

Innovation by design: The French Navy's FTI frigate programme

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The French Navy's new Frégate de Taille Intermédiaire will embody innovative features that will strike a balance between cost and capability, as *Richard Scott* reports

With a major design review planned next year ahead of the start of manufacture, work to mature the design of the French Navy's new Frégate de Taille Intermédiaire (FTI), or intermediate frigate, is at an advanced stage across industry, the Marine Nationale, and the Ministry of Defence's (MoD's) Direction Générale de l'Armement (DGA).

Offering new insights into the design development process, all three major stakeholders have revealed the extent to which they have been willing to embrace new features and operating practices to strike a balance between cost, schedule, and capability. Indeed, innovation is vital to meet the navy's need for a versatile yet affordable multimission warship that can be delivered by the end of 2023. The service expects to have the first of class fully operational in 2025 after operational testing and evaluation.



The first frigate under the FTI programme is scheduled for delivery in 2023. Entry into operational service with the Marine Nationale is planned to follow in 2025. (Naval Group)

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Furthermore, the FTI provides the basis for the Belh@rra export design, which France's Naval Group considers to be central to its ambitions in the international frigate market during the next 10–15

years. It should be noted that the Belh@rra branding was adopted to signify the intrinsically 'digital' nature of the design.

Main contracts for the five-ship, EUR3.8 billion (USD4.4 billion) FTI programme were awarded to Naval Group and Thales in October 2017. Naval Group is leading the ship design and construction activity, as well as also being responsible for the ship's SETIS combat management system (CMS). Thales, meanwhile, is responsible for supplying the ship's principal above-water and underwater sensors, identification friend or foe (IFF) equipment, and Aquilon integrated communications suite. Other suppliers for the programme include MBDA, Safran, MTU, and iXblue.

Affordable alternative

The FTI programme was conceived to resolve a conundrum. Although the French government's 2013 Livre Blanc affirmed a commitment to a force of 15 'first-rank' frigates, it also determined that the cost of the Aquitaine-class frigate developed under the Frégate Européenne Multi-Mission (FREMM) programme would result in the navy's inventory being curtailed at eight ships.

Instead, the FTI project was set up to deliver a more affordable 'intermediate' frigate to augment the two Horizon anti-air warfare (AAW) frigates and the eight Aquitaine-class ships. "The FTI will, by 2030, represent one-third of the navy's frigate fleet," said the DGA's FTI programme manager: a chief engineer who could not be named for security reasons. "The intention was that the navy would receive a ship that is a little smaller than the FREMM, but still with the fundamental attributes and capabilities of a frigate," he added.

Describing the stage the programme has reached, the chief engineer told *Jane's*, "We are currently continuing the process of design definition and plan to conduct the general [critical] design review around the middle of 2019, after which we will be ready to start cutting steel."

Moreover, he said, "The delivery of the first of class will be in 2023 [and] we will have the first two ships delivered by the end of the military planning law [Loi de Programmation Militaire] in 2025. All five ships will have been delivered by the end of 2029."

A streamlined acquisition approach is one area where the DGA and the navy see important gains. "What we used to do was for the navy to write their operational requirements, then for the DGA to translate it into a technical requirement and provide this to industry so they could prepare a design against this specification," the chief engineer explained. "They would then provide us the design, we would analyse it, go back to the navy, get their feedback, and then we would go back to industry."

FTI has adopted a different model, however. "We have organised to bring together the three [stakeholder] teams in the same place to work in parallel," the chief engineer said, confirming that the approach "has been shown to be very efficient, and so it is now a reference for other armament programmes".

He also pointed to the "extensive use of the DOORS [Dynamic Object-Oriented Requirements System] engineering tool" as an important component in the project. "It is a way to ensure [traceability] between the operational requirement, the technical requirement, and the design," he said. "It makes sure that you keep a 'memory' of the choices and trade-offs, and why they were made."

This new methodology has also served the navy well, according to a French commander who, as FTI programme officer in the Etat Major (Navy Headquarters) between July 2015 and September

this year, was responsible for articulating the service's operational requirements during the design definition process. "We have a big interest in understanding how our operational needs are interpreted and translated," said the commander, who could also not be named for security reasons. "It also allows us to provide explanations and insights to industry as to why we have set such requirements," he added.

Additionally, the commander noted, "It is iterative work, but we really go much faster because ... everybody understands clearly the needs and the solutions. This model is much more efficient, and provides much more clarity."

First rank

According to the commander, the designation 'first rank' frigate defines a ship "that can be employed in all warfare domains – anti-air, anti-surface, and anti-submarine warfare [ASW] – and has the capability to deploy, from the sea, special operations forces. Also, there is a necessity for an improved capability to defend against the asymmetric threat that has been growing in recent years."

Meanwhile, aviation capability is another important consideration. "[The ship] will have the capability to embark one helicopter and to host a UAV [unmanned aerial vehicle] at the same time," the commander said. "That is a new capability for the French Navy."

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