SYNTACS
Synapsis Tactical Command System
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The Raytheon Anschütz Synapsis Tactical Command System (SYNTACS) is an innovative and efficient C2 solution for effective decision making and adapted countermeasures, developed for today’s conflicts and asymmetric threats.

SYNTACS integrates ship’s sensors as well as effectors and provides the operator a tactical situation picture to directly control electro optical systems and/or weapon systems. Employing the open architecture of the Synapsis Bridge System and based on more than 100 years of competence with maritime systems and integrated solutions by using COTS equipment in naval platforms, the Raytheon Anschütz SYNTACS comes as a scalable and flexible system. SYNTACS accommodates different sensors and weapon systems appropriate for different missions.

The Synapsis Tactical Command System is available as a stand-alone mission management system but also as an integrated IMO-certified solution that provides tactical situation awareness/C2 capability as a part of an enhanced Synapsis Integrated Navigation System (INS).

Thanks to its versatile functionality, SYNTACS can be used onboard various types of ships for many different mission profiles. These range from fishery protection and search and rescue onboard police/customs units through maritime interdiction onboard naval vessels in worldwide out-of-area operations.

**BENEFITS AT A GLANCE**

- Significantly enhanced situational awareness and common operating picture (COP)
- Various scalable extension options to meet individual requirements best
- Highly affordable system and low life-cycle costs based on COTS technology
- Reduced and flexible manning/training by intuitive operation and standardized HMI
- Space saving by using or upgrading existing bridge workstations
- State-of-the-art architecture for minimal mechanical integration and cabling effort
- IMO-compliant system with INS type approval MSC.252(83) possible
- Easy to integrate and flexible for future adaptations/extensions
- Low risk with only one contact responsible for supply and support
- Proven system with over 10 systems already in the field/under contract
SCALABILITY AND FLEXIBILITY

The Synapsis Tactical Command System concept is a network based solution that incorporates core ship electronic systems in a standardized and space saving but flexible manner to allow quick adaptation to customer requirements. The entire system is built upon the Raytheon Anschütz OASIS (Open Architecture Software for Integrated Systems) framework to provide the customer with a homogeneous solution.

The level of flexibility offered with the SYNTACS architecture provides significant advantages over less integrated approaches, which often only interface separate, non-integrated systems without using a consistent and unified system architecture.

The OASIS framework allows rapid integration of additional sensor data. Individual sub-systems and components – e.g. self-contained weapons, electro optical sensors, small target trackers, data links, 2D radars, ESMs or sonars – can be added, replaced or removed to create customer-specific solutions or to adapt system configuration with changing operational needs.

Synapsis Tactical Command System helps smaller naval, coast guard and police vessels such as OPVs being the appropriate response to terrorism, piracy, smuggling, illegal immigration and more.

On board of naval assets like corvettes, frigates and destroyers the SYNTACS bridge system acts as an add-on to the CMS. With regard to this SYNTACS contributes significantly to ship self-defense as well as to near and mid range engagements by appropriate actions outside classic warfare areas/operations.

Finally, together with the SmartBlue command and control (C2) solution for land-based maritime surveillance, Raytheon Anschütz can offer a commercial off-the-shelf solution for the complete maritime domain awareness of a nations EEZ including both shore and offshore assets.
SYNTACS offers the operator a complete overview of the tactical situation around the ship. Via data correlation of all organic and external sensor information (radar, AIS, camera and other sensors), it allows a comprehensive overview of the operating picture with classification possibilities and tools for tactical maneuvers (intercept and monitoring). SYNTACS includes a track/target management and correlation capability which offers a common operating picture to all connected workstations onboard.

Depending on system configuration, SYNTACS features:
• Consistent HMI and central change of colors/dimming
• Customer defined HMI
• Fully functional electro optical sensor integration
• Freely movable sea chart representation
• GEOTIF charts
• Track presentation similar to MIL-STD-2525 or others
• Track list and track history
• Track filtering controls (range affiliation, source and alarm status)
• Tactical intercept heading-/speed recommendation
• Sensor range and current alignment
• Alarm zones, safety areas with freely configurable parameters
• Intelligent alarm management throughout the entire system
• Weapon alignment and status information
The **track list** displays all important target information (e.g., course, speed, distance, bearing, affiliation) additionally also the threat level is indicated.

**Classification of contacts**
SYNTACS enables target classification according MIL-STD e.g. as unknown, suspicious and friendly.

**Own ship navigation data**
SYNTACS displays own ship navigation data.

**Alarm zones** can be created with reference to shore lines structures or randomly. In case of an alarm zone violation, an alert is raised and the EO system camera is activated. Additionally, SYNTACS allows creating alarm zones relative to own ship. If unknown contacts enter the zone, the operator is alerted and the EO system automatically slews to the alerting track.

**Integrated electro optical sensor**
SYNTACS integrates the electro optical sensors, full functionally. The system can be manually controlled, slew to and follow tracked targets or slew to alert trigger. Snapshots and video recording are supported.

**The EOS field of view** is displayed on the chart, which enhances operator orientation and simplifies interpretation.

**Chart formats**
In addition to using standard ECDIS vector charts, SYNTACS can also display all information on satellite images.

**Integrated alarm management**
Relevant alerts from the whole Synapsis Navigation System are also displayed within SYNTACS. Likewise, SYNTACS security alerts are also displayed on other Synapsis Workstations.

**C2 operator HMI incl. georeferenced satellite image**
SYNTACS ADVANCED SYSTEM CONFIGURATION

Thanks to its advanced system architecture, SYNTACS provides high flexibility for customer-specific adaptations. This typically includes the integration of further sensors such as radars, sonars, or optical trackers as required by the customer, but can also relate to integration with other ship systems or integration of effectors. Besides this, a variety of standard options and extensions is available to adapt to typical mission requirements best.

Electro optical (EO) system integration module
SYNTACS integrates and if requested also incorporates marine-specific surveillance electro optics (EOS: HDTV daylight camera, IR-night sight, laser range finder, thermal imagers) to further enhance detection and identification capabilities. The SYNTACS display features an additional separate window for the tailor-made HMI to operate the EO system. The camera position, field of view is shown on the map. Based on the selected track, alarming track or selected position, the system allows automatic slewing of the camera. Alternatively, manual control via joystick and/or control panel of the EO system is possible. Meaning an additional console for EO sensor operation is not needed, which creates an opportunity to reduce manning on the bridge.

A wide range of EO systems designed for marine applications are available. Raytheon Anschütz offers integration of all types and manufacturers to suit the customer needs. On request Raytheon Anschütz can provide or advise a suitable EO system according to the customer’s requirements.

Integration of weapon control (option)
SYNTACS offers integration of small and medium weapon stations of various types and manufacturers. The workstation HMI will be configured to include a display of the gun and ammunition status, gun direction, weapon arcs and effective range.

Depending upon the system architecture either the EO system or the track source will provide the gun with target indication. Pedal and joystick controls for the guns can be integrated into the tactical console to save space on the bridge.

Small target tracker (option)
Thanks to its advanced system architecture, SYNTACS provides high flexibility for customer-specific adaptations. This typically includes the integration of further sensors such as radars, sonars, or optical trackers as required by the customer, but can also relate to integration with other ship systems or integration of effectors. Besides this, a variety of standard options and extensions is available to adapt to typical mission requirements best.
**Tactical data / communication links (option)**
SYNTACS is able to share operational data such as tracks, overlays, screenshots, video or mission data via the ship's existing SatCom or other communication lines like VHF or HF. Ship-to-ship and ship-to-shore communication would provide a common operating picture beyond ship’s own sensor range. The amount of data to be transmitted depends strongly on the communication channel and its bandwidth. The transmitted information can be encrypted for security reasons.

**Mission data recording module (option)**
By utilizing the C2 mission data recorder module (MDR) it is possible to record, store and replay mission relevant information for debriefing or training meetings. For a post-mission debrief, web access connected to the network is used.

The MDR collects videos and photos taken by the camera(s) as well as other available data (e.g. console screen recordings, voice, own ship data, target data, alarm data and more) to store them safely and securely.

**Search and rescue function (option)**
The SYNTACS search and rescue (SAR) function can generate search patterns with the most appropriate position calculated from wind speed and directions as well as currents and would, if connected, forward this information via data link to other vessels tasked in the search and rescue operation. Combined search and rescue operations with several authorities could be more easily coordinated by sharing a common operational picture between shore based rescue coordinators and SAR vessels. The calculations and available patterns are in accordance with IAMSAR manuals.

With the SYNTACS SAR module the vessel is highly capable of acting as on scene commander (OSC) of a SAR task group and coordinate the search areas, rhythm and tasks of all participants and authorities involved.

**Task force & helicopter management (option)**
In order to manage own fleet assets SYNTACS includes features for coordination and tracking other units by verifying position held in a convoy or task force. This function is also used also to support the operator with sector control of approaching and hovering helicopters.
EXPERIENCED PROGRAM MANAGEMENT

We offer extensive know-how and support for naval system integration programs. Experienced engineers guide customers from early consultancy, program outline and specification of systems through individual requirement engineering and program realization to setting in operation. Having all the important processes of project engineering, development and production centralized at the Raytheon Anschütz headquarters in Kiel, Germany offers great benefits for customers.

WORLDWIDE TECHNICAL SERVICE AND SUPPORT

Raytheon Anschütz offers a customer-oriented after sales management with a wide variety of services, from training and documentation through repair and warranty handling to obsolescence management, technical updating and individual retrofit suggestions.

Reliable operation is supported by our central service coordination, backed by our worldwide network of professional service partners who ensure fast spare supply and competent maintenance and repair. Raytheon Anschütz also offers customized ISS and ILS packages that support the respective customer with a low-risk, forward-looking support solution.

We accompany you wherever your mission is taking place – you can rely on predictable operation.

More than 200 service stations all around the world.