

# GERMAN NAVY OBJECTIVES FOR 2035 AND BEYOND

Ready for the Future:  
Towards Unmanned Systems and Artificial Intelligence



BUNDESWEHR

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## Ready for the Future: Towards Unmanned Systems and Artificial Intelligence

### The Situation

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The Bundeswehr must “become the cornerstone of conventional defence in Europe, the best-equipped force in Europe”. This is what Federal Chancellor Olaf Scholz declared at the Bundeswehr Commanders’ Conference in 2022. He stated the core mission of the Bundeswehr was national and collective defence, and all other tasks had to be subordinated to this mission.

The Chancellor thus specified his expectations towards the Bundeswehr, taking up NATO’s Strategic Concept, also adopted in 2022: deterrence and defence, crisis prevention and management as well as cooperative security continue to be the missions of Alliance’s, but with a clear emphasis on deterrence. This requires the German Navy in particular to exhibit high combat readiness and to demonstrate its presence in the North Atlan-

tic Ocean, the North and Baltic Seas, already in peacetime.

At the same time, technical innovations are fundamentally changing the conditions in the maritime area of operations. New underwater sensor systems as well as extensive shore-based, airborne, and space-borne reconnaissance render the battlefield increasingly transparent. From the resulting large amounts of data, complex IT systems – supported by artificial intelligence (AI) in the future – generate comprehensive situational pictures.

At the same time, potential adversaries possess high-performance weapon systems, some of which are extremely difficult to counter. There is less and less time for defensive reaction. Additional losses in combat must therefore be expected, which underlines the value of quantity: mass matters.



Potential threat and technological benchmark: A Russian frigate launching a 3M22 Zirkon type hypersonic anti-ship missile; May 2022  
(source: Youtube/Forces News, 04 Jan 2023; retrieved on 08 Feb 2023)

Another consequence of technological development is that the threat in combat increases to such an extent that own soldiers are to be exposed to it only to the extent absolutely necessary. Therefore, the trend clearly goes towards unmanned systems that can be employed in a joint network.

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### **Conclusions for the German Navy 2035 and Beyond**

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a) The most urgent requirement is a sufficient and continuously updated situational picture of all activities in our area of operation. In particular, it is necessary that we detect any adversary activities, assess them and exchange situational pictures both at national and Alliance level.

b) In order to remain capable of acting on the

basis of this situation picture and to be able to counter these activities, we need naval warfare means on, above and below water as well as in the air. The tasks to be mastered range from observing and/or impeding an adversary in peacetime to fighting him in times of war.

c) Outstanding resilience is indispensable for this as it ensures one's own capability to take action despite an adversary's activities. It requires structural, functional, and individual reserves. It also comprises the decentralisation of task assignment and responsibility in order to be prepared for a failure of central systems. ►



With unmanned systems into the future: In 2016, the 17-metre long autonomous submarine „Echo Voyager“ was the prototype for today’s Large Unmanned Underwater Vehicle „Orca“ of the US Navy.



## CRISIS PREVENTION AND MANAGEMENT AND COOPERATIVE SECURITY

National and collective defence determine the orientation of the German naval forces. Naval warfare means and command and control structures capable of prevailing in intensive combat operations are generally also suitable for use in low-intensity operations, for instance within the framework of UN or EU missions – but not vice versa.

Sustained operations of low intensity, however, have a negative impact on the operational readiness and responsiveness required for national and collective defence. Therefore, assigning naval forces to international crisis management operations always calls for careful consideration.

Primarily tailoring means of naval warfare towards such operations is counter-productive. This is why approaches, money and means of the German Navy directed towards this aim so far should be redirected. This would make it possible to employ combat-ready forces in a more flexible manner for deterrence and defence purposes or, optionally, as an instrument of foreign policy.

## What is Required

**1. Presence:** It is an expression of political will and a signal; it demonstrates solidarity within the Alliance and defence readiness. Presence also contributes to the situational awareness within the area of operation and increases the responsiveness of own forces.

To address this, the German Navy needs a sufficient number of vessels as well as fixed-wing and rotary aircraft that allow it to ensure a sustainable presence in its areas of operation.

**2. Maritime striking power:** Attacks from sea to shore (maritime strikes) reduce an adversary's options for action. They are mainly directed against command and control installations, sensor and weapon stations as well as logistic centres. It is thus possible to minimise the denial of access to an area by the enemy by means of fast, modern guided missiles (anti-access/area denial) so that sea routes in a region such as the Baltic Sea can be navigated safely again.

To address this, the German Navy primarily needs a sufficient number of above-water and underwater platforms that are fast, difficult to detect, and preferably unmanned, in order to reduce an adversary's response time.

**3. Above-water warfare:** Action against surface and airborne targets is a prerequisite for preventing an adversary from using a maritime space. This is especially important for supply routes across the North Atlantic Ocean and into the Baltic Sea.

To address this, the German Navy needs long-range sensor systems for tactical surface picture compilation, and defensive and offensive weapon systems as well as floating and flying platforms for above-water warfare.

**4. Underwater warfare:** The underwater sub-domain is rapidly gaining in importance. Modern submarines and other submersibles can cause enormous damage, even in peacetime, because it is difficult to attribute underwater attacks on civilian and military targets to a responsible party.

To address this, the German Navy needs modern sensor systems – both stationary and mobile – and AI-based evaluation of tactical subsurface pictures, as well as defensive and offensive weapon systems, submarines and unmanned vehicles for underwater warfare.

**5. Littoral combat and coastal defence:** Geographic conditions of the Baltic Sea make it necessary to secure positions lying within an adversary's range. Threats do not only come from aircraft or guided missiles but can also be posed by special and amphibious forces – particularly in hybrid conflicts. The German Navy must also be capable of protecting littoral areas and demonstrating presence there.

To address this, the German Navy needs mobile infantry as well as shore-based forces to control littoral areas from the sea and the shore and must also be capable of engaging targets from the shore.

**6. Maritime situational picture and assessment expertise:** A comprehensive maritime situational picture that includes the surface, underwater, littoral and air domains is a prerequisite for assessing current developments and adapting own activities. This permanent task requires special maritime assessment expertise shared in networks with military and civilian authorities, both at national and international level.

To address this, the German Navy needs own unmanned sensor systems for continuous data collection and must cultivate cooperative rela- ▶

tionships aimed at exchanging information with agencies within and outside the Bundeswehr, civil authorities, civil establishments, and the maritime industry. Therefore the Navy needs trained personnel, a network for data exchange and AI technology for data evaluation.

### **7. Command and Control and Resilience:**

Command and control centres must be particularly resilient as they are prime targets for adversarial activities. With its Naval Operations Centre in Rostock, the German Navy already operates a stationary maritime headquarters for the Baltic Sea area. Moreover, it must be able to lead NATO naval task forces from the sea.

To address this, the Navy needs both an alternative headquarters in a remote location with hardened buildings in addition to the Naval Operations Centre in Rostock's city centre and the ability to deploy operational sea-based naval staffs at very short notice to increase its overall command and control resilience.

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### **The Germany Navy and its Fleet 2035 and Beyond**

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The particular characteristics of the maritime area of operations and the requirements resulting from the new NATO Force Structure demand comprehensive capabilities of the German Navy. These include operations in the open Atlantic Ocean as well as in the North and Baltic Seas.

For the structure and objectives envisaged for the German Navy from 2035 onward, the following aspects are thus of vital importance: Warships must be capable of conducting multi-dimensional maritime warfare in the North Atlantic Ocean over large distances. For this

purpose, they also need high striking power and survivability. Unmanned systems complement the capability to cover wide areas. The particular threat situation in the Baltic Sea requires preferably unmanned, simple, and cost-effective weapon systems that are available in large numbers.

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### **What Matters Now**

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The Navy must prepare for high-intensity battles, procure a high number of unmanned systems, and employ artificial intelligence, especially for monitoring and evaluating the situational picture. For this kind of Navy to become a reality, two things are crucial now:

- 1.** The way to the future of the German Navy must be financed in a sustainable manner.
- 2.** The time to start testing the employment and operation of unmanned systems in experimental projects is now, so that lessons can be learned and the procurement of the indicated numbers can be initiated with minimised risk. ■



Project „NavyX“: Since July 2022, the 42-metre-long „Patrick Blackett“ has been the Royal Navy’s test platform for autonomous systems. Its most salient feature is the aft cargo deck for modular, containerised experiments.

## OPERATION OF THE FLEET

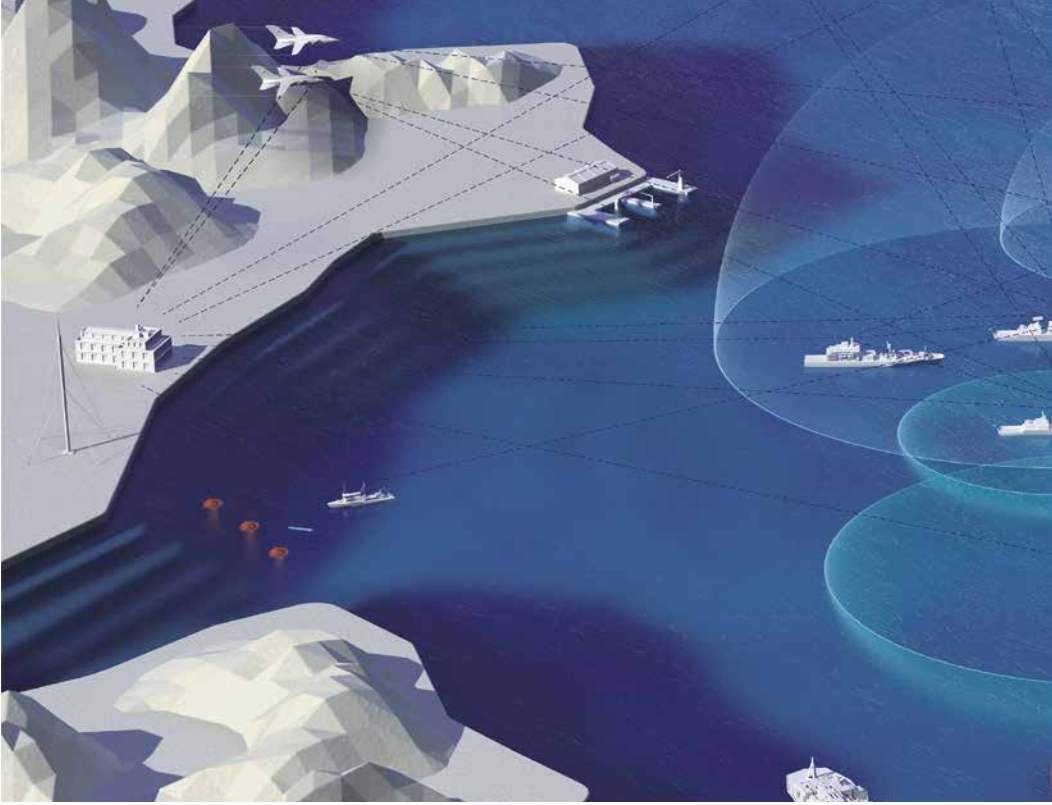
Naval means of warfare, especially ships and their crews, are subject to a cycle of maintenance, training, and operational readiness. With fully trained crews, about a third of the fleet can be considered fully combat ready for planning purposes.

Disruptions to this cycle must be kept to a minimum. Procuring similar, standardised systems that build upon the previous ones and are produced at regular intervals in fixed numbers instead of always buying new systems at long intervals would facilitate both maintenance and training. Future procurement projects for the fleet must take this into consideration.

## OPPORTUNITIES OF NATO’S ENLARGEMENT

It is expedient to integrate the enlarged NATO territory in the Baltic Sea into maritime defence planning to a greater degree. A joint use of bases outside Germany would bring the advantage of opening up a far larger area of operations. The foreseeable accession of Finland and Sweden will further extend the area.

Together with our NATO partners in the North Sea and Baltic Sea area, we should plan to which locations and in which situations naval means of warfare can be deployed, supplied and maintained and should prepare accordingly. The more comprehensively this is done, the more flexibility we will gain and the greater our contribution to credible deterrence will be.



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### GUIDING PRINCIPLES

#### 1. Mass Matters

In a possible war of attrition in the context of national and collective defence, mass also means resilience. This leads to the following requirements:

- A factor of 3 needs to be consistently applied to the required number of naval means of warfare (1/3 of vessels in maintenance, 1/3 at full combat readiness, 1/3 at graduated levels of combat readiness).
- A standardisation of naval means of warfare facilitates both the provisioning of spare parts and training.
- Means of warfare must be designed for ease of use.

#### 2. Orientation Towards the Future

The Navy's structure must:

- be sufficiently flexible to adapt it to the demographic development,
- minimise risks for its personnel on deployments,





Manned, optionally manned, and unmanned systems shall in future be connected in a naval combat cloud. This allows Navy systems to be integrated into multi-domain operations with other armed services.

- enable the testing of new unmanned capabilities in short time frames with a small number of commercially available prototypes (experimentation).

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### 3. Multi-Domain Operations

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The Navy contributes to combined arms operations through:

- system approaches that are networked, swarm-capable and, wherever possible, unmanned,
- the development of maritime strike capabilities.

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### 4. Resilience

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Resilience means the capability to remain operational after having sustained losses. This requires:

- the protection of a small number of bases for resupply and maintenance,
- an alternative hardened operational command and control centre as well as mobile tactical command and control at sea.



# TARGET STRUCTURE OF THE FLEET: OBJECTIVES FOR THE GERMAN NAVY 2035+

## System

type 127 frigates



type 126 frigates



type 125 frigates



corvettes



Future Combat Surface System (complementing corvettes)



mine countermeasures (MCM) platforms



unmanned MCM systems and/or MCM toolboxes



maritime patrol aircraft (MPA)



unmanned aerial systems (complementing MPAs)



shipboard helicopters



unmanned aerial vehicles (compl. shipboard helicopters)



multi-role helicopters



submarines



large unmanned underwater vehicles (compl. submarines)



intelligence collectors (successor to type 423)



combat support ships



fleet tankers



support platforms (successor to tender type 404)



**Notes:** The numbers of naval warfare means proposed here are based on (1) the requirements of the NATO Force Model (NFM), (2) the assessments of the German Navy regarding the force package required within the Alliance, (3) foreseeable

Tasks and Capabilities	Current Plan 2031		Navy Target 2035+
above-water warfare incl. air defence	5		6
underwater warfare	6		6
stabilisation operations, crisis management	4		3
above-water warfare	10	}	6 to 9
above-water warfare	-		18
mine warfare, seabed warfare, reconnaissance (underwater)	11	}	up to 12
mine warfare, seabed warfare, reconnaissance (underwater)	-		tbd
underwater/above-water warfare, reconnaissance	8	}	8
underwater/above-water warfare, reconnaissance	-		6
underwater/above-water warfare, reconnaissance	31	}	tbd
underwater/above-water warfare, reconnaissance	10		up to 22
transportation, reconnaissance, above-water warfare, SAR	18		17
underwater/above-water warfare, reconnaissance etc.	8	}	6 to 9
reconnaissance	-		up to 6
reconnaissance	3		3
logistics, operations support, medical support	3		3
logistics	2		3
command & control, troop, materiel and casualty transport	6		6

national responsibilities and (4) a factor of 3 applied to all figures in order to ensure the necessary operational availability. Moreover, the numbers of manned and unmanned systems complementing each other are interdependent.

## EDITORIAL INFORMATION

issued by:

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photos/illustrations:

Damen Shipyards, Forces News,  
Boeing, Royal Navy, Bundeswehr

last amended:

20 April 2023

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