RISVTT

INFORMATION PAPER ON APPLICATION SPECIFIC MESSAGES (ASM)

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1 INLAND AIS – STATE OF THE ART

Inland AIS is a means for vessel identification, position reporting and Vessel Tracking and Tracing in inland navigation. Inland AIS delivers reliable information about the vessels identity, its position as well as further vessel and voyage related information. The introduction phases of Inland AIS in inland navigation draws to a close as most of the European countries plan or already require mandatory carriage of Inland AIS stations for commercial inland vessels. There is an increasing use of information provided via AIS on board as well as on shore. Inland ECDIS connected to the Inland AIS station is on its way of becoming commonly used on board as a navigation information system. Information received by a shore based AIS infrastructure delivers the data to a whole range of RIS applications like traffic monitoring, ship reporting and look management.

2 ADDITIONAL FUNCTIONS OF INLAND AIS APPLICATION SPECIFIC MESSAGES

Inland AIS can do more than just providing identity and the position of a vessel. Inland AIS can also be used for the exchange other navigation and voyage related information between vessels and between vessel and shore beyond what is implemented in the Inland AIS station. One example is the exchange of the estimated time of arrival (ETA) from a vessel to a lock and the reply from the lock to the vessel as requested time of arrival (RTA). This information may be relevant for the tactical navigation of the vessel, as the vessel can adapt its speed according the RTA. This information may change during the course of the voyage and thus it should be presented to the skipper in an easy accessible way. An appropriate way for the transfer of this information is Inland AIS connected to an Inland ECDIS for the display of the information on board. The shore system also needs to support the transmission and handling of these messages and provide means for input and output of the related information. Other examples for this kind of information which can be provided by Inland AIS are actual water level, local weather incidents or signal status at a lock or bridge. The commonality of this information is the relevance for the tactical navigation and the timeliness in which the information should be provided to the skipper. As mentioned before, Inland AIS connected to an Inland ECDIS is a suitable means for that.
The mechanism within Inland AIS for the transfer of this information is the so called Application Specific Message (ASM).

3   APPLICATION SPECIFIC MESSAGES

AIS allows the transfer of Application Specific Messages (ASM) via the AIS radio link (AIS VDL) as a means of communication for external applications e.g. for transmission of ETA/RTA information. The use of ASM is a kind of data exchange between externally connected users of two or more AIS stations. AIS will just function as the carrier of the information and transfers the data content between the connected external applications. The AIS stations involved act as dedicated modems. The data content does not affect the operation of the AIS stations. However the use of ASM will have an impact on the load of the VDL. Therefore it is advised to the competent authorities to monitor the use of the VDL.

In general there are the following modes of using ASM. These modes can be handled by all types of AIS stations.

1   Addressed ASM (using AIS Message 6) which will be transmitted from any AIS station to one specific receiving AIS station.

2   Broadcast ASM (using AIS Message 8) which will be transmitted from any AIS station to all other receiving AIS stations within the receiving range.
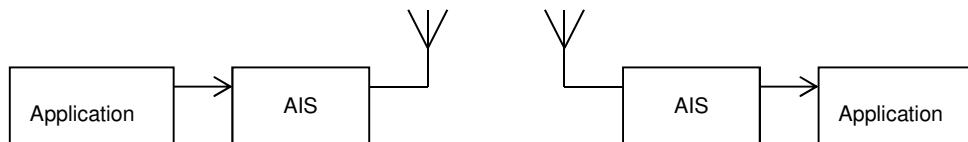
The following figure illustrates the use of ASM:

Figure 1: Transfer of ASM via AIS

For a description on the structure of ASM the ITU-M.1371 refers. This includes also a guideline for creating functional messages.

In maritime navigation IMO has already defined several ASM which are recommended for the use in maritime shipping. ASM which are published and maintained by IMO are called International Functional Messages (IFM), examples are the environmental messages containing various information like wind, water level, sea state, current follow. These international ASM are published in IMO circular SN.1/Circ.289.

Beside IMO`s IFM competent authorities in several regions have created their own ASM to serve their specific needs. Those ASM are called Regional Functional Messages (RFM) because they are published and maintained by regional competent authorities. A unique area code (Designated Area code – DAC) is used to identify the regional ASM.

For Inland AIS the VTT Expert Group recommended to only use RFMs with the common European DAC 200 in order to ensure harmonized development and use of ASM in Europe. Those RFM are commonly referred to as Inland AIS ASM.

4 INLAND SPECIFIC ASM

In inland navigation in Europe the VTT Standard defines several Inland ASM included to implement the specific need of inland navigation into the AIS. The VTT Standard uses the area code of DAC 200 for those regional ASM.

Two specific Inland ASM as published in the VTT standard are implemented directly in the Inland AIS station without the need of an external application:

- Inland ship static and voyage related data including ENI number vessel/convoy dimension type of vessel/convoy (Inland AIS ASM DAC=200, FI=10)
- Number of persons on board (Inland AIS ASM DAC=200, FI=55)

Additional Inland ASM which are meant for handling by an external application are published by the VTT Expert Group in the "Inland AIS ASM inventory" but are:

- ETA/RTA messages provide the possibility to communicate Estimated Time of Arrival and Requested Time of Arrival for resource planning at a lock, bridge or terminal
- EMMA warning message provides information in case of special meteorological situations at the waterway (no longer supported)
- Water level message provides information about the current value of water level gauges
- Signal Station message (replacing Signal Lights Message) provides information about type and status of traffic lights
- Bridge Clearance message provides the actual distance between the lowest point of a navigable bridge opening and the water surface
- Control Message provides a means to control (enable or disable) the broadcasting of ASM from mobile stations

Additional messages have also been developed and tested in the framework of the European or national projects and initiatives which resulted in following proposed new ASM currently under revision by the VTT Expert Group

- Standardized safety-related message (SSRM) provides short term information about incidents on the waterway in codified format for direct display in Inland ECDIS
- Convoy message provides detailed information about the setup of a convoy including the ID and loading status of each barge and the precise convoy outline

5 ROLE OF THE VTT EG

The VTT expert group is responsible for the maintenance of the VTT standard and the Inland AIS inventory in order to ensure harmonization of inland ASM within European inland navigation.

Internally the VTT EG has agreed procedures for introducing new inland ASM published in the document "European Harmonisation process on Application Specific Messages for Inland AIS". New ASM have to be proposed by members of the VTT EG through their national delegation. The decision about the publication of new ASM has to be taken by the group. All new inland ASM approved by the VTT EG result in an update of the Inland AIS ASM inventory.

6 USAGE OF ASM

The decision about the usage of ASM is in sole the responsibility of the national competent authority or the appropriate river commission. The Inland AIS ASM inventory defines the commonly agreed message structure in order to allow for harmonized implementation of ASM in shipborne and shore based applications.