



Ocean Week 2018:
Symposium on test areas for autonomous ships

Benefits of cooperation at the EU level: *ad hoc* group on MASS - VTS angle

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Introduction

Development towards fully or partly autonomous ships will **pose both opportunities and challenges** for the sector in terms of safety, security, existing legal frameworks, and operations.

A fast changing and rapid uptake of technologies enabling autonomous surface ships testing and operations **demand an updated role for VTS** services, including vessel traffic monitoring, management and control.

To **facilitate developments and testing in a safe predictable area/environment** and in the future for ensuring safe navigation, questions related to **vessel traffic monitoring, communications** (bidirectional) **and connectivity, management and control needs to be addressed.**



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Background

- The VTM Directive (2002/59/EC) and VTS
- Title I of the VTMIS Directive is about ship reporting and monitoring:

Article 7 specifically concerns the Use of ship's routing systems.

Article 8 the monitoring of the compliance of ships with vessel traffic services, both inside and outside the territorial seas.

Furthermore the requirement in *Article 9.3* requires the Member States to ensure that the coastal stations in charge of monitoring the compliance with vessel traffic services and ships' routing systems have sufficient and properly qualified staff available.



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Background

- The VTM Directive (2002/59/EC) and VTS
- Moreover, *Article 23* require **cooperation between the Member States and the Commission when extending the cover of the Community vessel traffic monitoring and information system, and/or updating it, with a view to enhanced identification and monitoring of ships**, taking into account developments in information and communication technologies.
- To this end, Member States and the Commission shall work together to **put in place, where necessary, mandatory reporting systems, mandatory maritime traffic services and appropriate ship's routing systems**, with a view to submitting them to the IMO for approval.
- The **angle taken is that of the authority/VTS** side of things.



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Background

Extensive testing has been identified as a **prerequisite** and crucial step for safe and successful MASS traffic.

Test areas for all aspects in developing maritime autonomy will **enable proof of concept** both for monitoring, management and control and for the commercial applications in this field.

Developments towards MASS for adapted **Vessel Traffic Control** as well as **Sea Traffic Management** are **parallel** and can support each other.



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Vessel Traffic Monitoring, Management and Control issues arising from Maritime Autonomous Surface Ships

- *ad hoc* experts sub-group to start investigating the VTMS aspects related to the introduction of autonomous navigation and to analyse how to deal with autonomous navigation and routing from the perspective of monitoring, management and control:
- Collect relevant information on the current status of the technological developments and experience in the areas of autonomous navigation and communication technologies and connectivity;
- Identify the best practices for test areas;
- Identify issues involved in the autonomous navigation and elaborate on those issues and aspects that need to be considered or changed to cater for safe such operations in the future, also for the situation of mixed traffic (when both manned and unmanned ships sailing on the same routes/ports/terminals)



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Issues to be considered

- There is a need to look at how to deal with **autonomous navigation and routing schemes in dedicated areas** as well as the monitoring of the vessels when moving beyond a dedicated test area.
- **Navigational safety** (situational awareness/collision avoidance) and the possible need for dedicated routing schemes and monitoring systems like VTS, between port-to-port operations, also cross-border



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Issues to be considered

- Navigation rules and communication systems and connectivity, including satellite communications and land based systems, with the ability to intervene when needed, **Interaction between (1) VTS operators, (2) remote controller/operator and (3) unmanned bridge.**
- Routing schemes/systems, **geographical boundaries and scope of 'traditional' VTS**
- possible impact on **skills and training needs for VTS operators**
- requirements for effective monitoring, management and control for navigation accuracy and collision avoidance, by or at the disposal of authorities involved.



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How to:

- Govern test areas?
- Notifications and publishing of notices to seafarers?
- Maritime safety (security) and environment protection requirements
- ...



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“The Autonomous ship” Horizon 2020 - RTD

Specific Challenge:

Digitisation and autonomy will bring disruptive changes to waterborne transport, providing competitive advantages to European business, better integrating logistics, changing business models, improving safety, facilitating maintenance, allowing telemetry and shore-based support as well as modifying the role of crew thus raising societal issues that need to be addressed. Whilst the first autonomous prototypes are being deployed, important regulatory and technical challenges remain. [...]

The first connected and autonomous services are expected to concern inland waterways, short sea shipping, ferries, coastal operations and urban water transport. The challenge is to now develop and demonstrate integrated automation technologies within a real environment.



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Closing

- There are many potential benefits...
- There are many challenges...
- There is a need to facilitate developments but as always when it comes to maritime – safety first!



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Thank you for your attention!

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