

Fact Sheet – DSTA Developed Networked Command and Control System

1. To support the conduct of integrated strike missions during Exercise Forging Sabre (XFS), the Defence Science and Technology Agency (DSTA) equipped the Singapore Armed Forces (SAF) with an indigenously developed command and control (C2) system.

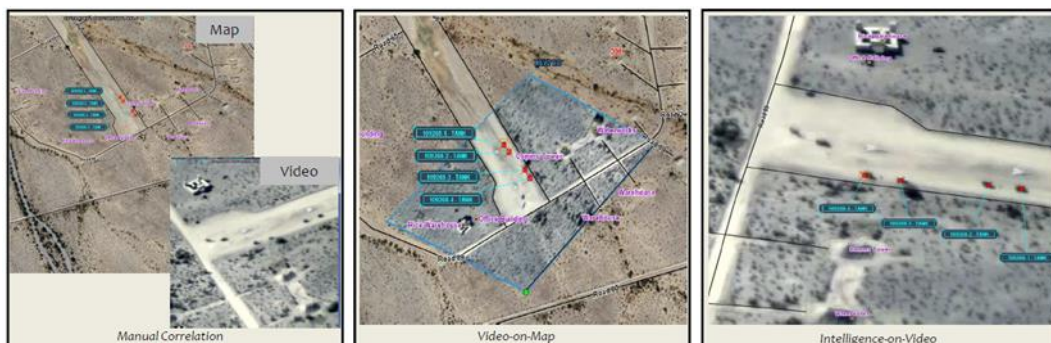
2. Acting as the nerve centre of the Command Post, the C2 system gives commanders an integrated battlefield picture, and enables the SAF to shorten the overall sensor-to-shooter cycle – from the time target information is picked up by sensors till the neutralisation of targets. Prior to incorporating this system, information and operations were largely conducted using disparate sources.

3. Key features include:

Real-time Ground Situation Picture

- The C2 system features real-time updates of the ground situation picture by integrating the Heron-1 Unmanned Aerial Vehicle (UAV) video feeds into an augmented reality display. Using advanced graphics rendering technology, static geographical data (e.g. landmarks, road names, building types, vegetation) are overlaid on top of the real-time video captured by the UAV. Previously, videos captured by the UAV had to be manually correlated and marked out on a separate static map display. The integrated display reduced the cognitive load of operators, and allowed them to quickly orientate to the latest ground situation picture to make timely decisions.

- Video content analytics technology is also applied to the UAV live feeds to automatically derive target locations onto the integrated display, further shortening the overall decision-making process and enabling operators to better keep track of multiple targets.



Technological evolution of the ground situation picture display

Enhanced Decision-Making

DSTA also leveraged on XFS 2017 to experiment with new tools for the C2 system to enhance decision-making:

- Sense-making tools were introduced to help commanders in making mission-critical decisions. For example, a special dashboard was created to aggregate higher-level information, such as the number of available or functional assets and bases.
- Commanders can make more accurate and rapid assessment of the extent of battle damage with the addition of new video content analytics technology, a first at XFS.

Modular and Scalable Architecture for Quicker Deployment

- DSTA engineers designed the C2 system such that C2 components supporting various exercise entities, like the sense-making tools for commanders, are reconfigurable. For example, simulation components that allow exercise personnel to validate their operational processes can be integrated to enable the SAF to undergo more complex exercise scenarios.
- The set-up time for the C2 system was also reduced from weeks to just days with server virtualisation technology that replaces bulky physical servers with virtual ones that allow space and computing optimisation. Having a smaller system server footprint reduced power, cooling and space requirements, saving costs and resources.

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