

**IFSMA /CAMM AGM 2017**

# **Autonomous and Unmanned Ships**

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## **Norway**

Rolls Royce – Marine

Kongsborg

DNV-GL

## **Finland**

Tekes, the Finnish Funding Agency for Innovation,

University of Turku

Tampere University of Technology

## **Denmark**

Danish Maritime Authority

Technical University of Denmark (DTU)

## **United Kingdom**

UK Maritime Autonomous Systems Regulatory Working Group (UKMASRWG)

Lloyd's Register

## **European Union**

MUNIN (Maritime Unmanned Navigation through Intelligence in Networks)



“HRONN”

IMO Assembly resolution A.947, Human Element Vision, defines the human element as:

*“a complex multi-dimensional issue that affects maritime safety, security and marine environmental protection. It involves the entire spectrum of human activities performed by ships' crews, shore-based management, regulatory bodies, recognized organizations, .....”*.

The issues which have been identified include:

The degree of redundancy and robustness in technical, navigational and engineering systems;

The quality of the software and algorithms;

Cyber security and the reliability of the communications system;

The risks in mixed manned and unmanned traffic;

The situation awareness of the human controller is limited to data from remote sensors;

## ISSUES:

The reliability of the sensors and systems in all environments;

System failure in remote areas;

Security and environment issues and concerns;

Infrastructure requirements and costs;

Training for the shore-based remote control personnel;

Responsibility and Liability issues;

Regulatory constraints and the duty to render assistance;

## ISSUES:

Pilotage requirements;

The cost and interaction with tug services, mooring personnel and ports;

The cost of delays and having maintenance and repairs done while in port;

The cost of remote control and monitoring, including escort ships;

The cost of insurance; and

The impact of automation in other areas and how it will impact on the demand for shipping.

## ITF Goals:

Promote recognition that the increasing capabilities and introduction of information and communications technology, coupled with robotics, will bring about disruptive change in the nature of work that can have negative as well as positive effects on the social contract between capital and labour, society in general and its political institutions.

Ensure that autonomous/unmanned ships operate with an equivalent or higher degree of safety than conventional ships and that all risk factors are taken into account that may endanger maritime safety, the marine environment and the general public.

ITF goals:

Define in clear terms the different levels of automation as it will be implemented in stages with varying impact on labour; requiring clarity as to appropriate responses.

Ensure that as technology progresses, that there is a holistic approach to the issue of autonomous/unmanned ships that considers fully both social as well as technical implications and the affect it has on maritime safety.

## ITF Goals:

Support the representatives of maritime labour to actively participate in the industrial, social and political dialogue that will influence and shape the introduction of advanced technology and robotics into the work place.

Ensure that the benefits of advanced technology and robotics are fairly distributed across society to avoid the politically destabilizing effect of increasing inequality of income.

Influence and shape any technology driven changes in the future nature of work to take into account the human element and preserve safe and decent work both at sea and ashore.