



**SAAB**

# **TACTICAL** MARITIME COMMUNICATION SOLUTION



# TACTICALL MARITIME COMMUNICATION SOLUTION

With TactiCall MCS Saab applies already proven integrated communication technology to the coastal radio domain thereby optimizing, modernizing and future-proofing already existing mission critical coastal radio systems.

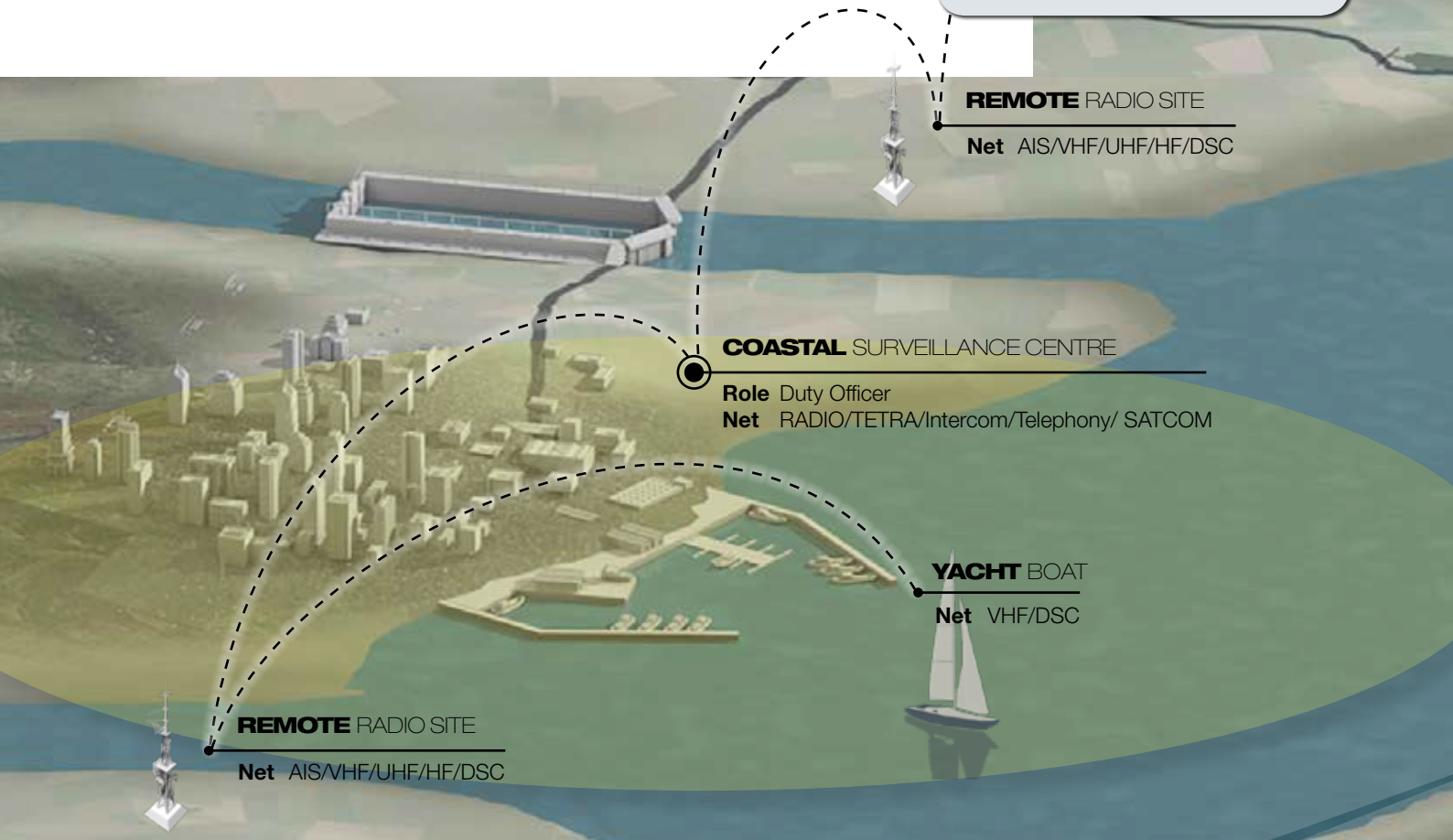
The solution comprises a fully IP based radio system which can be configured to support the needs and workflows connected to any type of coastline. TactiCall MCS integrates systems such as GMDSS, incident management, VTS, SAR operations, radio sites etc. into one effortless manageable platform – scalable and modular to be able to fit any type of operational environment.

Being completely software based the system is designed for seamless voice and data communication spanning all of today's technologies. The fault tolerant and secure design still adheres to open standards, and is even capable of operating entirely on commercial-off-the-shelf hardware.

TactiCall MCS can be offered as a packaged software product – integrating already existing systems and hardware or be scaled to include everything from microphone to antenna, making up a new futureproof coastal radio solution with Saab taking the role of lead system integrator.

## TACTICALL MCS BENEFITS

- Utilizing proven safety critical communication technology
- Scalable, failsafe and redundant system architecture
- Supporting both centralized and de-centralized control rooms
- Designed according to relevant ITU, IALA and IMO standards
- Integrates commercial-off-the-shelf hardware
- Cost efficient allowing re-use of existing radios and low maintenance
- User friendly intuitive HMI



### GMDSS

- NAVTEX
- Digital Selective Call (DSC)
- MMSI Database
- SATCOM



### RADIO

- SATCOM
- LTE
- TETRA
- VHF/ATIS
- VHF/DSC
- MF-HF, VHF & UHF



### TELEPHONY

- SATCOM
- GSM/3G/LTE (4G)
- PSTN
- IP/Analogue



### INTERCOM

- Operational intercom
- Forced call
- HD voice
- Chat

**SAR HELICOPTER**

**Role** Pilot  
**Net** Radio/TETRA/VHF



**JOINT RESCUE & COORDINATION CENTRE**

**Role** JRCC emergency  
**Net** Radio/TETRA/Intercom/Telephony/SATCOM



**MERCHANT SHIP**

**Role** Commanding office  
**Net** VHF/FM/UHF/HF/DSC/NAVTEX

**VESSEL TRAFFIC SURVEILLANCE CENTRE**

**Role** Traffic Operator  
**Net** VHF/Intercom/Telephony/TETRA

**COASTGUARD**

**Role** Commanding officer  
**Net** Radio/Intercom/Telephony/PA/SATCOM

**MARITIME COMMUNICATION**

TactiCall MCS is a distributed, IP-based communication solution allowing multiple control centres and remote radio sites to be connected over a wide geographical area. The solution supports voice and data communication on MF, HF, VHF, UHF, LTE and TETRA radios including DSC, NAVTEX as well as remote control of radio parameters.

TactiCall offers high quality VoIP audio interfaces conforming to the EUROCAE ED-137 standard, allowing integration of any ED-137 compliant radio and voice recorder. TactiCall's standard compliant VoIP and SIP telephony integration ensures interoperability with popular COTS telecom gateway and VoIP PABXs. TactiCall's data interfaces interconnect seamlessly with other maritime authorities allowing for a smooth integration, and improving situational awareness and response.

**FULLY GMDSS COMPLIANT**

TactiCall is fully GMDSS compliant and comes with integrated GMDSS/DSC functionality – no extra DSC radio or modem is needed. Saab equips the control rooms with a robust user-friendly GMDSS capability that delivers enhanced situational awareness and collaborative working in order to co-ordinate an effective response to distress situations.

The solution even provides open API's, allowing integration of GMDSS capabilities into 3<sup>rd</sup> party maritime surveillance systems and Incident management systems.

**CRUISE SHIP**

**Net** VHF/MF/HF/DSC/SATCOM



**CONTACT CENTRE**

- Call take functionality
- Call queuing
- Chat & email integration



**RECORDING**

- Legal recording
- Instant recording



**INTEGRATION**

- AIS systems
- GIS systems
- Incident & crisis management systems
- Coastal/VTS surveillance systems



**TRAINING**

- Radio simulation
- Instructor/trainee



# USER EXPERIENCE

The MCS user interface is optimized for maritime radio operations, linking all views together to provide a comprehensive workflow and overview.

## Database searches

Provides ship information by searching directly in the database, or simply select the ship on one of the map view, which will immediately perform an automatic database search.

## Radio calls

Radio calls are initiated from the radio communication panel – but can also be performed directly from the map view, creating intuitive access to available radios and nets.

## DSC messages

Incoming DSC messages can also be opened directly from the map view by selecting the sending ship, or be handled from the DSC message list view if this is preferred.

Transmitting ships will be highlighted on the map as long as a DSC message is unhan-

dled. Selecting DSC message will highlight all details related to the message in the:

- DSC message view
- Database
- DSC/radio communication map
- Detailed map view

Replying to a message will automatically activate the radio communication icon on the communication panel allowing the operator to PTT immediately. DSC messages can be sent to all ships within a geographical area by selecting the specific area on the map.

To optimize the use of available screen area the DSC views can be arranged, resized, stacked or hidden as tab pages which can then be displayed as needed.



**DSC call list**

Reply	Initial	Tag no.	Date	Time	QOS	ECC	Message type	Decoder	TX Station	Address
In progress	Clare	25	2016-05-21	12:42	100%	OK	System call	Nora	Silene	Dutch coastguard
In progress	Alexander	18	2016-05-21	12:27	100%	OK	Safety call	Westersch. MS wireless	All ships	

Colour indicates the message severity

**DSC message view**

Message type: Routine

Date: 2016-05-21 12:25

Address: Dutch coastguard

Decoder: MS wireless

QOS: 100%

ECC: OK

Telecommand: FM Voice (VME)

Suggested Ch: C472

Message details: Name: Tullu, Call sign: LRN, MMSI no: 234356000, Ship type: Freighter, Ship desc: [Image of ship]

Location: 52.34355° / 5.37354°

Heading: 58°

Status: Under way using engine

**DSC SYSTEM**

The default setup includes:

- A DSC call list
- History list, for sent & received DSC messages
- A DSC message view

Add-on options include:

- A database
- A DSC/radio communication map
- A detailed map view

Database



▲ Dynamic grouping of radio channels ensure the best possible overview, allowing for grouping of channels according to operational needs and placing them anywhere within the main view.

**Best signal selection**  
The RSSI indicator provides a visual indication of the reception strength displayed either as bars or circles

**FLEX 3000**

- Complete overview of available communication channels for quick response to traffic
- Dynamic patch connection between radio equipment and telephone lines
- Replay audio transmissions using build in recorder
- Easy access to volume controls (individual channels or all channels)



◀ Geographical dimensioning within TactiCall provides map views which enable easy access to all available communication channels from a geographical perspective.

Receiver stations are assigned directly on the map and are highlighted every time a radio signal is received on one or more stations.

A station's assigned radio channels are accessed through the map, and enables fast response to incoming radio calls simply by clicking the station indicator.

Incoming radio signals will be displayed on the map. In case of simultaneous calls the receiver with the best quality will be chosen.

# 3<sup>RD</sup> PARTY INTEGRATION



The TactiCall MCS can be used stand alone with the complete set of GMDSS capabilities available, but can also be combined with a common operational picture (AIS, radar, electro optics, direction finders etc.) in order to provide more accurate situational awareness.

The GMDSS API can be used to enhance other 3<sup>rd</sup> party systems with DSC and radio capabilities. The REST API provided can be used to integrate systems like surveillance, AIS, and incident management.

## INTEGRATED EXAMPLES

- Send & received distress, safety and routine DSC messages from 3rd party systems
- Showing GMDSS distress & safety related information, positioning on charts
- Send a DSC radio message to a geographical area marked on the map
- Update name and call sign information in TactiCall from AIS/ship register

# REGIONAL CENTRES

The TactiCall MCS system is built on distributed peer-to-peer architecture. A peer-to-peer architecture provides high availability over multiple communication paths, avoiding centralized servers and single points of failure.

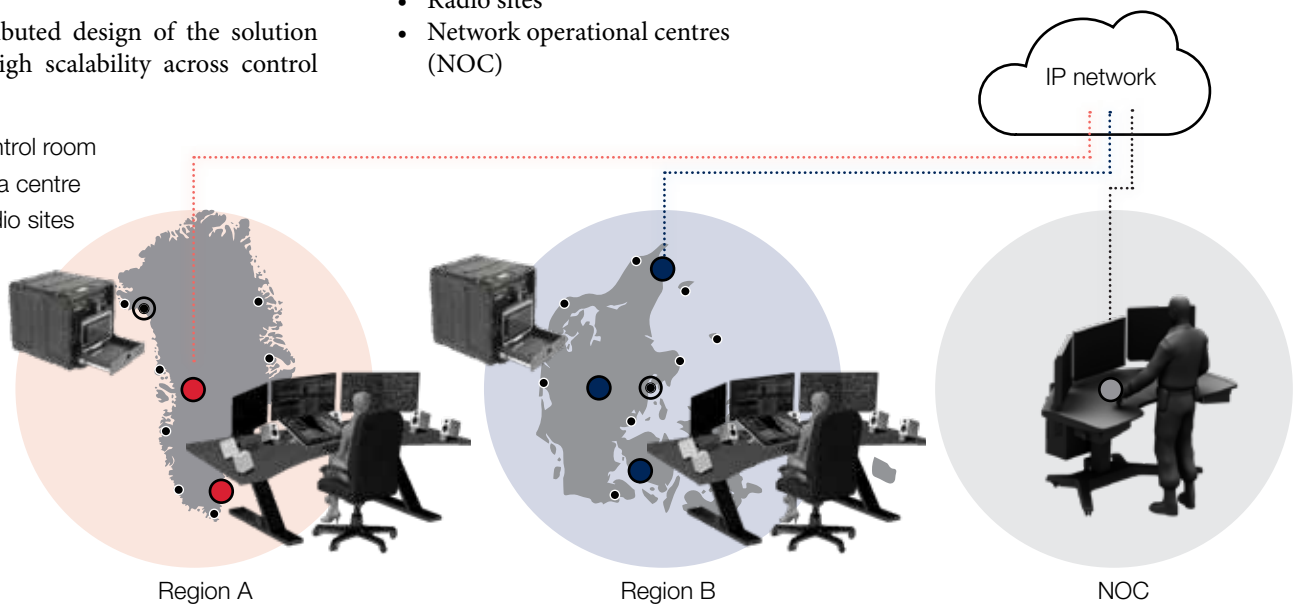
The distributed design of the solution enables high scalability across control

centres, operator positions, and radios connected to TactiCall. The full system typically consists of four key building blocks:

- Control rooms with operators
- Data centre with servers
- Radio sites
- Network operational centres (NOC)

One or more of these blocks can be placed anywhere within an IP network. Remote configuration management, software updates and supervision of the entire system is possible from any NOC.

- Control room
- ⊙ Data centre
- Radio sites



# SPEAKERS & ROOM CONFIGURATION

Operator roles correspond to areas of responsibility or particular operations. The concept of roles is to adapt the TactiCall MCS user interface, providing each operator with an easy overview of all necessary communication services to accomplish individual operational duties.

All main and secondary operations are adapted into the role concept. The area

of responsibility can be changed dynamically e.g. consolidating regional operations overnight when the workload is perceived to be reduced.

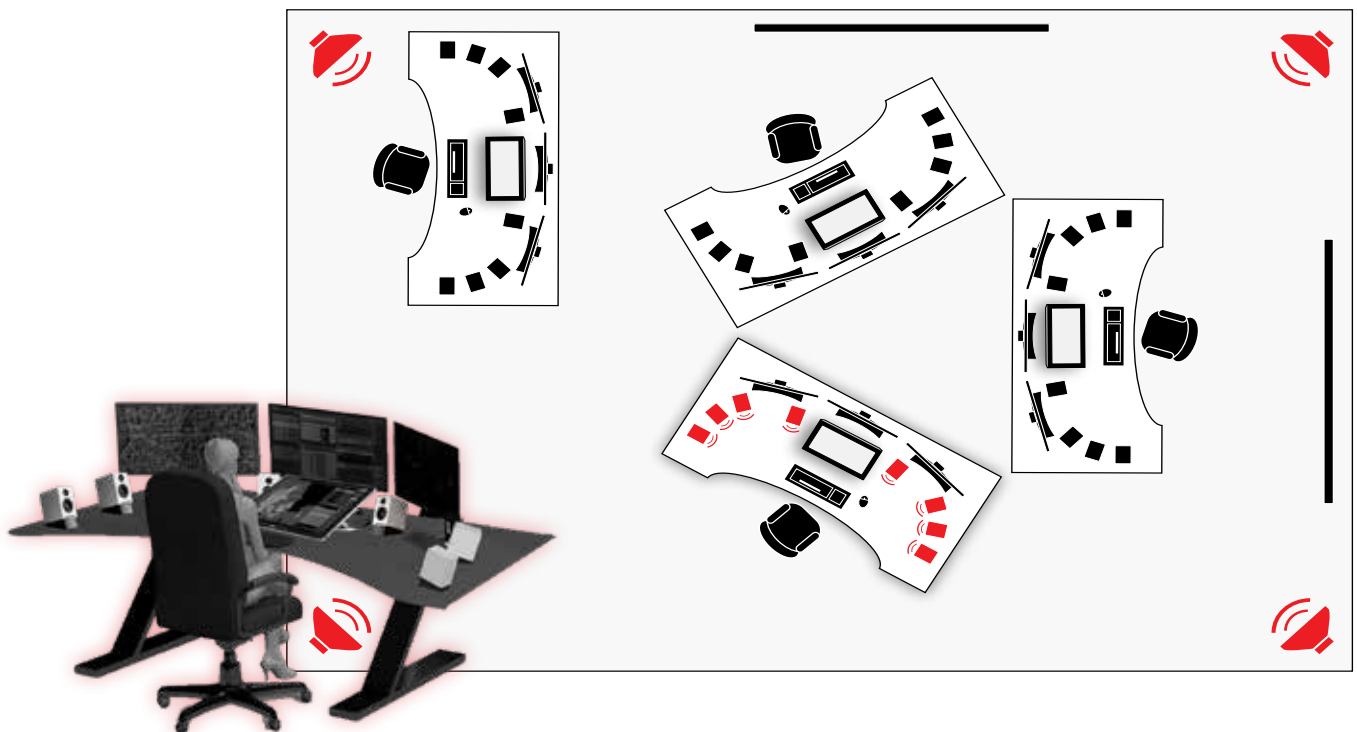
TactiCall MCS is designed with a flexible loudspeaker configuration, supporting up to 8 loudspeakers per operator position for monitoring radio channels and operational alarms. In addition a control room can be configured with

multiple IP speakers, each configurable with radio channel audio and operational alarms in the event of distress incidents.

## COMMUNICATION PLAN

Duties, responsibilities and privileges of a particular operator role are defined in the communication plan.

Control room example



## Features

- Fully IP based and redundant system architecture
- Fully GMDSS compliant with integrated Digital Selective Calling (DSC) and NAVTEX support
- Role based system with support for free operator seating
- Highly flexible and intuitive user interface
- Watchkeeping of radio channels with up to 8 loudspeakers per operator position
- Support for multiple control room speakers for radio channels monitoring
- Responsive radio map for guided and responsive radio operations
- Wall-mounted radio map & situational status overview
- Scheduled radio broadcast
- Best signal selection function
- Integration of Automatic Transmitter Identification System (ATIS) for inner waterways
- Support for EUROCADE ED-137 VoIP interface to radio and recorders
- Integration of analogue UHF, VHF, MF & HF radios
- Integration with digital radio systems such as TETRA, P25 & LTE
- Radio remote control feature
- Integrated short term recording & instant audio playback
- Integration to legal recorder incl. support for ED-137 VoIP recorder interface
- Telephone integration
- Intercom/hotline functionality
- Radio - telephone patch functionality
- Conference patch between radio/telephone and radio/radio
- Comprehensive REST API for 3<sup>rd</sup> party integration



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