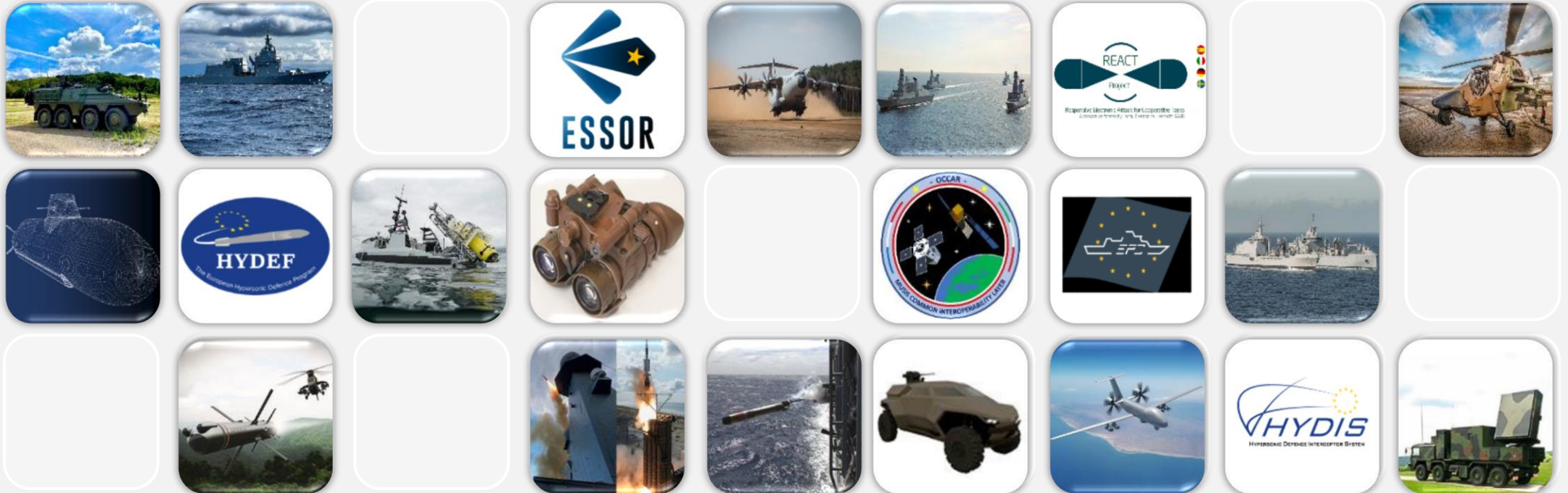


OCCAR Land Programmes Overview

Future Land Forces 2024 - Warsaw, Poland



Content



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OCCAR at a Glance

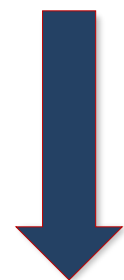
History, Business Model & Role in International Cooperation



OCCAR: A Brief History

REQUIREMENT

Need identified for European Nations to have more coordinated and effective defence initiatives.



French-German declaration (1993)



Baden Baden principles (1995)

UK and Italy joining (1996)



Signature of the Convention (1998) and ratification process started

OCCAR Legal Status (2001)

Belgium becoming a member state (2003)



Spain becoming a member state (2005)



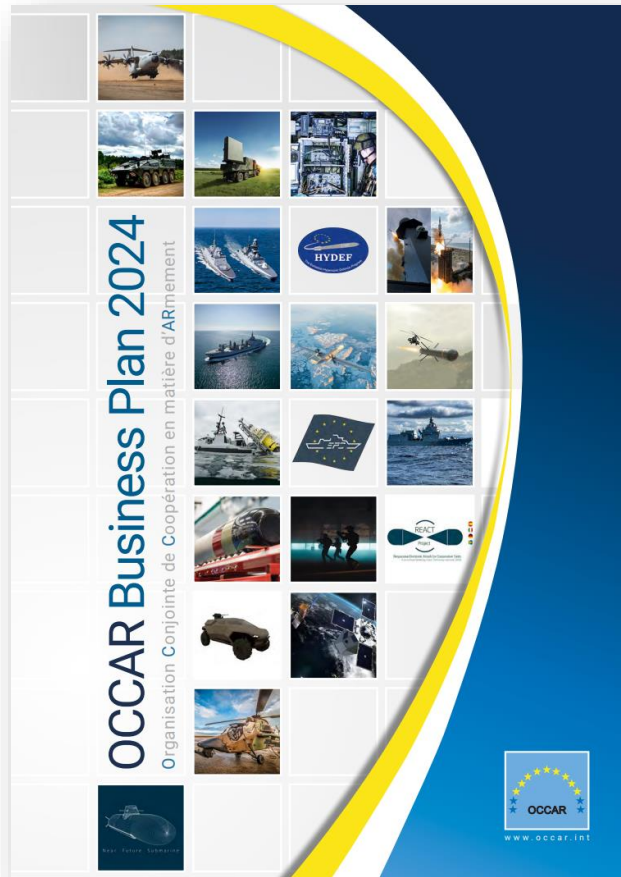
OCCAR's Journey

KEY PRINCIPLES

- Cost-effectiveness
- Harmonisation of requirements
- Competitive European Defence and Technological & Industrial Base
- "Global Balance" instead of "juste retour"
- Open to other European countries



OCCAR: Strategy



OCCAR Business Plan 2024

MISSION

Facilitate and manage cooperative European Armament Programmes through their life cycle, as well as Technology Demonstrator Programmes, to the satisfaction of our customers.

VISION

Centre of Excellence, and first choice in Europe, for cooperative defence equipment programmes managed on a through life basis.

Customer Relationship

Personalised service, long-term relationships

Best of Class

Effective PM services for schedule, cost and system performance

KEY SUCCESS FACTORS

Independent international organisation
20+ years successful record

Flexible, in terms of participants and programme integration

Centralised office for participating nations, reducing delays, increasing cost efficiency and/or avoiding duplication of efforts

Platform for sharing resources, knowledge and Through Life Management approach technologies
Global Balance

Support and strengthening of defence industries and key supply chains

Improving standardisation and interoperability of defence capabilities

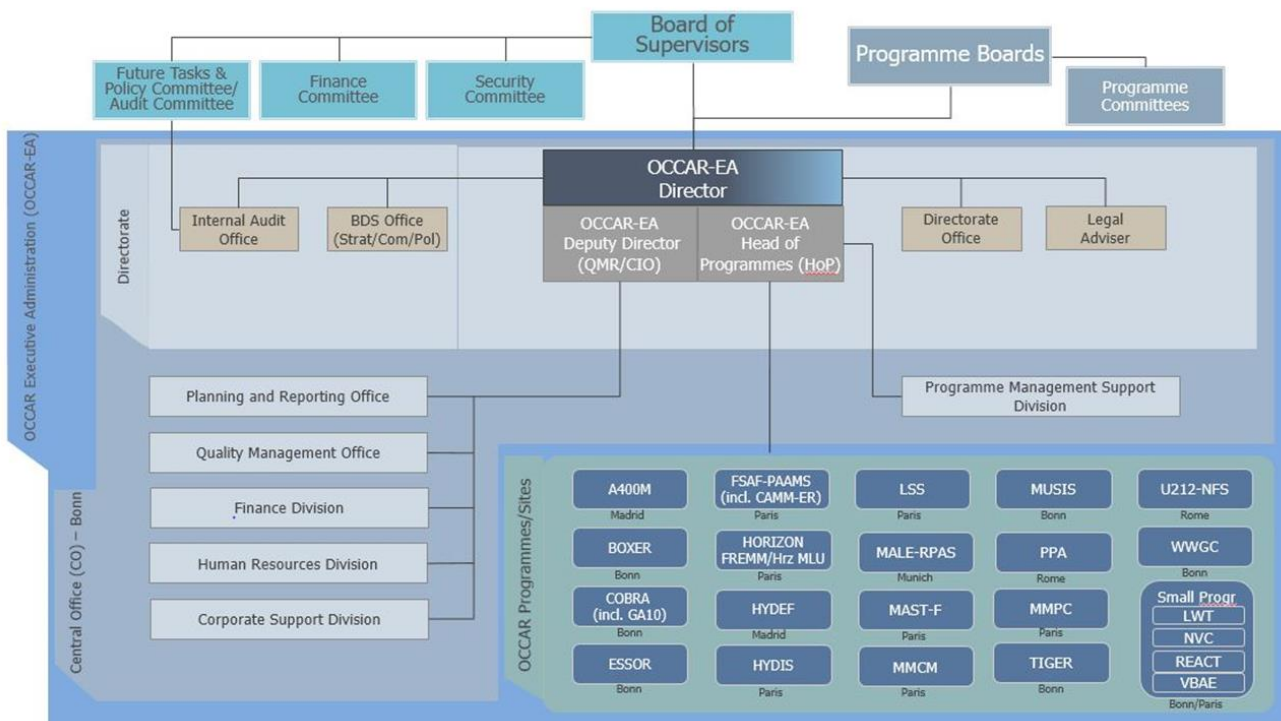
Set of agreed rules and ISO-certified processes

Speed (decision making etc.)



OCCAR: Business Model

OCCAR is an **independent, international organisation** for the management of complex, cooperative defence equipment programmes across **all phases of the Defence System Life Cycle**.



The aim is to be lean, flexible and modular. Key business model features:

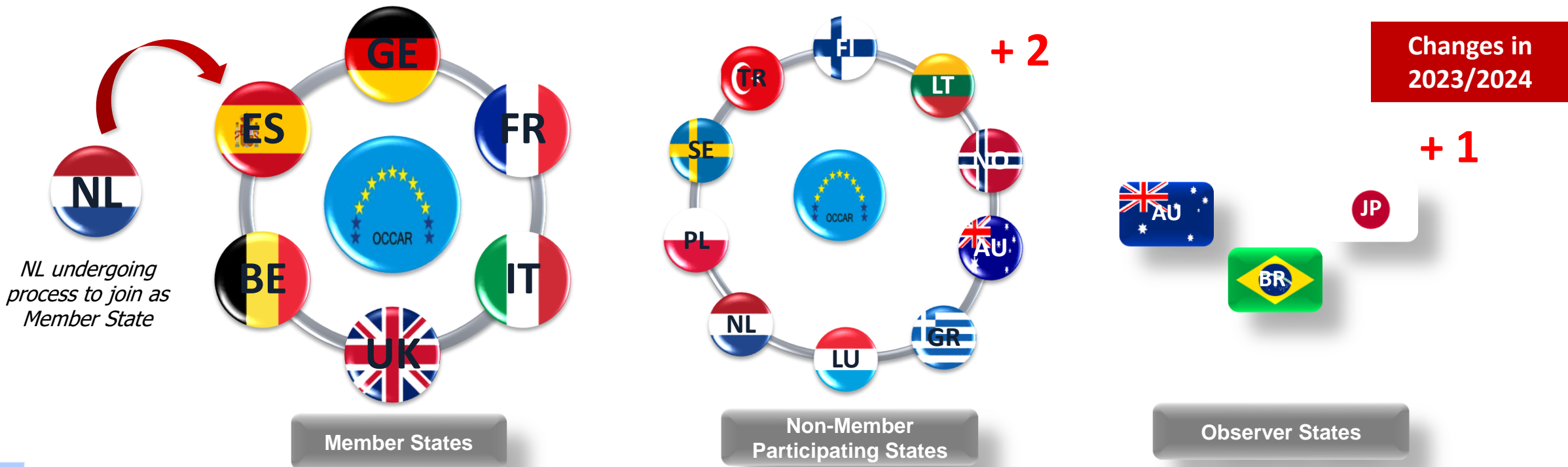
- Structured into Programme and Central Office divisions.
- Governed by a series of committees and boards, chaired and attended by the Nations.
- Programme Divisions deliver all usual equipment procurement and support functions (programme management, contract management, finance, technical and logistics expertise).
- Programme Divisions operate under a mandate from Nations (derived from Programme Mandate, MoU, Programme Decision etc).

OCCAR: Current Membership & Participation

OCCAR (Organisation Conjointe de Coopération en matière d'Armement)

International Organisation for the management of cooperative defence equipment programmes

Created through the **Convention** signed in 1998 and entered into force in 2001

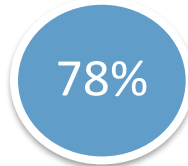
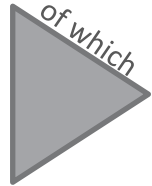


OCCAR: International Cooperation – The Challenge

€240bn

European defence expenditure in 2022

[Ref] EC Joint Communication JOIN(2024) 10 Final dd 05 Mar 2024



Expenditure outside the EU



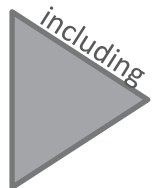
Collaborative procurement (EU benchmark = 35%)

Key issue is that Nations do not express themselves in a coordinated manner and thus industry does not have basis nor incentivisation to change supply model.

179

Different weapons systems in Europe

[Ref] 'Innovation and Efficiency: Increasing Europe's defense capabilities', McKinsey & Company, article dtd 28 Feb 2024



19

Main Battle Tanks



23

Armoured Infantry Fighting Vehicles



20

Tactical Combat Aircraft



27

Destroyers & Frigates

Key impacts are lower platform availability, challenge to interoperability and inefficient procurement.

Many NATO countries have committed to increase defence spending, including further support for Ukraine.

2023

c.30% of NATO members were expected to meet or exceed the 2% target in 2023

2025

c.50% of all NATO members expected to meet this target by 2025

European defence transformation has started, with the need to achieve industrial production capacity and resilience, in parallel with lower costs and reduced delivery timescales.

OCCAR: International Cooperation – OCCAR's Role

JOINT DECLARATION on OCCAR on July 5th, 2022

Deepening European Armaments Cooperation

In celebration of the 20th anniversary of the Organisation for Joint Armaments Cooperation (OCCAR), we, the Ministers of Defence of Belgium, France, Germany, Italy, Spain and the United Kingdom express our commitment to further advance European defence capabilities through defence cooperation.

Over the last 20 years OCCAR has been essential in improving our joint contribution to European security and defence by enabling collaborative capability programmes. In addition, OCCAR has strengthened the European Defence Technological and Industrial Base.

We acknowledge OCCAR's impressive record of accomplishment in effectively managing cooperative defence equipment programmes, also as a trusted partner of other agencies and organisations.

We are convinced that OCCAR needs to play an even more important role in the future helping us to better respond to a fundamentally changed security environment through enhanced armaments cooperation at higher levels of materiel commonality.

OCCAR must continue to support the European States in their efforts to enhance their contributions to European defence and NATO by increasing the efficiency and effectiveness of their defence expenditures.

Therefore, we reaffirm our steadfast support for the principles enshrined in the OCCAR Convention and express our determination to take further steps towards OCCAR becoming an acknowledged European Armaments Agency.

Reflecting on the original aim of OCCAR to associate with all European States, we encourage all our partners in Europe to join us in this effort and to benefit from OCCAR as a bridge-builder between us.

To reach this goal, we need to further improve on OCCAR's strengths and lower existing legal burdens for programme participation. Improving the legal foundations of association with OCCAR will enable all partners in Europe to start new cooperative armaments projects through OCCAR on an ad hoc basis.

- ❖ OCCAR already delivers **25 programmes** on behalf of Member & Participating States.
- ❖ In July 2022, a **Ministerial Joint Declaration** was signed by Member States.

“We are convinced OCCAR needs to play an even more important role in the future, helping us to better respond to a fundamentally changed security environment through enhanced armaments cooperation at higher levels of materiel commonality.”

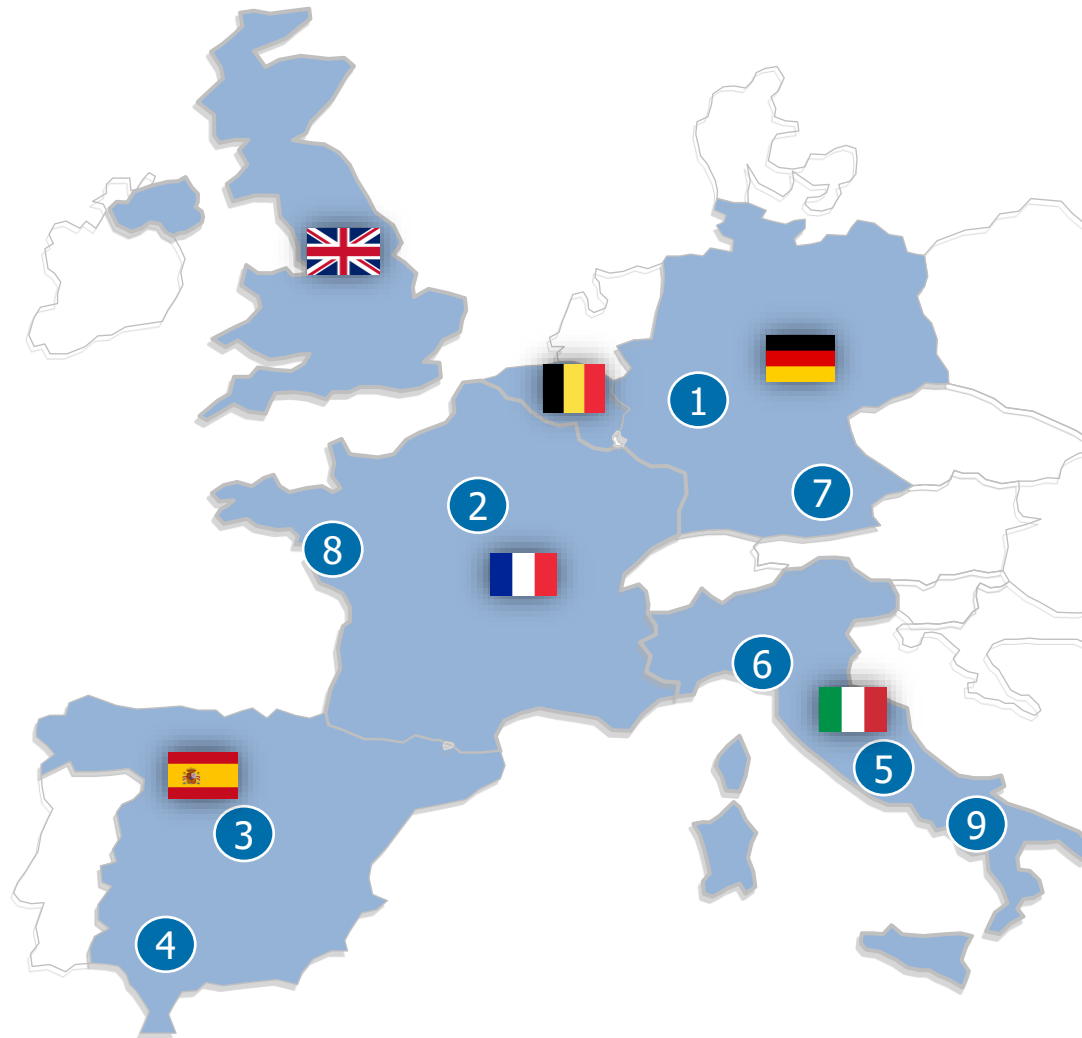
- ❖ The OCCAR Director has established contact across multiple European nations to initiate the activity of signing framework and security agreements between Nations and OCCAR.
- ❖ OCCAR already has legal frameworks and agreements in place with other international agencies to maximise international cooperation.



OCCAR Programmes

Portfolio Overview





OCCAR has grown to 400+ staff members across the following sites:

- 1 Bonn (Central Office+ BOXER – COBRA – ESSOR – MUSIS – NVC – TIGER)
- 2 Paris (FREMM – MAST-F – FR/UK MMCM – FSAF/PAAMS – LSS – MMPC)
- 3 Madrid (A400M – HYDEF)
- 4 Seville (A400M – Satellite Office)
- 5 Rome (U212 NFS – PPA – FREMM – CAMM-ER Satellite Office)
- 6 La Spezia (LSS – FREMM – Satellite Office)
- 7 Munich (MALE RPAS)
- 8 Saint Nazaire (LSS – Satellite Office)
- 9 Castellamare (LSS – Satellite Office)

OCCAR: Current Programme Status



Delivering
defence
capability across

Land Sea
Air Space



© AIRBUS

A400M meets the need for an efficient, versatile transport aircraft for today's military operations and uniquely combines strategic range, payload and speed, with a tactical capability including low level flight and operations from unprepared runways. It can transport troops and heavy, large volume loads and act as a tanker for both fast jets and helicopters.



© OCCAR

BOXER is an 8x8 all-terrain heavily armoured utility vehicle, with a concept of a common drive module and exchangeable mission module. It delivers maximum strategic advantage and tactical mobility in a wide range of operational scenarios. BOXER is designed for an ISS life of approx. 30 years. 700 BOXER vehicles have been delivered to date.



© OCCAR

COBRA is a cooperative long-range ground-based COUNTER Battery RADAR programme between DE and FR for detecting weapon systems, registration and adjustment of friendly firings, creation of battlefield data and communication with battle forces.



© ESSOR

ESSOR provides software defined radio solutions to improve interoperability of radio communications on the battlefield.



© DGA

FSAF-PAAMS is a tri-national Programme based on the Aster common missiles, comprising sea and land-based air-defence systems designed to counter conventional aircrafts and ballistic missile threats. Systems include SAMP/T & SAMP/T NG for FR and IT, PAAMS & Long-Range Radar for the 3 National Navies, SAAMs for FR and IT, and CAMM-ER for IT.



© DGA-FRA MoD

HORIZON MLU/FREMM – The MLU includes the 4 ships of the FR-IT Horizon Class. The main objectives of the MLU are obsolescence resolution of systems as well as design, development and integration on board of the new ones. Activities on board are foreseen from 2027 (on the first IT ship) until the end of 2029 (second FR ship).



© DCNS

FREMM is focused on the development, production of 8 Frigates ordered by FR, in Anti-Submarine Warfare (ASW) and AAW (FREDA) configuration, as well as 10 by IT, in ASW and General Purpose (GW) configuration, from 2005-2025. 2 additional ships (in EVolution configuration) are planned to be delivered to IT.



© HYDEF

HYDEF covers a concept study and initial design for the potential future development and acquisition of a hypersonic endo-atmospheric defence interceptor.



© HYDIS

HYDIS, the Hypersonic Defence Interceptor System (HYDIS) will develop a European interceptor for strengthening European air defence against emerging hypersonic threats.



© IT/FR Navy

LSS is a new generation Logistic Support Ship built to provide full support to long-range missions of a joint task group. These ships are able to embark a joint operational command staff and include a hospital and medical facilities.



© Eurtorp

LWT – MU90 is a top-level NATO-standard Light Weight Torpedo (LWT) designed for use by surface vessels, helicopters and airplanes against all submarines, in every operational scenario from blue to brown waters.



© Airbus

MALE RPAS Eurodrone is the best-in-class medium altitude remotely piloted aircraft system, primarily designed to perform long endurance intelligence, surveillance, target acquisition and reconnaissance missions.



© MBDA

MAST-F is a new generation land combat missile and main part of the renewal of the air-ground capacity on the TIGER helicopter and also on MALE RPAS.



© Italcas Spine

MMCM – Maritime Mine Counter Measures (MMCM) provides the next generation of mine hunting capability, allowing operations to be conducted at range. It is comprised of unmanned surfaces vessels (USVs) Remotely operated vehicles (ROVs) and Underwater Unmanned Vehicles (UUVs) utilising world class sensors.



© OCCAR

MMPC is a new Class of Patrol Corvette with a flexible approach that provides interoperable and deployable capabilities. Based on a common monohull concept, it will accommodate different weapon systems compatible with different missions and be characterised by a high green ambition.



© MUSIS

MUSIS is a multi-mission system that delivers space-based imaging capabilities to the intelligence communities. The Common Interoperable Layer enables one nation to task the space system of the other nation in a secure way.



© Theon Sensors SA

NVC ensures a common basic Night Vision Capability for dismounted soldiers and drivers of military vehicles by a common development, procurement and ISS of equipment such as Night Vision Goggles.



© Airbus

PPA is a Multipurpose patrol ship with the ability to accomplish military tasks in all maritime warfare domains, humanitarian assistance and anti-pollution ops. PPA is a highly innovative combat system (new-generation sub-systems developed within the Programme), modularity, high speed, manoeuvrability, long endurance, increased resilience, reduced emissions.



© REACT

REACT covers the concept definition, specification and design of an airborne electronic attack capability and architecture in order to evaluate different technologies at European industry level.



© Roberto Santos

TIGER is a versatile attack helicopter comprising air-to-ground, anti-tank, air-to-air, reconnaissance and force protection capabilities.



© OCCAR

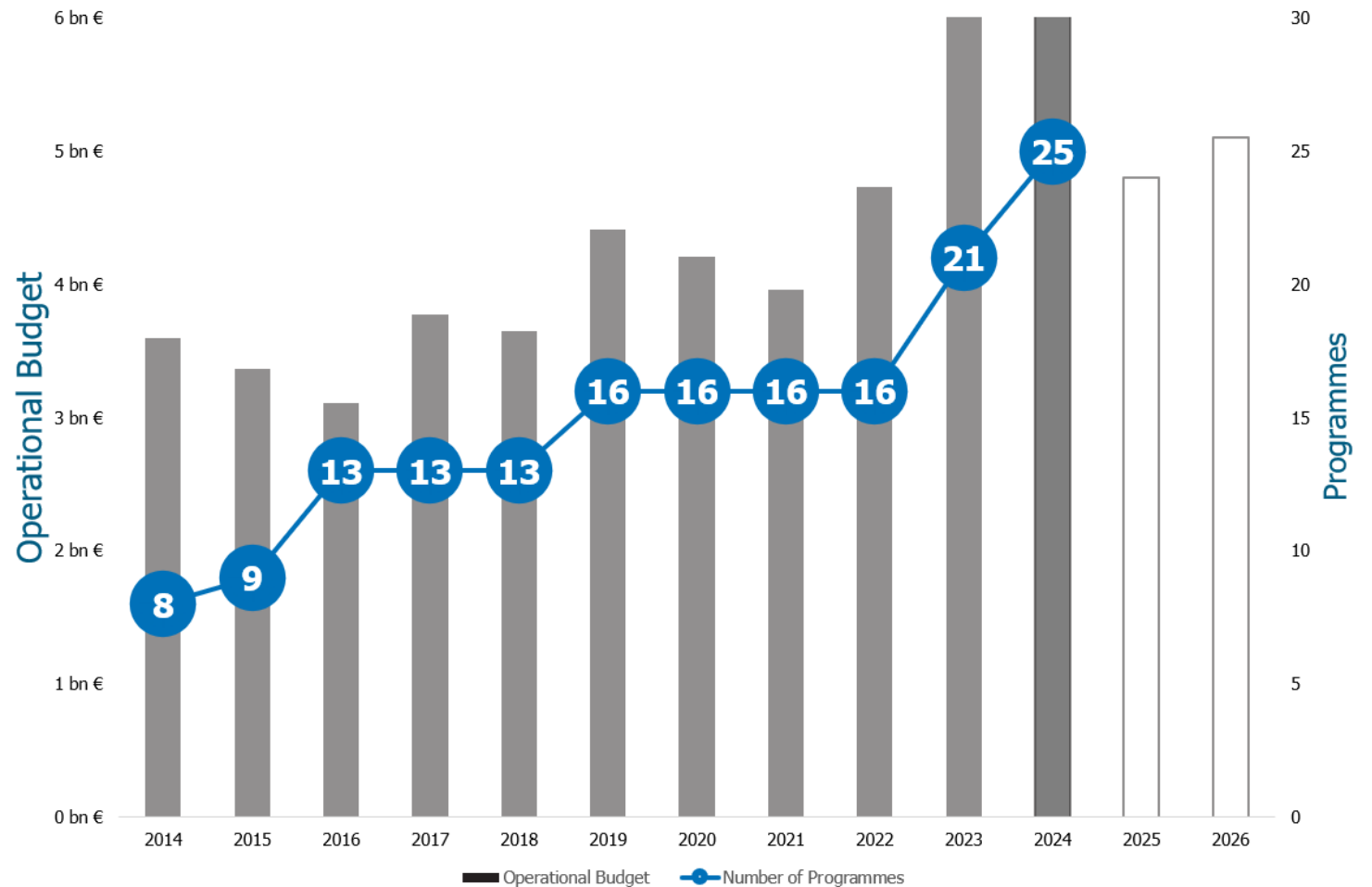
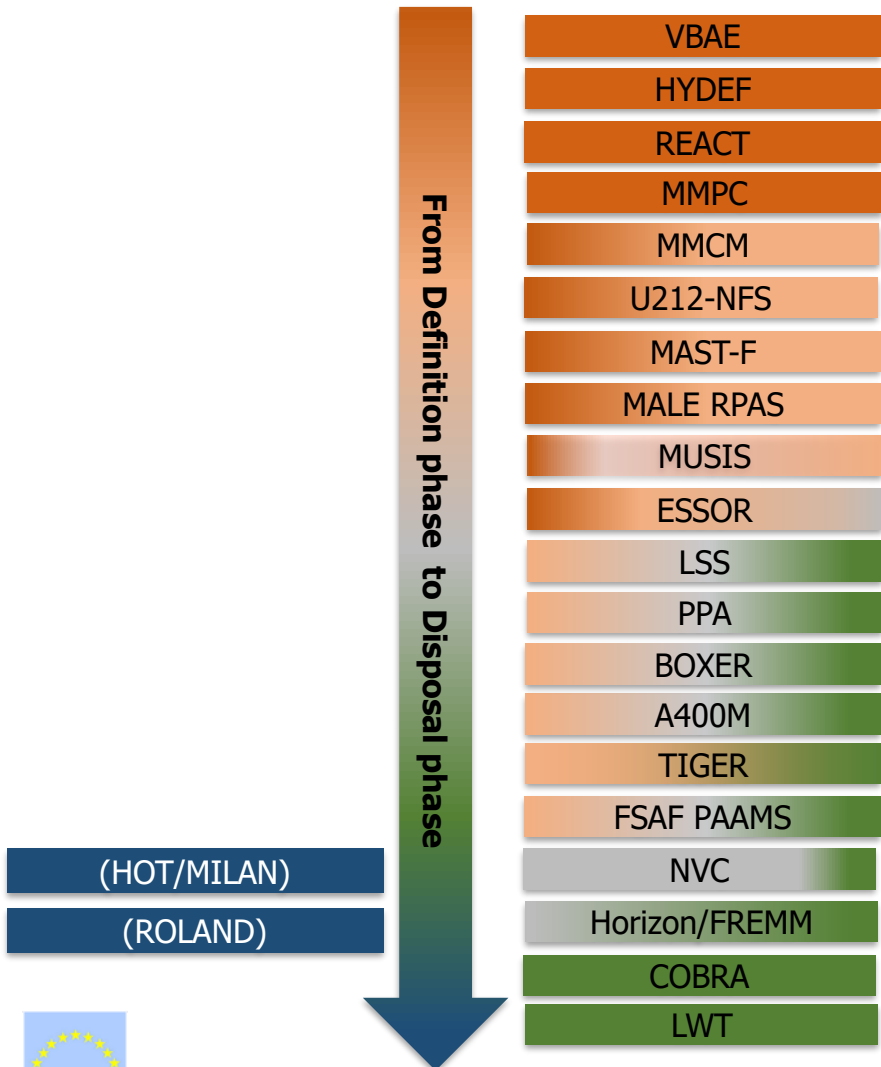
U212 enables the IT Navy to tackle new complex scenarios in underwater operations. It foresees the design, development and production of 4 submarines, a new training center and related ILS and ISS. U212 NFS is based on U212A submarines and includes edge technologies such as battery lithium propulsion and a new Combat Management System.



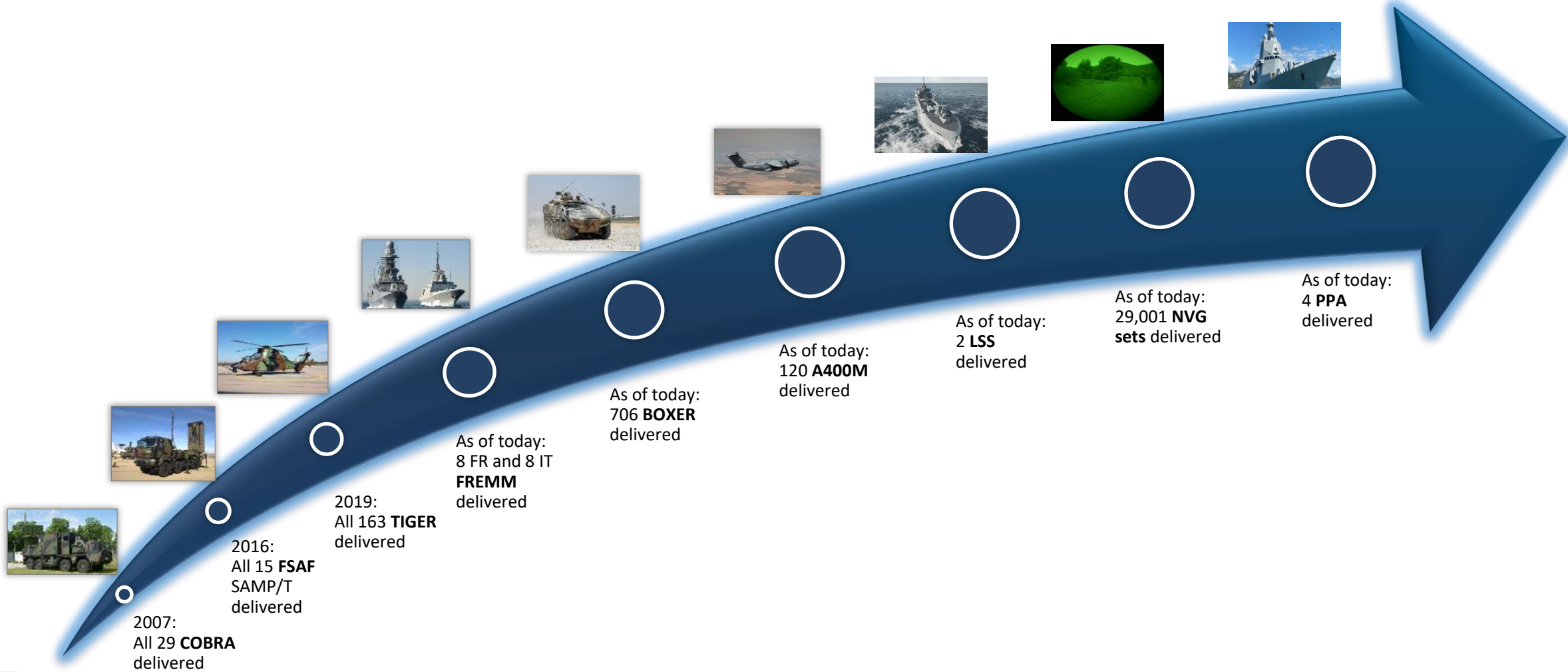
© DGA

VBAE covers the specification and pre-design for a modern and innovative light armoured vehicle integrated into battlefield information system, providing high added-value for reconnaissance, enhancing light combat engagement capabilities and stems from the FR and BE Army requirements.

OCCAR: Current Programme Status



OCCAR: Deliveries



OCCAR Land Programmes

Spotlight on Current and Future Developments

OCCAR: Land Programmes



BOXER The BOXER is an all terrain armoured utility vehicle. The concept of a drive module and an exchangeable mission module makes it a flexible military vehicle for a large range of assignments.



COBRA Location of weapon systems, registration and adjustment of friendly firings, creation of battlefield data, communication with battle forces - COBRA is a singularly effective force on the battlefield, performing rapidly and accurately.



VBAE The VBAE, Véhicule Blindé d'Aide à Engagement, is the future light armoured vehicle designed in cooperation between France and Belgium.



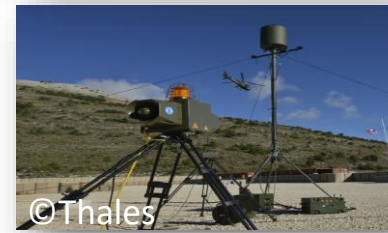
ESSOR The European Secure Software Defined Radio (ESSOR) uses Software Defined Radio technology to define the future of interoperable radios, producing standards, software (waveforms) and radio terminals.



Night Vision Capability aims to increase Belgium's and Germany's night vision capabilities of dismounted soldiers and vehicle drivers. The commonality concept increases interoperability and reduces the logistic footprint in theatre.



WWGC* The Wide Wet Gap Crossing (WWGC) will develop and produce a modern and fast amphibious river crossing capability that goes beyond current available capabilities, for Germany and the UK.



Ground Alerter 10* covers a Mid-Life Upgrade for an existing counter artillery system in service with France and Germany. The aim is to improve the radar and address obsolescence.

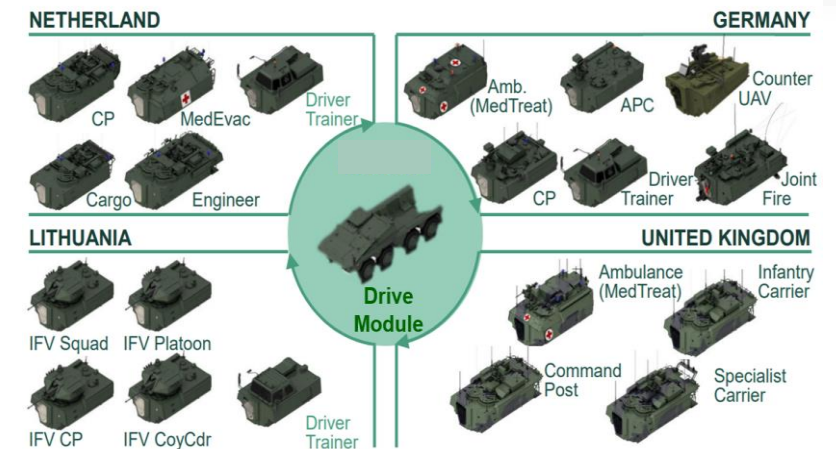
** New programmes under integration*

BOXER Programme - Overview

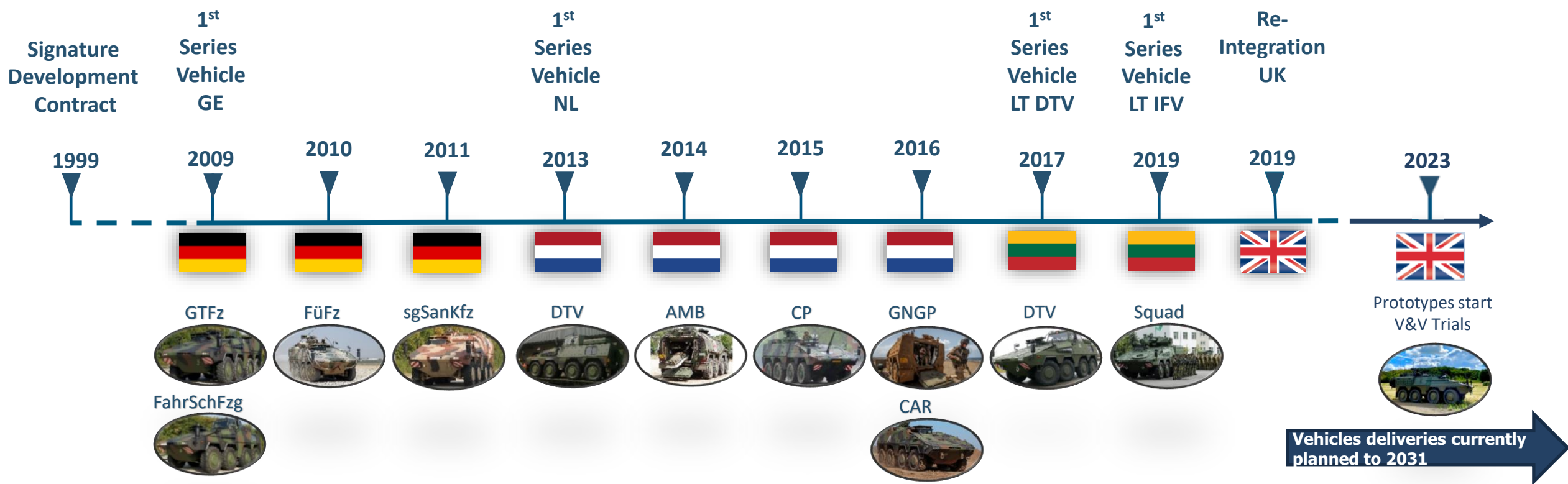


➔ Mission & Features

- ➔ State-of-the-art, proven 8x8 all-terrain heavily armoured utility vehicle.
- ➔ Modular: common drive module and exchangeable mission module to ensure maximum strategic advantage and tactical mobility in a wide range of operational scenarios.
- ➔ Variants include: infantry fighting vehicle, infantry carrier, ambulance, engineering, cargo and other specialist variants.
- ➔ Can carry up to 11 crew with a top speed of >100km/h.
- ➔ Qualified with a number of weapons and weapon systems.



BOXER Programme – Current Status and Future Steps



Current:

25 years of programme delivery.
1300+ BOXERs on contract in **19** variants.
6bn+ EUR on contract.
700+ BOXERs delivered.

2025 onwards:

Scoping, procurement, design and delivery of new vehicles and new variants for all Nations.

- Infantry Fighting Vehicles
- Bridge Layer
- Armoured Mortar
- Repair & Recovery
- Electronic Warfare
- Overwatch
- Deep-Find Radar
- SHORAD

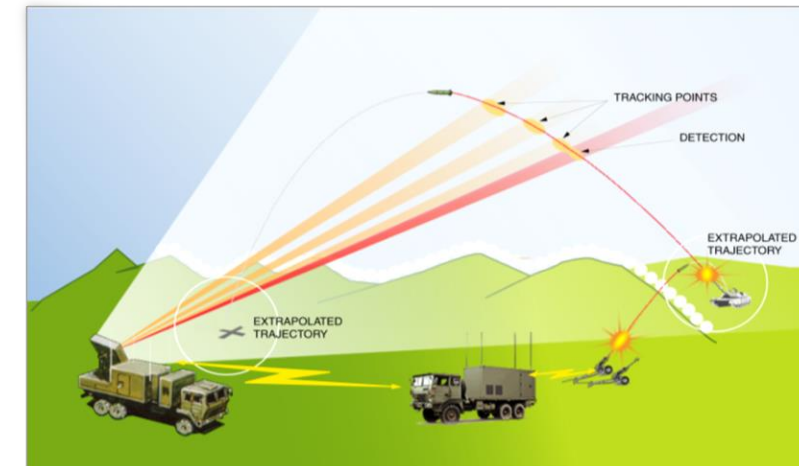
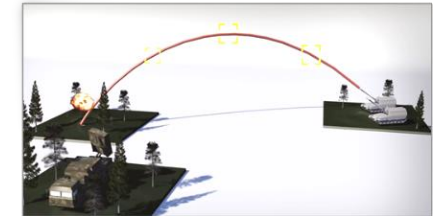
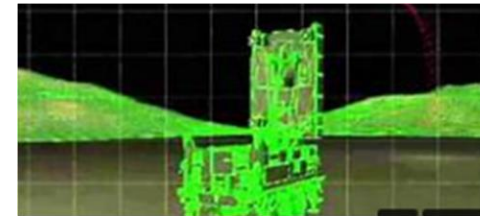


COBRA (COunter BAttery RADar) Programme - Overview



➔ Mission & Features

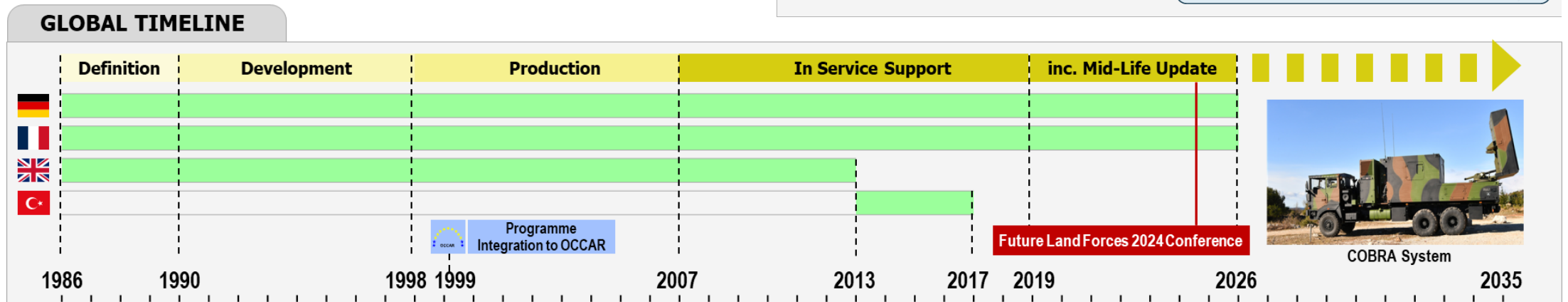
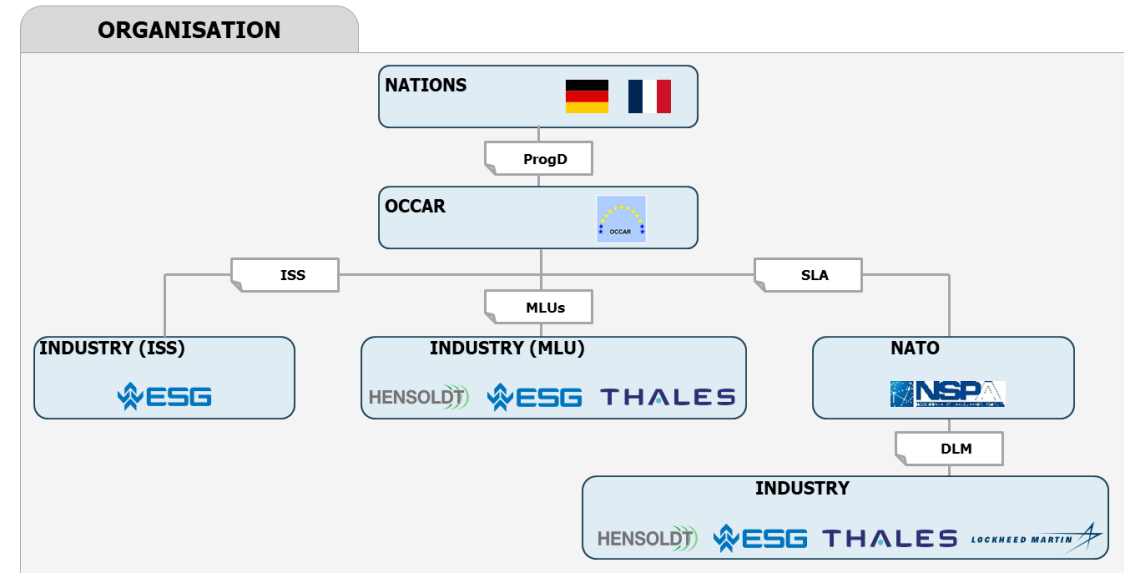
- ➔ To locate mortars, rocket launchers and artillery batteries in a highly mobile system.
- ➔ To provide information to initiate counter measures.
- ➔ To monitor breaches of cease-fire when deployed in a peacekeeping role.
- ➔ **Detection:** 40 batteries in 2min / rate acquisition greater than 240 weapons > 2min.
- ➔ **Tracking:** High performance RADAR in all environments (incl. nuclear, biological & chemical).
- ➔ **Reporting:** Integrated, flexible Command, Control and Communication System (Artillery C3 equipment to relay information to the battlefield).



COBRA Programme – Current Status

➔ Current status: ISS including MLU

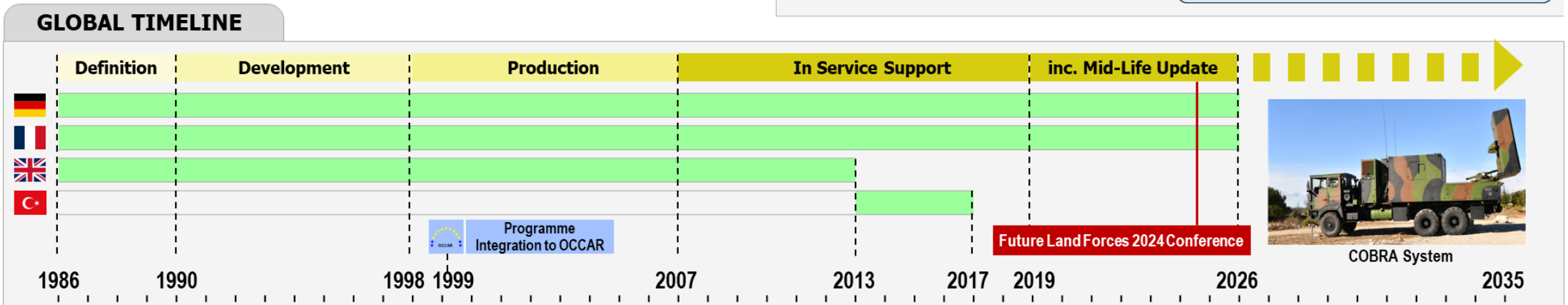
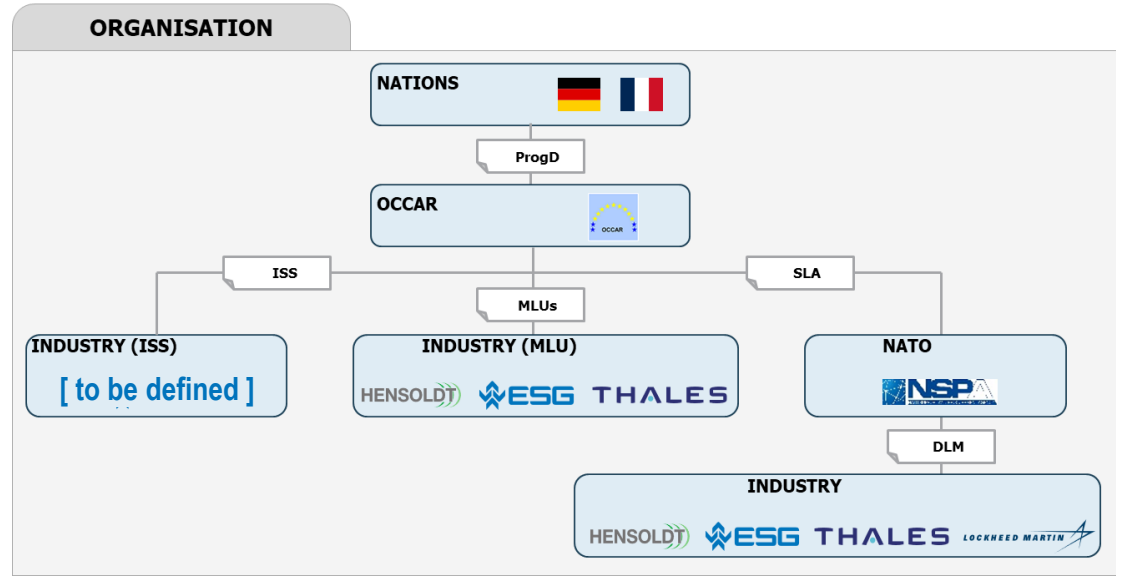
- Maintenance & improvement on the high level of system availability
- Preparation and implementation of ProgD beyond 2025
- Monitoring the execution of the In-Service Support Contract
- Monitoring the execution of 7 Mid-Life Update Contracts



COBRA Programme – Next & Future Activities

➔ Looking towards 2025+

- Preparation of the ISS contract beyond 2025
- Negotiation of a New Service Level Agreement (SLA) with NSPA
- Ongoing execution of MLU contracts including qualification and roll-out activities





ESSOR (Europe Secure Software Defined Radio) Programme - Overview

➔ Mission & Features

- ➔ Software Defined Radio = modern radios whose characteristics are defined by their software, not their electronics.
- ➔ ESSOR is creating software, called waveforms, to enable interoperability of SDR radios.
- ➔ Interoperability has been achieved on radios from the 6 Nations / ESSOR industry : BITIUM, ROHDE and SCHWARZ, LEONARDO, and RADMOR .



Military: No interoperability > use of multiple radios

vs



Civilian: Many manufacturers and interoperable applications



However, civilian technology is highly dangerous for military use.

" The use of personal cellphones has plagued both Ukraine and Russia throughout the war, leaving troops vulnerable to a piece of technology that, however mundane and ubiquitous in daily life, can pose an existential threat in modern war...."

The New York Time, Jan 23.

Programme Manager: Serge Debono (serge.debono@occar.int)

ESSOR Programme – Two STANAGs to enable Interoperability



ESSOR high data rate waveform is now a NATO standard (STANAG 5651) and is adopted by Federated Mission Networking (FMN). It is already available and tested on ESSOR nations industries radios.

ESSOR narrow band waveforms specification has been provided to NATO as a base for STANAG 5630 ed 2. It will be implemented and field tested on the radios from the ESSOR nation in the coming years.

Ongoing discussions to enable more nations and manufacturers to implement the ESSOR products on their radios to increase interoperability on the field.

NVC (Night Vision Capability) Programme - Overview



➔ Mission & Features

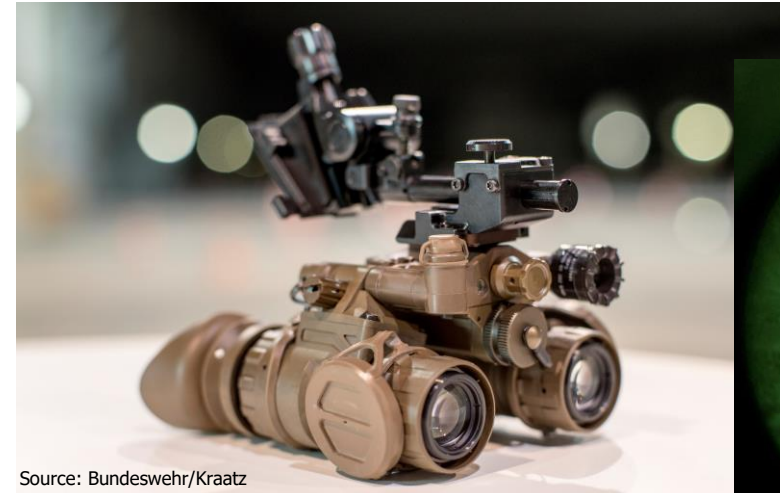
- ➔ NATO Capability Target L1201 "Advanced Individual Combat Capability":

Achieve common basic night vision capabilities of dismounted soldiers and operators of military vehicles.

- ➔ Increase the interoperability of the Programme Participating States.

- ➔ Reduce the logistic footprint of the Programme Participating States in common operations.

- ➔ NVG MIKRON is an innovative, lightweight, image intensified, dual tube binocular that can be operated helmet-mounted, head-mounted or hand-held.



Source: Bundeswehr/Kraatz



Source: Bundeswehr



Source: Bundeswehr/Mader



Source: MoD of Belgium

Programme Manager: Luc Ruyssinck (luc.ruyssinck@occar.int)

NVC Programme – Current Status and Future Steps

⌘ Night Vision Goggle MIKRON:

- Suppliers: Consortium Theon Sensors & Hensoldt Optronics
- 2021-2025: production and delivery of more than 49,000 MIKRON
- 2022-2027: Initial In-Service Support for Belgium
- 2024-2029: Initial In-Service Support for Germany

⌘ Infrared Clip-on Device started

- Competition started in 2024
- Production, delivery and initial In-Service support of more than 5,800 Infrared Clip-on Devices



➔ Mission & Features

➔ 4x4 armoured vehicle to support combat engagement.

A light, protected, numerized and agile frontline vehicle for a 3-men crew:

- ➔ Scout enemy forces.
- ➔ Engage enemy forces, especially with a medium caliber lethal version called 'VBAE aggression'.
- ➔ Stabilize and patrol unstable area.
- ➔ Priority to replace French cavalry vehicle 'VBL' but with more combat qualities (protection and fire power) and enhance Belgium motorized capability in control, recon and commandment.
- ➔ Respond to BE and FR operational requirements but intended to be the "best choice for this type of ConOps".

Current French VBL
Vehicle Below



Front engine vehicle architecture 1



Rear engine vehicle architecture 1



Pictures © ARQUUS

(Engine Position Architecture is currently in final decision loop)

VBAE Programme – Current Status and Future Steps

- ⌘ Suppliers: ARQUUS, KNDS France with John Cockerill Defence as main subcontractor
- ⌘ Timeline :
 - 2024-2025: on going Predesign contract (Stage 1, architecture maturation)
- ⌘ Expected timeline (not yet committed):
 - 2025-2026: Prepare Stage 2
 - 2026 and onwards: Development, Qualification, Production => Delivery in 2030
- ⌘ Intended scale: almost 2.000 vehicles plus exports

WWGC (Wide Wet Gap Crossing) Programme - Overview



➔ Mission & Features

- ➔ Current system had an initial order of 64 series vehicles and entered service with German and British armies in 1996. German-British Pioneer Bridge Battalion 130 based in Minden, with 30 German and 10 UK vehicles in service.
- ➔ A new system has been proposed - M3 EVO by General Dynamics European Land Systems (GDELS). WWGC Programme will cover development, production and initial ISS for a modern and fast capability to go beyond available systems.
- ➔ Self-driving amphibious rig with the capability to build floating bridges over bodies of water and to allow the crossing of heavier material, to include all of NATO's vehicles and the heaviest Main Battle Tanks.
- ➔ Plan to procure > 1000m of bridging capability to support land forces mobilization.

Current M3 Amphibious Rig and customers



- Germany 
- UK / England 
- Taiwan R.O.C. 
- Singapore 
- Indonesia 
- Latvia 
- South Korea 
- Sweden 
- Ukraine 

WWGC Programme – Current Status and Future Steps

- Single source Procurement for **Development, Procurement and initial In-Service** with **General Dynamics European Land Systems (GDELS)**.
- ITT issued in **April 2023**. ITT re-issued **September 2024** with national decision to reduced scope to **MOTS with limited development**. Contract award anticipated in **July 2025**.
- Programme Division will be set up in **Bonn** in current **OCCAR premises**.
- The **DE** forecast is: **IOC 04/2031**; FOC 04/2034 => In total **760m** bridge length.
- The **UK** forecast is: **IOC 09/2030**; FOC 06/2031 : In total **300m** bridge length.
- Potential interest from **other nations** likely to join programme following contract signature.



➔ Mission & Features

- ➔ 360° azimuth coverage to guarantee fast **detection and classification** of artillery, rockets and mortars flying in the direction of the camp within a **10km radius**.
- ➔ Calculate Point of Impact (POI) and alert military personnel on the ground by generating acoustic and visual alert, signaling estimated POI.
- ➔ Can operate in all environments.
- ➔ Mid-Life Upgrade will improve radar performance, increase threat detection scope and address obsolescence.



GA10 Programme – Current Status and Future Steps

- Programme Management Agreement (PMA) signed in January 2023 for:
 - Development of new standard GA10 (3 years)
 - Retrofit of existing GA10 systems (14 French & 17 German)
 - Initial ISS for a minimum of 2 years for the new GA10 Standard 3
- ITT released to Thales Land and Air Systems (LAS) (Germany) in February 2024. Tender response received May 2024. Negotiations between OCCAR and THALES LAS concluded August 2024. Target contract signature of November 2024.
- Programme Division will be established in the OCCAR premises in Bonn, Germany. Expected 2 x staff members.

Questions

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