Royal Netherlands Navy

Future Vision
Maritime Uncrewed

Royal Netherlands Navy (RNLN)

Foreword

This publication is the Royal Netherlands Navy's *Future Vision Maritime Uncrewed*.

The Royal Netherlands Navy is transitioning from fully crewed platforms to a fleet of more lightly crewed platforms paired with uncrewed (and autonomous) systems. This transition is not about separate systems and platforms. Rather, it centres on a system-of-systems approach: we can only boost our combat power if all platforms, uncrewed systems, and people work together effectively.

It is essential that we use uncrewed systems in a highly targeted manner, because such systems are not an end in themselves; they are a means to prevent conflict or achieve victory. In the Royal Netherlands Navy, we want to use uncrewed systems for tasks that are dangerous, difficult and decisive.

We launched the *Maritime Uncrewed Programme* to guide this transition process. The programme has the following aim:

to accelerate the deployment and (further) development of collaborative uncrewed systems as part of the Royal Netherlands Navy's operational concept in order to achieve greater combat power, together with the other branches parts of the Armed Forces as well as allies, industry and knowledge institutions.

As a first step, the *Task Force Maritime Uncrewed* developed a clear perspective on the role of uncrewed systems in the future fleet and operational concepts. The task force drew up future perspectives for seven areas of warfare: protection of the North Sea and the Dutch Caribbean; naval mine warfare; anti-submarine warfare; integrated air and missile defence; littoral: amphibious operations; maritime special operations; and maritime strike.

Together, these seven future perspectives for the Royal Netherlands Navy shape our vision on the use of uncrewed systems in our future operational concept. This provides direction for developing uncrewed systems and making informed investment choices. We are making a start now, with this clear goal in mind. Always ready!

Vice Admiral H.H. (Harold) Liebregs
Commander of the Royal Netherlands Navy

Future Vision Maritime Uncrewed

Objective

Uncrewed systems are essential to the Royal Netherlands Navy of the future. That is why the *Maritime Uncrewed Programme* was launched at the start of 2025, with the aim:

to accelerate the deployment and (further) development of collaborative uncrewed systems as part of the Royal Netherlands Navy's operational concept in order to achieve greater combat power, together with the other branches parts of the Armed Forces as well as allies, industry and knowledge institutions.

Background

We are transitioning from fully crewed platforms to a fleet of more lightly crewed platforms paired with uncrewed (and autonomous) systems[1] (see Figure 1):

The *Task Force Maritime Uncrewed*[2] was established to accelerate and streamline this transition. In this task force, operational and technical experts from the entire maritime defence chain, including the knowledge institutions, work together effectively. Technical and operational developments in the field of uncrewed systems are moving so rapidly that traditional methods of developing and procuring materiel are far too slow. In a time of constantly changing threats and rapid technological development, it is essential to quickly and effectively link innovations to operational applications and obtain feedback on their performance. This demands that we make a quick start, learn from experimental operational deployments, and continue to look to the future regarding (further) development. But for longer-term developments, short-cyclical operational feedback obtained through concept development & experimentation (CD&E) and operational testing & evaluation (OT&E) remains equally important to achieving and maintaining operational superiority in future conflicts.

The highly targeted use of uncrewed systems is essential for this purpose. Such systems are not an end in themselves, but a means to prevent conflict or achieve victory. In the Royal Netherlands Navy, we want to use uncrewed systems for tasks that are dangerous, difficult and decisive:

- Dangerous: getting people out of the danger zone, if possible.
- Difficult: deployment in situations where a computer-controlled system is better capable than humans (such as processing large amounts of information quickly).
- Decisive: always looking to attain maximum operational impact, focused on winning the fight, both defensively and offensively.

One example is defence against a swarm of UXVs, which requires an extremely quick response to a very complex situation with multiple targets.

We therefore expect that by 2035 the Royal Netherlands Navy will consist of a hybrid mix of larger platforms and (medium and small) uncrewed systems: on and under water, in the air and on land.

1 *Met UXVs: uncrewed aerial vehicles (UAVs) in the air, uncrewed surface vehicles (USVs) on the water, uncrewed underwater vehicles (UUVs) underwater, and uncrewed ground vehicles (UGVs) on land.*

2 *With RNLN-wide representatives (S&A, DOPS, NLFLEET, MWC), the Marine Corps, NLMARSOF, SOCOM, DPLAN-AMO, COMMIT-AMS, SeaSEC and the knowledge institutes (TNO, MARIN, NLR).*

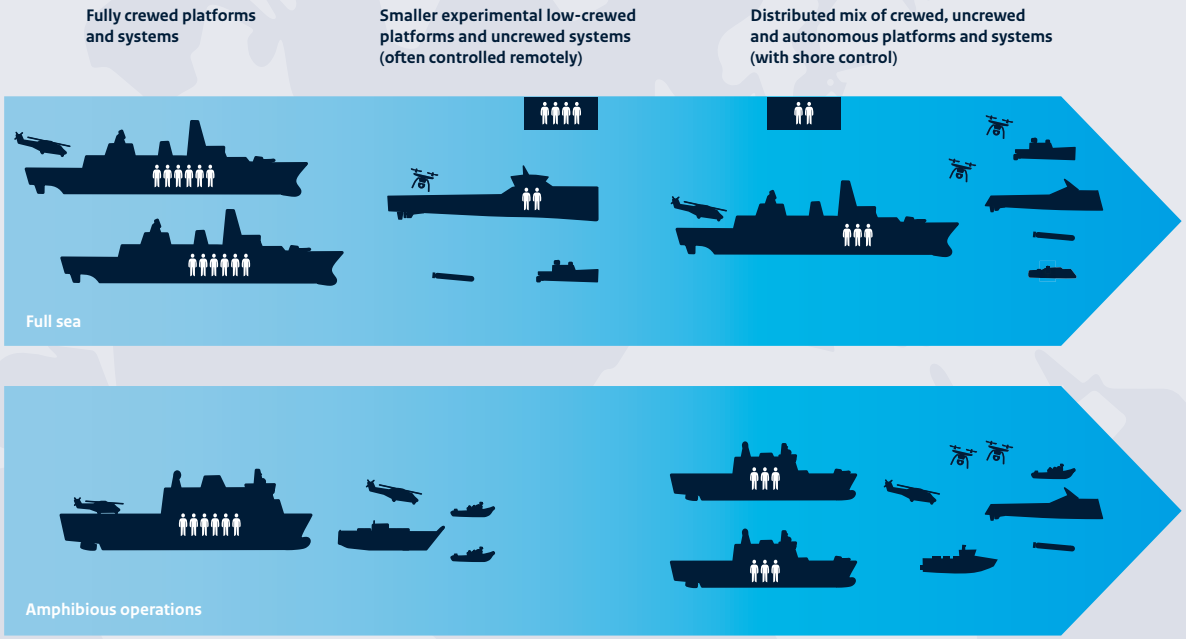
Larger platforms:

- Serve as the base for uncrewed systems, human command & control, heavier sensor and weapon systems, logistics, and energy supply.
- Provide greater sustainability, larger deployability in adverse weather conditions, and long-range sensor and weapon systems.
- Are expensive, visible and vulnerable, and require a large crew.

Uncrewed systems:

- Provide fast and flexible application of the latest technology.
- Get people out of harm's way and have fewer limitations than crewed systems.
- Pose a threat to the enemy and provide self-protection through cooperation in large numbers.
- Are cheaper and can therefore provide 'affordable mass'.
- Allow greater flexibility in design because there is no need to take crewing into account.
- Have a limited range and load-bearing capacity (payload).

This transition is not about separate systems and platforms. Rather, it centres on a system-of-systems approach: combat power is only increased if platforms, uncrewed systems, and people work together effectively. The most common context is that of multi-domain operations together with the other branches of the Armed Forces and in collaboration with NATO partners.



The transition from fully crewed platforms, through an interim period with experimental low-crewed platforms and (often remotely controlled) uncrewed systems, to a system-of-systems approach of lighter crewed platforms, surrounded by uncrewed (and autonomous) systems. This applies both on the high seas (above) and in amphibious operations (below).

Figure 1

A rapid and effective feedback loop between innovation and operational application is essential in a time of constantly changing threats and rapid technological development. This demands a combination of starting quickly and learning from experimental operational deployments, while continuing to look ahead in the (further) development guided by the Future Vision Maritime Uncrewed.

From top to bottom, left to right: V-BAT, Noa USV above the Johan de Witt, USV with UUV from the MCM Toolbox, UUV by Lobster Robotics, foil-assisted USV by Flying Fish, and Marines with UAV during Exercise Arctic Guard.

Future perspectives for the seven areas of warfare

Developments such as these demand a clear strategy. Commissioned by the Admiralty Board, the Task Force has therefore started developing a clear *vision for the future* of uncrewed maritime systems in fleet and operational concepts, to ensure that the overall direction is clear to all involved. This makes it possible to work towards the end goal in a focused yet flexible manner; right now, but also in the future.

As part of this assignment, the Task Force has developed future perspectives for seven areas of warfare where uncrewed systems will play an important role as a system of systems:

- Protection of the North Sea and the Dutch Caribbean
- Naval mine warfare
- Anti-submarine warfare
- Integrated air and missile defence
- Littoral: amphibious operations
- Maritime special operations
- Maritime strike

The previously established operational concepts, including the Future Maritime Operating Concept (FMOC) and Force Design, formed the starting point for this process. In addition, we inventoried all current ongoing projects and programmes, such as the VMOS project for the procurement of maritime uncrewed systems, and the development of the multi-role support ship (MSS). The *Future Vision* document will cover the period 2030-2040, i.e. an average of ten years into the future (2035). This allows us to combine a future-oriented outlook with realism and a sense of urgency to get started now, with this future perspective

as our guide. Today's experimental systems will have been developed into broadly applicable systems within a system of systems. We will have considered which characteristics make systems so unique and what benefits this brings to our performance. The platforms and systems are designed to be as "system-agnostic" as possible. We will want to carry out these future operations together with our NATO partners. Furthermore, the future perspectives are not static; they will be adjusted and expanded over time. It is also worth remembering that these future perspectives cannot give a complete picture of future operations. They do not form a complete concept of operations (CONOPS) and will require further elaboration. They do, however, provide overall direction for the targeted and accelerated deployment and development of uncrewed systems in the operational concept of the Royal Netherlands Navy as a system of systems for enhanced combat power.

With seven future perspectives the Task Force Maritime Uncrewed has developed a clear Future Vision for the role of uncrewed systems in the future fleet and operational concept. This provides direction for the development of uncrewed systems and the making of informed investment decisions.

Long term perspective (2040-2050)

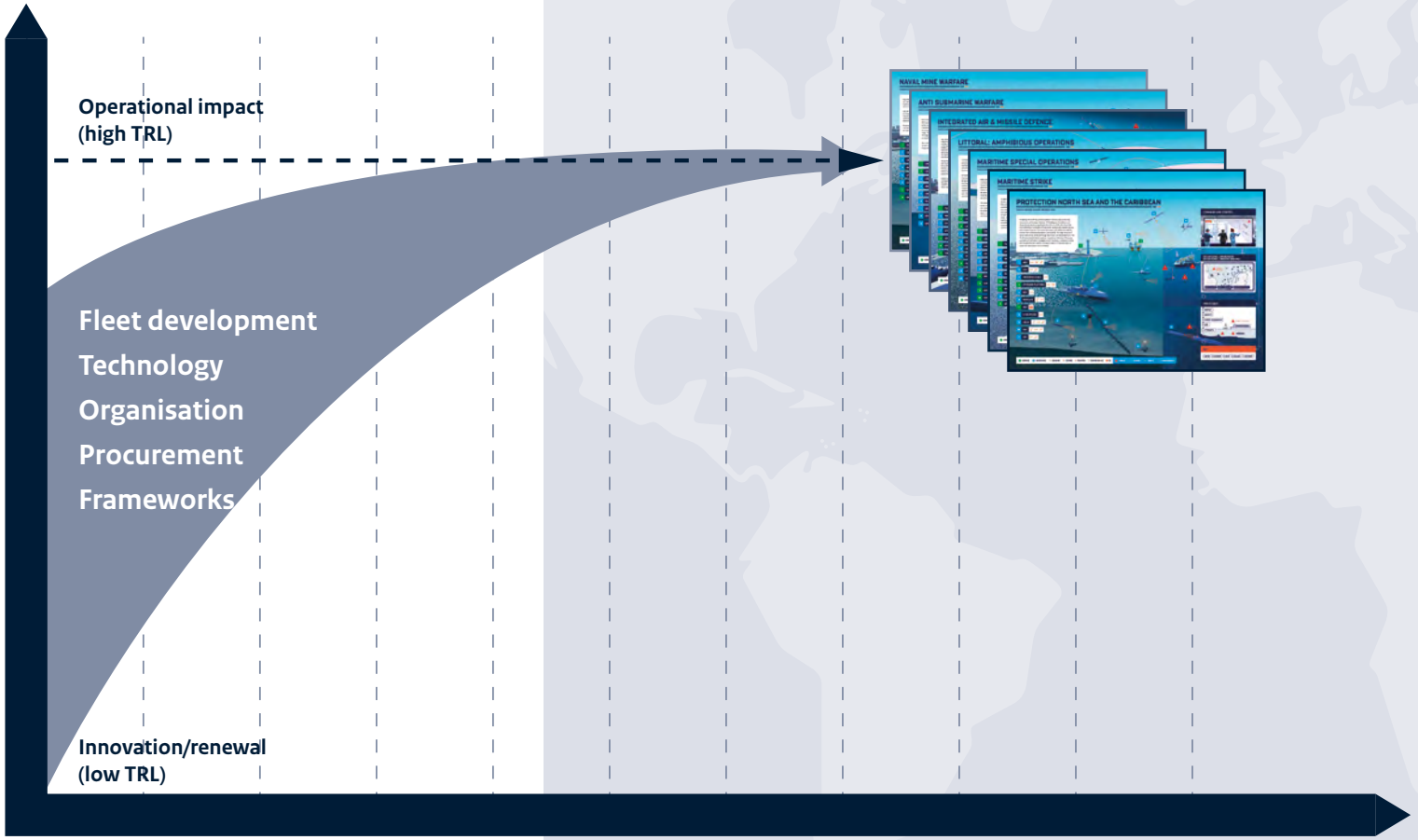
Predicting the future is difficult. As previously mentioned, this vision for the future covers the period 2030-2040, i.e. an average of ten years into the future: 2035. The aim is to allow the combination of a future-oriented outlook with realism and a sense of urgency to get started now, with this *Future Vision Maritime Uncrewed* as our guide. For the subsequent period (2040-2050), we foresee the following developments:

- A shift from uncrewed systems to ever greater forms of autonomy.
- Ever more distributed operations (from large platforms to medium-sized uncrewed or lightly crewed systems), with truly networked operations as a system of systems.
- Increased computing power in uncrewed systems (or in their remote control), possibly through the use of quantum technology.
- The rapid development of the use of artificial intelligence (AI), both for building situational awareness (FIND) through sensor fusion and for engaging hostile systems (STRIKE).
- A pressing need for the ability to operate in GNSS-denied or A2/AD areas.
- The necessity of a strong focus on secure data and communication, enabling systems to collaborate securely and quickly in a networked environment (Combat Cloud).
- The development of stealth UXVs, which will make detection more difficult, combined with improved protection against jamming.
- Increased battery capacity and thus greater sustainability in uncrewed systems.

Implementation outline

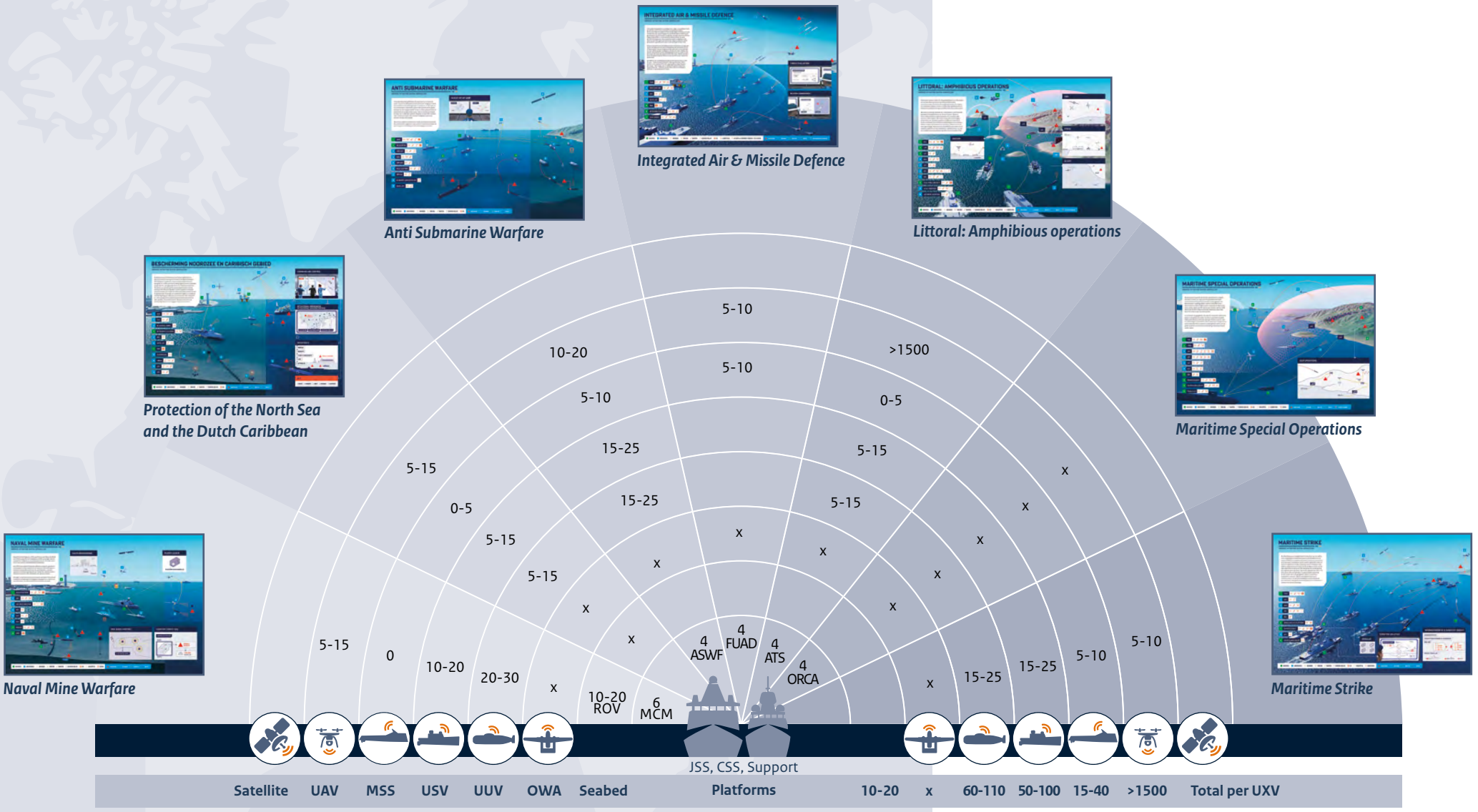
With this vision for the future in mind, guidelines have been set for its effective implementation (see Figure 2). We have selected five key areas:

- Fleet development: Platforms, UXVs, weapon systems, doctrines and operational concepts
- Technology: Knowledge and technology development and system-of-systems integration (C2/ICT)
- Organisation: Structure, training, people, culture, facilities, logistics and maintenance
- Procurement: Procurement strategy, collaboration with industry, and experimentation
- Frameworks: Policy, ethics, the law of war and regulations in peacetime.



With this Future Vision in mind, the main guidelines for effective implementation are outlined through five main areas: fleet development (platforms, UXVs, weapon systems, doctrines, and operational concepts), technology (knowledge and technology development and system-of-systems integration, C2/ICT), organization (structure, training, people, culture, facilities, logistics, and maintenance), acquisition (procurement strategy, collaboration with industry, and experimentation), and frameworks (policy, ethics, law of war, and peacetime regulations).

Figure 2



Legenda

UXV's (in the rings):

UAV:	*Uncrewed Aerial Vehicle*
MSS:	*Multirole Support Ship (Large USV)*
USV:	*Uncrewed Surface Vehicle (USV's)*
UUV:	*Uncrewed Underwater Vehicle*
OWA:	*One Way Attack drone*
ROV:	*Remotely Operated Vehicle*

Platforms (in center):

MCM:	*Mine Counter Measures platform*
ASWF:	*Anti Submarine Warfare Frigate*
FUAD:	*Future Air Defender*
ATS:	*Amphibious Transport Ship*
ORCA:	*Submarines*
JSS:	*Joint Support Ship*
CSS:	*Combat Support Ship*

Conceptual Future Force ('radar picture') of the Royal Netherlands Navy, as ambition for its fleet in 2035, in which the seven operational future perspectives are translated into the number of uncrewed systems on the basis of the number of planned large platforms.

Figuur 3

Fleet development: platforms, UXVs, weapon systems, doctrines and operational concepts

The *Future Vision* sets out in clear terms that we are transitioning from fully crewed platforms to a system-of-systems approach with more lightly crewed platforms paired with uncrewed (and autonomous) systems. With regard to the key area of fleet configuration, it must be established what it will mean for the fleet and the Marine Corps, as well as for doctrine, operational concepts and the actual development and effective operation of a system of systems.

To clarify the impact of the *Future Vision Maritime Uncrewed* on the navy's future fleet, the 'radar picture' in Figure 3 translates the seven future perspectives into numbers of uncrewed systems. It combines two aspects:

- The number of large platforms foreseen: six mine countermeasure (MCM) vessels, four anti-submarine warfare frigates (ASWF), four Future Air Defender (FuAD) frigates, four amphibious transport ships (ATS) and four Orka-class submarines, plus the supporting fleet such as joint support ships (JSS), combat support ships (CSS) and auxiliary vessels.
- The numbers of UXVs specified in the seven future perspectives (the segments) have been derived from the number of large platforms per warfare area. For each type of UXV, these are shown in the rings. Flying, sailing and submerged one-way attack drones are marked separately: OWA. The total number for each UXV is shown at the bottom on the right-hand side.[3]

This provides an overall conceptual picture of the future Royal Netherlands Navy, as the target for its future force ambitions. The transition becomes immediately apparent: we are moving from a Royal Netherlands Navy dominated by large, crewed platforms to a Navy where the combination of crewed platforms with large numbers of uncrewed (and autonomous) systems plays a major role.

3 We used a range of 10 for all UXVs except the larger MSSs where the range is 5. The numbers of one-way attack drones and systems for special operations forces (SOF) exceeds the classification level of this document, so those have not been included. They are marked with X. Satellites have been included because of their importance to positioning and communication, but their number has not been specified.

Technology: (further) development and integration

Although industry has already started making various separate uncrewed systems available, a true system-of-systems approach with crewed platforms and uncrewed (and partly autonomous) systems effectively working together is still a distant prospect. Various sub-areas also still require significant further technical development.

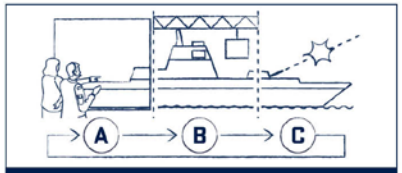
We have therefore opted for a targeted approach along two different but interconnected routes:

1. **Knowledge and technology development:**
   For the development and refinement of the sub-themes, we will follow the themes that have been set out in the marine knowledge document Kennisplan Zee and for which roadmaps are currently under development. Those roadmaps in turn are based on the 2025-2029 Defence Strategy for Defence and Innovation (D-SII). Almost all of these themes are essential for our *Future Vision Maritime Uncrewed*.

2. **System-of-systems integration in MUST (Maritime Uncrewed Sea Trials) exercise:**
   The effective command & control of networked systems, reliable positioning, and secure communication (C2/ICT) are essential components in all of this. In these areas, we want to build on the success of the Royal Netherlands Navy's maritime drone team and COMMIT-AMS in developing GENIUS-ICTUS-IDUS, for the purpose of effectively controlling groups of UXVs from the GUARDION combat management system (CMS).

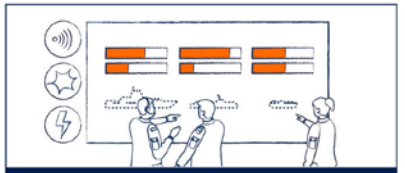
MARITIEME TRANSITIE | MARITIME UNCREWED SYSTEMS

The Royal Netherlands Navy has a system of uncrewed maritime systems on, under and over water that can be deployed in close cooperation with (large) crewed ships, vessels and submarines.

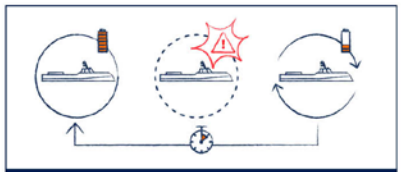


PROCESS

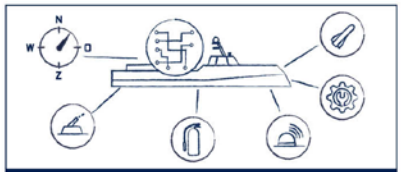
PAYLOAD



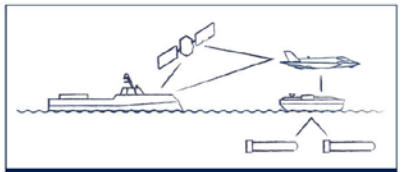
PLATFORM DESIGN, PERFORMANCE AND RELIABILITY



SURVIVABILITY



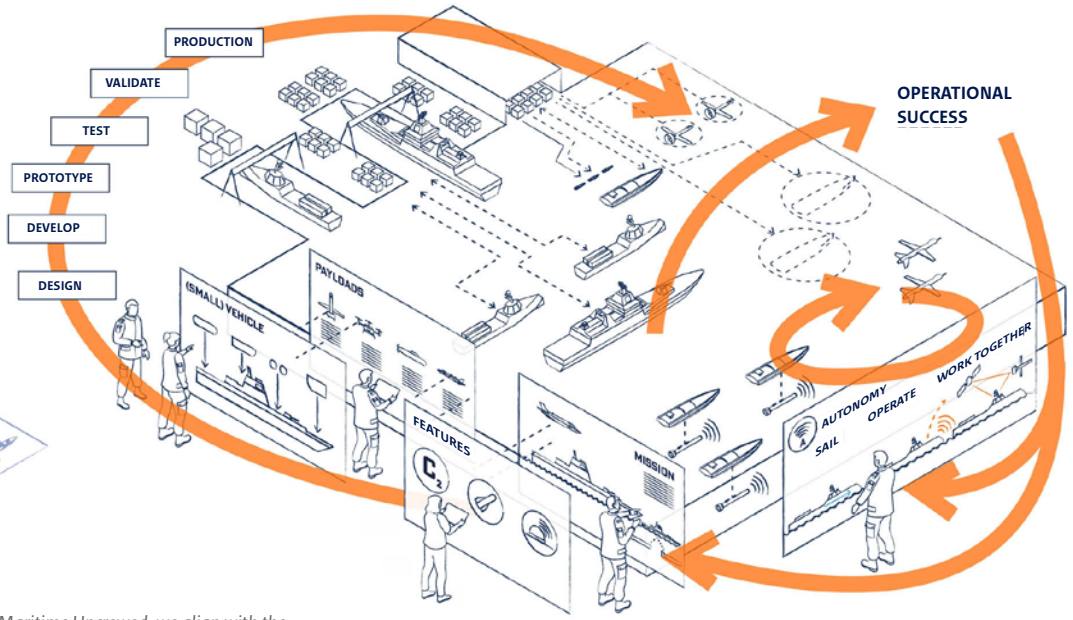
AUTONOMY



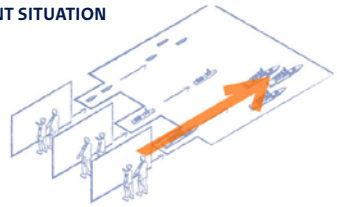
NETWORKED, INTEGRATED OPERATIONS

END STATE

HUMAN SUPPORT



CURRENT SITUATION



For knowledge and technology development around Maritime Uncrewed, we align with the knowledge themes of the marine knowledge document 'Kennisplan Zee', including its maritime transition themes, maritime reinforcement, and defense-wide fundamental developments

Figure 4

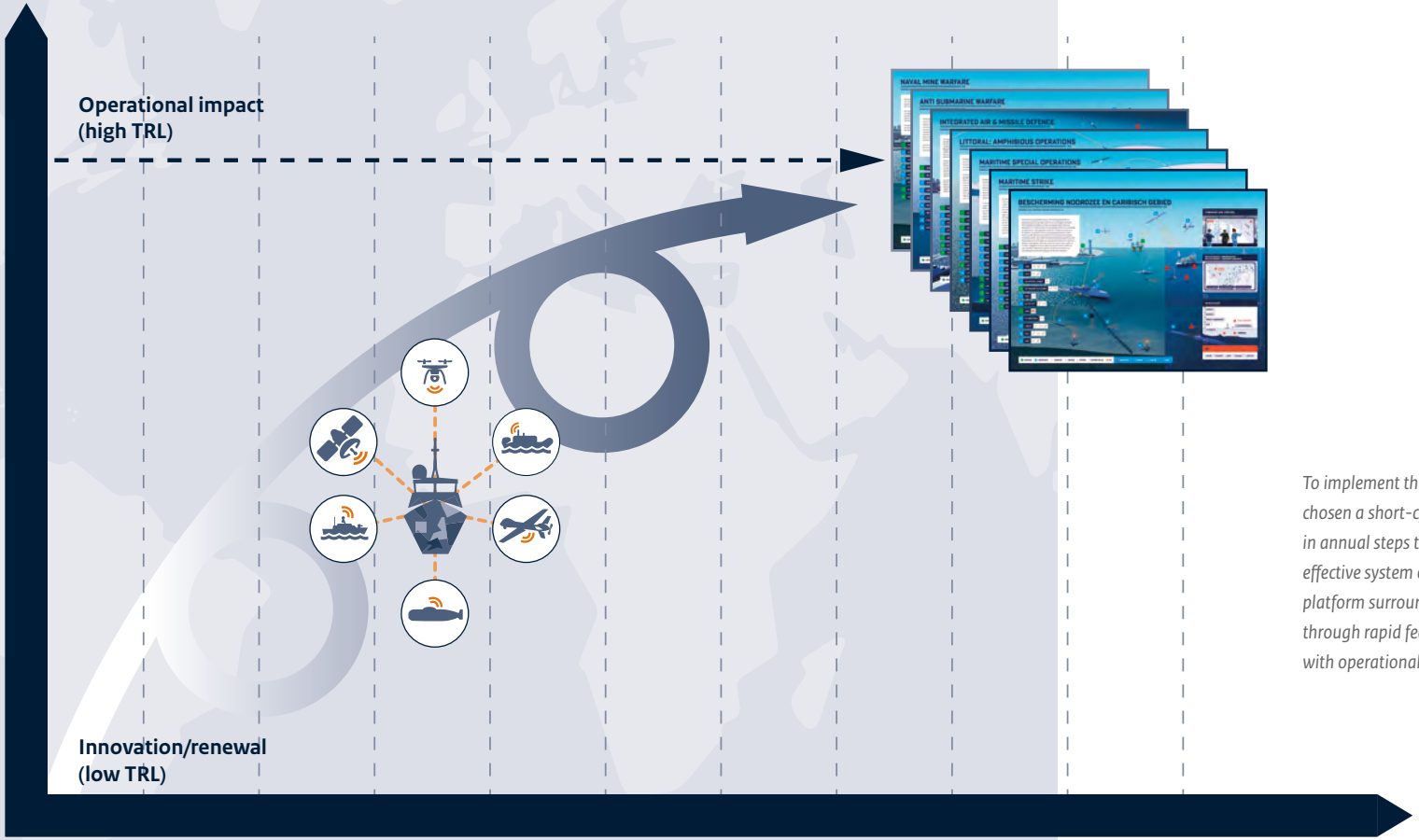


Figure 5

To implement the Future Vision, we have chosen a short-cyclic approach, working in annual steps towards an increasingly effective system of systems (a crewed platform surrounded by uncrewed UXVs) through rapid feedback of innovations with operational applications.

We will take a short-cyclical CD&E and OT&E approach here, working in annual cycles to create an ever more effective system of systems by quickly linking innovations to operational applications and obtaining feedback on their performance. The aim is to achieve constant improvements in the joint deployability of uncrewed systems as part of our operations.

In concrete terms, we want to do this through annual maritime uncrewed sea trials (MUST) on the North Sea, so that we can demonstrate the achievement of the annual goals for innovation and integration in operational circumstances. The outcomes of this national exercise will then be input for international exercises such as REPMUS and TF-X, for integration with our NATO partners.

We intend to use the lightly crewed Galatea and the first-generation multi-role support ships (MSSs) as innovation platforms on the North Sea, flanked by USVs, UAVs and UUVs. This will provide us with a small-scale model of our seven future perspectives (large crewed platforms with uncrewed MSSs) that we can use to test and further develop networked operations.

In this way, we can continuously monitor and adjust the development of a system of systems towards our *Future Vision* in 2035. This further development and operational feedback will also provide continuously increasing readiness and combat power. This accelerated deployment and (further) development of crewed and uncrewed systems is illustrated schematically in the figure below:

In parallel, we need to work on second-generation multi-role support ships (MSS-2.0). These must be uncrewed by design: with highly automated navigation and propulsion systems that enable them to sail for N months and take on the roles as described in the seven future perspectives.

Navigation plans Knowledge and technology development

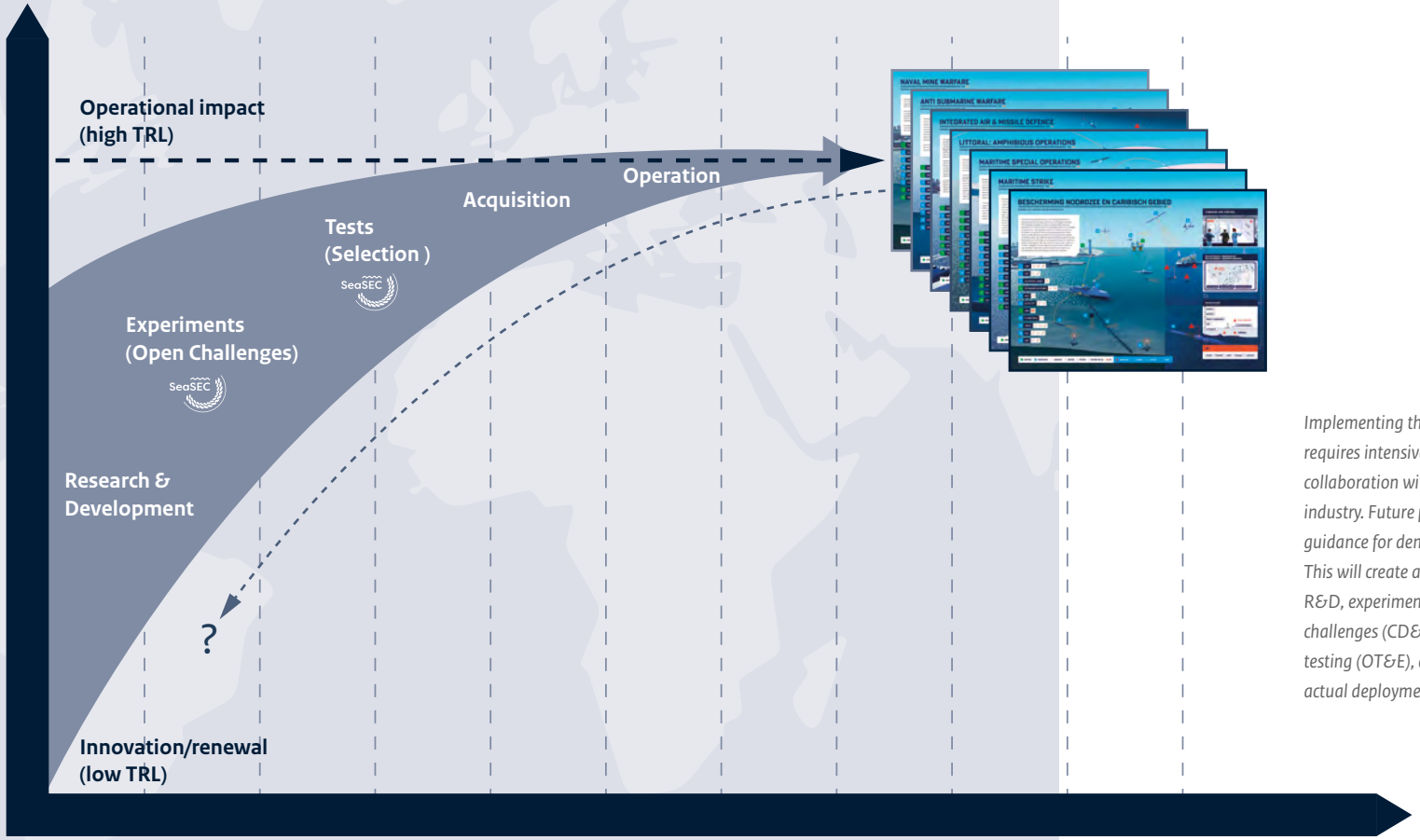


Figure 6

Implementing the Future Vision requires intensive and early collaboration with Dutch and EU industry. Future perspectives provide guidance for demand management. This will create an effective chain of R&D, experiments through open challenges (CD&E), operational testing (OT&E), acquisition, and actual deployment in operations.

Procurement: procurement strategy, collaboration with industry, and experimentation

There are good reasons why the objective of the Maritime Uncrewed programme includes the phrase 'together with industry and the knowledge institutions'. Technical and operational developments in the field of uncrewed systems are moving so rapidly that traditional methods of developing and procuring materiel are far too slow.

This necessitates an intensive and early cooperation with Dutch and European industry. For that reason, we are sharing our *Future Vision* with industry in a variety of ways, so that we can be targeted and effective as we build the future Royal Netherlands Navy together. As a consequence, we must adapt our procurement strategy, targeting joint development together with industry and continuous development, with the corresponding budgets included in the process.

As the figure 6 illustrates, the future perspectives set out in this *Future Vision* are leading with regard to demand management. What can industry offer when it comes to achieving this *Future Vision*? And what technology gaps remain to be bridged together?

Defence can gather this information using the open challenges organised by the Seabed Security Experimentation Centre (SeaSEC), for example. They are a form of concept development & experimentation (CD&E). Defence can also gather information in a more targeted manner, making a selection and ensuring that there are options for the funded development and initial delivery of specific systems. Such operational testing & evaluation (OT&E) can be carried out through schemes such as the Strategic Defence Innovation Research (SDIR) scheme.

Industry could also launch initiatives in the context of a so-called 'technology push'. In such cases, the RNLN's future perspectives provide a focused filter: does the industry partner's initiative match these operational perspectives and does it really add something substantial? If not, Defence must provide clarity as quickly as possible, in order to prevent industrial parties from continuing the development of systems that offer no real prospects.

Defence is asking industry parties to actively seek out mutual collaboration and to form effective consortia, where multiple parties focus on their specific added value in such mutual collaboration.

In this context, Defence is focusing on active ecosystems for the collaborative development and scaling up of the production of uncrewed systems. For UAVs, there is intensive collaboration with the Royal Netherlands Army and the Royal Netherlands Air and Space Force. For maritime UXVs (UUVs and USVs), there is close collaboration with the maritime sector through the pioneering Smart Maritime programme, which is part of the agenda of the maritime manufacturing sector, *Sectoragenda Maritieme Maakindustrie* (SAMMI).

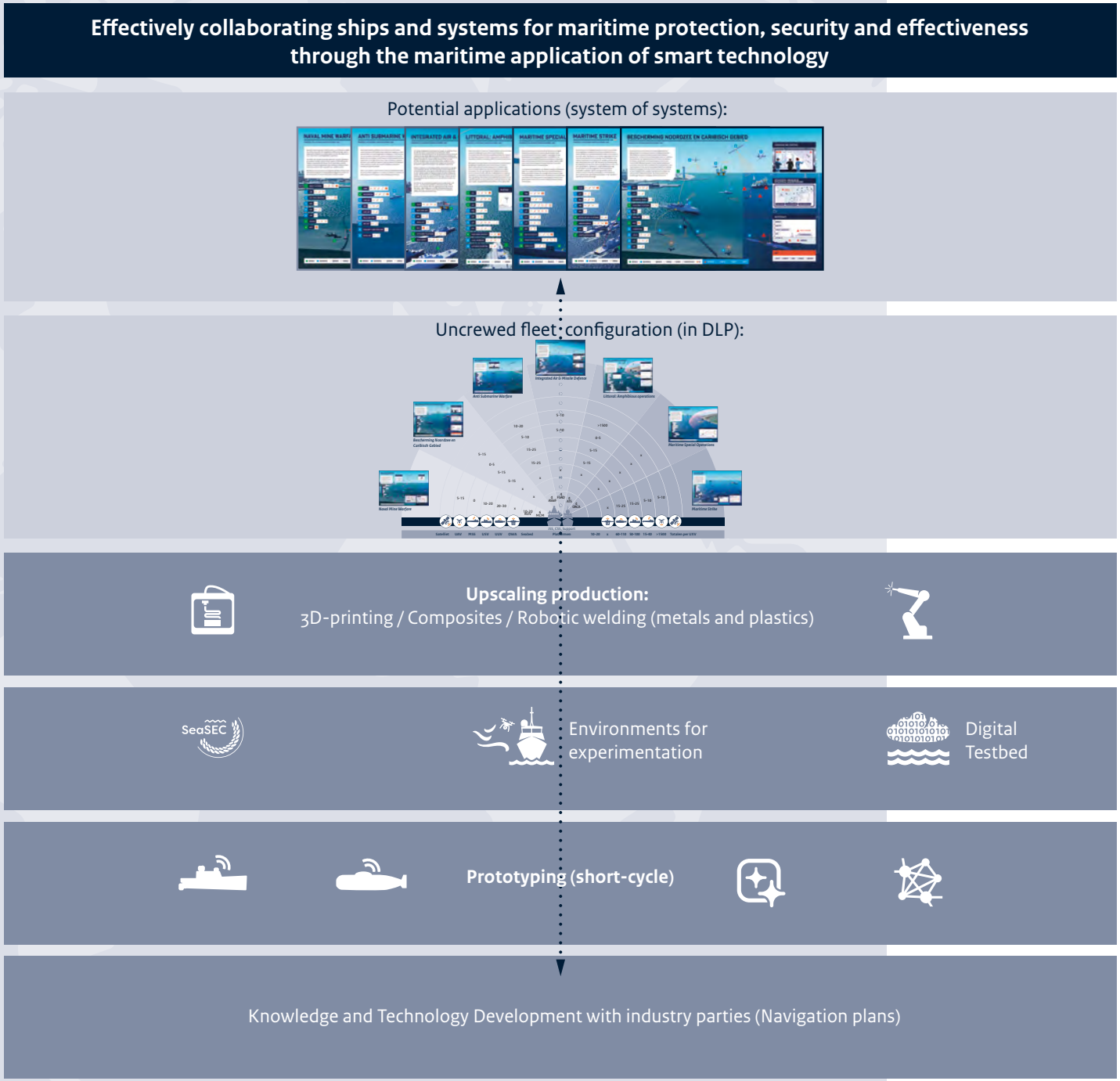


Figure 7

Design of the Smart Maritime ecosystem for the joint development and scaling up of maritime UXVs (UUVs and USVs) within the Sector Agenda for the Maritime Manufacturing Industry (SAMMI). The future perspectives and the future fleet ('radar picture') are the guiding principles (from above), allowing for industry input (from below) through knowledge and technology development, short-cycle prototyping, experiments in operational conditions, and the scaling up of new series production techniques.

The following figure provides a compact overview of this ecosystem, with from top to bottom:

- The seven future perspectives in this *Future Vision* that are leading in Defence's demand management[4].
- Ultimately this should lead to the uncrewed fleet configuration as detailed in this document, with the funding to be provided from the Defence Lifecycle Plan (DLP).
- This necessitates the development of manufacturing capacity for the serial production of USVs and UUVs, for example with 3D printing, composites and robotic welding.
- To attain effective CD&E and OT&E in operational conditions, we need to develop physical experimental environments (such as SeaSEC in Scheveningen, on vessels such as the GeoSea or Galatea) as well as digital ones.
- Support for prototyping of promising systems by Dutch suppliers, where we provide targeted supported for further development.
- The additional development of the necessary knowledge and technology together with industry, on the basis of joint navigation plans.

As indicated, the eventual fleet configuration of uncrewed systems will be funded from the DLP. However, starting up this ecosystem requires industry-enhancing resources. By creating a larger Smart Maritime ecosystem in this way, i.e based on the Defence organisation's need, we can foster collaboration across the sector and prevent our purchasers (part of Materiel and IT Command) from becoming overloaded.

Achieving actual acceleration in this ecosystem requires the effective use of new procurement strategies in the Defence organisation, such as the Strategic Defence Innovation Research (SDIR) approach and the Innovation Partnership.

4 here is interaction with civilian applications of uncrewed systems, for example in the offshore energy sector and in dredging on the one hand, and in inland and naval shipping on the other.

Annex: The seven future perspectives

NAVAL MINE WARFARE

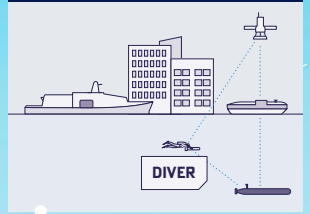
PART OF TASKFORCE MARITIME UNCREWED, RNLN

By 2035, Naval Mine Warfare will include Mine Laying (ML) in addition to Mine Counter Measures (MCM). The NMW deployment area includes domestic waters, so-called chokepoints, and foreign waters, with the aim of ensuring safe routes to and from ports and operational areas.

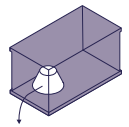
For MCM, the capacity is binational, uncrewed, autonomous, networked, and scalable to enable effects-based operations. CZSK has several parent platforms for this purpose, carrying a mix of uncrewed and autonomous systems, and deploying them in a networked manner. Diver deployment, supported by uncrewed systems, remains necessary for complex situations.

Using data fusion and AI, results of the deployment are displayed clearly on the onboard and/or shore-based systems, and initial recommendations are provided. A robust cyber network is essential for this.

PORT PROTECTION



MINE LAYING



PLATFORM INDEPENDENT

1 MCM PLATFORM C2

2 USV

3 USV MINE SWEEPER

4 ROV

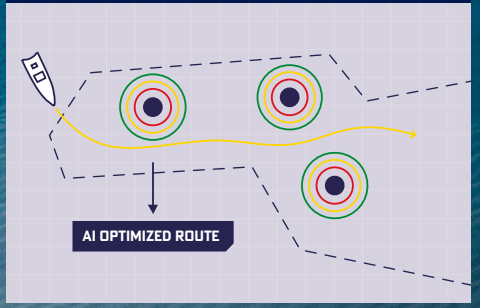
5 UAV

6 UUV

7 DIVER

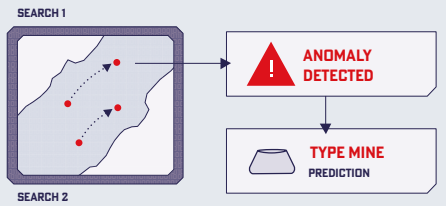
8 MOC C2

RISK BASED MAPPING



CONSTANT SURVEY (SA)

CHANGE DETECTION



CREWED | UNCREWED | SENSOR | DRONE | WEAPON | COMMS RELAY | C2 | DECEPTION | CEMA

THREAT | COMMS | ROUTE | ENGAGEMENT

ANTI SUBMARINE WARFARE

PART OF TASKFORCE MARITIME UNCREWED, RNLN

Anti-Submarine Warfare (ASW) has a dynamic and a static variant. Dynamic ASW operates on open water with a transiting Task Group, while static ASW primarily operates near coastal areas or chokepoints. By 2035, a mix of crewed and uncrewed systems will have the capacity to detect and engage the enemy before people and vital systems come within enemy weapons range. This mix consists of units operating above, on, and underwater. The larger central ASW units will be supported by several medium-sized uncrewed units operating in a dispersed manner.

This mix of systems will transform over time from uncrewed units under central control to autonomous clusters of units that, under command, independently neutralize an underwater threat.

INSIGHT ON ASWF

1 ASWF C2

2 HELICOPTER C2

3 ASW UAV

4 MSS

5 ASW USV

6 MALE UAV/MPA

7 ISR UAV

8 STANDOFF ASW EFFECTOR

9 SATELLITE

CREWED | UNCREWED | SENSOR | DRONE | WEAPON | COMMS RELAY | C2 | THREAT | COMMS | ROUTE | ENGAGEMENT

INTEGRATED AIR & MISSILE DEFENCE

PART OF TASKFORCE MARITIME UNCREWED, RNLN

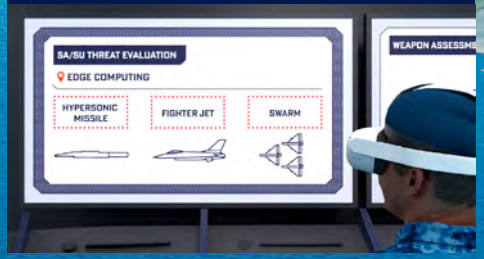
The current threat assessment is more diverse than ever before: from inexpensive drones that can even form a swarm, to hypersonic ballistic missiles. Within the Royal Netherlands Navy, the Future Air Defender (FuAD) is the crewed mothership from which Integrated Air and Missile Defence (IAMD) is coordinated. The FUAD is surrounded by multiple autonomous Multirole Support Ships (MSSs) and Uncrewed Aerial Vehicles (UAVs), which are controlled from the FUAD using mission autonomy. No personnel are required on board an MSS. The systems operate in a networked and distributed manner within a secure Combat Cloud.

Threat situational awareness is generated not only by sensors from our own naval units but also through joint collaboration with, for example, ISR (Air or Space Based). By integrating data from international and civil-military parties in an advanced manner, not only a comprehensive but also a robust picture of the air threat is created, extending far beyond and beyond the horizon, above sea, land, and in space. This allows us to comprehensively assess the threat and thus deploy weapons more effectively.

An MSS can be equipped with various payloads, such as C-UAS (Counter-Uncrewed Aerial Vehicles), loitering ammunition, SAMs (Surface-to-Air Missiles), HPM-HEL (High Powered Microwave-High Energy Laser) weapon systems, and ESM-ECM (Electronic Support Measures - Electronic Counter Measures) systems, to detect and co-ordinately counter the threat.

1 FUAD
2 MSS TASK UNIT
3 UAV
4 SATELLITE
5 MOC
6 OFFSHORE PLATFORM
7 TASK GROUP

THREAT EVALUATION



WEAPON ASSIGNMENT

CREWED | UNCREWED | SENSOR | DRONE | WEAPON | COMMS RELAY | C2 | LOGISTICS | AI DATA & SENSOR FUSION / C2 CLOUD

THREAT | COMMS | ROUTE | ENGAGEMENT | SECURED AREA

LITTORAL: AMPHIBIOUS OPERATIONS

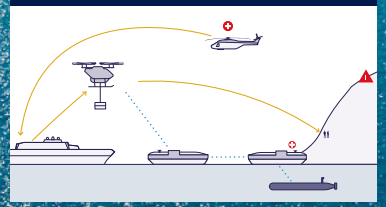
PART OF TASKFORCE MARITIME UNCREWED, RNLN

Uncrewed systems are an integral part of the Littoral Raiding Force's operations via Littoral Access Points (LAPs). They fulfill roles within all warfighting functions. By 2035, the integration of uncrewed systems will primarily focus on tasks that are considered Dangerous, Difficult and Decisive for crewed systems.

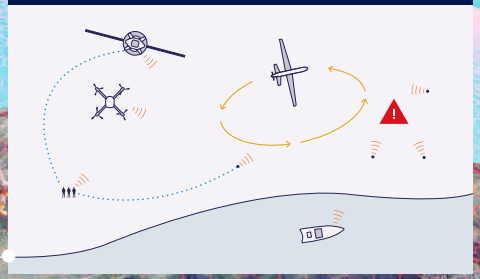
We adhere to three design guidelines for our systems: multifunctionality, layering and stackability, and a family of systems. Systems must be designed to be multifunctional so they can be deployed in multiple roles. Each tactical level should, as much as possible, have its own organic UxV toolbox (Uncrewed Aerial-Surface-Underwater-Ground Vehicle) to operate independently. This ensures self-reliance and redundancy, as well as a short kill chain. Furthermore, the different levels must be able to support each other with their organic systems. We strive, where possible, for standardized platforms throughout CZSK.

- 1 ATS
- 2 LCM
- 3 LAC
- 4 MSS
- 5 UUV
- 6 USV
- 7 UAV
- 8 FIXED WING AIRCRAFT
- 9 LOYAL WINGMAN
- 10 LOITERING MUNITION

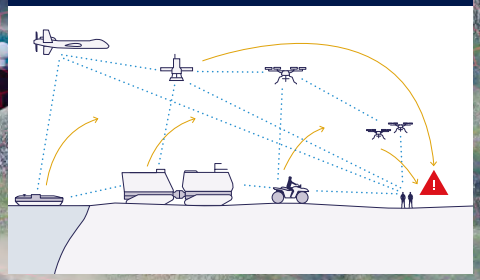
SUSTAIN



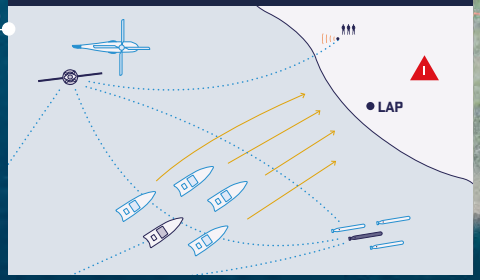
FIND



STRIKE



DECEPTION



CREWED | UNCREWED | SENSOR | DRONE | WEAPON | COMMS RELAY | C2 | DECEPTION | LOGISTICS

THREAT | COMMS | ROUTE | ENGAGEMENT | A2/AD AREA

MARITIME SPECIAL OPERATIONS

PART OF TASKFORCE MARITIME UNCREWED, RNLN

Deep operations involve the stealthy, distributed, and potentially clandestine deployment of small maritime specialized teams via Littoral Access Points (LAPs). They are deployed from a submarine using, for example, a Long Range Stealth Insertion Craft (LRSIC) or a Swimmer Delivery Vehicle (SDV). Uncrewed assets are deployed for ISR, comms relay, deception, logistics, CEMA tasks (Cyber & Electric Magnetic Activities), targeting, and weapons deployment, resulting in mixed crewed-uncrewed operations.

The operation involves layers of time, distance, and quantity. Uncrewed assets can be launched from a Forward Operating Base (FOB), submarines, and crewed vessels. Smaller assets and nodes for ISR (Intelligence, Surveillance, and Reconnaissance) and deception can be deployed from other uncrewed systems. Larger systems can also be deployed for resupply and (casualty) recovery.

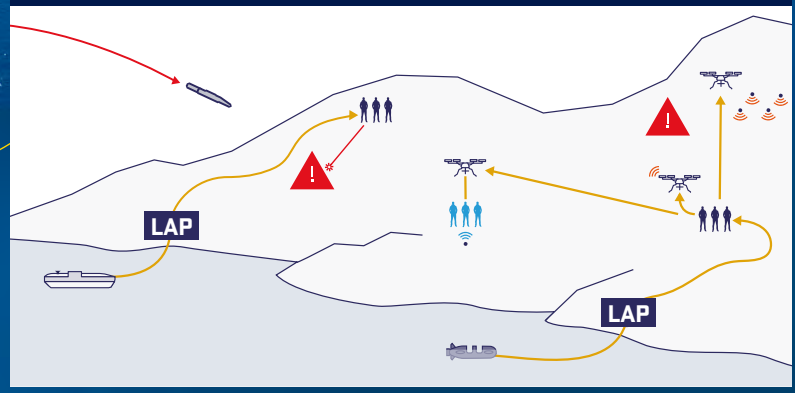
- 1 FOB
- 2 LRSIC
- 3 UAS
- 4 USV
- 5 UAV
- 6 UUV
- 7 SDV
- 8 SUBMARINE
- 9 MERCHANT VESSEL
- 10 TEAM A & B

LAP

LAP

LAP

DEEP OPERATIONS



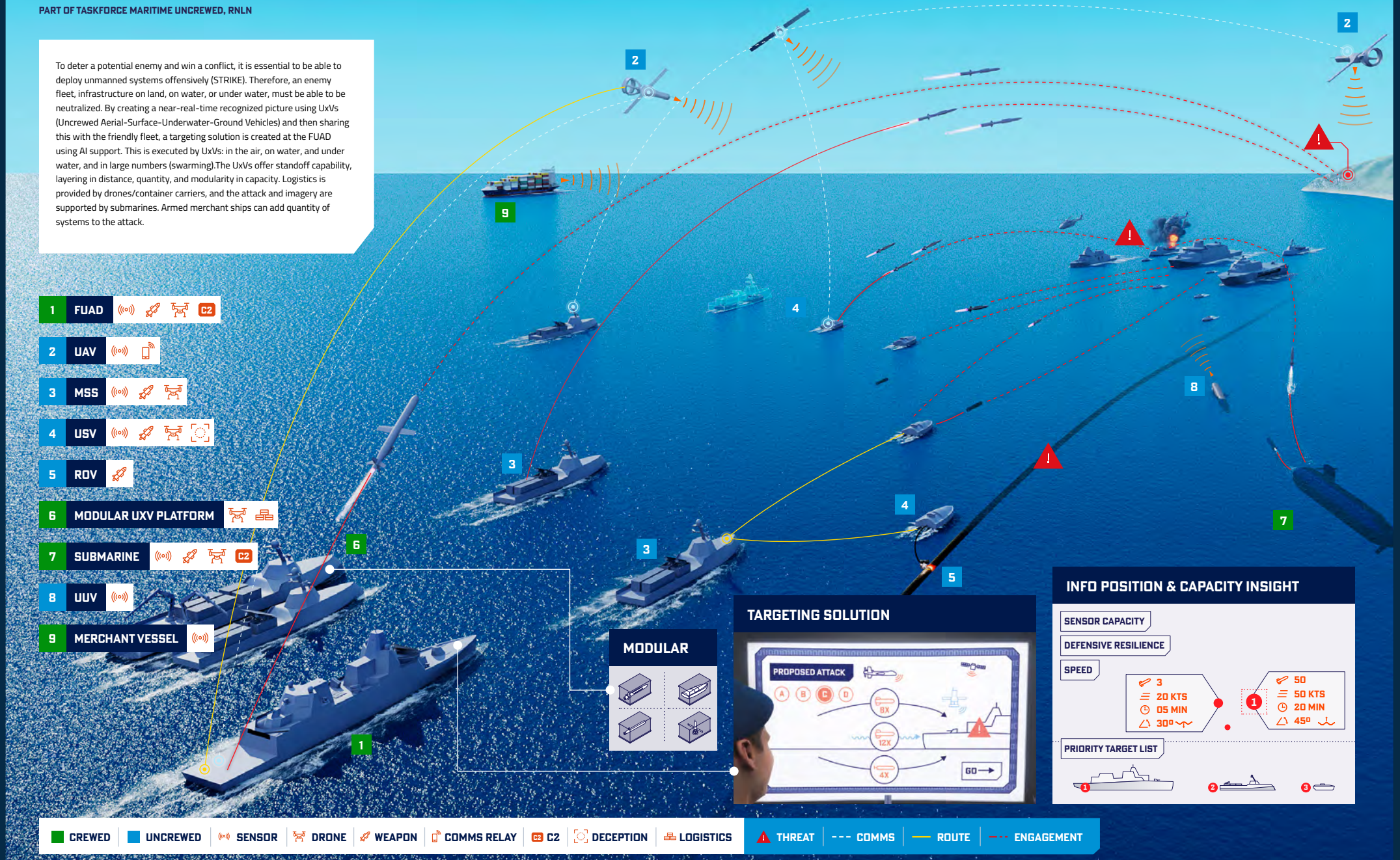
CREWED | UNCREWED | SENSOR | DRONE | WEAPON | COMMS RELAY | C2 | DECEPTION | LOGISTICS | CEMA

THREAT | COMMS | ROUTE | ENGAGEMENT | A2/AD AREA

MARITIME STRIKE

PART OF TASKFORCE MARITIME UNCREWED, RNLN

To deter a potential enemy and win a conflict, it is essential to be able to deploy unmanned systems offensively (STRIKE). Therefore, an enemy fleet, infrastructure on land, on water, or under water, must be able to be neutralized. By creating a near-real-time recognized picture using UxVs (Uncrewed Aerial-Surface-Underwater-Ground Vehicles) and then sharing this with the friendly fleet, a targeting solution is created at the FUAD using AI support. This is executed by UxVs: in the air, on water, and under water, and in large numbers (swarming).The UxVs offer standoff capability, layering in distance, quantity, and modularity in capacity. Logistics is provided by drones/container carriers, and the attack and imagery are supported by submarines. Armed merchant ships can add quantity of systems to the attack.



PROTECTION NORTH SEA AND THE CARIBBEAN

PART OF TASKFORCE MARITIME UNCREWED, RNLN

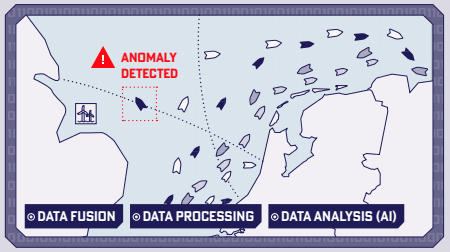
Protecting the North Sea and the Caribbean remains a key priority due to economic and strategic interests. ISR (Intelligence, Surveillance and Reconnaissance) plays a significant role in this. By 2035, this role will be fully fulfilled by a combination of networked, permanently installed sensors and uncrewed systems. This system of systems will still be controlled by humans from a Maritime Operations Centre (MOC). The large amounts of sensor data will be combined through data fusion and interpreted by AI. The AI will automatically detect suspicious situations or behaviour. These pop-up events will be further investigated and, if necessary, monitored, tracked, and inspected by task-specific, uncrewed systems. If malicious intent is suspected, intervention may be initiated.

1 MSS
2 UUV
3 FIBEROPTIC CABLE
4 OFFSHORE PLATFORM
5 ROV
6 SATELLITE
7 MOC
8 HYDROPHONE
9 LRUAV
10 UAV
11 USV

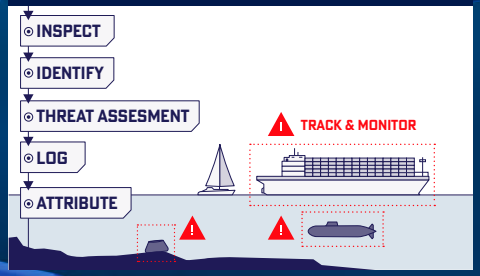
CREWED | UNCREWED | SENSOR | DRONE | WEAPON | COMMS RELAY | C2 | THREAT | COMMS | ROUTE | ENGAGEMENT

COMMAND AND CONTROL

SITUATIONAL AWARENESS SITUATIONAL UNDERSTANDING



INVESTIGATE



ACT

DETER | DISRUPT | DENY | DISABLE | DESTROY

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