Naval Integrated Navigation

Customised Solutions and Service Support for Naval Surface Vessels
The Raytheon Anschütz Integrated Bridge and Navigation System (IBS) is based on the latest generation of cutting-edge technology, which sets new standards for functionality, safe operation and ergonomics. It can be adapted to military shock level requirements of the specific customer.

The Integrated Bridge and Navigation System provides much more than the sum of the abilities of its individual components. The focus on functional integration enables highly customised solutions, ranging from bridge sizes for small patrol crafts up to sophisticated bridge systems for large naval vessels.

The latest generation of our Integrated Bridge offers intelligent redundancy management, advanced functionality and ease of operation as well as reliability and ship safety. Multifunction Systems are available to combine all nautical functions with a further option for integrating specific military applications and other ship system operations. Various interfaces with the ship’s backbone make the Integrated Bridge scalable to an Integrated Platform Management System.

Raytheon Anschütz looks back on years of experience in naval system integration. A wide variety of services is offered to support all systems through their whole life cycle.

- Increased Reliability and Safety in Navigation
- “Any Function, Any Place” principle for full Situation Awareness
- Efficient Crew Training due to Common Operating Philosophy
- Easy Logistics and Reduced Maintenance Costs
- One responsible Supplier for Integration, Maintenance and Spares
Your Benefit

- Maximum safety with respect to collision avoidance and anti-grounding
- Professional navigation systems to improve precision, performance and efficiency
- Clearly structured and user-friendly HMI for intuitive and ergonomic operation
- Requirement Engineering to enable customer-specific solutions
- Personal support and experienced programme management
- Integration of specific military applications
- Can be tailored to meet international military shock level requirements
- Worldwide maintenance and maximum spare parts availability
- Integrated Logistic Support, Obsolescence Management, In-Service Support, Technical Documentation
Intelligent Technology for Safe and Easy Operation

Multifunction Systems
Our Multifunction Systems are set up to provide all information for reliable, safe and easy operation. The workstations are tailored to integrate the functions of IMO Radar, (W)ECDIS, Conning or other ship system operations to allow full control and full data access at any position. All solutions efficiently assist the crew in collision avoidance, route planning and track control.

- Full navigational data access at any workstation simplifies watch keeping
- Easy operation through common operating philosophy (“look and feel”)
- Redundancy of equipment leads to additional safety
- Increased efficiency in spare parts logistics through standardised component

Network Architecture
All necessary data for the core navigation system are provided by a suite of high performance and reliable sensors (e.g. Anschütz gyro compass, Marine Inertial Navigation System, echo sounder, speed log, P(Y) GPS and weather sensors). The sensor information is distributed consistently to all connected workstation within a real time capable navigation data bus, which provides full redundancy in distribution.

Having all data processed simultaneously at all workstations not only simplifies works, it also increases level of safety and enables full flexibility for data access from any place on the bridge. Status and performance of all workstation are automatically monitored by the new Health Monitoring to further enhance the availability of data and functions on the bridge.

Advanced Data Management
The Data Distribution Unit (DDU) features a Degradation Management, which continuously monitors the availability and quality of sensor information. The most reliable set of data is distributed to all connected workstations to ensure consistent and common information. Thereby the Multi-Redundant Hot-Standby function provides an intelligent management of redundancies to ensure highest availability of sensor data.
HyNav
The optionally integrated HyNav navigation filter provides navigation data with enhanced accuracy and reliability. HyNav’s combined Kalman filter algorithms feature spatial and time correction as well as automatic plausibility and integrity checks to ensure despatch of common and consistent navigation information. With its optional Extended Dead-Reckoning capability the HyNav navigation filter provides navigation information even with loss of position and speed sensors.

Open Architecture – Bridge Integration Platform
The innovative Bridge Integration Platform combines all sensor data and makes them available at each workstation connected to the bus. It improves the operation of the ship through intelligent integration of functions in an open architecture environment. The Integration Platform interfaces with the ship’s data backbone, making possible not only the integration of additional applications or specific navy features such as automation data, vital platform controls or naval light gun control, but also the full scalability and future expandability of the bridge system.

Proven Standards
All solutions developed, produced and engineered by Raytheon Anschütz are in compliance with a Quality Management System according to ISO 9001-2008 as well as in compliance with an Environmental Protection System according to ISO 14001-2004. We consistently use an iterative process of improvement concerning processes, projects, programmes and products and maintain the certification of the CMMI® (Capability Maturity Model Integration) level 2. Where required, programmes may be processed according to further military standards.
Optimised System Functionality

Synapsis Radar with SeaScout™ functionality
All Radars are high performance navigation radars with advanced ARPA detection capabilities and Chart Radar functionality. The Radar is fitted with an unique collision avoidance tool. When a single softkey is pressed, the radar shows the “no go areas”. It never was easier to find the proper course change to avoid danger.

Synapsis ECDIS with full integrated WECDIS capabilities
Our ECDIS features intelligent functionality that exceeds simple route planning tasks to contribute to easy and comfortable operation. For operation on naval surface vessels, the ECDIS provides special navy features for WECDIS functionality such as Additional Military Layers (AML) and WAIS.

More intelligent Synapsis Conning display
Synapsis Conning provides all relevant navigation data at a glance. Various functions can be activated and configured by the operator as needed, depending on the mission situation and the type of equipment. The Conning features the intelligent management of relevant alerts, as well as distribution and presentation of alerts and supports the bridge team in its tasks to identify situations and to take appropriate action. The alert management system can also be configured for watch alarm and alarm transfer.
Reliable Steering Control System
The latest generation of NautoSteer® is a highly advanced steering control system that can be configured to any steering control system with the relevant redundancy requirements. It is based on CAN-bus technology to further improve operational safety such as included wire break monitoring and steering failure monitoring.

Comfortable Autopilot Operation
The NautoPilot® 5000 provides a multitude of benefits. A large graphical display ensures a clearly arranged presentation of information; all functions are easy to operate via hard keys and touch screen. The autopilot maintains the proven steering algorithms and is in combination with the Integrated Bridge approved for Track Control category B/C to offer highest precision in automatic steering.

Fuel Saving Capabilities
Anschütz autopilots feature an ECO-mode for continuous, automatic adaptation to the current sea-state and weather without a manual change of autopilot parameters. Subsequently less rudder action is required, which leads to lower levels of speed reduction and thus less fuel consumption.

Proven Sensor Technology
The Standard 22 M Gyro Compass is a state-of-the-art system, specifically designed for the use onboard of naval vessels. The most modern technologies ensure reliable, safe operation and intelligent system features. As a highly accurate attitude heading and reference sensor, the MINS ring laser gyro is available.
Naval System Integration with Full Service

Raytheon Anschütz offers a wide variety of services throughout the whole programme, from early customer consulting and customised designs up to obsolescence management and worldwide maintenance during operation.

**Experienced Programme Management**
We offer extensive know-how and personal support for naval system integration programmes. Experienced engineers guide you from programme outline and specification of systems through programme realisation to setting in operation. Integration of customer-specific requirements always remains possible.

**In-Service Support (ISS)**
Raytheon Anschütz offers ISS packages that support the respective customer with a low-risk, forward-looking support solution. Customised solutions cover performance-related payments to ensure highest availability at predictable costs for the entire period of performance. Further key factors are coverage of obsolescence and refreshing through technical updating, ensuring a suitable training level, and documentation.

**Integrated Logistic Support (ILS)**
Raytheon Anschütz looks back upon many years of experience in supporting its customers while always striving to utilize the latest tools in customising logistics. An ILS proposal describes all relevant logistic support measures as a prerequisite for economical and effective operation of technical equipment. Raytheon Anschütz also offers Interactive Electronic Technical Documentation (IETD).

**Professional Service Network around the World**
As one of the world’s largest service providers we take care of our products and systems on board over 30,000 ships around the world. We offer central service coordination, worldwide maintenance and repair as well as refit for the whole life cycle of a vessel.

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

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