# IPMS

Integrated Platform
Management System
for navy vessels

## What is IPMS?

An integrated platform management system (IPMS) is a distributed system used on board ships and submarines for the real-time monitoring and control of the vessel's hull, mechanical, electrical and damage control machinery and systems.

### IPMS benefits

- Open and scalable architecture

- Virtually unlimited input/output

- COTS based

- Reduced ship life cycle cost

- High level of automation gives reduced manning

Typical machinery, equipment and systems monitored and controlled by the IPMS include:

- Propulsion system

- Handles, engines, propellers

- Power Management System (generators, switchboards, distribution)

- Damage control equipment (e.g. fire pumps)

- Auxiliary machinery systems for heating, ventilation, airconditioning, chilled water etc.

- Alarm System

- Extension Alarm System

In essence, IPMS may be used for control and monitoring of virtually all equipment onboard a warship, excluding the combat related weapons/sensors and the ship's communication and navigation equipment.

## Well-proven solution for navies worldwide

Logimatic has developed an Integrated Platform Management System for The Royal Danish Navy's Flexible Support Vessels and Frigates.

The system consists of a number of processing units (PLCs) distributed around the ship, and a number of operator stations located in the Engine Control Room and on the Bridge.

All operator stations can display any IPMS mimic, so the ship platform can be controlled completely either from ECR or the Bridge.

Optional connections to the ship-wide data network enables connection of portable PCs for diagnostic purposes and manning of local Damage Control Stations.

More than 100 mimic displays have been developed, based on standard windows graphical user interface where data are displayed and controllable components can be manipulated via pop-up faceplates.

The mimics are designed in accordance with the system diagrams and show outlines of essential machinery details to facilitate seamless operation of the system.

The system has been implemented on the Flexible Support Vessels at the Royal Danish Navy since 2004 and has recently been implemented on the Frigates.

*"Logimatics IPMS has brought the application of computer aided control and supervision of our vessels into a new era, both in terms of operability and maintainability.*

*Logimatic has had a strict focus on the ship operators in the development of a very user friendly system, and we are especially satisfied with the Damage Control System that is tailored exactly to our specific needs.*

*The crew members also express their satisfaction in the daily use of the system, stating that it provides seamless supervision, diagnostic and maintenance of the ship equipment."*

Captain Per Bigum Christensen
Technical Director, Maritime System
Danish Defense Acquisition &
Logistics Organization

# The IPMS architecture

The IPMS is realized with a number of distributed data collection and control units, called outstations, and a number of operator stations with computers, displays and keyboard. All equipment is arranged in a network architecture (see illustration below).

An optical Ethernet backbone links the various computers and processors, connected in a ring so single failures do not prevent communication. Remote input/output outstations are connected to "processor" outstations by means of redundant ControlNet where two separate network cables are routed in geographically distinct paths. The ControlNet is deterministic and very reliable and thereby well suited for time critical and demanding control tasks. The distributed architecture ensures a high level of operability and with a careful design of built-in redundancy and control of ship redundant systems, the entire platform comprises a very safe system.

The different outstations are located in the different damage zones (or fire zones), thus decreasing the overall vulnerability to fire and flooding. The computer surveillance system is realized with two Data Servers (redundant) and a number of Clients installed on the operator station computers. The clients are distributed between the two data servers.
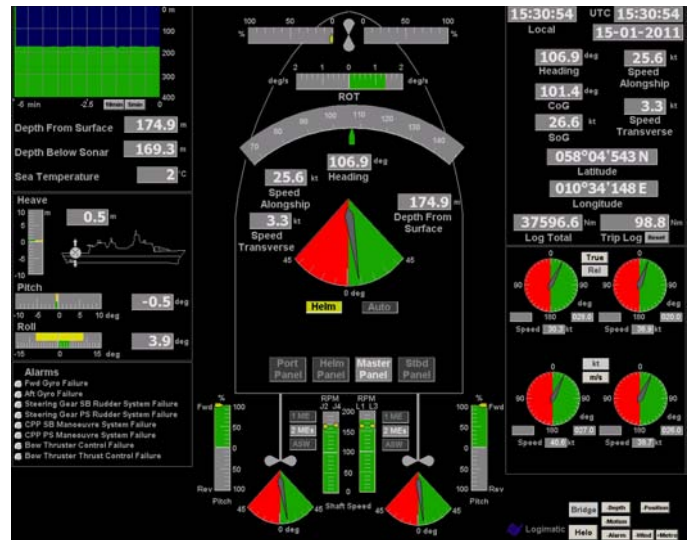


*Screen: Conning Display*

Each operator station is equipped with two independent sets of computer, monitor, keyboard and mouse. In case of failure of one computer the other computer remains fully operable. External systems, such as the Main Engine Control System, are connected with serial interfaces where a large number of data can be transferred without installing expensive input/output modules.
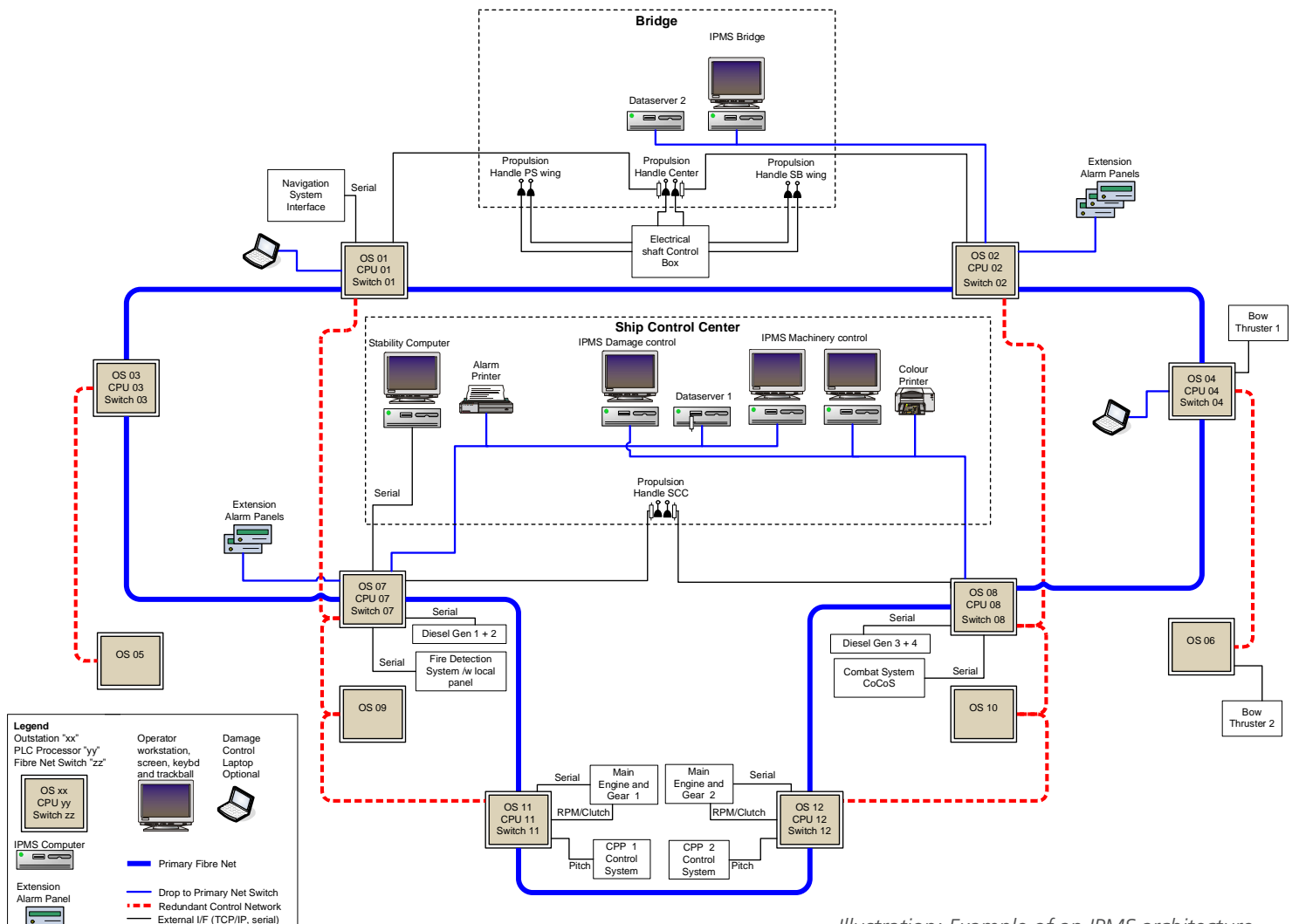


*Illustration: Example of an IPMS architecture.*

## ABOUT LOGIMATIC

Logimatic is an international engineering and IT company with 25 years of experience in developing IT based solutions for the global maritime industry. Logimatic occupies more than 70 employees.

Our main activities are concentrated on the sales, implementation and support of in-house developed IT solutions.

We wish to be regarded as a professional and loyal partner with years of know-how with regard to the marine industry.

Throughout the years many of our customers have returned with new projects. This leads us to believe that we bring value to our customers and streng-then their competitiveness.

At Logimatic we acknowledge the importance of quality within the working procedures. Hence, we have been certified according to the ISO 9001 since 1998.

**LOGIMATIC**
*integrating knowledge and technology*

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