



Shaping the future

... in NAVAL COMMUNICATIONS



**Secure and
Reliable Communications**

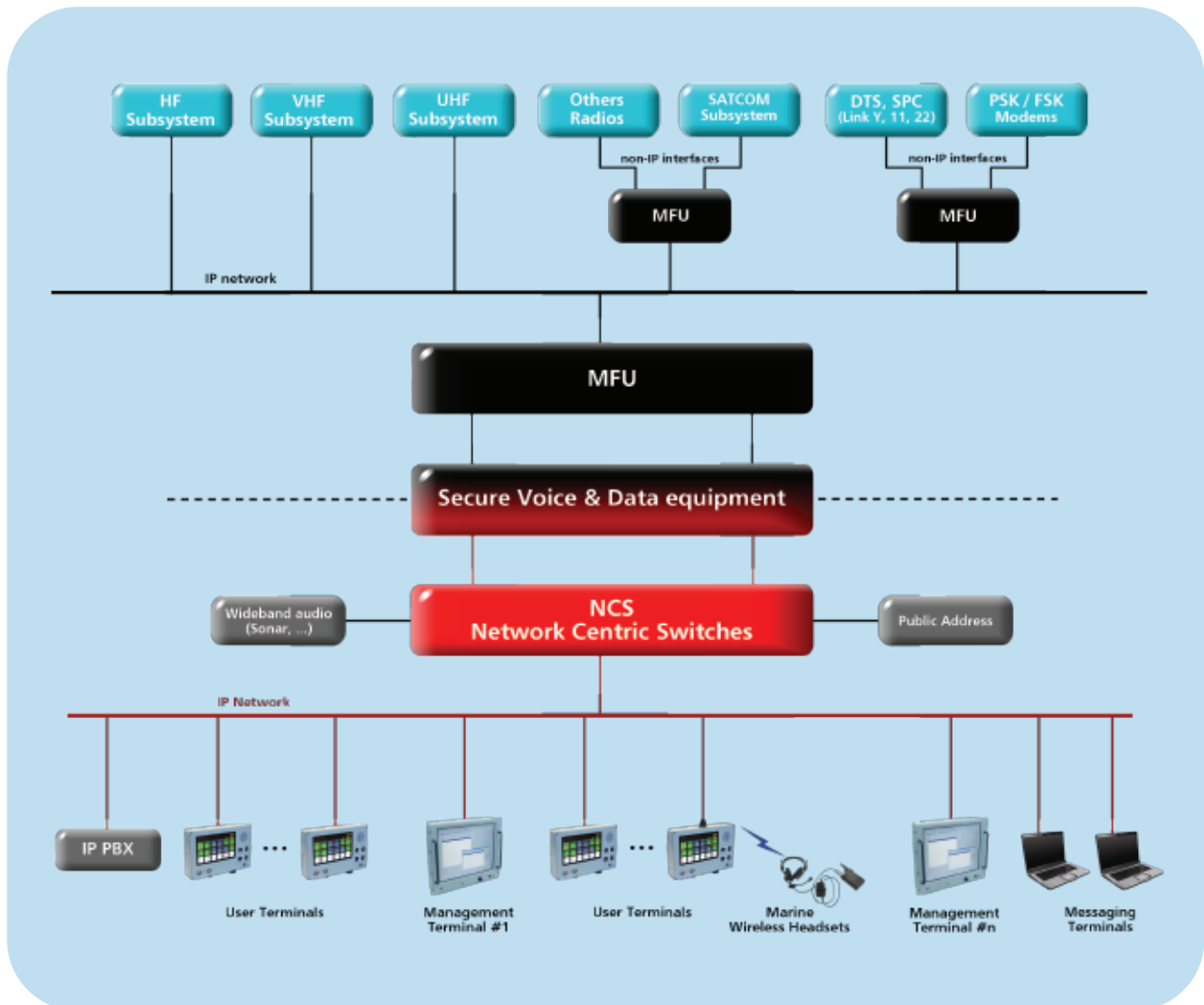
for all types of warships



ICCS

Integrated Communications Control System, featuring

- Full integration of all internal and external communications resources, including remote control functions
- Powerful, comprehensive control and supervision tool
- Unique operational characteristics, namely through the concept of communication plans (Complans); an extremely efficient management of resources is achieved, as well as the capability to react quickly to changes on the operational scenario
- Embedded training facilities allowing the set-up of a communications training environment; coexisting with normal operation, it enables on-board users to develop their operational proficiency
- High survivability and reliability; no single point of failure at the system level



Cost-effective, modular system design

- Open system, based on widely accepted standards and technology, thus guaranteeing easy, fast and cost-effective integration of communication equipment and subsystems of any manufacturer
- Interfaces to the Combat System enabling the transfer of information between both systems
- Inherent upgrade and growth capabilities, both in terms of configuration and technological evolution
- Flexible architecture, suitable for any type of warship
- State-of-the-art technology

Tailored to meet the specific requirements of each Customer

ICCS is indeed a step ahead in terms of shipboard communications management, supporting high-level concepts such as COMPLANS and On Board Training facilities.

The system features a centralized control, with an appealing, intuitive and powerful Human interface, that turns the control and management of the ship's communications into a simple and trivial task, requiring a minimum of skilled personnel.

EMCON emission control

Powerful internal communication capabilities including:

- Point-to-point and conference circuits
- Special facilities such as group calls and programmable priority break-in

The overall system set-up (channel allocation, frequencies, operation modes, etc.) can be changed either automatically or with a single command, enabling short reaction time to changes in the operational context.

Flexible utilisation of transceivers, modems and crypto devices.

Parallel keying and Radio relay circuits.

Frequency "kick" support, to allow fast reaction time to changes in the operational context.

Remote control of communications equipment, including real-time status monitoring, fully integrated into the COMPLANS.

Multiple and dynamic assignment of external channels, either plain or secure to User Terminals.

High Survivability and Reliability

- **Automatic re-routing** facilities
- **Duplication** of all system vital components
- **Modularity**
- **Distribution of Network Centric Switches (NCS)** through different ship's compartment, minimising the consequences of a single hit
- **Allocation of communication equipment of the same type to multiple NCS**, considerably reducing the impact of a single failure
- Minimum cabling; extensive use of fibre optics
- Separate cable runs, avoiding the risk of simultaneous cable cuts
- Special coating of circuit card assemblies for protection against environmental agents
- EMI/EMC protective measures
- Extensive use of high-quality, low cross-talk and self-extinguishable, halogen-free cables
- Careful design and construction of mechanical parts bearing in mind the shipboard, corrosion prone environmental conditions
- Resilient mounting of equipment cabinets whenever required to cope with the shock and vibration phenomena prevailing on board naval vessels

ICCS main components

- **NCS, Network Centric Switches (19", 7 height units)**

- **MFU, Multi-Functional Units (19", 1 height unit)**

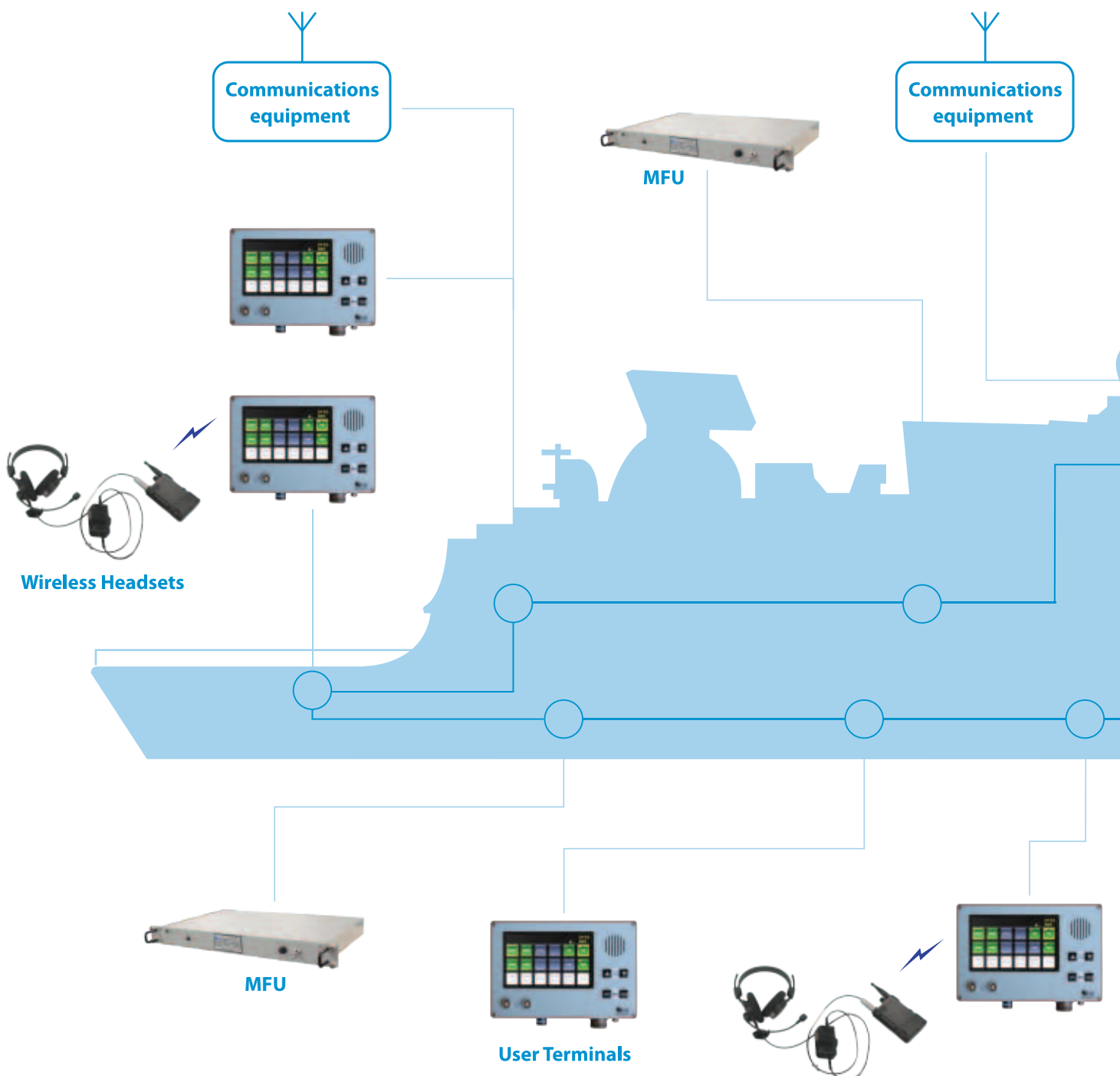
providing

- Digital and analogue interfaces to the communications equipment
- Signal distribution functions

- **Management Terminal**, enabling a single operator to take care of the full control and supervision of the system

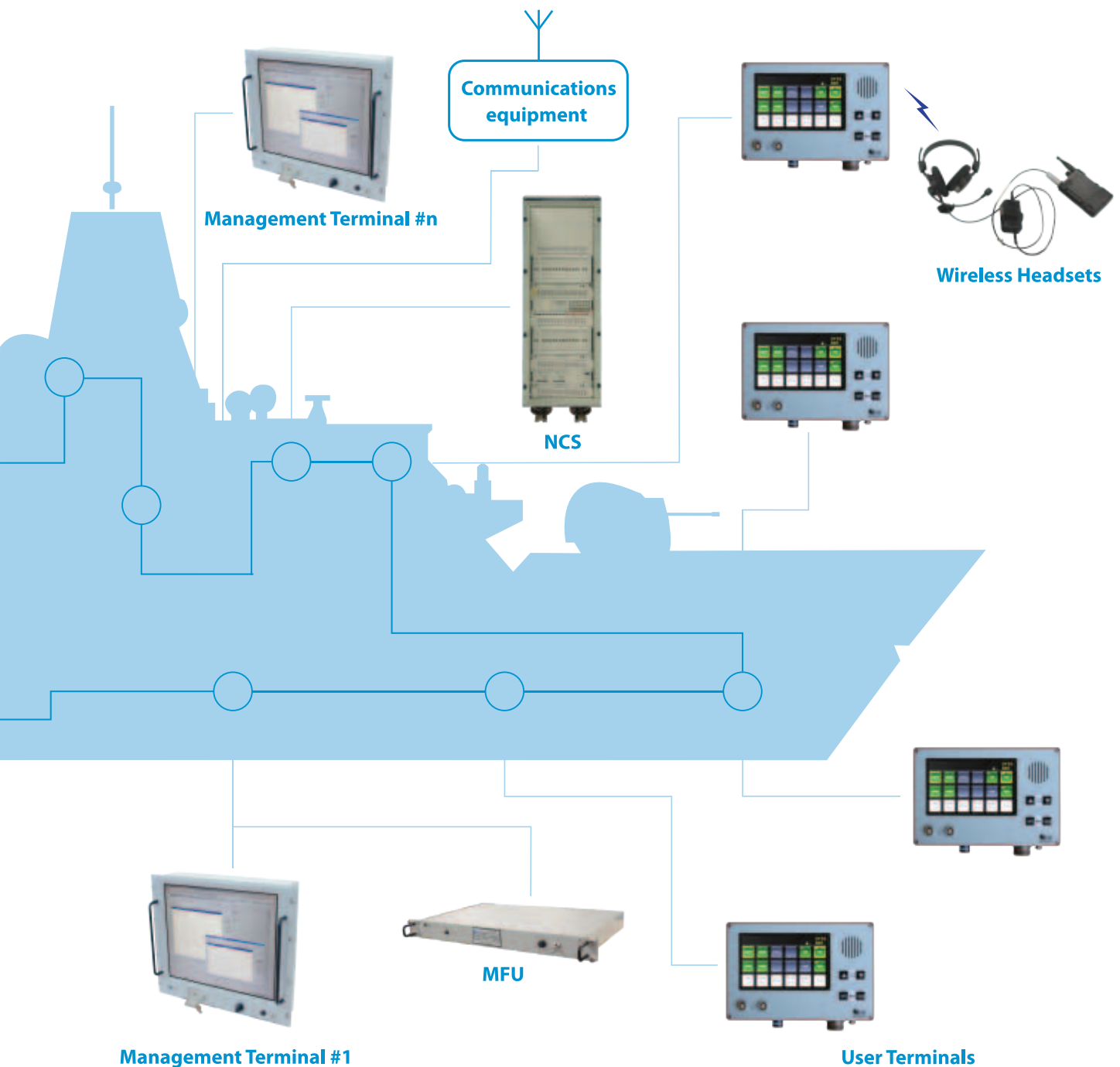
- **User Terminals**

- Access control (Login)
- Simultaneous access to internal and external communication channels
- Multi-level security
- Wireless capability
- Equipment remote control



TWH-101N Marine Wireless Headset

- Simultaneous operation of internal and external circuits
- Encrypted communications with the User Terminal
- Wireless operation is enabled/disabled on the User Terminal
- Up to 128 users (Reception)
- Spread spectrum technology on 2.4GHz
- RF output power: -1dBm up to +24dBm
- Autonomy: up to 8 hours (16 hours with additional battery pack)



Systems Integration

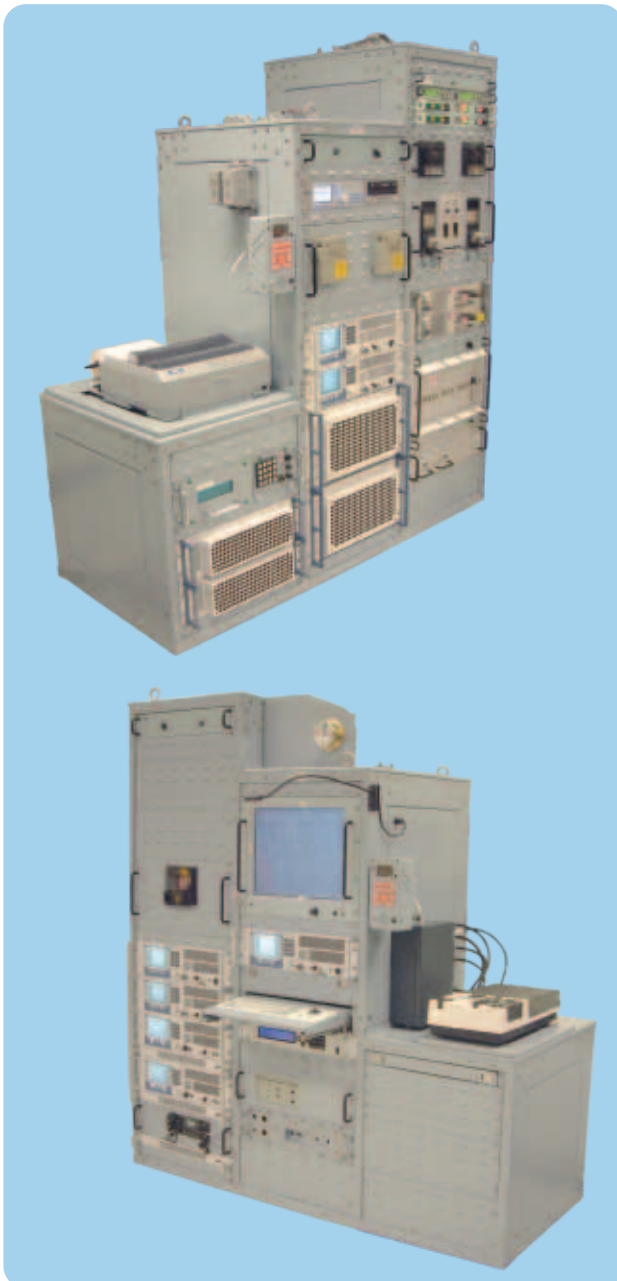
EID supplies state-of-the-art, high performance Fully Integrated Information and Communications Systems, meeting the most stringent requirements of any type of warship.

With ICCS as the core sub-system that glues together all the on-board communications equipment, the Fully Integrated Information and Communications Systems include all the equipment required to establish the different types of external and internal communication channels, namely:

- radios (covering all the necessary frequencies bands), SATCOM equipment
- modems
- COMSEC equipment
- GMDSS equipment
- Public Address System
- Message Handling System
- Sound Power Telephones and PABX
- Wireless systems
- Data Networks

NCS (C)

- Compact stand-alone switch for small ships
- Cost-effective solution for refit programs



Besides equipment/sub-systems selection and supply, EID carries out all the design and engineering activities required to provide a fully integrated, operational system. These include:

- system-ship and inter-system interface design (electrical and mechanical)
- power supply requirements, environmental aspects
- room lay-outs
- top-side antenna arrangement
- installation data and drawings, cable plans
- setting to work, acceptance tests
- integrated logistics support, cataloguing and quality assurance plan

Most of the communications equipment is housed in consoles and cabinets specifically designed to cope with the severe space and environmental constraints prevailing aboard warships.

An emblematic Fully Integrated Information and Communications System example is the one supplied by EID for submarines; the overall system complies with demanding requirements, such as:

- Shock standard BV043
- EMI/EMC MIL-STD-461
- Airborne Noise Requirements
- Structureborne Noise Requirements

Controlling communications on board 100+ warships



ICCS

key benefits and advantages:

- Fully integrated communications system
- Unique and thorough systems approach to Naval Communications
- Open system design
- Cost-effective solution
- Customized to meet the specific requirements of the users

ICCS is the outcome of EID vast experience and solid know-how in the naval communications field, together with long-term and fruitful relationships with a diversity of navies and multiple crews.