Kairos for maritime applications
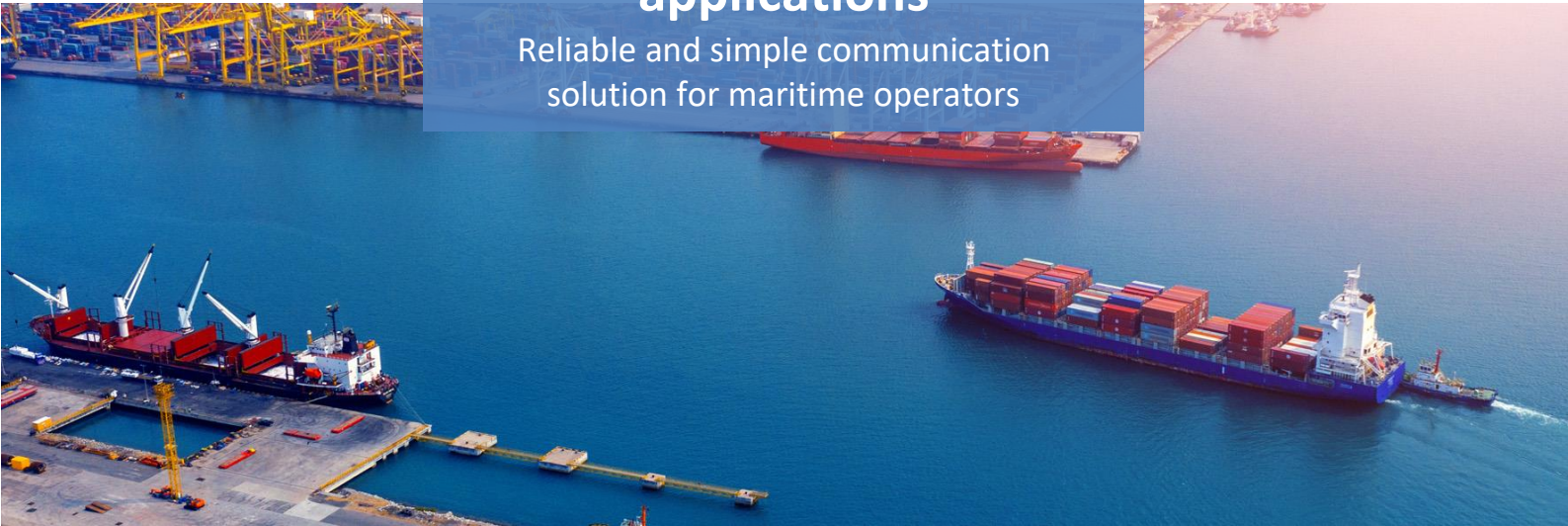Reliable and simple communication solution for maritime operators

CLIENTS
Coast guards, port and waterway operators and authorities

MARKET SEGMENTS
Maritime, ports, rivers and inland waterways

KEY FEATURES
- *ATIS encoding and decoding*
- *Simplex simulcast*
- *Analog simulcast subnetworks*
- *RSSI via SW or HW connectivity*

BACKGROUND

Coastal, port and waterways radio networks can help to increase the productivity and to enhance the safety for delivering efficient and secure operations; typically, are divided in two main classes: rescue and communications. Rescue services are held worldwide in analog on CH16; from aboard, it is possible to send a distress call according to an international format of Digital Selective Call (DSC); these requests are received from the base stations and reported to the operation centers. Instead communication services for Vessel Traffic Services (VTS) are shore-side systems, generally managed by radio, which range from the provision of simple information messages to ships, such as position of other traffic or meteorological hazard warnings, to extensive management of traffic within a port or waterway.
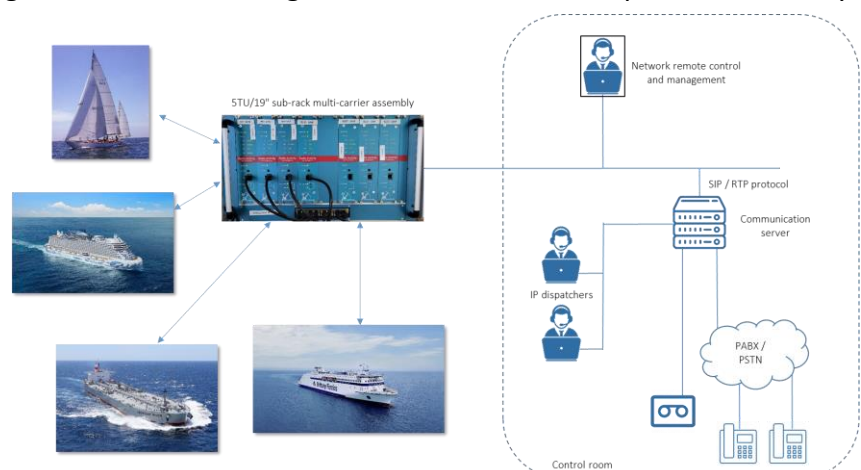
SOLUTION

Kairos is the solution of Radio Activity for the maritime and PMR markets: a base station and RF repeater for voice and data traffic, in VHF / UHF frequency bands, multi-protocol analog & DMR & P25 & POCSAG, with SIP & RTP interfaces. Kairos natively integrate the voice / data transport through an Ethernet connection; the classic 4W+E&M connections are still available for being used in multiple structures. Networks can be implemented in simulcast (i.e. using the same couple of frequencies in the overall network) or in multi-frequency; PtP RF radio links in VHF / UHF can be also implemented with the same HW. All the signaling and voice communications are typically collected in the operative centers of these networks; in particular, an audio matrix will be present able to handle flows arriving from the different transceivers and to make them available to the operators. Some specific features make Kairos the perfect solution for communications in maritime environment, as listed here below.
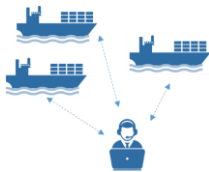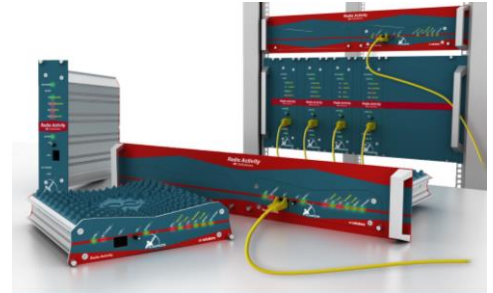
✓ ATIS ENCODING AND DECODING

Kairos can be implemented in ATIS (Automatic Transmitter Identification Systems) systems, used in inland waterways in various countries in mainland Europe. At the end of every transmission the radio sends out an unique FFSK data signal, which contains the user or ships unique call sign, that is monitored by marine coast stations.
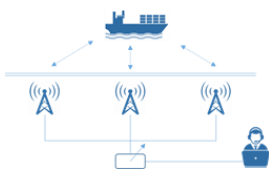
✓ SIMPLEX SIMULCAST

CH16 (156.8 MHz) is an international marine VHF radio frequency designated for distress, urgency and safety priority calls. Kairos can be used also in simplex communications, as requested for general communications in CH16, in conjunction with simulcast, for managing the different coverage areas as an unique network.
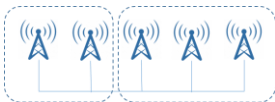
✓ ANALOG SIMULCAST SUBNETWORKS

Kairos technology allows to remotely create different simulcast sub-groups of base stations, for splitting the overall area to be covered. This functionality is useful for dividing wide coastal or port areas in different sectors.

✓ RSSI VIA SW OR HW CONNECTIVITY

An RSSI proportional to the received signal is usually sent by the legacy base stations to the operation centers: the operator can use this information for understanding the best base station to be considered for the communications with a ship. Also Kairos can transmit this information, for being used in the modern maritime networks, through the RTP protocol or via a specific HW connector designed by Radio Activity.

CASE STUDIES

Kairos was already implemented in several maritime projects, for example:

- ✓ Italy - Poseidon Project - 55 sites for covering Italian coasts
- ✓ Belgium - 3 different port authorities - VHF radio communication systems in simulcast with over 80 Kairos
- ✓ Netherlands - local authority - internal waters navigation networks
- ✓ France - local authority - single infrastructure to cover over 400 Km of waterways with 7 DMR simulcast networks
- ✓ Australia and New Zealand - surf lifesaving - analog and DMR networks, IP and RF linked.

RESULTS AND BENEFITS

Maritime is a fast evolving sector, that requires reliable and ad hoc solutions. Kairos integrates numerous functionalities customized for this sector, field proven in several maritime projects: ATIS encoding and decoding, simplex simulcast, analog simulcast subnetworks and RSSI via SW or HW connectivity. All these functionalities, together with the usual characteristics of Kairos (simulcast, soft diversity reception, HW protection, compact and reliable, etc…), make it the perfect solution for the maritime networks.
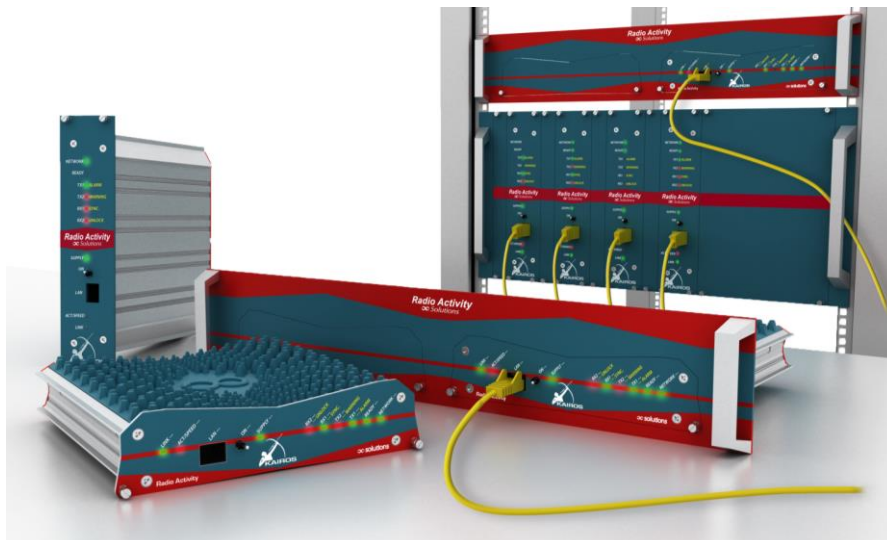
Kairos family: professional infrastructure for Digital Mobile Radio