

# PISCES

## Protocols for Integrated Ship Control and Evaluation of Situations

A research project for the Telematics Application Programme  
European Commission's Directorate General XIII

### What is PISCES?

PISCES was approved as a research project for the Telematics Application Programme of the European Commission's DG XIII in the autumn of 1997. The project started in December 1997 and ends in February 2000.

PISCES aims at specifying, developing and implementing a new protocol standard for Integrated Ship Control (ISC) systems. It is based on the existing MiTS (Maritime Information Technology Standard) protocol and is closely linked to MiTS Forum.

### Why a new protocol standard?

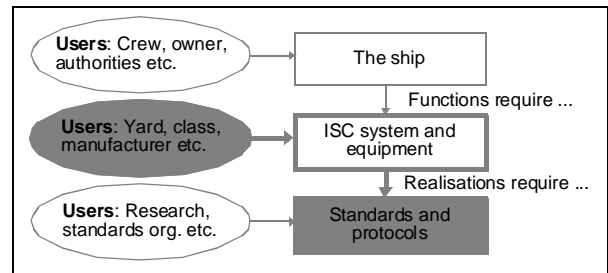
The construction and operation of modern integrated ship control systems require access to increasingly larger amounts of accurate ship state information. The PISCES consortium is convinced that new standards for data acquisition are necessary to develop highly integrated control systems in a safe and cost effective manner.

Data acquisition standards enables the development of new ISC functions by making accurate ship state information easily available. PISCES will also focus on interoperability between manufacturers and less cumbersome system integration through the development of a set of standard equipment interfaces. This work will be based on existing MiTS companion standards and the IEC 61162 series of standards.

One should also note that PISCES is not a completely *new* standard. It is based on MiTS and will essentially add some features to better support the next generation ISC systems.

### Who will benefit from PISCES ?

Standards are enabling technology and have little or no visibility for the operators or owners of the ship. However, the ship consists of - among other things - ISC equipment and systems which rely on the existence of protocols and other standards to realise their functions.



Thus, the primary users of PISCES are the manufacturers of ISC equipment, integrators of systems (e.g. yards or manufacturers) and supervising institutions (class and authorities). End users (e.g. crew and owner) will indirectly see the benefits of PISCES in better, safer and more efficient ISC systems.

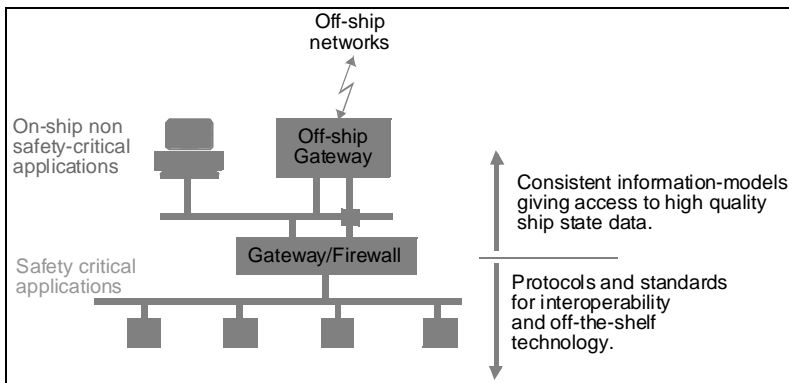
### Will it be open?

The PISCES consortium has agreed to make all general results of the project available to the public through international standards organisations (for documents) and an independent support organisation (for software). The latter includes software for the protocol stack and the standard equipment interfaces as well as tools for developing and integrating ISC components and systems.

The development of the standards will be done in co-operation with various standards organisations (also the USA and Japan) and will be supervised by an open user reference group.

## Enhanced Ship safety

There is an increasingly stronger emphasis on ship safety. Many safety enhancing measures that are being proposed will in practice depend on ISC standardisation. ISC standards will make accurate ship state information available that is a prerequisite for enhanced ship monitoring and guidance. This will be a major benefit for the authorities as well as for the public at large. ISC standards will also create a standardised infrastructure for ISC



systems through the definition of protocols and architectures. This will make it easier to assess the inherent safety and robustness of the ISC systems themselves. This will directly benefit the class societies.

## Optimising the use of transport resources

There is also a need to optimise the use of transport resources by integrating the transport providers into the production chain from raw materials to consumers. This is already appearing on a high level with Vessel Traffic Services (VTS) and fleet management systems. However, there is one vital link missing in this chain: The link to the actual source of information about the ship's state and situation, i.e., the ISC system. This final link will be provided by PISCES.

## Project goal - Summary

The PISCES project will develop and establish a common ISC data-bus standard to enable the development of safety and efficiency enhancing applications for ship supervision and control. The project will contribute to increased interoperability between different manufacturers' ISC equipment and by that

reduce the life cycle cost of the ship. The project will co-operate with external organisations to spread knowledge about the results and make sure that the potential is released.

## Main benefits of PISCES

- Easier system interfacing, off-the-shelf technology, higher safety.
- Open system interconnection: Manufacturer independence, easier integration.
- Access to higher quality ship information: Decision support and safety.
- Safe and cost-effective integration within the control system and to off-ship systems.

## The consortium

The PISCES consortium brings together four groups of companies:

### 1. Ship electronic equipment

**manufacturers:** Autronica (NO),

Kongsberg Norcontrol (NO), Kvaerner Ships Equipment (NO), Marac Electronics (GR), STN ATLAS Elektronik (DE), Scana Moland (NO) and Siemens (DE).

2. **Yards:** Howaldtswerke-Deutsche Werft (DE) and Karlskronavarvet (SE).

3. **Information technology specialists:** EC-gruppen (SE), Dassault Electronique (FR), ISSUS (DE) and SINTEF (NO).

4. **Class societies:** Det Norske Veritas (NO).

In addition, two educational institutions are participating as sponsoring partners: Koninklijk Instituut voor de Marine (NL) and the Norwegian University of Science and Technology (NO).

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