

(d) optimising of lock circles by calculation of ETAs/RTAs for a chain of locks, transmission of RTAs to skippers.

(2) A vessel tracking and tracing system with a database and appropriate means of communication (e.g. VHF, GSM — voice and data) (Chapter 5.2.3) can support lock and bridge planning.

5.4. **Calamity abatement support**

(1) Calamity abatement support registers the vessel and transport data at the beginning of a voyage in a RIS centre and updates the data during the voyage. In case of an accident, the RIS centre delivers the data without delay to the emergency services.

(2) Depending on the risk assessment (Table 6.4 point B.2.a), a calamity abatement service may register only certain types of vessels and compositions (Chapter 5.2.3(8)) or all vessels.

(3) It should be the responsibility of the skipper to report the required data (Table 5.2.3).

(4) A ship reporting system with a database and appropriate means of communication should be established (Chapter 5.2.3).

(5) Position and sailing direction of the vessel should be reported:

(a) when entering or leaving the area of a RIS centre;

(b) at specified reporting points within the area of the RIS centre;

(c) when the data has been changed during the voyage;

(d) before and after stops of longer than a specific period.

5.5. **Information for transport logistics**

(1) Logistic applications of RIS comprise:

(a) voyage planning;

(b) transport management;

(c) intermodal port and terminal management;

(d) cargo and fleet management.

(2) Voyage planning is the task of the skipper and the vessel owner. Voyage planning comprises the planning of the loading and the draught of the vessel, as well as the planning of the ETA and of possible loading or unloading during the voyage. RIS should support voyage planning by:

(a) fairway information service (Chapter 5.1);

(b) strategic traffic information (Chapter 5.2.3);

(c) lock and bridge management (Chapter 5.3.3).

(3) Transport management means the management of the transport chain beyond the scope of navigation driven by freight brokers and transport service quality managers. It is aimed at:

(a) controlling the overall performance of the contracted fleet managers/skippers and terminal operators;

(b) controlling the progress in the contracted transports;

(c) monitoring unexpected threats for the reliability of these transports;

(d) finalising the transport (delivery and invoice).

(4) The competent authorities should design their information systems in a way that the data flow between public and private partners is possible. The standards and technical specifications according to Chapter 1, points 3.e to j shall be used.

(5) Communication and information exchange between private and public partners in RIS for logistic applications should be carried out according to the procedures and technical specifications that are being agreed for RIS.

(6) The competent authorities should provide ample room for logistics applications within the bounds of their possibilities, such as:

(a) the exchange of information between users and customers relating to vessels and terminals;

(b) fleet planning support;

(c) ETA/RTA negotiations between vessels and terminals;

(d) vessel tracking and tracing;

(e) electronic market places.

The competent authorities should indicate the data structure in use to application builders.

(7) Confidentiality of data exchange in a RIS needs to be ensured in accordance with Article 9 of the RIS Directive. In cases where logistic information is provided by systems operated by a competent authority, this authority should take the necessary steps to ensure the protection of confidentiality of commercial information. When confidential data are provided to third parties, privacy regulations have to be taken into account.

5.6. **Information for law enforcement**

Law enforcement ensures that people within a given jurisdiction adhere to the laws of that jurisdiction. RIS supports law enforcement in inland navigation in the fields of:

(a) cross-border management (e.g. the movement of people controlled by the immigration service, customs);

(b) compliance with the requirements for traffic safety;

(c) compliance with the environmental requirements.

6. PLANNING OF RIS

6.1. **General**

In accordance with Article 4 of the RIS Directive, Member States shall take the necessary measures to implement RIS on inland waterways falling within the scope of Article 2.1 of that Directive. Member States may apply the Directive also to those inland waterways and ports which are not referred to in Article 2.1.

The concerned competent authority usually should provide the necessary expertise and arrange funding to provide the desired levels of technology and expertise to meet the objectives.

6.2. **Responsibilities**

(1) The competent authority has the responsibility — as far as RIS are traffic related — to plan RIS, to commission RIS and to arrange funding of RIS. In case of existing RIS, the competent authority should change the scope of the RIS if circumstances dictate so.

(2) Where two or more governments or competent authorities have a common interest in establishing RIS in a particular area, they may decide to develop common RIS.

(3) Attention should be paid to the possibilities of monitoring and maintaining the desired level of reliability and availability of RIS.

(4) During the planning of RIS, the concerned competent authority should:

(a) have a legal basis for the actions of the RIS and assure that the RIS are in conformity with national and international laws;

(b) determine the objectives of the RIS;

(c) appoint a RIS authority;

(d) describe the area of coverage of the RIS;

(e) determine the services and functions which will be rendered;

(f) define the requirements for the applications;

(g) provide the equipment necessary to carry out the tasks given to the RIS;

(h) provide and train sufficient and competent personnel;

(i) harmonise the demands of traffic and transport management by cooperation with the organisations of cargo shippers, fleet owners and port owners.

6.3. **Liability**

The liability element of compliance with RIS guidance is an important consideration which can only be decided on a case-by-case basis in accordance with national law. Consequently, a RIS authority should take into account the legal implications in the event of a shipping accident, where RIS operators may have failed to carry out their duty competently.

6.4. **Planning process**

Table 6.4 illustrates the steps to follow when planning for the development and implementation of RIS.

Table 6.4

The planning process for RIS

A.   PRELIMINARY INVESTIGATION

1.   **Description and analysis of the existing and future situation in the area**

   a)   Hydrographical, hydrological and meteorological conditions

   b)   Waterway conditions

   e.g. dimensions of waterways (locks, bridges, fairways), visibility along fairways, specific constraints (bends, narrows, shoals, narrow and low bridges), navigation patterns, bottlenecks, operating times of locks

   c)   Current and future traffic and transport situation

   number of passengers, tons of cargo, kind of cargo, composition of fleet

   d)   Number, type and impact of accidents including analysis of consequences

   e)   Legal situation

   authorities, incident/calamity regulations

   f)   Regional management and organisational situation

   e.g. lock operators, harbour and terminal companies

   g)   Existing RIS systems

   h)   Other problems in the area,

   e.g. delays

2.   **Objectives** see Chapter 4.3

3.   **Tasks** see Chapter 4.4

4.   **Services and functions to be provided** see Chapter 4.5 and 4.6

5.   **Regulations required**

6.   **Requirements for the applications**

7.   **Proposal for decision on further procedure**

B.   APPLICATION DESIGN

1.   **Design of one or more future RIS applications**

   short description, representation of performance and cost estimation of the potential IT systems

   a)   Design on a functional basis

   external and internal functions dependant on the local situation

   b)   Translation of the functional design into a technical design (systems)

   c)   Definition of equipment needed on vessels and on shore

2.   **Evaluation of future RIS applications**

   a)   Risk assessment, e.g. types of risks and weighing of risks by pair wise comparison

      b)   Efficiency of transport by cost/benefit analysis

           reduction of waiting times for vessels, higher reliability, shorter voyage duration, costs of incidents, accidents and delays

      c)   Environment impact study

           if appropriate, for urban areas and the river

3.   **Organisational structure of the future RIS applications**

      a)   Liability in the legislation and regional legal basis

      b)   Competent authority for planning and construction

      c)   RIS authority for operation

           authority that is carrying out the task

      d)   Personnel facilities

           eventually fully automated, training aspects

6.5. **Training**

The successful delivery of RIS depends upon competent and experienced personnel to fulfil the responsibilities of a RIS authority. The recruitment, selection and training of suitable personnel are a pre-requisite to the provision of professionally qualified personnel capable of contributing to safe and efficient vessel operations. Such personnel will help to ensure that full regard is given to the diverse tasks inherent in RIS activities.

7.   STEPWISE DEVELOPMENT OF RIS

(1)   An overview of the possible step by step development of the different parts of RIS is given in Table 7.

(2)   Because of the widely varying parameters, it is not possible to give general recommendations on RIS solutions for certain circumstances.

Table 7

Possible stepwise development of the different parts of RIS

(in italics: system tested, but not implemented yet)

Type of service		Step	System configuration	Chapter
1. Fairway information services	1.1 Voice communication shore/ship	1	Local nautical information by VHF at locks and bridges	5.1.2
		2	Central nautical information by VHF system with RIS centre	5.1.2
	1.2 Internet	1	Internet homepage with notices to skippers and water levels, static pages without content management system	5.1.3(1)
		2	As No 1, but additionally dynamic pages with content management system	5.1.3(3)
		3	E-mail subscription of notices to skippers and water levels	5.1.3(4)
		4	On demand, presentation of all fairway information from port of departure to port of destination for route planning on one web page	5.1.3(5)
	1.3 Electronic navigational chart	1	Electronic raster chart (scan from paper chart)	
		2	Inland ECDIS in information mode	5.1.4(1)

Type of service		Step	System configuration	Chapter
2. Traffic information	2.1 Tactical traffic information (TTI) on board by radar, Inland ECDIS, and vessel tracking and tracing	1	TTI by radar	5.2.2(1)
		2	TTI by radar and Inland ECDIS in navigation mode, only safety relevant objects in the ENC	5.2.2(2) to (4) 5.1.4(3)
		3	As No 2, all objects in ENC	5.1.4(4)
		4	Inland ECDIS as No 3, additionally with water depths	5.1.4(5)
		5	Inland ECDIS as No 1, additionally with vessel tracking and tracing	5.2.2(5)
	2.2 Strategic traffic information by ship reporting system	1	Database at RIS centre, reports via voice GSM, input in RIS centre manually	5.2.3(5a)
		2	Database at RIS centre, reports via voice VHF, input in RIS centre manually	5.2.3(5b)
		3	Database at RIS centre, initial reports via electronic ship reporting (data GSM), input in RIS centre automatically, position reports via voice VHF	5.2.3(5c)
		4	*As No 3, add. reports on positions and ETAs via vessel tracking and tracing systems, input in RIS centre automatically*	5.2.3(5d)
		5	Database at RIS centre, add. electronic data interchange between RIS centres	5.2.3(9)
3. Traffic management	3.1 Vessel traffic services (VTS)	1	Shore based radar stations, VTS centre, Inland ECDIS with radar overlay	5.3.1(1)
		2	As No 1, Inland ECDIS with radar overlay and target tracking	5.3.1(3)
		3	Inland ECDIS with vessel tracking and tracing information	5.3.1(3)
	3.2 Lock and bridge management	1	Database for lock diary, registration of waiting times, local	5.3.3(1a)
		2	As No 1, add. data exchange with other locks	5.3.3(1b)
		3	*As No 2, add. transmission of waiting times to skippers (support of voyage planning)*	5.3.3(1c)
		4	*Optimising of lock circles by calculation of ETAs/RTAs for a chain of locks, emission of RTAs to skippers, input of positions of vessels by vessel tracking and tracing system*	5.3.3(1d)
4. Calamity abatement support	4.1 Ship reporting system for certain types of vessels and compositions	1 — 5	System configurations as No 2.2	5.4
	4.2 Ship reporting system for all vessels	1 — 5	System configurations as No 2.2	5.4

Type of service		Step	System configuration	Chapter
5. Voyage planning	5.1 Fairway information	1	System configurations as Nos 1.1 to 1.3	5.5(2)
	5.2 *Lock/bridge management, transmission of RTAs and waiting times*	2	*System configurations as No 3.2.4*	

8. RIS STANDARDISATION PROCEDURES

(1) Standardisation of RIS is needed because:

(a) inland navigation does not stop at borders of countries;

(b) new IT developments in other modes of transport should be adopted in inland navigation in order to enable an integration of transport (multimodal transport on road, rail and waterway);

(c) the different RIS systems reach their full benefit only when they are harmonised;

(d) suppliers of equipment will not start producing hardware and software for RIS, if the standards and technical specifications are not drawn up.

(2) RIS shall be developed and operated, following agreed standards and technical specifications, such as:

(a) these RIS guidelines as a framework;

(b) IALA inland VTS guidelines;

(c) inland ECDIS technical specifications;

(d) Eelectronic ship reporting technical specifications;

(e) notices to skippers technical specifications;

(f) vessel tracking and tracing technical specifications (such as Inland AIS technical specifications);

(g) inland radar requirements (future ETSI standard);

(h) regional arrangement concerning the radio telephone service on inland waterways.

(3) Technical specifications should be developed in compatibility with the maritime world in order to enable mixed traffic in the estuaries of rivers/sea-river trade.

(4) International organisations being already involved in maritime standardisation should be asked to take into account standardisation developments in the inland waterway sector, such as:

(a) IHO, IEC as regards Inland ECDIS;

(b) IALA as regards Inland VTS;

(c) PIANC as regards river information services;

(d) ITU, ETSI; IEC, IALA as regards Inland AIS;

(e) ITU as regards inland VHF;

(f) UN/ECE as regards special standards to be used in electronic ship reporting (e.g. EDIFACT, UN/LOCODE).

(5) Those organisations should be invited to participate and cooperate in the development and maintenance of the technical specifications and standards (as it already happens).

(6) The international bodies like UN/ECE; the Central Commission for the Navigation on the Rhine, the Danube Commission and similar bodies in other parts of the world, are asked to either adopt or recommend the technical specifications as defined under the RIS Directive.

(7) The national governments are asked to certify the equipment produced according to the technical specifications as defined under the RIS Directive.

(8) National governments are requested to cooperate in a bilateral or multilateral way to achieve the greatest amount of harmonisation.

Appendix

Example of an information processing loop to Chapter 4.4

Task: Lock management
Role: Lock operator

Evaluate

Decide

Observe

Act

STRATEGIC LEVEL
Long time lock planning

TACTICAL LEVEL
short time lock planning

OPERATIONAL LEVEL

Evaluate waiting times for approaching vessels

Decide on the estimated reopening and delays

Evaluate the locking situation for the next locking cycle

Decide on the estimated waiting time

Evaluate priority of vessels and order of lockage

Decide on priority and lock chamber to be used

Observe blockings of neighbouring locks

Inform skippers on situation on the whole waterway

Observe approaching vessels from both directions

Inform skipper of approaching vessels

Observe arriving vessels

Inform skipper to enter the lock