



DRONESHIELD

Artificial Intelligence For Multi-Mission Threat Protection and C-UAS Defence

DroneShield Limited (ASX:DRO)
Investor Presentation
23 October 2023



3Q23 Update



- Record contracts and rapidly growing cash receipts
 - **\$48.2 million cash receipts** YTD to 20 Oct 2023, **up 3x** vs entire FY22
 - **\$43.3 million revenue** YTD to 20 Oct 2023, **up 2.5x** vs entire FY22
 - **\$10.2 million record quarterly cash receipts** (incl \$2.5 million in grants)
 - \$33 million US Government sale announced in July, already substantially delivered (full delivery by end of year), with the next milestone payment in November – approx. \$16 million in payments remaining
- **Cash balance of \$50.1 million** as of 20 October, no debt or convertibles
- \$51 million contracted backlog and pipeline of over \$400 million*
- Substantially completed expansion of the team to enable build, delivery and support of materially larger orders
 - Moving to a larger Sydney facility (2.5x current floor space) prior to year-end, plus supply chain partners been rapidly expanding
 - Positioning the company for \$300-400m annual production capacity for 2024
 - 95 team members including over 75 engineers
- Favourable macro environment for DroneShield with rapidly rising counterdrone, defence and security spending globally
 - The Ukraine conflict continues to highlight the use of drones on the battlefield, which will continue driving increasing C-UAS orders even after the eventual ceasefire
 - Drones increasingly used across global conflicts, including [Hamas terror attack](#) on Israel

* There is no assurance that any of the Company's sales opportunities will result in sales.



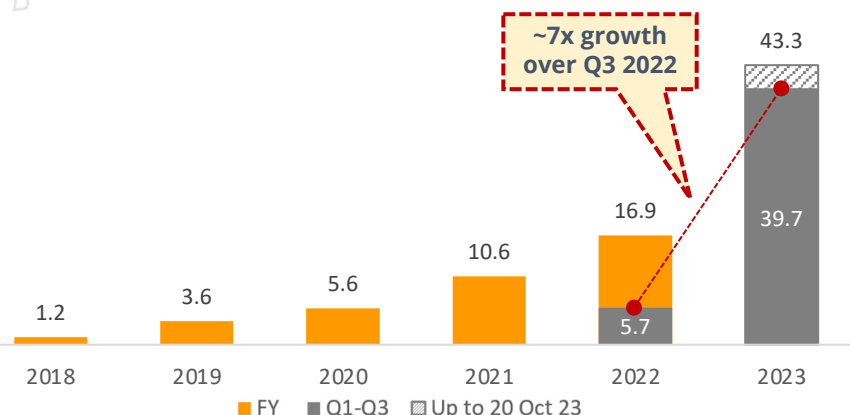
DroneShield at AUSA 2023 exhibition in October 2023.

Continued Rapid Growth (\$m, Dec YE)

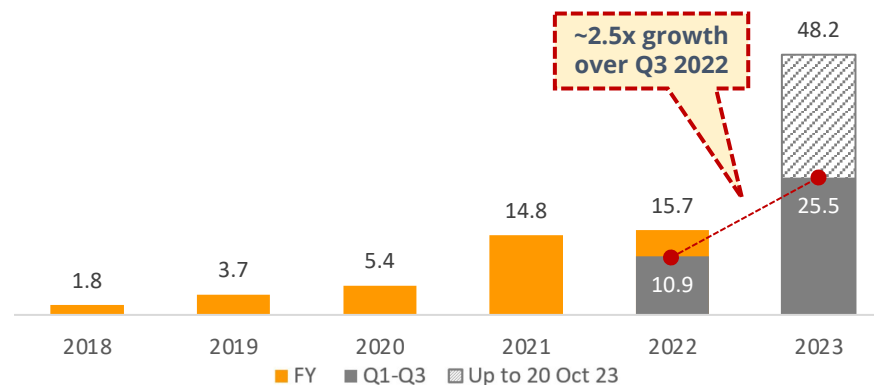


The business stands at an inflection point

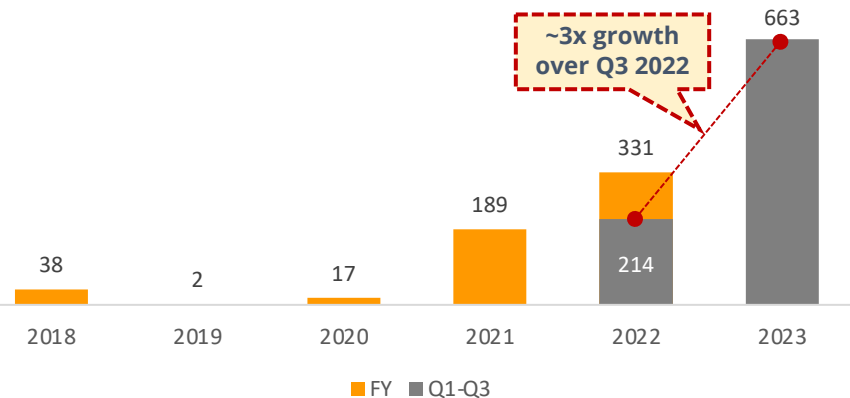
Strong Revenue Growth (A\$m)



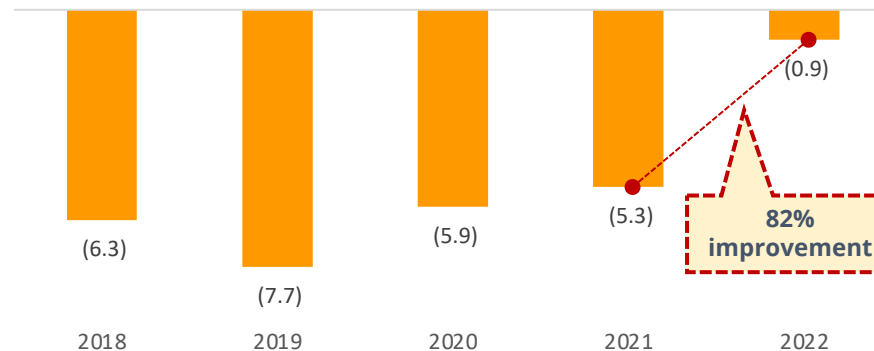
Rapid Cash Receipt Growth (Sales + Grants) (A\$m)



SaaS Revenue (A\$000)



Rapidly Improving P&L (A\$m)



* SaaS model was fully introduced in 2021

DroneShield “Secret Sauce”



C-UAS pioneer, full in-house suite of products, with a culture of innovation and deep channels to market

Market leading, differentiated technology



All hardware (except radar and camera) developed and made in-house (with outsourced manufacturing to DRO's specifications for large batches)

- low in-house capex as heavy industrial work is outsourced at lower margins to DRO specifications



All SaaS software, including AI engines for RF sensors, cameras, sensorfusion; and EW work, done in-house

- robust software and digital infrastructure to support enterprise grade software updates, monitoring and retrieval



75+ in-house engineers (out of team of 95) developing and integrating IP into product updates

- FPGA, AI/ML, RF/waveform, data engineering, field service engineering, front-end, back-end, platforms, mechanical engineering, industrial design, UI/UX, and production engineers, quality managers

Global pioneer with strong team and brand



The original counterdrone pioneer, with a strong global brand and reputation for innovation and quality



Experienced in-house veteran sales team (complemented by global distributor network)

Complete product, integration and geographic coverage



Body-worn, vehicle/ship and fixed site systems



Both integrator and sensor maker – can integrate third party sensors/actuators, and have its sensors easily integrated into larger systems



Global presence in around 100 countries via experienced and trained distributor network



Mature technology development roadmap executed by a seasoned counterdrone team, ensuring solutions adapt to counterdrone market shifts

Numerous other differentiators



Substantial and growing in-house AI databases for RF, sensorfusion and optical/thermal AI



Deep sales pipeline and relationships with end users and channel partners, following multi-year nurturing and growth



Security clearances, certifications, NATO Stock Numbers



Problem and Opportunity: Drones as a Threat

Drones - A Critical and Growing Threat Vector



Russia launches 'kamikaze' drone attack on Kyiv, killing 4 and hitting civilian infrastructure

By Victoria Stutenko, Oles Velychyn and Yulia Kessaleva, CNN
Updated 3:09 PM EDT, Mon October 17, 2022

Drone activity at Augusta Correctional Center in Craigsville causes lockdowns

Flights into Gatwick diverted after reports of drone near airport

Spokesperson says 12 incoming flights affected during almost hour-long suspension due to alert



A British Airways plane at Gatwick. The carrier said one of its flights was diverted to Stansted before refuelling and returning to the West Sussex airport. Photograph: Gareth Fuller/PA

BORDER CRIME

Smugglers use drones to spy on agents in the field, Border Patrol says

by: Salvador Rivera
Posted: Mar 9, 2023 / 06:27 PM CST
Updated: Mar 16, 2023 / 07:30 PM CDT

Drugs and weapons were given to the windows of the Donacona prison

Unauthorized drone causes temporary ground stoppage at Pittsburgh International Airport



The Drone Is Quickly Becoming A Federal Prison Contraband Nightmare

Walter Pavlo Contributor
I write and consult on federal criminal law and criminal justice

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POLITICS / WAR

How Hamas flooded Israel, killed hundreds and took another 100 hostage: A revolution in drone warfare dating back to Ukraine

By MICHAEL J. ARMSTRONG AND THE CONVERSATION



100 drones a day in Sydney Airport no-fly zone

A sharp increase in drones flying in airport no-fly zones has commercial pilots on alert and the regulator erecting warning signs.

Pak smugglers switch to smaller, stealthier drones to drop drugs into Punjab

By Ravinder Vasudeva · Chandigarh

Aug 18, 2023 12:09 AM IST

Reason: Such drones can fly long distances and make comparatively less noise, thus making it harder for security agencies to detect these as compared to the large-sized drones.



THE WALL STREET JOURNAL



Saudi Arabia Reveals Extent Of Damage To Oil Plants After Drone Strike



Russia Hits Ukraine's Kyiv Region With Drone Attack

Ukraine's air-force command says it downed six Iranian-made drones over the south

Why is the Malicious Use of Drones a Threat?



The widespread adoption of drone technology has increased the risk and prevalence of disruptive use



Payload Delivery

- **Attacks:** Dropping harmful / explosive payloads (including chemical or biological substances) or creating damage via collision
- **Smuggling:** Moving contraband into sensitive zones such as prisons



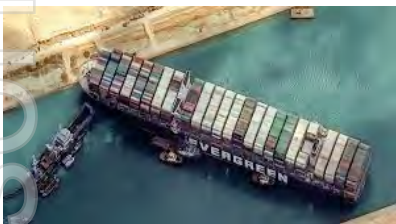
Intelligence Gathering

- **Directing Attack:** Reporting enemy target location on the battlefield to direct forces
- **Spying and Tracking:** Obtaining video, images and track movements of personnel
- **Surveillance:** Using drone images and other payload data to enable reconnaissance



Nuisance Activity

- **Infrastructure Disruption:** Using drones to jeopardise the safe operation of major facilities such as airports



Cyber and Ransom Attacks

- **Corporates, Ships, Facilities:** Hack into control networks via proximity intrusion with a drone, and demand ransom or cause terrorist attack

Counterdrone: US\$10bn Diverse Addressable Market



Rapidly improving and easily available drone technology is driving demand for counterdrone solutions

Military



Government Facilities



Law Enforcement



Protective Details



Airports



Stadiums



Commercial Venues



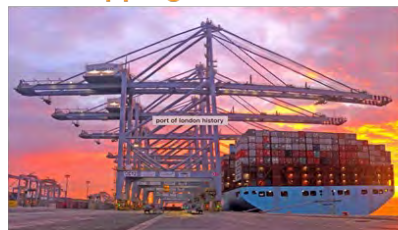
Energy Production



High Profile Events



Shipping / LNG Ports



Rescue / Fire Response



Correctional Facilities



Sources:

Addressable market: <https://www.DroneShield.com/counterdrone-market>

Markets and Markets: <https://www.marketsandmarkets.com/Market-Reports/anti-drone-market-177013645.html>

Factors & Factors: <https://www.globenewswire.com/en/news-release/2021/08/27/2287713/0/en/Global-Counter-UAV-Market-Size-Share-Expected-to-Reach-USD-2-041-09-Million-by-2026-Facts-Factors.html>

How a Counterdrone System Works



DroneShield performs all 3 steps of the process

Step 1

Detect



State of the art, multi-sensor drone **detection** products provide optimal detection and identification of drones and other UAS threats

Step 2

Assess



- Machine learning and AI based detection and classification software for near-real time **tracking** and **assessment** of drone threats

Step 3

Respond



- Respond** / defeat technologies offer intelligent, responsive, non-kinetic solutions for the controlled management of threats

Geopolitical Environment Providing Market Tailwinds

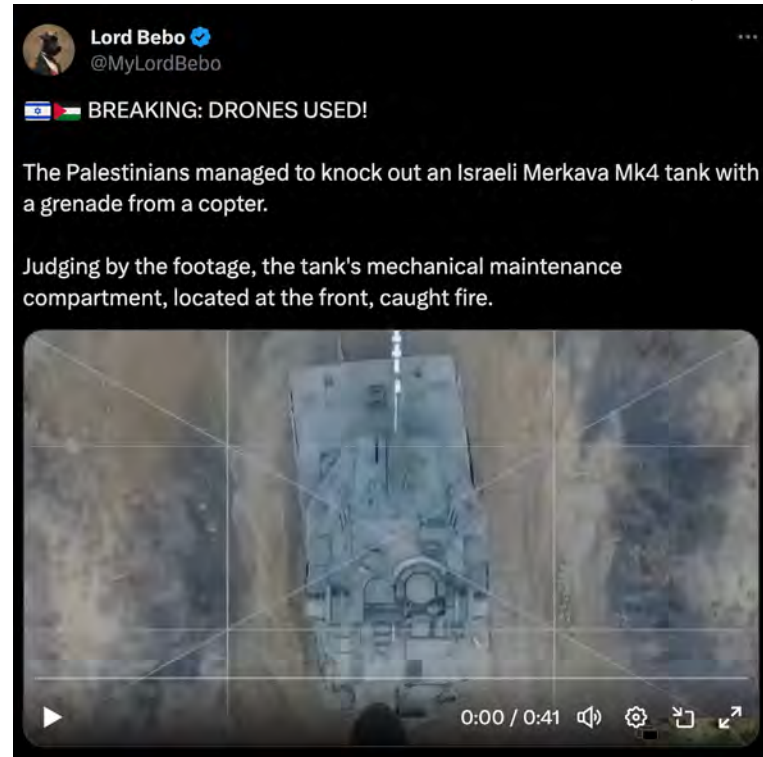


- Increased expenditure by Western Governments in response to the war in Ukraine
 - US DoD increasing 2023 budget to over US\$800bn, a record peacetime amount¹
 - Germany increasing spending to over 2% of GDP (from 1.53% in 2021), including a new EUR100bn fund to modernise military²
 - Poland have announced a record 2023 Defence budget at 3% of GDP³
 - Australia completed Defence Strategic Review, with expectations to increase the allocations to asymmetric, high-tech and greyzone warfare
- In Australia, the Government is seeking to rapidly grow sovereign defence capability, with several key focus areas directly matching DRO expertise, including counter-robotics, Electronic Warfare, and battlefield surveillance (ISR)
- Record Defence and Security budgets, combined with a demonstrated use of drones by both sides in Ukraine for payload delivery, directing artillery strikes, collecting field intelligence and general use, has put increasing focus on both drone and counterdrone systems for all major militaries
- Increasing global tensions and use of drones across hot zones, including Hamas attack on Israel, and in the Armenia/Azerbaijan ongoing conflict
- DroneShield is one of very few fielded and proven counterdrone systems with US DoD recommendations and based in Australia and US, hence well positioned to supply to Western allies
- Combined, these factors are expected to lead to meaningful and consistent order flow for DroneShield across near and medium term

¹ <https://news.am/eng/news/711941.html>

² <https://www.reuters.com/business/aerospace-defense/germany-hike-defense-spending-scholz-says-further-policy-shift-2022-02-27/>

³ <https://www.trade.gov/market-intelligence/polands-defense-spending>



Iranian Shahed drones used by the Russian military



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DroneShield Overview

Executive Summary



DroneShield Overview

- Founded in 2014 and listed on the ASX in 2016, DroneShield provides **Artificial Intelligence platforms for protection against drones**
- **Hardware and software** to detect and safely neutralise small drones used for warfare, terrorism, contraband delivery, and airport disruptions
- **Key customers** include military, intelligence community, Homeland Security, law enforcement, critical infrastructure, prisons and airports globally

Business Model

- **Three streams of revenue:** hardware (drone detection and defeat devices), SaaS (device software updates) and R&D
- Sales through an **experienced in-house veteran salesforce with distribution partners across over 100 countries**
- SaaS is expected to become a **significant proportion of overall revenue** over the next 5 years
- R&D contracts are adjacent to the core technology, and contribute advanced capability in-house

SaaS via Proprietary AI Software Engines

- **RFAI™** (radiofrequency spectrum engine), **DroneOptID™** (optical AI engine), **SFAI™** (sensorfusion AI engine)
- The engines undertake real-time, at the edge, **detection and identification of drones** and other potential threats
- The result is an **increase in detection responsiveness, lower false positives** and an **increase in the speed** at which new threats are detected, classified and tracked by DRO systems
- Customers receive **regular software updates** via enrolling in a SaaS model at the time of purchase of their systems
- All solutions except for radars and cameras hardware fully developed in-house, with no reliance on third party IP

Addressable Market

- **US\$10 billion** worldwide addressable market
- Rapidly improving and easily available drone technology is **driving demand for counterdrone solutions**
- **Current geopolitical conflicts make extensive use of drones by all sides**

Growth Strategy

- Today, over **75% of revenues is derived from defence**
- Defence, intelligence community and border security will continue to be the key focus, however there is a **major opportunity for growth** into civilian airports, critical infrastructure, prisons, stadiums and corporates

Investment Highlights



Leader in Counterdrone

World leading provider of state-of-the-art counterdrone solutions and electronic warfare systems used in a diverse array of critical end markets

Proprietary AI-Based Platform

Full-scale hardware and SaaS offering used to detect, assess, and safely counteract threats from unmanned aerial systems

Large and Growing Market

Leverage to the global defence and security technology sector; \$10bn counterdrone addressable market, in addition to electronic warfare and defence AI markets

High Quality Sales Pipeline

Sales pipeline of over \$400m with over 80 qualified projects at different stages; over \$51m in contracted orders currently being fulfilled

Recurring Customer Base

Best-in-class customer base including the Australian Department of Defence, US DoD, US State Department and others

Rapidly Scaling Financial Profile

The business is at an inflection point, with a record \$42m in YTD cash receipts

Fully Funded for Growth

Fully funded for growth with \$40m raised in March 2023; spending geared towards rapid scaling of inventory and operations to meet high demand

DroneShield: Complete Proprietary Hardware and Software



High IP, yet mass-production hardware, with a software subscription platform and Electronic Warfare work

- Company-owned production facility, supplemented by outsourced manufacturers, to ensure ability to manage large hardware orders
- The focus is on software subscriptions, with hardware fleet serving as an enabling platform

Hardware with Embedded Software and Associated Services

Dismounted & Body-Worn Counterdrone Solutions



DroneGun Mk3



DroneGun Mk4



DroneGun Tactical



RfPatrol Mk2

Vehicle / Ship / Fixed Site Counterdrone Solutions



DroneSentry-X Mk2



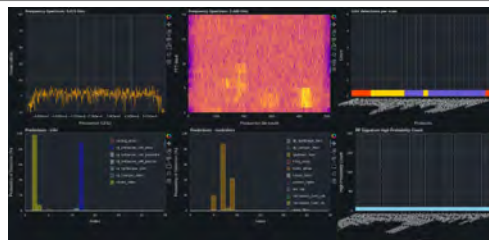
DroneSentry

Software (SaaS and R&D contracts)

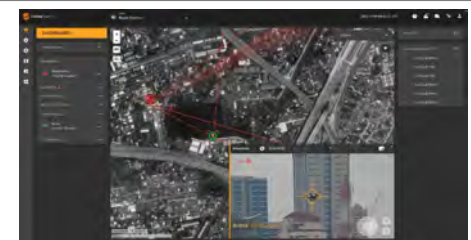
Electronic Warfare and SIGINT



RFAI (Radiofrequency AI engine)



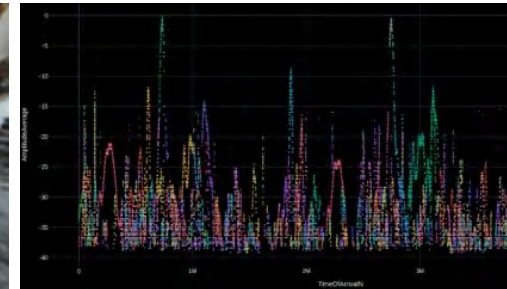
DroneSentry-C2 and DroneOptID



Explosive Growth Based on a Strong Foundation



2014-2017 Building the Foundation	2018-2022 “Green Shoots”	2023 Explosive Growth	2024-2028 Transforming to Next Level
<ul style="list-style-type: none"> Setting up in Australia and US ASX IPO (raising \$7m) R&D and productizing the initial product family: <ul style="list-style-type: none"> DroneGun Mk1 and Mk2 Acoustic detection sensors Team grows to 11 staff Global partner network setup C-UAS market in infancy Customers demos, trials and initial smaller orders From nil to \$300k/year annual revenue 	<ul style="list-style-type: none"> Multiple \$1m+ orders \$3.8m 2-year R&D contract \$9.6m and \$17m capital raises, \$3.7m Epirus investment Completing the product line-up: <ul style="list-style-type: none"> DroneGun Tactical RfPatrol Mk1 and Mk2 DroneSentry-X Refinement of DroneSentry Introducing SaaS model First-ever ACMA licence to manufacture jammers Team grows to 60 staff From \$1m to \$17m annual revenue 	<ul style="list-style-type: none"> \$33m U.S. Govt sale \$9.9m 2-year R&D contract Numerous other multi-million contracts \$40m capital raise in March 2023 to fund working capital and scale the team 95 staff in Sydney and Virginia Exploding market, with Ukraine highlighting the need for C-UAS products \$51m order backlog \$400m pipeline 	<ul style="list-style-type: none"> 5-year target*: <ul style="list-style-type: none"> \$300-\$500m annual revenue 50% of revenue in SaaS and software R&D This revenue is expected to be supported by 120-150 staff



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Competitor Analysis

Competitor Analysis

DroneShield is the only global provider of its own individual sensors, integrated into a complete system, fully in-house



Origin										
Integrator	✓	✓	✓	✓	✓	-	-	-	-	-
Detect										
Dismounted	✓	-	-	-	-	-	-	-	-	-
Vehicle	✓	-	✓	-	-	-	-	✓	✓	✓
Fixed Site	✓	✓	✓	-	✓	-	-	✓	✓	✓
Defeat										
Dismounted	✓	-	-	✓	✓	✓	✓	-	-	-
Vehicle	✓	-	-	-	-	-	-	✓	-	✓
Fixed Site	✓	✓	-	✓	-	-	-	✓	✓	✓
Comment										
Platform information	<ul style="list-style-type: none"> ✓ Most extensive product range in the market ✓ Large IP portfolio ✓ Leading performance 	<ul style="list-style-type: none"> Integrator-only via its Lattice platform 	<ul style="list-style-type: none"> Substantially an integrator Acquired AVT, a smaller integrator 	<ul style="list-style-type: none"> Highlander Partners (Texas PE) acquired both Liteye and Black Sage Integrator/C2 supplier 	<ul style="list-style-type: none"> Lower-performance technology Focus on law enforcement Acquired Aerial Armor Jan 23 	<ul style="list-style-type: none"> Handheld Dronekiller jammer gun Lacks a full product suite 	<ul style="list-style-type: none"> Handheld DroneBuster jammer gun Lacks a full product suite 	<ul style="list-style-type: none"> Titan RF detect-and-defeat (via Citadel acquisition) LOCUST laser defeat Acquired Verus Mar 23 	<ul style="list-style-type: none"> Offer an expensive, competing product to DroneSentry 	<ul style="list-style-type: none"> Use protocol manipulation approach – similar legal restrictions to jamming, but less reliability and no swarm protection
Detect	RF, EO / IR, Radar	RF, EO / IR, Radar	RF, EO / IR, Radar	RF, EO / IR, Radar	RF, EO / IR, Radar	-	-	RF	EO / IR, RF, Radar	Protocol manipulation
Defeat	RF smart jamming	Drone on drone – Anvil product	-	Catching net, RF jamming	RF jamming	RF jamming	RF jamming	RF jamming, Laser	RF jamming	Protocol manipulation
Geography	Global	USA, UK, Australia	USA	USA	Global	USA	Global	USA	USA	Global
Technology Portfolio	RF, EW, AI, sensorfusion, computervision	Sensor integration	EO / IR sensors, gimbals, RF	Sensor integration	RF	Waveforms	RF	RF, Laser	RF, EW, radar	Protocol manipulation

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Key Execution Priorities and Growth Strategy

Leadership in Counterdrone, Grow Adjacent Capabilities and SaaS



Mission: Making the world a safer place through mass deployments of drone detection and neutralization systems

Three-part Strategy



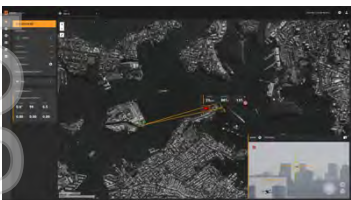
Continue Leadership in the Counterdrone/Unmanned Threat Sector

- The counterdrone market is growing rapidly, especially in the US
- DroneShield is well positioned as the industry pioneer, with on-the-ground US team, and Australia being part of the Five Eye intelligence alliance (US, UK, Australia, NZ and Canada)
- Continue to embed hardware and SaaS with key customer systems globally



Grow Adjacent Electronic Warfare Capabilities

- Executing on the third, \$9.9m 2-year contract with a Five Eyes Department of Defence
- EW includes obtaining intelligence of the radiofrequency signals on the battlefield and applying directed energy to jam, degrade, disrupt or neutralise an adversary capability
- The work is almost entirely software-based, assisting with scale and margins
- Medium term opportunities for broader dissemination amongst AUKUS (Australia / US / UK alliance)



Grow SaaS (Software as a Service)

- Existing counterdrone detection products include a meaningful ongoing subscription, which will continue to grow with the number of deployed devices in the field – DroneShield provides quarterly software updates
- Two key SaaS products: RFAI (RF devices AI engine) and DroneSentry-C2 (incl SFAI sensorfusion and DroneOptID electro-optical AI engine))



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Appendices

Counterdrone Detection Solutions



DroneShield uses multi-sensor drone detection for optimal results, unaffected by time of day or weather






	Radio frequency	Radar*	Cameras*	Acoustic*
Imagery				
Overview	<ul style="list-style-type: none"> Foundational layer Detects drone comms protocols (via conventional RF library or an AI engine) 	<ul style="list-style-type: none"> Motion tracker - emits signals which are then reflected back to the radar by targets 	<ul style="list-style-type: none"> Electro-Optical (EO), Infrared (IR) and Thermal Video analytics and image capture identification of drone activity 	<ul style="list-style-type: none"> Compares noise of drone blades or motor to a database of acoustic signatures
Advantages	<ul style="list-style-type: none"> ✓ No interference with other sensors ✓ Tracks multiple targets ✓ Passive – cannot be “seen” ✓ Low false alarm rate ✓ Direction-finding capability ✓ Long ranges ✓ Cost effective 	<ul style="list-style-type: none"> ✓ Picks up drones without RF emissions ✓ Tracks multiple targets 	<ul style="list-style-type: none"> ✓ Best used for verification, classification and tracking of a target detected by other sensors ✓ Potential identification of payloads ✓ Provides “eye on target” 	<ul style="list-style-type: none"> ✓ Passive, cost effective ✓ Supporting sensor, filling gaps from other sensors
Disadvantages	<ul style="list-style-type: none"> ✗ Doesn't pick up RF-silent drones ✗ Requires firmware updates 	<ul style="list-style-type: none"> ✗ False alarms (birds etc) ✗ Is “seen” as emits energy ✗ Longer range detection is expensive ✗ Struggles with hovering drones 	<ul style="list-style-type: none"> ✗ Not well suited for detection on its own due to field-of-view vs distance trade-off ✗ Short ranges 	<ul style="list-style-type: none"> ✗ Short range ✗ False alarms ✗ Cannot locate or track ✗ Requires signature database updates

* Third party hardware, integrated into DroneShield combined multi-sensor solution, with differentiated offering via AI-powered software layers

Counterdrone Defeat Solutions



DroneShield uses smart jamming which has advantages over other technologies, particularly, in its use across civil and military applications, and does not compete against large Defence Primes

	Safe – “soft kill” No intentional damage to the drone		Kinetic – “hard kill” Physical force used with potential for destructive damage		
	DroneShield Offering	Exotic Tech, Limited Reliability			Large Defence Primes Dominance Area
	Smart Jamming	Spoofing/Cyber/Protocol Manipulation	Counter-Drone Drones	Projectile Fire Kinetic Systems	Directed Energy (Laser or Microwave)
Imagery					
Overview	<ul style="list-style-type: none"> Radio waves force a drone to fly back, hover, or land 	<ul style="list-style-type: none"> Hijacks the control of a drone 	<ul style="list-style-type: none"> “Kamikaze” or “catching” drones 	<ul style="list-style-type: none"> Remote weapons systems shoot down drones 	<ul style="list-style-type: none"> Lasers and high-power microwave systems “dazzle” or destroy a drone
Advantages	<ul style="list-style-type: none"> ✓ Universal effectiveness ✓ 360-degree defeat coverage ✓ Effective against swarms ✓ Civil and military environments 	<ul style="list-style-type: none"> ✓ Allows for the re-routing and re-direction of malicious drone flight paths ✓ Applications in both civil and military environments 	<ul style="list-style-type: none"> ✓ “Catching” the drone is available to a wider range of customers 	<ul style="list-style-type: none"> ✓ Effective against Govt-grade drones ✓ Established technology for military operations 	<ul style="list-style-type: none"> ✓ Effective against Govt-grade drones ✓ Systems can be mounted on naval vessels for complex defence systems
Disadvantages	<ul style="list-style-type: none"> ✗ Potential for collateral interference (for a “dirty” jammer) 	<ul style="list-style-type: none"> ✗ Not effective against all drones ✗ Higher chance of collateral damage ✗ 30-90sec per drone to engage, can’t engage multiple drones same time 	<ul style="list-style-type: none"> ✗ Generally slow to deploy ✗ Not effective against swarms 	<ul style="list-style-type: none"> ✗ Collateral damage ✗ Unsuitable for use in a civil environment 	<ul style="list-style-type: none"> ✗ In early stages ✗ Only available for military applications

Benefits and Applications of Safe, Layered, Counterdrone Systems over Kinetic Systems



Safe counterdrone systems have many advantages over kinetic counter-drone systems, which are only practical for deployment in war-like scenarios

Avoidance of Collateral Damage



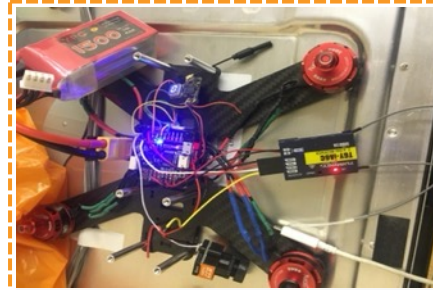
- DroneShield safe defeat solutions force drones to pre-set emergency protocols causing the drone to fly back to its starting point, hover, or land, safely neutralizing the threat
- Alternatively, kinetic solutions could see a destroyed drone fall on crowds of people or inflict “friendly fire” from projectiles

Evidence for Legal Prosecution



- A drone which has been forced to land can be collected by local law enforcement to track the whereabouts of its controller
- As drones are usually accompanied by an image recording device, this can be used as legal evidence to prosecute offenders

Intelligence Gathering



- Drones can often carry sensitive instruments or technology
- When forced to land, this technology can be exploited by military personnel to aid in intelligence gathering operations

Multi-Platform with Scale Benefits



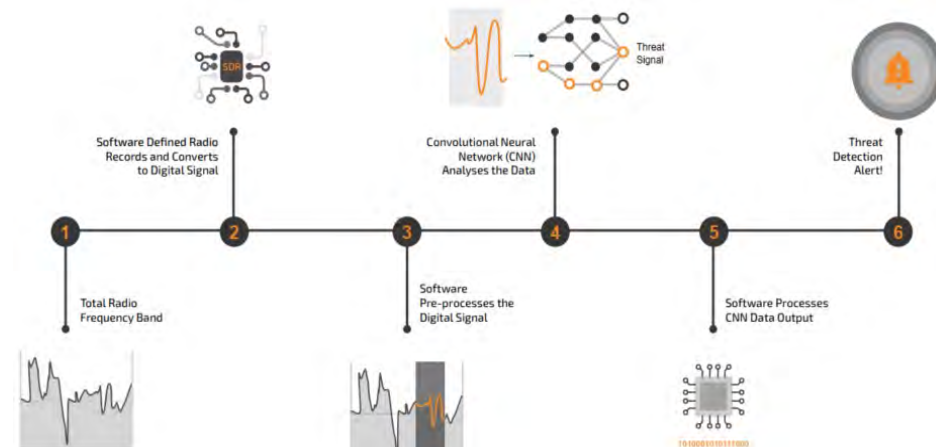
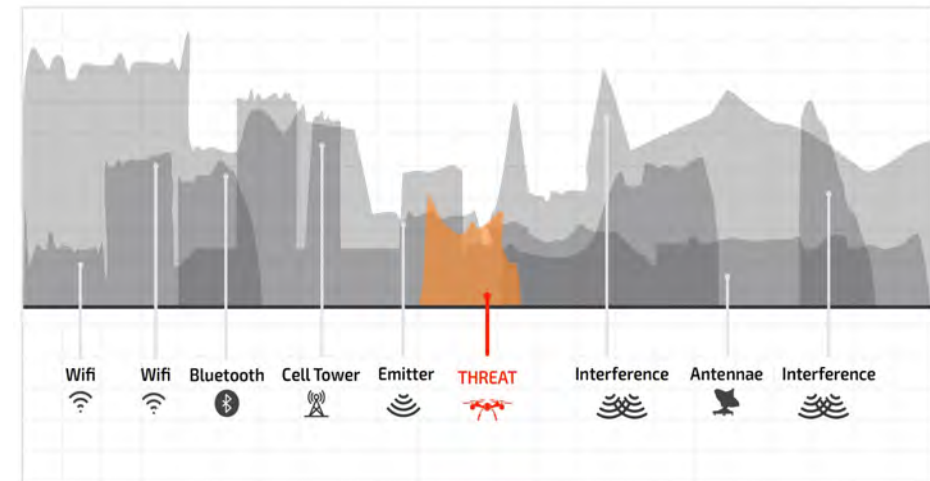
- Safe solutions can be carried on-the-man, mounted on light skinned vehicles and provide continuous passive protection unconstrained by ammunition stores
- Kinetic counter-drone solutions are often mounted on heavy, remote weapon stations and constrained by magazine depth

DroneShield AI Software Sees Through Noise – Radiofrequency Spectrum



World leading proprietary RF AI platform for protection against advanced threats, such as drones

- Drones operate in the densest parts of the Radio Frequency (“RF”) Spectrum with “noise” coming from all kinds of other emitters including Wi-Fi, Bluetooth, cell towers and antennas
 - Drone detection technology needs to be able to pull a signal out of all the other “noise”, while maintaining low false alarms
- DroneShield has developed a cutting-edge spectrum awareness capability using proprietary AI techniques through its RFAI™ engine
- The RFAI™ engine receives quarterly updates (intra-quarter updates also available) which get pushed to the devices globally
- Why is this more advanced than the cell phone technology?
 - Need to detect all protocols, all the time, on all bands, while cell phones are specific dedicated protocols on specific channelsCell phones are a well-defined protocols with defined timing, frequency, and identifying signals to lock onto. This allows to optimise the system from the hardware bands being made narrow band so there is no interference. The Government licensed bands allow no interference sources, so the algorithms are defined, which means the math is defined
- In C-UAS, there is no set sample rate, sample frequency, bands, licensed channel control, so there is no optimisation about any one algorithm



DroneOptID AI Software – Optical and Thermal Spectrum Counterdrone Surveillance



DroneShield's DroneOptID AI engine detects and tracks complex threats such as drones in cluttered environments

- Drones are small, fast-moving objects, hard to detect with naked eye more than 50m away, against complex background
- Cameras on their own cannot detect and track drones at any meaningful distance, due to
 - the trade-off between the camera Field-of-View (FoV) and Depth. A wide FoV would only see drone at a close distance. A narrow FoV means only looking at a tiny part of the area
 - Even once an object is detected, separating drones from birds is difficult, especially for fixed wing drones
- To enable cameras to accurately detect and track drones and other objects, DroneShield has developed a proprietary AI engine DroneOptID™, in conjunction with University of Technology Sydney, with DroneShield retaining the IP
 - DroneOptID uses the latest in Computer Vision technology to detect, identify and track drones in real time, cutting through all the other “noise”
 - The software takes geographical and environmental data from other sensors in order to slew and validate a drone threat. Once the drone is in the field of view of the camera, using proprietary DroneShield algorithms, the DroneOptID software uses motion tracking and machine learning techniques to identify and track the target

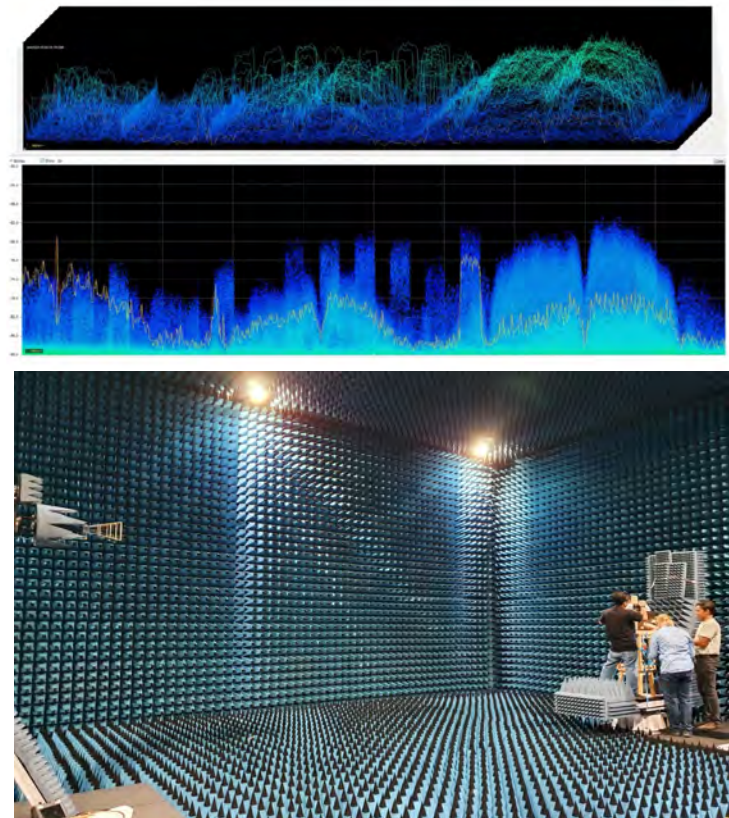


Artificial Intelligence in Electronic Warfare



DroneShield is favourably exposed to the fast-growing Electronic Warfare business segment













- **Electronic warfare (EW)** is any action involving the use of the electromagnetic spectrum (EM spectrum) or directed energy to control the spectrum, attack an enemy, or impede enemy assaults
- The purpose of electronic warfare is to deny the opponent the advantage of—and ensure friendly unimpeded access to—the EM spectrum
- Demand for smart EW technologies to jam, degrade, disrupt or neutralise an adversary capability are rapidly growing and are an essential part of modern warfare
- Given the overlap with DroneShield's counter-drone AI technology and the minimal Australian based competition in EW technology, DroneShield is in the box seat to exert dominance in this rapidly growing area
- In July 2023, DroneShield received a \$9.9 million, 2-year R&D contract with the Five Eyes Department of Defence
 - Contract was awarded on a sole source basis
- Additional, and larger, contracts are expected, as DroneShield builds up its AI capabilities in the EW and Signals Intelligence arena



Seasoned Senior Team



DroneShield's experienced team carries a solid track record of delivering growth

 <p>Peter James Independent Non-Executive Chairman</p> <ul style="list-style-type: none"> Peter joined DroneShield's Board of Directors in 2016 Over 30 years of experience in the Technology, Telco and Media Industries Chairman of ASX-listed companies including Macquarie Telecom Chair of Nearmap, when sold to Thoma Bravo for \$1bn in December 2022 	 <p>Oleg Vornik CEO and Managing Director</p> <ul style="list-style-type: none"> Oleg joined DroneShield in 2015, and the Board of Directors in January 2017 Responsible for overseeing DroneShield's market strategy Senior executive experience includes Royal Bank of Canada, Brookfield, Deutsche Bank and ABN AMRO 	 <p>Jethro Marks Independent Non-Executive Director</p> <ul style="list-style-type: none"> Jethro joined DroneShield's Board of Directors in January 2020 CEO and co-founder of the Mercury Retail Group Extensive commercial experience in successfully scaling a multinational business 	 <p>Carla Balanco CFO and Joint Company Secretary</p> <ul style="list-style-type: none"> Carla joined DroneShield in mid-2018 Instrumental in scaling the company's financial management systems Experience working in Chartered, Commercial and Business Development roles 	 <p>Red McClintock Sales Director</p> <ul style="list-style-type: none"> Red served 23 years as an officer in the Royal Australian Navy Prior to joining DroneShield, Red worked for five years with BAE Systems as a Business Development and Account Manager 	 <p>Tom Branstetter U.S. Director of Business Development</p> <ul style="list-style-type: none"> U.S. Navy veteran and former Navy SEAL Focus across DoD and other federal agencies Tom holds a Bachelor of Arts degree in Entrepreneurship
 <p>Angus Bean Chief Technology Officer</p> <ul style="list-style-type: none"> Angus joined DroneShield in early 2016 Merges the fields of mechanical hardware, electronics, software, digital interface and technology Experience as the development lead for Australia's largest industrial design and engineering consultancy 	 <p>Lawrence Marychurch Vice President, Design</p> <ul style="list-style-type: none"> Lawrence joined DroneShield in 2018 and has a background in Industrial Design Manages a team of industrial designers and mechanical engineers as well as DroneShield's in-house production team Responsible for DroneShield's wide base of Australian and international component suppliers 	 <p>Paul Cenoz Counsel and Joint Company Secretary</p> <ul style="list-style-type: none"> Paul joined DroneShield in 2023. He is admitted to practice law in California and NSW. Prior to DroneShield, Paul held executive roles at high growth scale-ups, successfully building businesses in the US and Australia. He was COO and General Counsel of OSINT Combine in Sydney 	 <p>Matt McCrann U.S. CEO</p> <ul style="list-style-type: none"> Experienced business development executive Over 15 years of experience in the Defense and National Security sector Served in the US Navy as an Intelligence Analyst and a member of NSA/CSS's Cryptologic Direct Support Element 	 <p>Raffael Battner Operations Manager</p> <ul style="list-style-type: none"> Over 15 years of experience in Manufacturing and Operations Management Prior management positions in deep-tech start-ups as well as corporate organisations delivering products and projects into the automotive, telecommunications and industrial market 	 <p>Carl Norman Vice President, Embedded Systems</p> <ul style="list-style-type: none"> Carl is an experienced embedded product engineer who joined DroneShield early in 2019 Over 25 years of experience in electronic product design, manufacturing and project management Background in RF products, analogue, embedded and high speed digital systems

Industry and Media Recognition



ASX-listed DroneShield wins US Defence contract



Matthew Cranston
United States correspondent

Oct 5, 2022 - 6:04am

Washington | ASX-listed DroneShield won a \$1.8 million contract which will open doors to military.



Tess Bennett
Technology reporter

Aug 9, 2023 - 1:32pm

In what is the company's first win, dozens of DroneGun N which neutralises an a

The CEO of an Australian company that builds rifle-like devices that force drones out of the sky says investors should overcome ethical concerns and get behind the defence industry because rising global tensions mean World War III is likely in our lifetimes.

Oleg Vornik, chief executive of ASX-listed DroneShield added that although his drone guns don't hurt people or even the flying robots they bring down, Australia needs to be as self-reliant as possible, which meant building a strong private defence industry.



DroneShield boss Oleg Vornik warns Australia is the target of "grey-zone warfare" that is being waged via cyber attacks. (Duncan Coleman)

By BEN PAKHAM
FOREIGN AFFAIRS AND DEFENCE
CORRESPONDENT
Follow @benpakham

8:35M MAY 4, 2023
6 COMMENTS

DroneShield (ASX:DRO) selected for ISREW panel

ASX News, Technology

ASX:DRO MCAP \$71.36M



Julia Seymour
Markets Presenter/Reporter
julia.seymour@thetraderadd.com.au
07 September 2023 15:21 (AEST)



DroneShield: Diggers 'naked' to drone

Shares soar as US government buys up Aussie company's anti-drone tech

Nick Bonnyady
Technology writer

Jul 17, 2023 - 5:14pm

Save Share

Shares in ASX-listed defence technology company DroneShield have soared 19 per cent, after it struck a \$33 million deal to sell equipment to the United States Department of Defence, underscoring the importance of the versatile unmanned vehicles to modern warfare.

DroneShield makes systems that stop drones from communicating with

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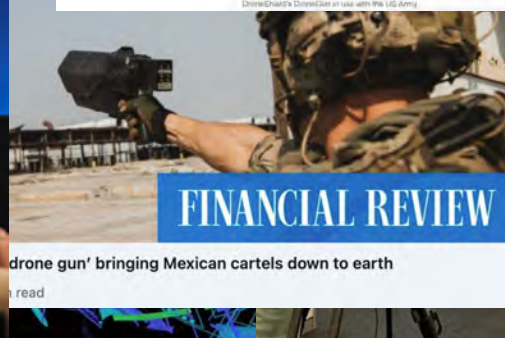
TURD \$0.220

1 year 1.80x

0.420

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afr.com • 1 min read

Technology Fast 50 Australia

Capital Structure



Capital Structure (approximately 10,000 shareholders) – as at 20 October 2023

DRO Shares on Issue	611,403,611
DRO Options on Issue	11,290,000
Fully Diluted Shares on Issue	622,693,611
Fully Diluted Equity Value	\$165m
Cash	\$50.1m
Debt	\$nil
Fully Diluted Enterprise Value	\$114.9m

¹ Options issued at various strike price and maturities. For full information please refer to ASX releases
² At 26.5c per share, as at 20 October 2023

Director and Employee Shareholdings

Oleg Vornik, CEO and Managing Director	15,027,022 shares	2.41%*
Peter James, Independent Non- Executive Chairman	8,817,522 shares	1.42%*
Jethro Marks, Non-Executive Director	1,750,000 shares	0.28%*
Other Employees	28,210,999 shares 5,590,000 options	5.43%*

*On a fully diluted basis

Research Coverage



El Salvador President Nayib Bukele with DroneShield DroneGun Tactical

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DRONESHIELD

Artificial Intelligence For Multi-Mission Threat Protection and C-UAS Defense

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