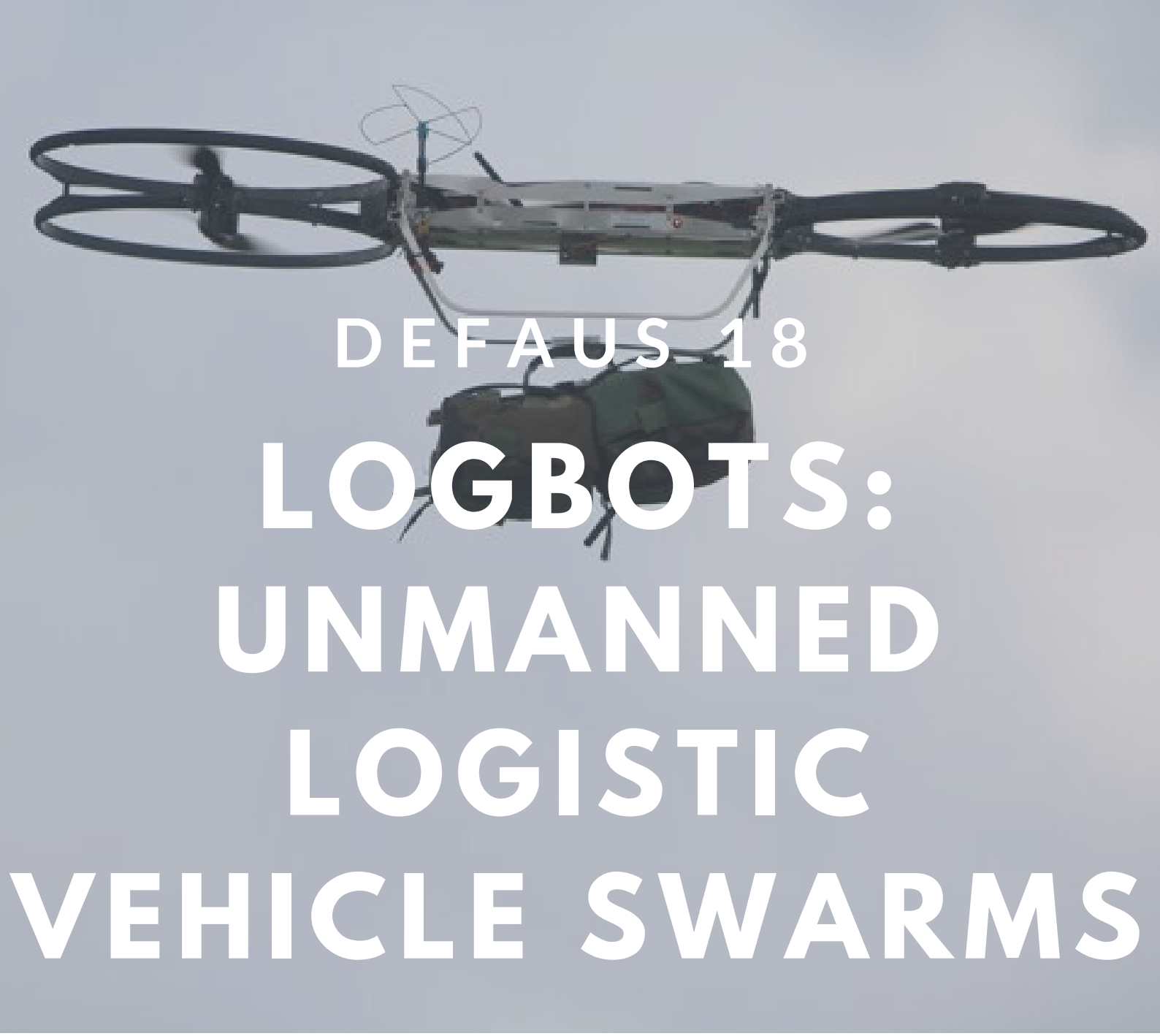

DEFAUS 18

LOGBOTS: UNMANNED LOGISTIC VEHICLE SWARMS

PITCHER

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ABSTRACT

Why should combat service support remain aggregated and secured in manned logistic nodes? Swarms of Unmanned Logistic Vehicles are a mobile caching system, where the static footprint of a doctrinal Combat Services Support Team is dispersed on dozens of Unmanned Logistic Vehicles – LOGBOTs (Logistic Robots) operating closer to the dependency than fixed logistic bases. This avoids the doctrinal Distribution Point concept which historically is manned trucks returning to a Forward Operating Base. Swarmed Unmanned Logistic Vehicles will enable dependencies down to section level to be continuously resupplied by small, unmanned vehicles capable of moving, hiding and caching independently throughout the battlespace, without exposing manned logistic nodes to enemy targeting.

Unmanned Logistic Vehicles will undertake logistics tasks that are not worth risking humans for: rapidly manufacturing 3D-printed parts, deploying specialist equipment on demand, and pre-positioning supplies. Since ancient warfare, ground logistics has always been manned, which presents an attractive and critical target for enemy forces. By negating the need for humans to operate logistics vehicles, logistics are more responsive, specialised and flexible to the Commander's plan, offering:

- Less logistic tail while significantly increasing the logistic capabilities afforded,
- Opportune combat support and combat support service functions,
- When swarms are fully employed – a deception and decoy plan given the presence of Unmanned Logistics Vehicle movements, massing and activities.

Given the feasibility of autonomous vehicles, artificial intelligence and predictive analytics for supply-demand problems, why are we not doing logistics more securely, effectively and more efficiently?

PROPOSAL AND OUTCOMES

The individual Unmanned Logistic Vehicle will be a long endurance ground platform that will feature automated loading/unloading mechanisms and opportune tray space for specialist equipment. Each Unmanned Logistic Vehicle shares some of the overall “stockholdings on wheels” for the supported Combat Team. Therefore, holdings will be hard to find and neutralise – vehicles will cross-load to move items up the supply chain, forming a nodal distribution system unlike the doctrinal “lines of support” system. Modular design will mean that each vehicle will be able to be returned to the field quickly – vital, if we are to operate a swarm of dozens, if not hundreds. An enemy seeking the previously-large footprint will struggle to detect and immobilise any significant mass of the swarmed fleet, preserving its supplies and support to friendly forces. Ideally, Unmanned Logistic Vehicles will significantly outnumber their human supervisors. The following outcomes are sought:

- **Establish a ULV capability program** between Defence Science and Technology Group, Army and Joint Logistics to develop system requirements, with swarm engineering as a necessity for experimentation.
- **Proof of Feasibility test** for combat services support on a Combat Team Field Training Exercise leading to Battle Group sustainment.
- **External liaison authorised** with civilian logistic companies designing unmanned distribution networks and allied partners who have already developed autonomous resupply and additive manufacturing methods for operational deployment.
- **Exploitation of Enterprise Resource Planning** data points in collaboration with the Chief Information Officer Group project team.