

Integrated ASW Suite for Surface Vessels The Next Step in Underwater Warfare

... a sound decision

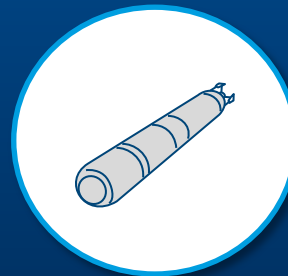
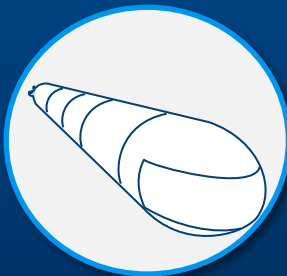
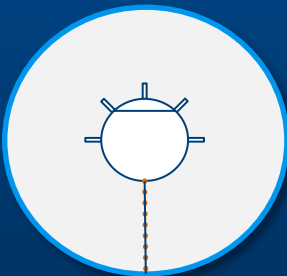
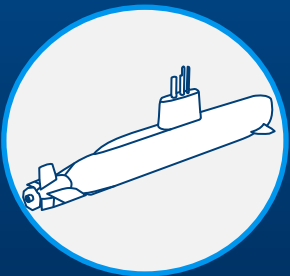
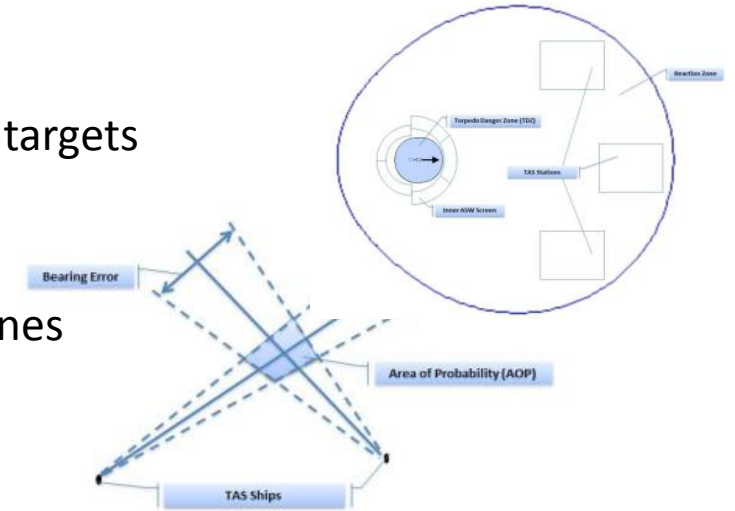


Integrated ASW Suite for Surface Vessels

Underwater Battlespace

Surface combatants require powerful sonar systems. The need of a joint tactical picture from multiple underwater sensors is imminent for effective Underwater Warfare operations.

- High-performance in both open-ocean and littoral environments against ASW/UUW targets
- High-fidelity sonar coverage around ASW escorts against torpedo attacks
- Long-range surveillance against submarines
- Mine and obstacle avoidance, surveillance against smaller objects such as AUVs/Drones
- More automation, less personnel
- Multi-static operations and interconnection of multiple platforms



Integrated ASW Suite for Surface Vessels

Situation Today

- 36 submarine programs till 2036
 - around 300 new submarines
 - 40% in Asia
 - Russia : 15%
 - MENA: 15%
-
- Today, the latest class of Russian submarines is as quiet as U.S. submarines [...]
 - Chinese submarines, although relatively noisy, are more numerous and will be challenging to track and engage.
 - To counter these improving threats, the future fleet will need to return to some of its Cold War approaches for offensive ASW [...]

Sources:

P. 27, RESTORING AMERICAN SEAPOWERS, CSBA 2017
AMI, Rüstung&Technik April 2017



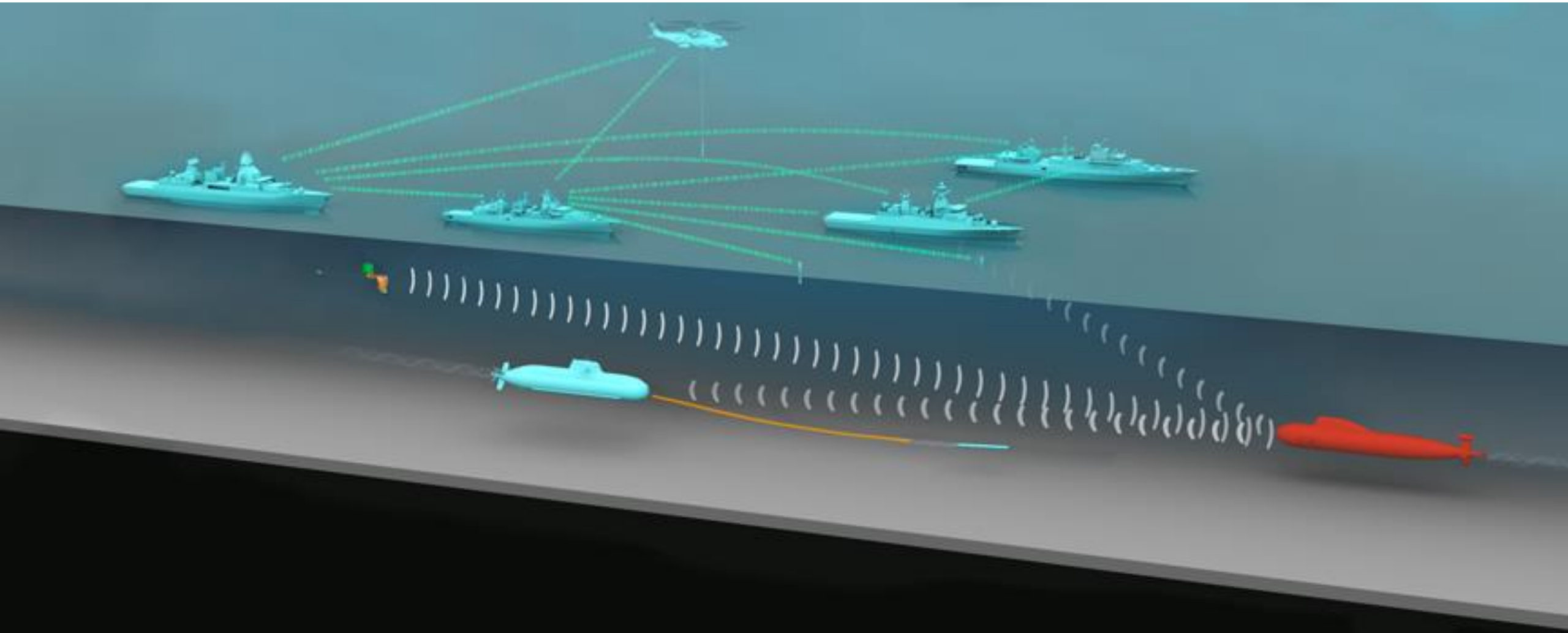
<https://sputniknews.com/military/201706261054981276-russia-lada-class-subs/>

http://www.military-today.com/navy/shang_class.htm

<https://robertnyakundi.wordpress.com/2012/06/29/chinese-093-shang-class-nuclear-submarine-4/>

Integrated ASW Suite for Surface Vessels

Multi-static – Netted Systems



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Future threats



Watch a swarm of underwater drones hunt and surround a boat

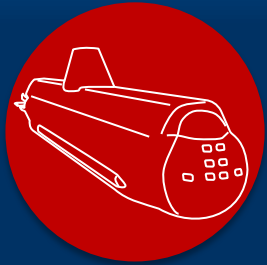


<https://www.newscientist.com/article/2166572-watch-a-swarm-of-underwater-drones-hunt-and-surround-a-boat/>

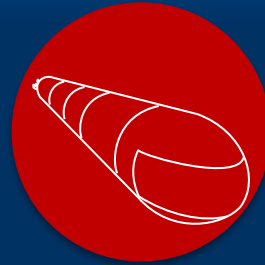
SwarmDiver drones close in on a boat
Aquabotix

Integrated ASW Suite for Surface Vessels

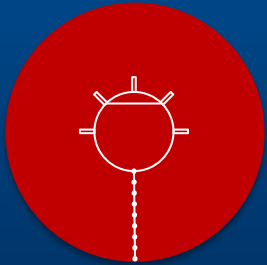
Upcoming Spectrum of Underwater Threats – Today and Tomorrow



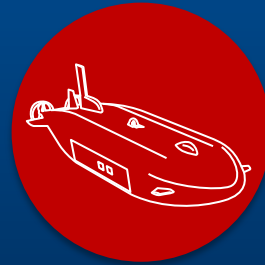
Enhanced endurance (SSK)
Harder to detect
New capabilities and tasks
New weapons / target types
Improved sensors



Extended weapon range
Less reliance on wire guidance
Optimized attack tactics
Reduced vulnerability to softkill systems



Multiple types,
Enhanced intelligence
Cost effective
Dynamic mines



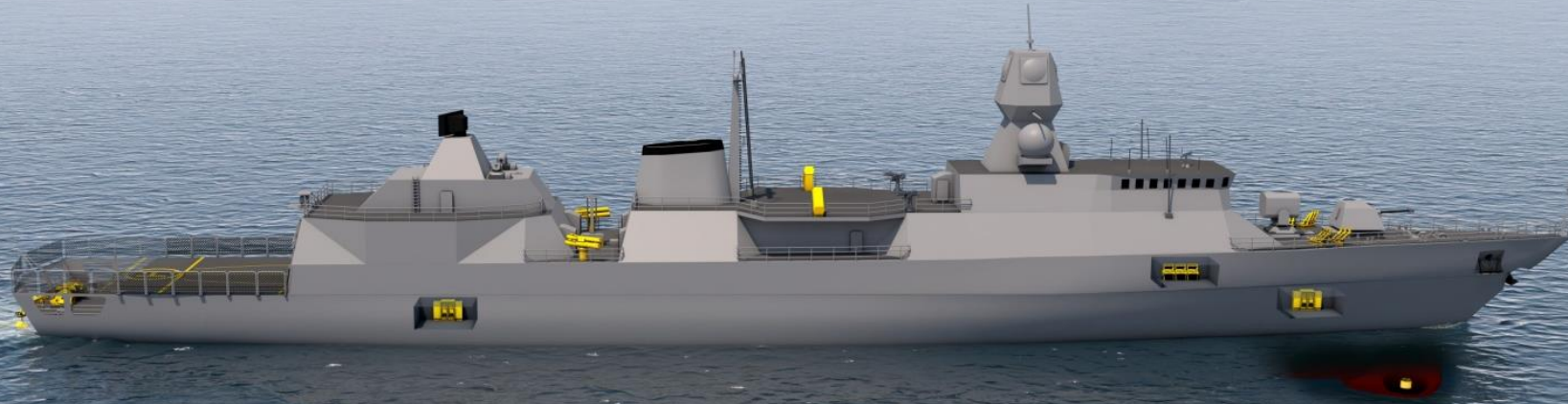
Semi submersibles
Civil UUV
Military UUV
Large & Long Endurance UUV
Narcotic subs

Integrated ASW Suite for Surface Vessels

Sensor to Shooter

An Integrated ASW Suite is a modularly designed ASW solution complementary to any Combat System.

It can be adapted to the customer's needs, providing different sonar systems, integration levels and effector solutions.



Integrated ASW Suite for Surface Vessels

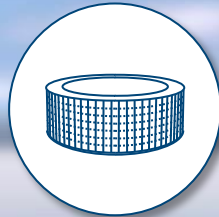
It takes all types of UW Sensors



VDS



TAS



HMS



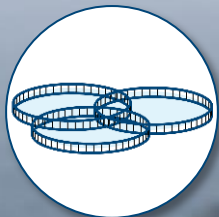
Bistatic Sensor
Combination



Minehunting
HMS



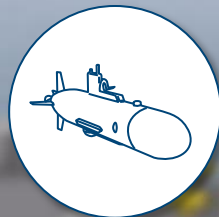
TDCL and
Intercept



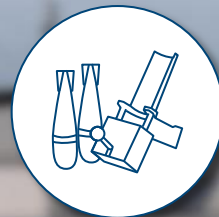
Multistatic
Sensor Network



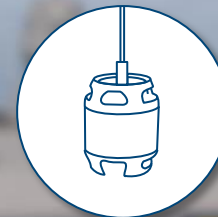
Dipping
Sonar



AUVs/USVs



Bathy



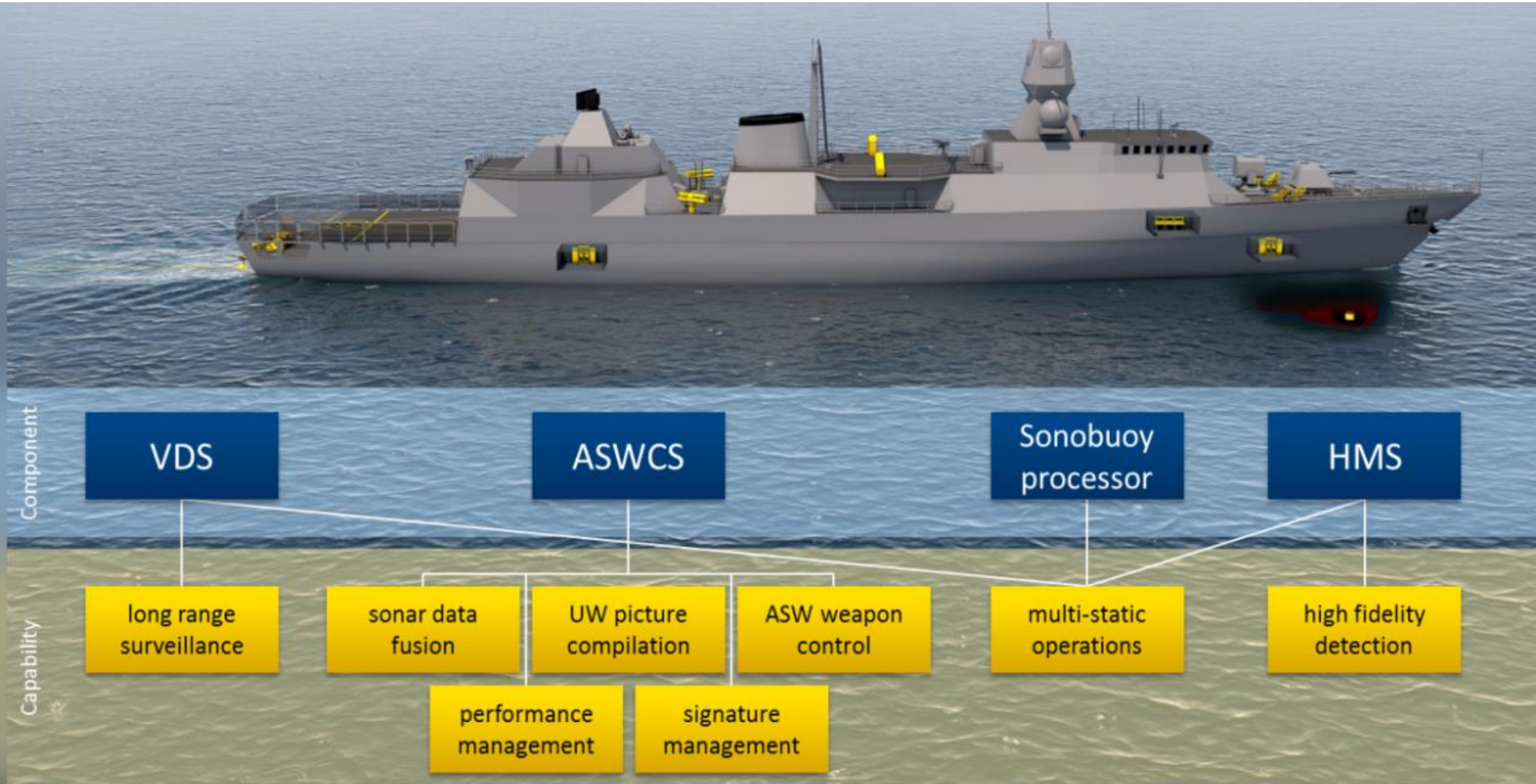
Diver Detection



Sonobuoys

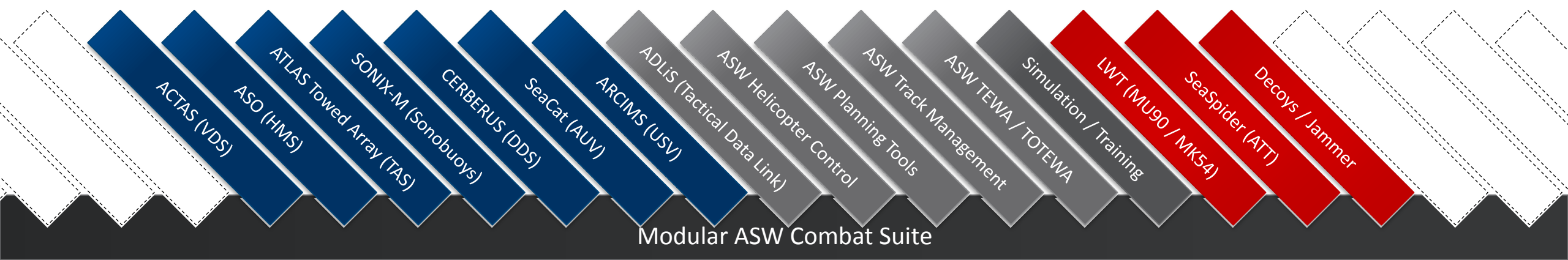
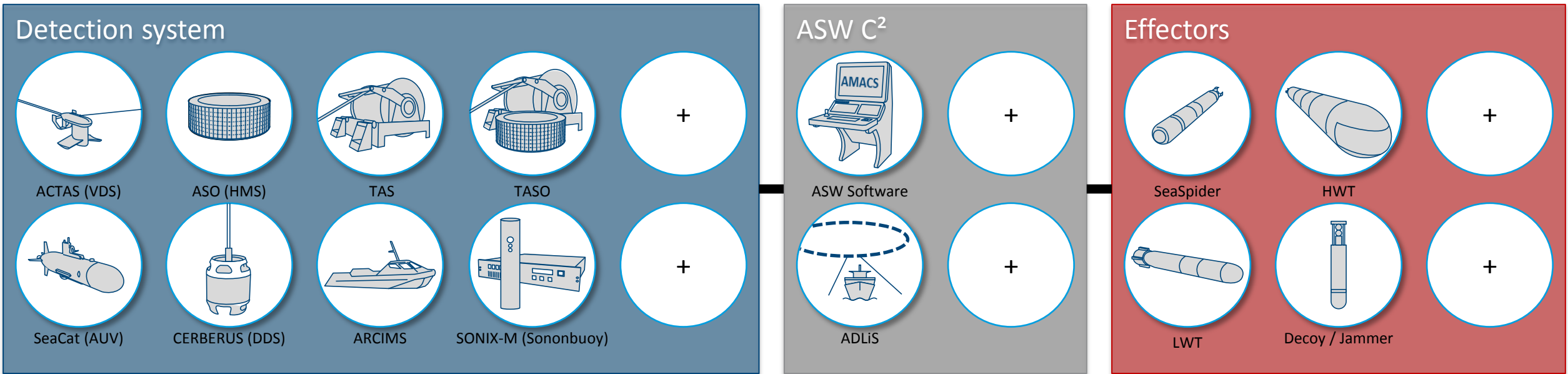
Integrated ASW Suite for Surface Vessels

Configuration Example



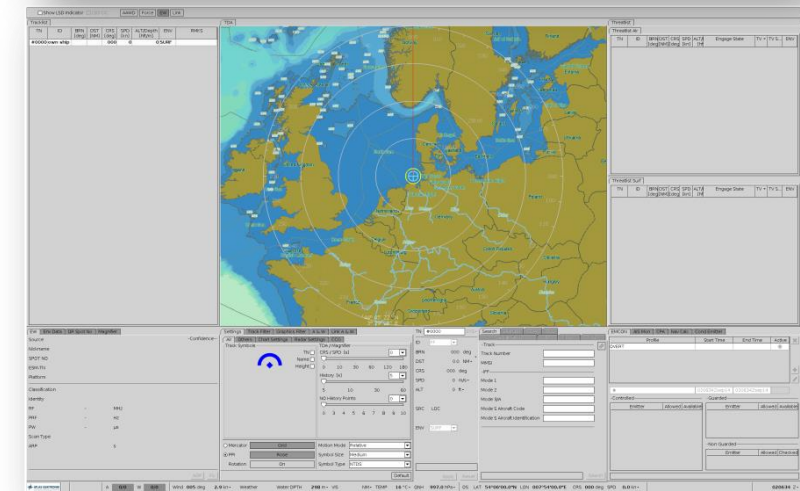
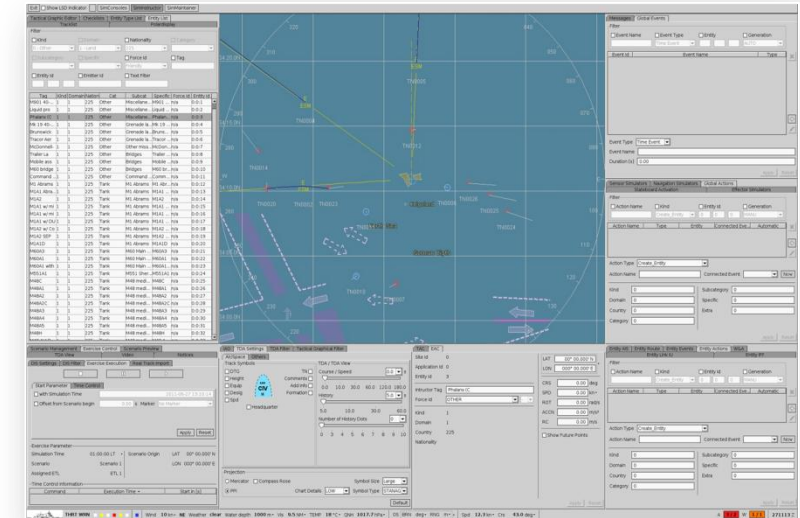
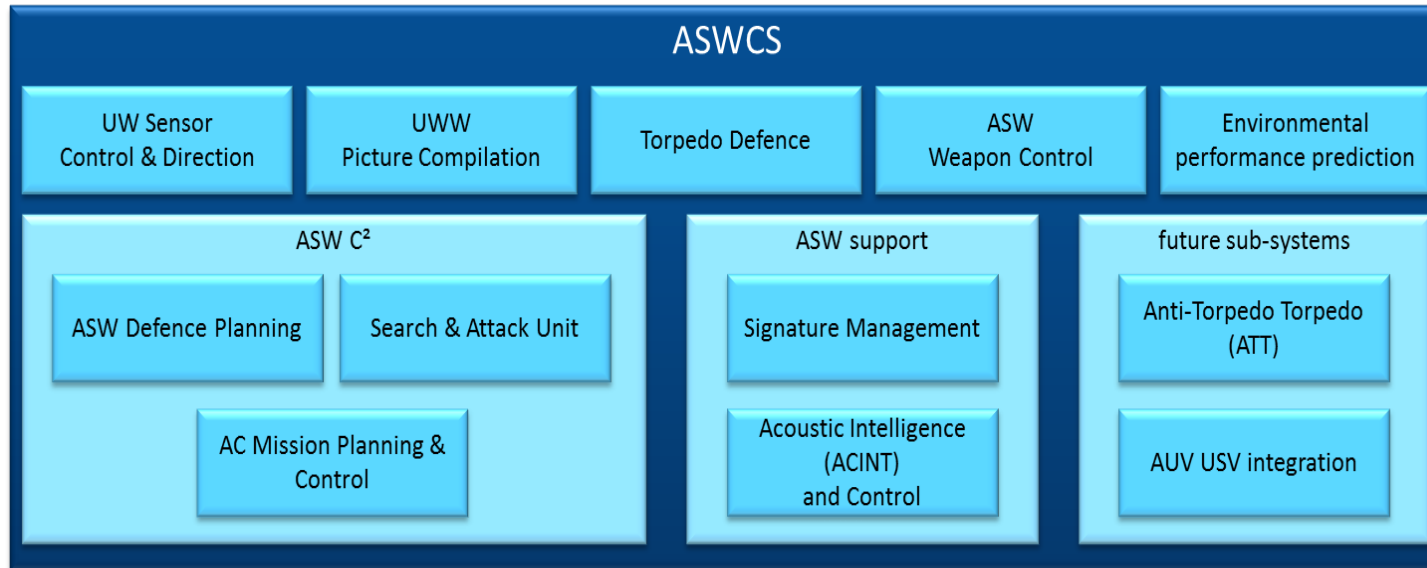
Integrated ASW Suite for Surface Vessels

ASW Toolkit



Integrated ASW Suite for Surface Vessels

ASW C² Cluster – Tactical Picture



Integrated ASW Suite for Surface Vessels

ASW C² Cluster – Automated and Independent

High performance Underwater Combat System

- From sensor-to-shooter
- Joint operational picture
- Multistatic operations
- Control of multiple sensors and effectors
- Data fusion and track correlation

Compatible to existing C²-Systems

- And compatible to subsystems e.g.:
- Tactical Data Link (ADLiS)
 - Underwater communications systems

Free configuration of sensor and weapon set-up

- Torpedo Defence Suite
- Submarine hunting
- Surveillance

Advanced system functions

- Asymmetric warfare
- Supports TG / special forces
- Simulation and training
- Automatic threat evaluation and weapon assignment
- Multiple sensor data fusion

Superior Design

- Proven technology
- Littoral waters
- Blue water
- Marginal Seas

Design principles

- Select your set of sensors and effectors that fits your operational needs
- Choose from sensors such as HMS, VDS, passive TAS, Sonobuoys and effectors like LWT and ATT (SeaSpider)

Integrated ASW Suite for Surface Vessels

What is on the horizon

An Integrated ASW Suite is one cornerstone towards autonomous ASW platforms

Necessary functions:

- Automated processing in terms of Detection, Classification and Localization (DCL)
- Netted Systems – interconnection of multiple platforms (Air, Surface, Underwater)
- Underwater Communication (Data transfer rates, Big Data, Digital Data)
- Autonomous Mission Planning including adaption of sensor parameters based on environmental and tactical data
- Failure safety and redundancy



Integrated ASW Suite

Complete functional chain.
Covering the whole underwater battlespace

ASW solution complementary to
any Combat System

ASW Toolkit – choose from a broad variety of sensors
and effectors

Increase capabilities for multi-static operations

Future-proven design and technology

Compatible to other subsystems such as Link

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