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SAF 2040: Behind the SAF's Future Transformation Plans

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SYNOPSIS

*On 28 February 2024, Singapore's defence minister unveiled in Parliament a series of upgrades and enhancements intended as part of the military's transformation plans to improve its capabilities and warfighting set-up. **THOMAS LIM** and **IAN LI** analyse three of the most significant announcements released by his ministry – the purchase of eight F-35As, the diffusion of unmanned assets, and the enhancing of realism in soldier training.*

COMMENTARY

On 28 February 2024, Singapore's Defence Minister Dr Ng Eng Hen [unveiled](#) in Parliament a series of upgrades and enhancements intended as part of the transformation plans of the Singapore Armed Forces (SAF). The plans, which were announced during the Committee of Supply debate on the budget for the Ministry of Defence (MINDEF), are aimed at improving the SAF's capabilities and warfighting set-up.

The debate on MINDEF's budget comes amid a tenuous time in global affairs, with the 2022 Russia-Ukraine war showing no sign of [abating](#) and the outbreak of the Israel-Hamas [conflict](#) in 2023 threatening to destabilise the Middle East. Closer to home, conflicting claims in the South China Sea, most notably the intensifying tensions between China and the Philippines over issues related to the Second Thomas Shoal, heighten the prospect of escalation. With this increasingly polarised international arena in mind, MINDEF's multitude of tactical upgrades and procurements come as no surprise.

Nonetheless, acquisition and modernisation decisions are part of a long-term [process](#) of continuous calculations, and there are political and strategic sensitivities that accompany every decision. A closer inspection of the recent announcements brings into focus three significant choices, from which observers can better understand the SAF's next-generation transformation plans and the organisation's adaptation in accordance with the character of today's conflicts.

An Expanded F-35 Fleet

A prominent headliner of the SAF's latest modernisation plans is the decision to purchase eight F-35 fighter jets – more specifically, the F-35A variant. Notably, this purchase is different from the SAF's previous order of F-35s, which were for the "B" variant. Although both variants belong to the same class of fifth-generation fighter jets, the technical specifications are [different](#). For instance, a side-by-side comparison immediately shows how the "B" variant is considerably larger than the "A" variant, primarily because of the former's Rolls-Royce LiftFan, a technical specification that gives it short take-off/vertical landing (STOVL) capabilities. The F-35B's STOVL feature played a critical [role](#) in the SAF's purchase decision as it would provide additional operational viability in land-scarce Singapore and greater resilience against runway bombing attacks intended to [disrupt](#) aircraft take-offs.

However, the addition of the "A" variant complements the "B" variant, with the superior edge it has in combat, albeit at the trade-off of the "B" variant's STOVL capability. The "A" variant has lesser technical [complexities](#) than the "B" variant, while also [capable](#) of holding larger payloads and operating for longer durations. This feature makes it a more direct upgrade for the role hitherto played by the Republic of Singapore Air Force (RSAF)'s existing fleet of F-16s, which are set to enter [obsolescence](#) in the mid-2030s. Understandably, the decision comes in a climate where the possibility of conventional war cannot be ruled [out](#). However, the "B" variant is not vastly [inferior](#) to the "A" variant, and thus having a dual-variant fleet allows the RSAF to complete a wider variety of tasks, while also being able to tailor its asset deployments to suit specific mission requirements.



An F-35 Lightning II. The Singapore Armed Forces' (SAF) latest modernisation plans include the purchase of eight F-35A fighter jets for a dual-variant fleet, allowing the Republic of Singapore Air Force (RSAF) to complete a wider variety of tasks according to specific mission requirements. *Image from Wikimedia Commons.*

Considering that both the “A” and “B” variant share the same aircraft design, it will be easier for the RSAF to integrate the new variant into its warfighting set-up as it can adapt its training for the F-35Bs to the “A” variants. The SAF has also had the opportunity to explore the interoperability and overall viability of operating both “A” and “B” variants through various military-to-military exchanges with foreign partners such as Australia that use the “A” variant.

With the eight F-35As estimated to [arrive](#) in Singapore in 2030, the RSAF will be able to maintain its combat capabilities even as the F-16s enter the tail-end of their life cycle before being fully phased out. Even if the arrival of the F-35As is delayed, possibly due to the US military industrial complex falling behind on delivery [deadlines](#), there is still some buffer time owing to this timely purchase. Furthermore, the purchase was timed to capture a “[window of opportunity](#)”, with F-35 prices now more competitive as global orders for the platform increase. The F-35A is in fact [cheaper](#) than the F-35B, which means that the latest purchase can be done at a reasonable cost that represents good value for money.

The Proliferation of Unmanned Platforms

The SAF’s other acquisitions and deployments display a definite trend towards the widespread infusion of unmanned and autonomous assets into its daily operations. The use of unmanned assets has been ubiquitous in the Russia-Ukraine war. Such has been the efficacy of these platforms that a [decree](#) was signed by President Volodymyr Zelensky on 6 February 2024, creating a separate branch of the Ukrainian armed forces dedicated to drones. Certainly, there are many lessons that can be drawn from Ukraine’s experiences regarding the changing character of war, not least the value of integrating unmanned assets with manned deployments in today’s conflicts.

Understandably, MINDEF’s latest announcements of upgrades and enhancements highlight a greater integration of unmanned assets across operational domains. For example, the Republic of Singapore Navy (RSN) has announced the deployment of the home-grown Veloce-60 (V60) unmanned aerial vehicle (UAV), to be launched from existing RSN ships. The V60 UAVs first made their [debut](#) in 2020 and operate in line with the “[mothership](#)” [concept](#), where the SAF’s larger manned and more technologically advanced vehicles are equipped with the capabilities to dock and deploy remote-controlled and unmanned assets in service of a wider spectrum of missions.

The RSN also announced its intention to deploy unmanned surface vessels (USVs) in its Maritime Security Command (MARSEC) to perform a constabulary role in Singapore’s territorial waters. With this announcement, the likelihood is that autonomous sea trials have been completed, and there is confidence in the MARSEC USVs’ ability to perform their intended role. Given that the SAF intends to operate with a one-third reduction in total manpower by 2030, the MARSEC USV deployment best encapsulates the [idea](#) of using technology as a force multiplier, potentially being able to replace manned roles out at sea and performing similar functions with longer operational durability while keeping the operator out of harm’s way.

The army, for its part, has [announced](#) the deployment of micro-UAVs to help soldiers with basic infantry warfare and troop movement. These were first deployed publicly in [Exercise Forging Sabre 2023](#), where the SAF play-tested its micro-UAV assets in mission deployment settings. Despite the diminutive size of the micro-UAVs, their official infusion into the army's fighting set-up will represent a significant change in how the SAF conducts ground missions, in particular regarding last-mile surveillance procedures. From now on, the typical infantry section would have to be trained to perform missions alongside micro-UAVs as part of their basic bound-to-bound movement, and this requires a ground-up change in the SAF's training and conduct of exercises.

Learning for War

While the two foregoing announcements discussed represent an enhancement of the SAF's technological capabilities, the final one goes back to basic soldiering fundamentals. As the ongoing Russia-Ukraine war has shown, training plays an important [role](#) in improving combat effectiveness. For instance, the average Ukrainian soldier has significant [combat experience](#) but, owing to the relatively poor state of pre-war training, often lacks basic soldiering fundamentals. This shortcoming is amplified as soldiers are rapidly promoted to replace combat losses, moving the problem upstream. Based on this observation, there is outsized value to be gained by ensuring that all SAF personnel can train under controlled and realistic, albeit simulated, battlefield conditions.

The progressive opening of [SAFTI City](#), a next-generation training facility, will help optimise training for soldiers. By harnessing technologies such as smart targeting systems, laser technologies, unmanned vehicles, visual screens, and interactive layouts, SAFTI City will be able to recreate, as much as possible, a realistic battlefield environment for soldiers to train in.

Training realism is particularly critical for a military like the conscript-based SAF, given the short training period for its soldiers as well as the relative lack of opportunities for combat-related deployments. This means that the SAF must constantly review the efficacies of its internal systems and military doctrines, while referring to the warfighting experiences of others. Given how urban warfare has featured prominently in recent conflicts such as the [Battle of Marawi](#) in the Philippines and the ongoing [Israel-Hamas conflict](#), there is little surprise that Phase 1 of SAFTI City and the first of three planned Instrumented Battle Circuits focus on [urban](#) operations.

Conclusion

A closer look at the SAF's latest modernisation plans highlights the need for it to maintain its operational edge through the acquisition of top-of-the-shelf military assets like the F-35As, while ensuring the proper management of asset obsolescence and transition timelines. Furthermore, as militaries around the world continue to extract lessons in warfighting from ongoing conflicts, the SAF's widespread implementation of unmanned assets is an ambitious move that displays its intent to stay ahead of the curve while simultaneously overcoming Singapore's manpower constraints.

The improvements made to the SAF's training facilities will result in an improvement in organisational training standards, with the use of new technologies to recreate a wider variety of scenarios for both conventional urban warfighting and operations other than war. Amid tenuous times in global affairs, the SAF has continued to push on with its next-generation transformation scheduled for 2040, re-asserting its position as one of the premier militaries in the region and the backstop for Singapore's national security.

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