PIANC
The World Association for
Waterborne Navigation Infrastructure

**Recreational
Navigation
Commission
RecCom**

EnviCom WG 209

RECOMMENDATIONS FOR USE OF AIS DATA FOR RECREATIONAL NAVIGATION INFRASTRUCTURE
TERMS OF REFERENCE

1. Historical background - Definition of the problem

AIS data has been used increasingly in commercial waterborne transportation. Data collection protocols have been established, and a variety of private and public-sector groups have developed tools to use this data for multiple purposes within transportation systems and waterway management. However, very little has been done as it relates to recreational navigation infrastructure.

AIS transceivers are mandatory for most seagoing ships, but not for most recreational vessels. As costs of AIS decrease (particularly AIS Class B) the percentage of voluntary users has increased. The value of collecting and analyzing AIS data for recreational vessels may need to be evaluated.

From the point of view of RecCom, we envision that AIS data may be used on multiple ways to improve Recreational Navigation Infrastructure (RNI). For example, aggregate historical information on transits and routes (traffic density maps) and other types of information that can be generated by analysing AIS data can be very valuable, both for marina planning and operational businesses.

Recommendations for beneficial uses of AIS for the recreational navigation infrastructure, should recognize that navigation safety and security is the purpose and priority use of the system and its sustainment. Additional navigation safety and security considerations specific to the recreational navigation industry may be explored (especially in the context of data collection, monitoring, protocols, and regulations), to the extent that they contribute to the main objective..

For example, the abundance of signals from recreational vessels may have the potential to generate conflicts with existing uses of data for waterborne transportation. Therefore, conflicts with existing uses of AIS data should be avoided, and synergies should be sought to improve navigation safety.

Alternative uses of AIS can also be explored, to the extent that they contribute to the primary goal. For example, the development of of web and/or mobile apps that allow pleasure craft owners, amongst others, access AIS data at very low costs, provide additional services, and avoid impacting AIS data links.

2. Objectives

The goal of this RecCom WG is to understand needs and opportunities relative to AIS data for RNI planning.

The main specific objectives are to:

1. Identify potential uses of AIS data for recreational navigation infrastructure development, maintenance, refurbishing and adaptation.

2. Create guidelines and recommendations on AIS data collection, analysis and use for planning, which are specific to recreational navigation infrastructure needs and do not conflict with other uses for waterborne transportation.

3. Evaluate potential recommendations regarding AIS requirements for recreational vessels, in coordination with waterborne transportation safety and ecosystem sustainability needs, as it relates to improving the usability of data for planning and design.

The main objective of the WG are focused on the static use of data records (historical information). Additional discussions on operational uses may be considered, to the extent that they contribute to the main objective.

3. Earlier reports to be reviewed

Over the last several years, the field for AIS data has grown exponentially for other uses, mainly waterborne transporation. The literature on the subject encompasses both basic technology, system management, and AIS data applications for a variety of uses. Data is also available through commercial suppliers, which can benefit from the recommendations in this report (for example, regarding data processing and presentation).

No previous PIANC Working Group reports specific to the use of AIS data have been published yet. However, the e-navigation for inland waterways report by PIANC (WG 156) and numerous AIS papers presented in SMART Rivers and other PIANC events over the last decade have addressed AIS use, and may include relevant information.

4. Scope

The scope of the WG include documenting the different ways AIS data is collected and analysed, its regulatory framework, and broader future use. The WG will assess different sources for AIS data (including public and private, land-based and satellite), collection, displays and analysis of AIS data under use. Availability of AIS data on recreational vessels will also be documented.

Other non-AIS systems, including Vessel Monitoring Systems and Vessel Tracking Services, as well as applications based on use of mobile apps, may be considered to provide context to the main topic.

The WG will also generate and gather observations from practitioners (including but not limited to RecCom and ICOMIA-MG) regarding potential uses of AIS data and assess if existing protocols are sufficient to develop tools to achieve those goals.

The WG will evaluate the present status and potential recommendations for changes to requirements or recommendations for use of AIS by recreational vessels.

The WG will propose general guidelines to bridge the gap between the existing state of practice and potential future uses for the recretional navigation industry, especially focused on sustainable recreational navigation infrastructure.

5. Intended product

The WG shall provide a report that provides insights into current and future uses of AIS data from recreational vessels, and, the quality and availibitly of data sets that can be best used for recreational navigation infrastructure planning.

Some possible uses of the findings of this WG for recreational navigation infrastructure may include:

- RNI and destination planning, feasibility studies, and design: data could help assess (quantitatively or qualitatively) demand trends, usage patterns, and traffic changes over time.
- Maintanenance and refurbishment planning of infrastructure systems: coastal or waterway managers may use traffic data as a tool to evalaute (quantitatively or qualitatively) demand and usage of facilities in a system.
- Environmental management of ecologically sensitive resources: monitoring or documentation of navigation patters of recreational navigation in sensitive ecological areas, protected areas with specific recreational uses, or slow speed zones. The possibilty of effectively monitoring usage inexpensively may allows for certain recreational activities to develop, which could otherwise be considered an environmental risk.
- Information for boaters: It would be helpful to the charting community and the recreational community to see usage trends of marina facilities, simple charting and tracking, boat ramps, navigation access channels, and destinations. (this is not the primary purpose of this WG).

6. Working Group Membership

RecCom has invited researchers in the field as sponsors, to benefit from available know-how on AIS to address the future use of AIS data for recreational navigation and infrastructure development. Commercial providers of data management and analysis services should also be consulted for their input.

- AIS monitoring and data management experts
- Navigation managers and planners
- Marina developers, managers, designers and consultants
- Tourism and marine protected areas managers (including managers of MPA where recreational use is important)

7. Working Group Target Audience

- Commercial providers AIS data products
- Coastal and Watershed navigation managers, Waterway Managers,
- and planners
- Marina planners, designers, owners, developers, managers and consultants
- Tourism and marine protected areas managers (including managers of MPA where recreational use is important)
- Coastal planners, economic development agencies,

8. Relevance to countries in transition

This topic can be used by countries in transition to leapfrog RNI development constraints. The results may be used to promote market potential awareness and sustainable use of marine resources for recreation.

9. Climate Change

Data analyses based on the expected guidelines may be used to monitor navigation usage changes due to extreme events (such as evaluation of impacts of extreme hurricanes or floods) or long-term climate change patterns, which can be used to evaluate resilience and plan for climate adaptation.

10. References

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