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Working Party on Inland Water Transport

Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation
(Twenty-eighth session, 8-10 June 2004
agenda item 6)

ESTABLISHMENT OF COMMON PRINCIPLES AND TECHNICAL REQUIREMENTS FOR A PAN-EUROPEAN RIVER INFORMATION SERVICE (RIS)

Addendum 1

The secretariat reproduces below annexes 1 to 6 to the Guidelines and Recommendations for River Information Services (RIS) established by the International Navigation Association (PIANC). The annexes make part of the RIS Guidelines 2004 and have been transmitted by the delegation of Germany.

Guidelines and Recommendations for River Information Services
(RIS Guidelines 2004)

Annex 1
Inland ECDIS (electronic navigational chart)

(1) Inland ECDIS means Electronic Chart Display and Information System for inland navigation.

(2) Inland ECDIS (Edition 1.02.2003) is the European standard for electronic navigational charts for inland navigation, adopted by the Central Commission for the Navigation on the Rhine, the Danube Commission, and the UN Economic Commission for Europe.

(3) The Inland ECDIS standard has five sections corresponding to the maritime ECDIS Standard:

1 Performance standard (according to IMO A.817(19))

2 Data standard (additions to IHO S57)

3 Presentation standard (additions to IHO S52)

4 Operational and performance requirements, methods of testing and required test results (according to IEC-1174)

5 Glossary of terms

(4) Inland ECDIS is compatible with maritime ECDIS, that means:

(a) Inland vessels sailing in maritime waters with Inland ECDIS equipment get all maritime ENC information.

(b) Sea going vessels sailing in inland waters with maritime ECDIS equipment get all information being equal to marine information (e.g. river banks), but they do not get the additional inland information (e.g. inland notice marks).

(5) Sea-river vessels are recommended to use the additional Inland ECDIS software libraries in order to get full Inland ENC information.

(6) Inland ECDIS should use chart information (ENC) as specified by the IHO S57 Standard (edition 3.0) with the additions of the Inland ECDIS Standard.

(7) The presentation should be in accordance with the IHO S52 Standard (edition 3.0) and with the amendments of the Inland ECDIS Standard.

(8) Inland ECDIS may be used in *navigation mode or in information mode*.

(9) *Navigation mode* means the use of Inland ECDIS with traffic information by radar overlay. Inland ECDIS in navigation mode may be operated in three configurations:

1 Separate installation of Inland ECDIS and radar equipment; the latter sending the radar signal to the Inland ECDIS computer

2 As before, but only one monitor used

3 Radar equipment with integrated Inland ECDIS functionality. It is recommended to develop and use this configuration in the future

(10) *Information Mode* means the use of Inland ECDIS without traffic information by radar overlay. For an Inland ECDIS application designed for Information Mode only, the requirements of navigation mode are to be understood as recommendations.

(11) In the navigation mode, an Inland ECDIS (operating system software, application software and hardware) should have a high level of reliability and availability at least of the same level as other means of navigation.

(12) Inland ECDIS equipment for navigation mode should be certified by the competent authority.

Annex 2

Electronic ship reporting in inland navigation

(1) The Standard for Electronic Ship Reporting in inland navigation has been adopted by the Central Commission for the Navigation on the Rhine,

(2) Ship reporting is needed for strategic traffic information service, traffic management and calamity abatement support. Being an alternative to paper or voice reporting, electronic reporting facilitates the data interchange between vessels and traffic centres. Moreover, the regulations of electronic ship reporting enable the traffic centres of different authorities to exchange the data electronically.

(3) The standard provides rules for the interchange of electronic messages between partners in the field of inland navigation. Authorities and other parties concerned (ship owners, skippers, shippers, ports, terminal operators) shall exchange data in conformity with the standard.

(4) In electronic ship reporting, information is exchanged using messages. The standard describes the following messaging procedures:

1 Ship-to-authority messaging

a Transport notification

b Arrival notification and position report (not dealt with in detail)

2 Authority-to-authority messaging

3 Authority-to-ship messaging

(5) All message definitions are based on the UN/EDIFACT standard.

(6) The ERINOT message (*Electronic reporting international notification*) is used for transport notification (1.a) and for authority-to-authority messaging (2) in inland navigation. ERINOT is derived from the UN EDIFACT *International forwarding and transport dangerous goods notification (IFTDGN 98B)* message. It is compatible with the PROTECT 1.0 message used by North European ports. This procedure ensures that conformity between maritime and inland navigation is granted for dangerous and polluting goods. Using some liberties of the IFTDGN message, the ERINOT message has been extended to allow non-dangerous goods to be notified. This feature allows putting all data of the transport or voyage notification in one single message.

(7) The ERI response message ERIRSP is used for authority-to-ship messaging. ERIRSP is derived from the UN/EDIFACT APERAK message.

(8) In order to minimise interpreting work to be done by the receivers of messages, classifications and code lists should be used to the highest possible extent. Existing codes should be used in order to avoid special work to be done for the assembling and maintenance of new code lists. The following classifications can be used in inland ship reporting:

1 UN vessel and convoy type code (UN recommendation 28, ECE/trade/276; 2001/23)

2 CCNR official ship number

3 IMO ship identification number (IMO resolution A.600/15), SOLAS chapter XI, reg 3)

4 AVV Rijkswaterstaat electronic reporting number (ERN, used for ship identification)

5 WCO harmonized commodity description and coding system 2002 (HS Code, for goods description)

6 EUROSTAT combined nomenclature (CN code, for goods description)

7 EUROSTAT standard goods classification for transport statistics /revised (NST/R) (for goods description) [1/]

8 UN dangerous goods number (UNDG)

9 IMO international maritime dangerous goods code (IMDG)

10 CCNR ADNR (for dangerous goods)

11 UN country code (ISO 3166-1)

12 UN location code (UN/LOCODE)

13 Fairway section code (National administrations of waterways)

14 Terminal code (National administrations of waterways)

15 ISO freight container size and type code (ISO 6364, chapter 4 and annexes D and E)

16 ISO container identification code (ISO 668, ISO 1496, ISO 8323)

17 UN package type (UN/CEFACT, recommendation 21)

[1/] Since the 4-digit NST/R codes of the different countries are not compatible, it is recommended to use the common HS code of the World Customs Organization for cargo description.

(1) The location is given in the following subfields:

1 UN country code (2 digits),

2 UN location code (3 digits),

3 Fairway section code (5 digits),

4 Terminal code (5 digits),

5 Fairway section hectometre (5 digits).

The subfields are not needed all the time. But the location must be given unique which can happen in different ways depending on the purpose of reporting and the local situation.

(2) The standard recommends that every authority should accept messages in accordance with the message specification as plain text or as an attachment of an e-mail.

Annex 3

Notices to skippers by electronic data transmission in inland navigation

(1) Fairway information is given by voice report via the radiotelephone service on inland waterways (VHF) or by data transmission using the TCP/IP protocol (Internet, e-mail, SMS).

(2) The European Standard for Notices to Skippers provides rules for the fairway information by data transmission. Using a standard vocabulary in combination with code lists, the standard enables the automatic translation of the messages into other languages to a high extent.

(3) The message language is Extended Markup Language (XML), enabling easy handling by the receiver of the message. The XML message specification has four sections:

1 Message identification

2 Fairway and traffic related messages

3 Water level related messages

4 Ice messages.

(4) In order to enable a broad applicability, the XML message definition contains a wide range of data elements. The message is structured in entities (tags), such as sections, groups, subgroups and data elements. Not all of the entities will be needed at any waterway or can be delivered with reasonable manpower. Therefore, it is distinguished in the XML message specification between mandatory and conditional groups and data elements. Mandatory are entities that are needed:

- For the to definition and interchange of the message (section 1)
- For a minimum of information (sections 2 to 4).

At least one of the above-named sections 2 to 4 has to be used in a message. In section 2 the messages can be related to a waterway section or to an object (e.g. bridge, lock).

(1) In section 2, the message contains one conditional data element for free text (string) in the original language that will not be translated automatically. The use of free text should be restricted to a minimum. All other data elements are encoded.

(2) The defined codes are (examples for values in brackets)

1 Barrage code (barrage closed, barrage opened, …..)

2 Communication code (telephone, VHF, …..)

3 UN country code, ISO 3166-1 (CH, AU,.....)

4 Direction code (all directions, upstream, ...

5 Ice condition (light solid ice, medium spread floating ice to 40 % covered, ...)

6 Ice accessibility (low traffic, no navigation without breaking, ...)

7 Ice classification (navigable, fairly navigable, ...)

8 Ice situation (no limitation, limitation, no navigation allowed)

9 Interval code (continuous, daily, ...)

10 Language code (see ISO 639)

11 Limitation code (blockage, partial obstruction, ...)

12 Measure code (discharge, water level, vertical clearance, ...)

13 Position code (all, left, ...)

14 Reason code (event, work, dredging, high water, ...)

15 Reference code (WGS84, NAP, Adria, NN, GlW, RNW .....)

16 Regime code (normal, high, ...)

17 Reporting code (information, regular duty to report, ...)

18 Subject code (dredging; work, ...)

19 Target group code (commercial vessels, pleasure craft)

20 Type code (river, lock, ...)

(3) The full texts to the codes are given in English and several other European languages.

(4) The competent authorities should provide notices to skippers in XML format downloadable in the Internet. Internet services shall provide a possibility to select data sets for the download by waterway section and time of validity. In addition, the participating parties (authorities) can agree on the procedures of transmitting the XML messages by push and pull services directly from the XML server.

Annex 4

Inland AIS (transponders)

being one of the systems that can be used in vessel tracking and tracing [2/]

(1) The Automatic Identification System (AIS) is a ship borne radio data system, exchanging static, dynamic and voyage related vessel data between equipped vessels and between equipped vessels and shore stations. Ship borne AIS stations broadcast the vessel's identity, position and other data in regular intervals. By receiving these transmissions, ship borne or shore based AIS stations within the radio range can automatically locate, identify and track AIS equipped vessels on an appropriate display like radar or Inland ECDIS. AIS systems are intended to enhance safety of navigation in ship to ship use, surveillance (VTS), vessel tracking and tracing, and calamity abatement support. Several types of AIS stations can be distinguished:

(a) Class A mobile stations to be used by all sea going vessels falling under the IMO SOLAS chapter V carriage requirements,

(b) Class B mobile stations with limited functionality to be used by e.g. pleasure crafts,

(c) Class A derivatives, having full class A functionality on VDL level, may deviate in supplementary functions and can be used by all vessels not falling under IMO carriage requirements (e.g. tugs, pilot vessels, inland vessels (to be called Inland AIS in this document),

(d) Base stations, including shore based simplex and duplex repeater stations.

(2) An Inland AIS station consists in general of the following components:

(a) VHF transceiver (1 transmitter/2 receivers)

(b) GNSS receiver

(c) Data processor

(3) Universal ship borne AIS, as defined by IMO, ITU and IEC, and recommended for the use in inland navigation, uses self-organised time division multiple access (SOTDMA) in the VHF maritime mobile band. AIS operates on the internationally designated VHF frequencies AIS 1 and AIS 2.

[2/] The requirements will be defined within the standard for vessel tracking and tracing by the European expert group in 2004.

(4) A characteristic of AIS is the autonomous mode, using SOTDMA without any need for an organising master station. The radio protocol is designed in a way that vessel stations operate autonomously in a self organised manner by exchanging link access parameters. Time is divided into 1 minute frames with 2,250 time slots per radio channel which are synchronised by GNSS. Each participant organizes its access to the radio channel by choosing free time slots considering the future use of time slots by other stations. There is no need for a central intelligence controlling the slot assignment.

(5) System regulations for maritime AIS are:

(a) IMO Resolution MSC.74(69) annex 3: Recommendation on performance standards for AIS

(b) ITU Recommendation ITU-R M1371: Technical characteristics for a universal ship borne automatic identification system, using time division multiple access in the VHF maritime mobile band

(c) IALA Technical clarifications on recommendation ITU-R M.1371-1

(d) IEC 61993-2 Automatic identification systems (AIS) part 2: class A ship borne equipment of the universal ship borne automatic identification system (AIS)

(e) IALA Guidelines on the automatic identification system (AIS)

(6) For seagoing vessels, AIS became a carriage requirement in July 2002, according to the SOLAS convention.

(7) Vessel tracking and tracing systems in inland navigation shall be compatible with maritime AIS, as defined by IMO. Therefore, AIS messages should contain:

(a) Static information, such as official ship number, call sign of vessel, name of vessel, type of vessel

(b) Dynamic information, such as vessels position with accuracy indication and integrity status

(c) Voyage related information, such as length and beam of vessel combination, hazardous cargo on board (blue cones/lights according to ADN/ADNR) estimated time of arrival (ETA)

(8) For moving vessels an update rate for the position information on tactical level should be similar to the update rate of the radar. For vessels at anchor it is recommended to have an update rate of several minutes, or if information is amended.

(9) The following modes of operation can be distinguished:

(a) Ship – ship operation: All AIS equipped vessels are able to receive static and dynamic information from all other AIS equipped vessels within the radio range.

(b) Ship – shore operation: Data from AIS equipped vessels can also be received by AIS base stations connected to the RIS centre where a traffic image (TTI and/or STI) can be constructed.

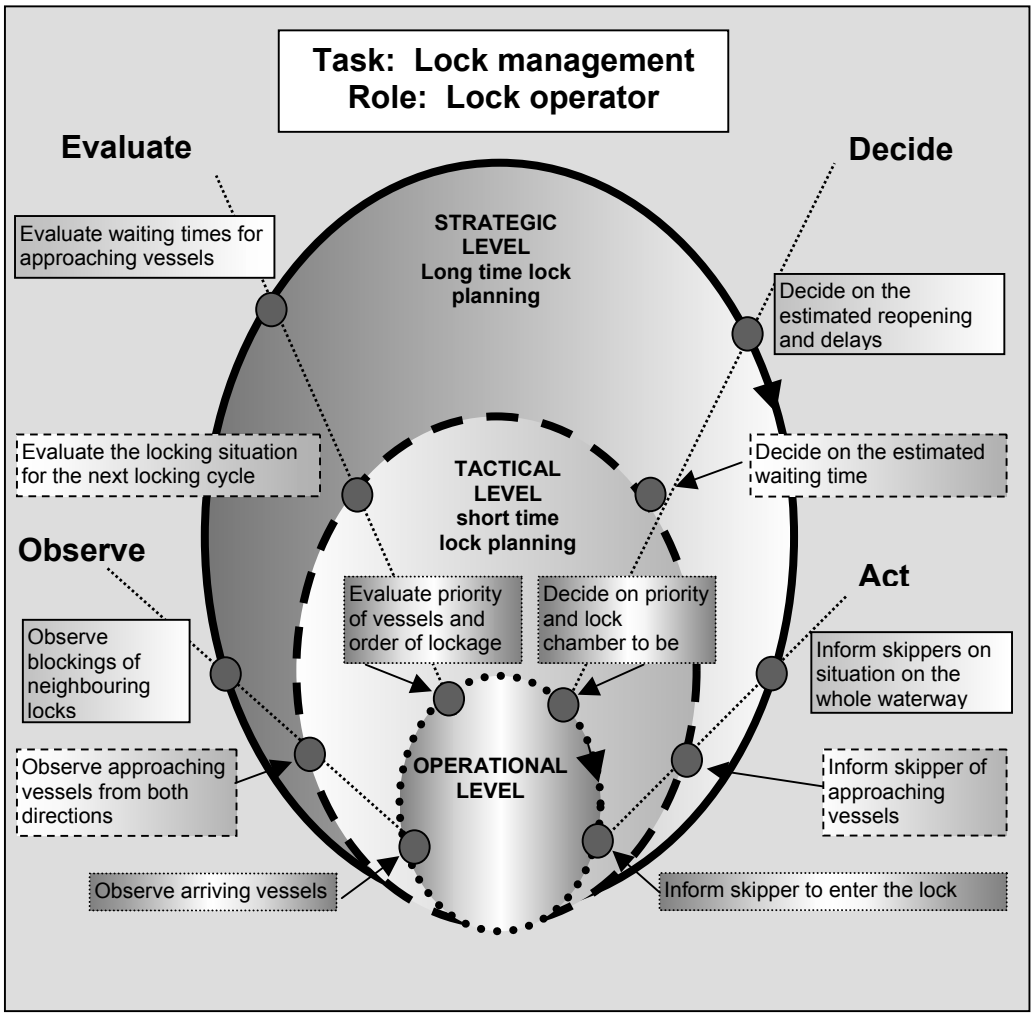
(c) Shore – ship operation: safety related data from shore to vessel can be transmitted.

(10) AIS is an additional source for navigational information. AIS does not replace, but supports navigational services such as radar target tracking and VTS. AIS has its strength as a means of surveillance and tracking of vessels equipped with it. Due to their different characteristics, AIS and radar complement each other.

Annex 5

Example of an information processing loop

To chapter 4.4



Annex 6

Some RIS related web sites

- Administratie Waterwegen en Zeewezen, Belgium, Flanders: www.awz.be
- Central Commission for the Rhine Navigation: http://www.ccr-zkr.org
- C-Map Norway AS (Inland ENC production): www.c-map.no
- COMPRIS (Consortium operational management platform RIS of the EU 5th Framework Programme): www.euro-compris.org
- Danube Commission: /www.danubecom-intern.org/
- Danube RIS in Austria: doris.bmvit.gv.at
- Electronic Waterway Information System, Germany: www.elwis.de
- Federal Waterway Authority, Germany: http://www.wsv.de
- Finnish Maritime Administration: www.fma.fi
- International Association of Marine Aids to Navigation and Lighthouse authorities IALA:
- www.iala-aism.org
- International Navigation Association AIPCN-PIANC: http://www.pianc-aipcn.org
- Ministerie Verkeer en Waterstaat, The Netherlands: (http://www.minvenw.nl)
- NoorderSoft (route planner): http://noordersoft.com
- Office de promotion des voies navigables, Belgium: http://www.opvn.be
- Open ECDIS Forum on the development of Inland ECDIS: www.openecdis.org/discussion/InlandECDIS/
- Österreichisches Bundesministerium für Verkehr, Innovation und Technologie: http://www.bmvit.gv.at
- Promotie Binnenvaart Vlaanderen, Belgium: http://www.binnenvaart.be
- Rijkswaterstaat, The Netherlands (RIZA): http://www.waterland.net/bericht/scheepv
- SevenCs AG & Co. KG (ECDIS tools, ECDIS applications, Inland ENC production): http://www.sevencs.de
- Transas Data Co Ltd. (electronic charts):http:///www.transas.com
- Tresco Engineering (ECDIS applications, Inland ENC production): http://www.tresco.be
- Tresco Navigation Systems (ECDIS applications, Inland ENC production): http://www.tresconavigationssystems.com
- UNECE EDIFACT Standard: http://www.umece.org./trade/untdid/welcome.htm
- UN Economic Commission for Europe (Inland Water Transport): http://www.unece.org/trans/main/sc3/sc3/sc3fdoc.html
- US Army: www.usace.mil
- US Coast Guard: www.uscg.mil
- via donau, Austria: www.via-donau.org
- Voies Navigables de France: http://www.vnf.fr
- Waterman Thematic Network of the EU 5th Framework Programme: www.waterman-ts.net

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