

# C-SCOPE

Vessel Traffic Services System



Flexible communication with ships via AIS, VDES and Private Secure Cloud

## C-SCOPE Vessel Traffic Services System

C-Scope is Kongsberg Norcontrol's 7th generation situational awareness solution to identify and proactively manage risk, primarily within the maritime domain. C-Scope provides ultimate situational awareness for tactical operations and strategic planning for ports authorities, coastal administrations, inland waterways authorities, offshore operators and military organizations.

C-Scope conforms with and is compliant with IALA Recommendation V-128 and Guideline G-1111.

Today's Vessel Traffic Service (VTS) systems are rarely "closed" and typically need to interoperate with other systems such as financial systems, pilot portable units, port management systems, incident management systems, external databases, etc. Such interoperability requirements increase the risk of cyber-attacks, and therefore the C-Scope software has been designed to the quality assurance standard required by NATO (AQAP 2110 and AQAP 150).

The key features of C-Scope are its open architecture, autonomous services and flexibility.

As needs differ between VTS operators, C-Scope provides the possibility of customizing the operating environment. If needed, each VTS operator can select the rules and parameters that are required, tailoring lists, dialogs, context menus and chart layers to meet his or her needs.

Kongsberg Norcontrol holds a Gold Standard Global Partnership with Microsoft.

- ### FEATURES
- Service-oriented architecture - makes for a flexible system that can adapt to future needs
  - Design principals based on open international standards defined by W3C, OGC and OMG.
  - Compliant with IALA v.128, V.135 and V.145, as well as Human-centered design for interactive systems (ISO 9241-210, 2010)
  - Geospatial Data Visualization Engine features:
    - » Displays tens of thousands of data objects over complex maps and images
    - » High data refresh rates
    - » High-fidelity displays
    - » Operational responsiveness
    - » Minimal latency between system data update and operator awareness
  - Decision Support Tools providing the right information, to the right VTS Operator, at the right time.







### C-SCOPE OPERATOR CLIENT

The primary interface to the C-Scope VTS System for compiling and providing the visualization of the real-time VTS Traffic Image. This is a fully correlated product derived from C-Scope VTS system's real time sensors: radar and AIS, visualized on an S57 ENC. Vital compilation services provide a clear and coherent Traffic Image, with discrete radar target shown only once, and correlated with its AIS track and any other track data source. Predicted vector, direct reckoning and voice reported tracks are all provided to the user as well.



### C-SCOPE EXTRACTOR AND TRACKER SERVICE

At the front-end of the C-Scope VTS traffic image is the radar extractor and tracker. This is a highly effective, state of the art solution with extremely high resolution. It can extract and track very small targets as well as very large targets. It also has the capability to detect and track extremely high speed targets as well as immediately detect targets splitting and merging. This solution ensures excellent quality of radar input, thus guaranteeing superlative C-Scope response. It is compatible with the majority, if not all, VTS radars available today.



### C-SCOPE SENSOR FUSION SERVICE

C-Scope's core principle is to display one track for one set of data, with no dual tracking at any point, thus maintaining a clear, coherent, and accurate VTS Traffic Image at all times. The sensor fusion solution achieves this by continually analysing the quality of contact and tracking provided by each data source for each track. By identifying the quality of each data source, C-Scope uses only the best data for picture compilation. This is aided by sensor controls whereby the user can ensure the very best radar & AIS performance determined by the environment and situation.



### C-SCOPE DECISION SUPPORT SERVICE

This service provides the right information, to the right VTS operator, at the right time in order to make informed decisions. This is a state-of-the-art service, with high flexibility, configured to the bespoke needs of both the operator and the system. It uses intelligent track warning algorithms for navigation channels, anchor and berth position, potential collisions and groundings, congestion, and integrity checks for track data source deviations, which provide a critical counter-measure to spoofing, ghosting, and duplicate MMSI numbers.

### C-SCOPE MANAGEMENT INFORMATION SERVICE

This information management solution supports VTS operators in planning all aspects of a vessel's voyage, from its approach to port, to its sailing. It is a highly modular application that enables customers to choose the functionality they need for their specific situation. Key modules include Visit/Voyage Management, Vessel Management, Documents, Web Booking, Report Builder and more.



### ADDITIONAL VTS SERVICES

- » Traffic Analysis service - provides statistics on number of vessels, traffic routes, flag, ship type, dangerous cargo, and more.
- » Incident management - allows for coordinated response by all stakeholders.
- » Integrated meteorological & oceanographic data - provides accurate input to SAR/oil spill drift models.
- » Health Monitoring - provides complete monitoring of all VTS system hardware components, software applications, processes and services, warnings for any VTS component failure.
- » Earth observation sensors including radar, AIS & electro optics - extend surveillance coverage.
- » 3D Visualisation Service - improves situational awareness in high-risk areas, as well as for non-mariners such as visiting dignitaries, press, and operators with a non-maritime background.
- » Synchronized logging and replay - simplifies debriefing, lessons-learned and investigation.
- » Web and Mobile application HMI - provides remote access to real-time VTS Traffic Image.