

DSTA-enhanced Command and Control System Boosts SAF Sense-Strike Capability

The networked Command and Control (C2) system is the nerve centre of the Command Post and provides commanders with an integrated battlefield picture and comprehensive situational awareness. By leveraging Artificial Intelligence (AI) and data analytics, defence engineers from the Defence Technology Community¹ (DTC) built smart decision support applications for the sense-to-strike process, boosting the SAF's ability to orchestrate integrated strike operations swiftly and effectively for Exercise Forging Sabre (XFS19).

To help operators detect targets in complex and highly urbanised environments, engineers from the Defence Science and Technology Agency (DSTA) developed an **Automatic Target Detection (ATD)** software. The tool leverages AI to locate and mark potential targets on the Heron 1 UAV video feed. DSTA engineers worked closely with the SAF to train AI models to locate static and moving targets. The engineers also constantly perform analysis and evaluation on the AI models, fine-tuning them to improve target detection. With the networked C2 system, the information is shared between operators in the battlefield and the Command Post for real-time situational awareness.

Commanders also require updated information on the targets in order to make time-critical decisions for the successful conduct of integrated strike operations. For moving targets such as vehicles, taking into account changes in the target's movement route or speed is important in ensuring accuracy in strike missions. Hence, DSTA engineers integrated a **Target Look-Ahead capability** that taps on AI to tighten reaction time for decision-making during strike operations. They developed algorithms to analyse data such as potential routes and terrain to predict the target's future position, and assist commanders to plan and conduct strike operations with greater precision and accuracy.

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¹ The Defence Technology Community (DTC) comprises several entities within MINDEF – Future Systems & Technology Directorate (FSTD), Technology Strategy and Policy Office (TSPO), Industry & Resources Policy Office (IRPO) and Defence Technology Collaboration Office (DTCO) – as well as Defence Science and Technology Agency (DSTA) and DSO National Laboratories. The DTC continually evolves to better exploit advancements in technology, respond to changing threats, and support the needs of the SAF.