

EDF-2021-NAVAL-D: Multirole and modular offshore patrol vessel

Naval combat systems and platforms are essential assets to ensure presence where needed, and exercise control and power at sea.

The main objective is to generate a new multirole and modular class of vessels able to increase current navies' capabilities mainly in terms of Maritime Situational Awareness (MSA), Surface Superiority and Power Projection and also to carry out a large spectrum of maritime operations ranging from peacetime and times of crisis actions to wartime operations.

Proposals are invited against the following topic:

EDF-2021-NAVAL-D-MMPC: Modular and multirole patrol corvette

Budget

The Union is considering a contribution of up to EUR 60 000 000 to support proposals addressing the abovementioned topic and its associated specific challenge, scope, targeted activities and main functional requirements.

Up to one action may be funded under this call.

Specific challenge

The ambition of the EU navies is to drastically increase the flexibility of second line vessels in order to conduct a wider range of operations and to make the vessels more suitable to face 21st century challenges and newest constraints and operational requirements to expand the capacities to interoperate and significantly elevate their level of availability and sustainability.

Moreover, the new class of ships needs to be based on a shared baseline, which can be tailored to different national individual requirements.

These goals can be reached at most optimized cost by a new generation of ships defined with a high level of commonality and modularity and taking advantage of a common engineering knowledge base and the large experiences at EU level.

The challenge is to take into account the different requirements from participating Member States and succeed in defining and demonstrate the capacity of building a family of ships which will have a common baseline (reference ship) jointly with some specificities (modularity in design and flexibility in mission) to answer to specific needs from each participating Member States.

Scope

The proposals must aim to:

- define a shared and common set of rules, standards and interfaces applicable to naval architecture and associated systems to improve the industrial cooperation and integration of the European naval companies and Small & Medium Enterprises (SME) and promote common European supply chains;

- create standardized industrial processes and methodologies and increase Member State's joint capability to develop future warships in a reduced amount of time and at most optimized cost, and so contribute to the competitiveness of the European defence industry;
- increase availability through integration of modularity and flexibility in the design of military vessels, and ultimately to generate a new 2500t-3500t class modular vessel able to increase current capabilities of the navies mainly in terms of MSA, Surface Superiority and Power Projection and also carry out a large spectrum of maritime operations ranging from peacetime governmental activities to wartime operations.

Targeted activities

The proposals must cover the following activities as referred in article 10.3 of the EDF Regulation, not excluding possible upstream activities eligible for development actions if deemed useful to reach the objectives:

- studies, such as feasibility studies to explore the feasibility of new or improved technologies, products, processes, services and solutions;
- the design of a defence product, tangible or intangible component or technology as well as the definition of the technical specifications on which such design has been developed which may include partial tests for risk reduction in an industrial or representative environment.

The activities must in particular include:

- Definition of common methodologies, tools, set of common rules and standards for the studies and construction of the vessel, list of innovative solutions and relevant technological bricks, list of potential EU original equipment manufacturers (OEMs) to be used during the following phases. This phase also includes the definition of standardized interfaces and the study and demonstration of some core technological bricks that are of highest importance for the concept of the vessel.
- Concept and feasibility studies for the reference ship and verification of capability to cope with participating Member States/national specific requirements. Definition of flexible and scalable architectures and demonstration they are able to handle the amount of variability of vessel and systems impacted by the participating Member States/national specific requirements. This phase also includes the selection and the definition of the standardized interfaces with the main systems. The feasibility studies will provide several solutions for the reference ship plus specificities (sizing, general arrangement...).
- Concept studies and evaluation, in order to elaborate and characterize the main parameters (sizing, general arrangement...) of MMPC solutions for the reference ship and characterization of national variants, and prepare the next detailed design phase for the MMPC.

In order to increase commonality between national variants, and to reduce non-recurring costs, the systems aboard the vessel must have, as much as feasible and economically interesting, standardized functional interfaces to be defined during the first phase of studies.

To allow participating Member States to share capability modules in the flexible areas, the physical and functional interfaces and technologies in those areas must be common. The confirmation of the feasibility of such flexible area will be demonstrated.

A detailed planning of potential subsequent phases should be generated, including the identification of implementation priorities, according to the operational needs.

Functional requirements

The proposed study must include:

- Definition of common and jointly agreed naval standards recognized by Classification Societies;
- Definition of common agreed operational standards and criteria for all possible matters not subjected to Classification Societies rules;
- Definition and demonstration of common set of system engineering tools and methodology to perform the feasibility studies and design (basic and also detailed design in next step of the project) of the reference ship, as well as the specificities;
- Definition and demonstration of common standardized integration and testing procedures;
- Definition and demonstration of standardized interfaces for flexible areas;
- Definition and demonstration of standardized interfaces for main systems or equipment and networks;
- Definition and demonstration of common tools (e.g. Product lifecycle management) and data exchange processes in order to collaborate between the members of the industrial team and also with the participating Member States;
- Definition and demonstration of common production methods for the reference ship and the participating Member States/national variants.

A reference ship constituting the common part of the platform, as well as the definition of specificities responding to the panel of participating Member States requirements must be defined creating a family of ships, being able to:

- cope with common requirements;
- incorporate innovative solutions aiming to increase the overall efficiency of the vessel during her life-span and reduce the adverse effects on environment;
- integrate new technological bricks. These last must be studied and must demonstrate their interest and their performance for this new family of ships. The list of topics to be studied and demonstrated could include, but not limited to the following: active signature management, innovative green systems for propulsion, electrical production, waste management refrigerating gas, capability to deploy multiple UxV, flex zone preparation and handling system, ship data management (secured data centre, virtualization, remote treatment, data analytics...), smart damage management system (innovative detection/fighting system, remote/automated system, crew localization...), design oriented to circular economy (use of materials facilitating green recycling at end of life, solutions to contribute to climate objectives with a target to significantly and globally reduce the ship's gas emissions when compared to a year 2020 state-of-the-art equivalent ship);
- modular concept that favours reconfiguration and modernization throughout useful life;

- contribute to climate objectives with a target to significantly and globally reduce the ship's gas emissions when compared to a year 2020 state-of-the-art equivalent ship.

Expected impact

- Smart interoperable interfaces allowing an easier integration of new systems aboard the vessel and further naval vessels.
- Potential use of disruptive technologies or dual use possible applications through the definition of a new design process
- Design process and solutions oriented to circular economy: use of materials facilitating green recycling at end of life and innovative green systems for propulsion, electrical production, waste management refrigerating gas...
- Reduction of building time, with increased competitiveness and with a widened level of interoperability and standardization to contribute to enhanced surface superiority and increase the EU fleet integration.
- Enhancement of EU's defence industries competitiveness, innovation, efficiency and technological autonomy, facilitating the widening of cross-border cooperation in particular as regards SMEs and Mid-caps.