



AI-Enabled Platforms for Protection against Advanced Threats

DroneShield (ASX:DRO)

October 2022

Image: DroneGun MKIII™ units ready for dispatch under a US DoD order at the DroneShield Virginia warehouse

October 2022 Update



- **Positive operating cashflow quarter**, with bank balance as of 30 September at \$7.5 million.
- **Multiple larger size contracts** received, including \$2 million European DroneSentry™ order, \$1.8 million US DoD DroneGun™ order.
- **First paid US civilian airport deployment** - a reference case and pathway to further sales.
- Appointment to the Australian DoD ISREW panel.
- **Second highest cash receipt quarter of \$5.6 million** customer and grant cash receipts, up 103% on 2Q22.
- **\$50 million sales pipeline** for remainder of 2022 (with a further \$180 million pipeline for 2023 onwards), with growing focus towards the US and Australian Government customers*.
- Strong inventory balance of **\$15 million** as at 30 September by sale value mitigating supply chain risk and enabling rapid sales.
- Key drivers for 4Q22:
 - Ukraine military aid contracts
 - US Government and NATO contracts across defence, intelligence, homeland security and airports
 - Australian Government counterdrone, Electronic Warfare and general sovereign capability work
 - International pipeline (Middle East, Europe, South-East Asia and others)
- Favourable macro environment for DroneShield with rapidly rising counterdrone expenditure globally, as drone incidents continue, and defence and security spending rises globally.

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

ersonal use only



DRONESHIELD

Business Overview

Image: DroneSentry™ at an airport

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

AI-Enabled Platforms for Protection against Advanced Threats



Multiple platforms in adjacent technologies and customers with a common theme of AI-based threat protection

Counterdrone

- Global leader with multiple differentiators in a rapidly growing counterdrone market
- Hardware sales with SaaS
- Tier 1 customers across military, intelligence community, Government and critical infrastructure
- \$200m+ pipeline

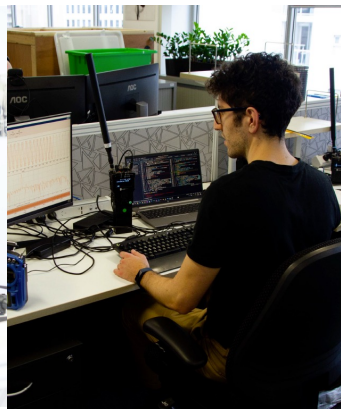
Artificial Intelligence in Electronic Warfare

- Executing on a 2 year \$3.8m contract with Australian DoD, following on the initial \$600k contract in 2020
- Follow-up contract expected in 2023
- Potential to take the work to the US DoD
- Land, Sea/sonar, Air, Space and Joint Forces applications
 - DroneShield's AI software is well positioned to solve Defence "big data" challenges

Artificial Intelligence in computer vision and sensor fusion

- Executing on a 1-year initial \$800k contract with Australian DoD
- Expecting follow up work

Synergies between counterdrone and non-drone applications



How does a counterdrone system work?



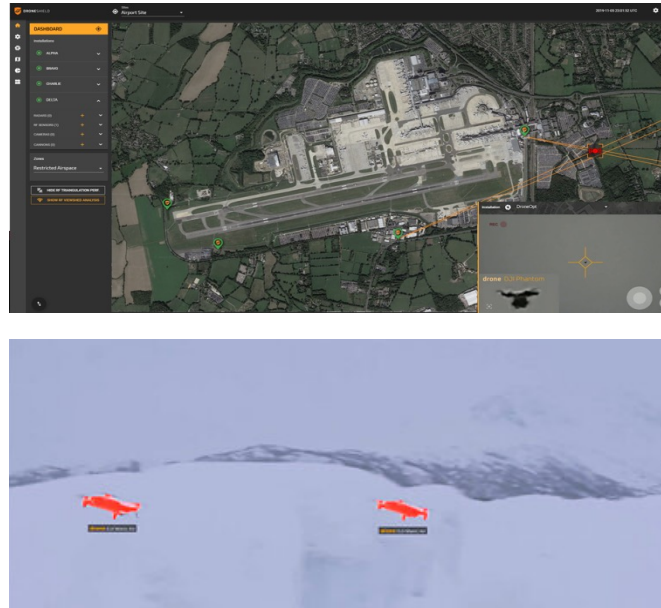
Step 1

Detect



Step 2

Assess



Step 3

Respond



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

- Machine learning and AI based detection and classification software is used to undertake near-real time tracking and **assessment** of drones and UAS threats

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

Investment Highlights



World leading
proprietary **AI platform**
for protection against
drones

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

Sales pipeline of **\$50m for
remainder of 2022 and
\$180m for 2023**

Best in class customer
base including
**Department of Defence,
US Air Force, US State
Department**

\$5.3m in 1H22 cash receipts,
with majority of 2022 receipts
expected in 2H22, as the
business **nears inflection point**

**Repeat customers
constitute majority of sales**

Executive Summary



DroneShield Overview	<ul style="list-style-type: none">Founded in 2014 and listed on the ASX in June 2016, DroneShield (ASX:DRO) provides Artificial Intelligence based platforms for protection against advanced threats such as drones and autonomous systemsHardware and software solutions that detect and safely neutralise small drones (unmanned aerial vehicles or “UAS”) used for nefarious purposes, such as high-tech warfare, terrorism, contraband delivery, and airport disruptionsKey customers include military, intelligence community, Homeland Security, law enforcement, critical infrastructure, and airports globally
Financial Highlights	<ul style="list-style-type: none">\$10.9 million customer and grant cash receipts for 1Q-3Q 22, with expected strong 4Q22\$230m+ near term project pipeline (\$50m for remainder of 2022 projects)\$7.5m cash in bank (as at 30 June 2022)
Business Model	<ul style="list-style-type: none">Three streams of revenue: hardware (drone detection and defeat devices), SaaS (device software updates) and R&D contractsSales through an experienced in-house veteran salesforce with distribution partners across over 100 countriesRegular software updates for hardware products and DroneSentry-C2™ (Command-and-Control software) as a standalone subscription product will lead to a significant proportion of SaaS revenue over the next 5 yearsR&D contracts are expected to rapidly increase, representing an opportunity to develop advanced capability in-house, and attracting and upskilling talent
Proprietary AI Technology	<ul style="list-style-type: none">Underpinning all hardware products are the Company’s proprietary AI-enabled threat awareness software engines RFAI™ and DroneOptID™RFAI™ and DroneOptID™ are machine learning and AI based detection and classification software, utilising proprietary techniques to undertake real-time, at the edge, detection and identification of unmanned robotic systems and, more broadly, other potential threats in the ISR and Electronic Warfare fieldsThe result is a dramatic increase in detection responsiveness, lower false positives and a significant 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. Software updates build on the system architecture and increase performance and the number of detectable threatsDelivering on a A\$3.8m contract to provide Electronic Warfare (“EW”) capabilities to detect “never seen before threats” to the Australian DoD
Addressable Market	<ul style="list-style-type: none">Large international addressable markets in counterdrone and related EW and tracking systems estimated at approximately US\$10 billion worldwideRapidly improving and easily available drone technology is driving demand for counterdrone solutionsCurrent geopolitical conflicts make extensive use of drones by all sides
Growth Strategy	<ul style="list-style-type: none">Today, over 75% of revenues is derived from defence, and approximately 15% of revenue comes from the intelligence communityDefence, the intelligence community and border security will continue to be the key focus for DRO, however there is a major opportunity for continued expansion into other markets including civilian airports, prisons, stadiums and corporates
Key execution priorities	<ul style="list-style-type: none">US sales: converting trial and integration successes into large multi-million-dollar contractsAustralia sales: expanding on the initial A\$3.8m Electronic Warfare contract into the next, and larger, contractTechnology: rapidly scaling the AI engine software for SaaS deployments, and release of DroneSentry-C2™M&A: continue to review and successfully implement appealing acquisition options

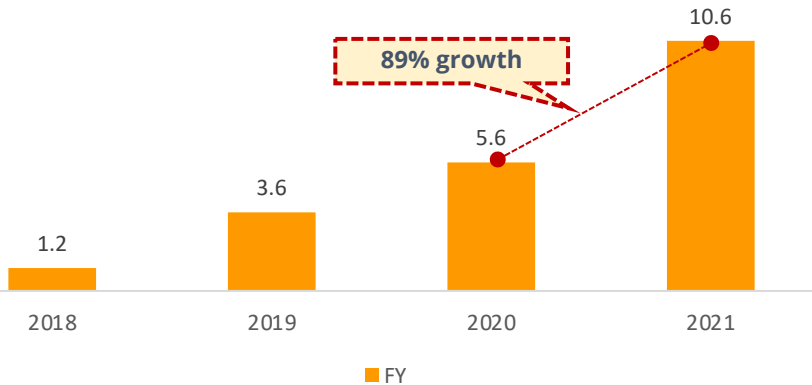
Continued Rapid Growth (A\$m, Dec YE)

Moving Towards Positive Cashflow

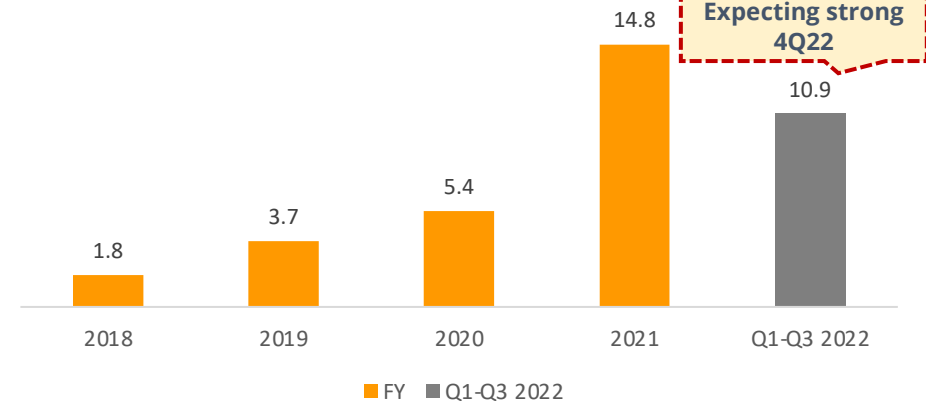


Rapidly improving financials, as the business stands at an inflection point into 2022

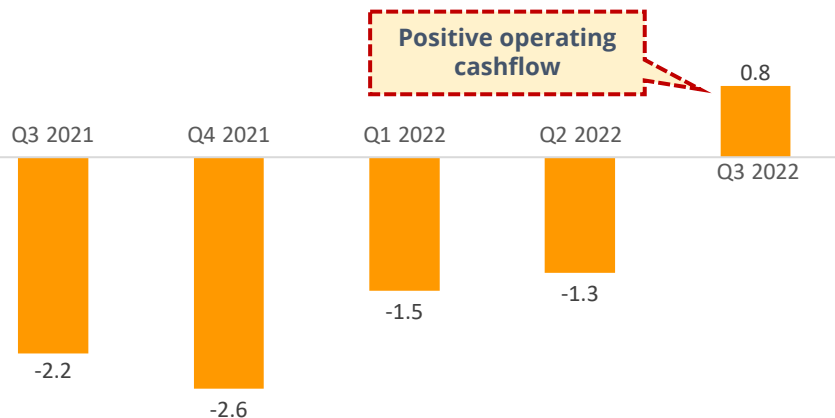
Strong Revenue Growth



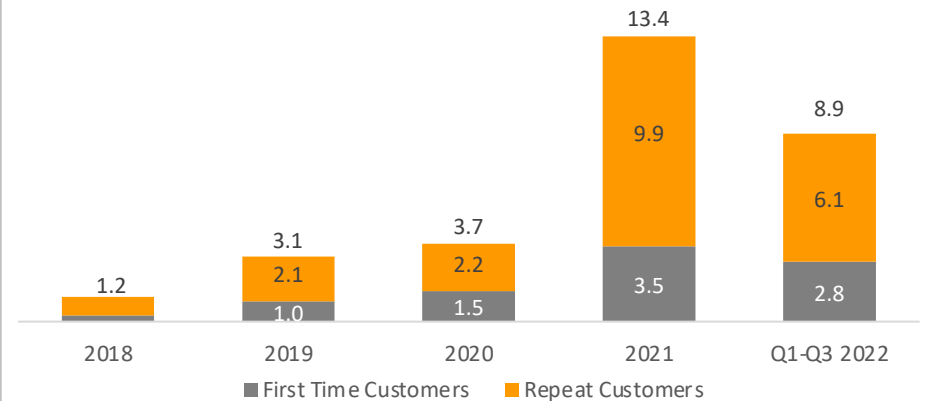
Rapid Cash Receipt Growth (Sales + Grants)



Moving towards Positive Net Cashflow



Customer "Stickiness" – Repeat vs First Time Cash Receipts





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Addressable Market

Image: DroneShield product brief at the Eurosatory conference

Counterdrone: Multi-Billion Dollar Market by 2024



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

Military



Government Facilities



Law Enforcement



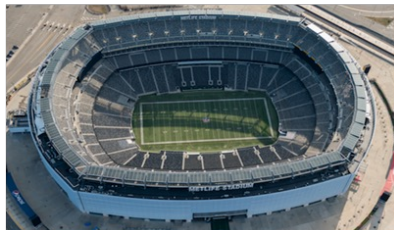
Protective Details



Airports



Stadiums



Commercial Venues



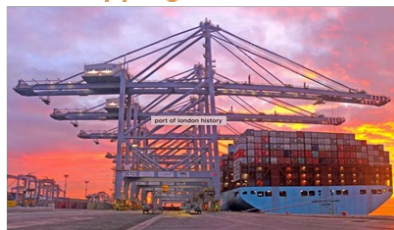
Energy Production



High Profile Events



Shipping / LNG Ports



Rescue / Fire Response



Correctional Facilities



Sources:

MarchWatch: <https://www.marketwatch.com/press-release/counter-uas-market-size-share-growth-business-scenario-insights-industry-analysis-and-forecasts-report-2027-2021-11-11>

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-Expected-to-Reach-USD-2-041-09-Million-by-2026-Facts-Factors.html>

US\$10bn Total Addressable Market



Military Vehicles - Mounted
\$25k - \$200k each

\$2.3bn



\$1.1bn



Airports - Fixed Sites
\$125k - \$2m each

\$1.1bn



Military - Portables
\$20k - \$55k each



\$625mil

Energy Production & Critical
Infrastructure - Fixed Sites
\$125k - \$2m each

Law Enforcement - Portables
\$63k - \$500k each

\$550mil



Military - Fixed Sites
\$125k - \$860k each

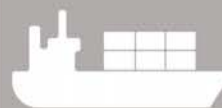


\$500mil

Government Facilities - Fixed Sites
\$63k - \$500k each



\$1.5bn



\$582mil

Shipping - Vehicle Mounted
\$63k - \$200k each



\$500mil

Civil Helicopters -
Fixed Sites
\$30k each



Military helicopter -
Vehicle mounted
\$25k - \$125k each

\$390mil



\$500mil

Correctional Facilities -
Fixed Sites
\$63k - \$500k each



Stadiums & Events
Fixed Sites or Portable
\$25k - \$125k each

Civil helicopters -
Portable
\$30k each

Oil Refineries - Fixed Sites
\$62k - \$500k each

Shipping & Ports - Fixed Sites
\$125k - \$1m each

Sources: <https://www.dronesshield.com/counterdrone-market>

ersonal use only



Detect.
Identify.
Respond.



Ready for the
drone age?



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DroneShield Capability and Product Overview

Image: DroneGun Tactical™ and DroneSentry-X™ at BT's stand at International Security Expo in London

DroneShield Capability Overview



High-IP, yet mass-production enabled hardware, enabling a software subscription platform

Hardware with Embedded Software and Associated Services

Dismounted & Body-Worn Counterdrone Solutions



DroneGun MKIII



DroneGun Tactical



RfPatrol

Vehicle / Ship / Fixed Site Counterdrone Solutions



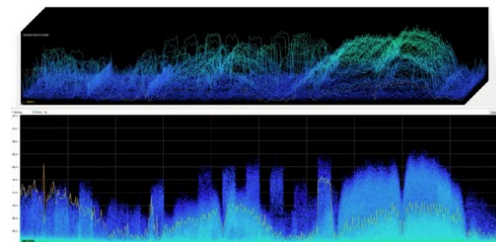
DroneSentry-X



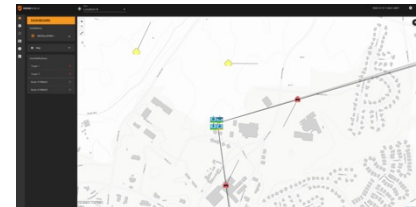
DroneSentry

Software (SaaS and R&D contracts)

Electronic Warfare and SIGINT

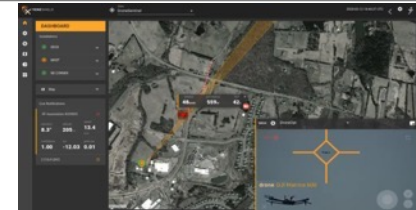


Command-and-Control (C2)



DroneSentry-C2

Optical Detection and Tracking AI



DroneOptID





DroneShield has its own production facility, supplemented by two outsourced manufacturers, to ensure ability to manage large hardware orders

The focus is on software subscriptions, with hardware fleet serving as an enabling platform

Counterdrone detection solutions



DroneShield uses multi-sensor drone detection for optimal results







	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

DRO offering	Safe - "soft kill"			Kinetic - "hard kill"	
	Smart jamming	Spoofing/Cyber	Counter-drone drones	Projectile fire kinetic systems	Directed energy (Laser or microwave)
Impact	No intentional damage to the drone			Physical force used with potential for destructive damage	
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 	<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

Exotic tech,
limited reliability

Large Defence Primes
dominance area

ersonnel use only



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Competitor Analysis

DroneShield's competitive counterdrone advantage?



C-UAS market pioneer, with a culture of systematic innovation and understanding of channels to market

Market leading, differentiated technology...



Multi-sensor detection, ID and tracking



Best-in-breed detection range



Best-in-breed defeat range

...across multiple platforms...



Body-worn



Vehicle/Ship mounted



Fixed site

...underpinned by AI-powered SaaS...



Proprietary software integrated across product suite



Difficult to replicate



Experienced development team for quarterly software updates

... and backed by high barriers to entry



Experienced in-house veteran sales team



Relationships and pipeline with global defence partners and clients in over 100 countries














Deep in-house world-leading technology talent (40+ engineers)

Competitor analysis

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



Country of origin	 / 				 / 				
Integrator	✓	✓	✓	✓	✓	-	-	-	✓
In-House Detect									
Dismounted	✓	-	-	-	-	-	-	-	-
Vehicle Mounted	✓	-	✓	-	-	-	-	✓	✓
Fixed Site	✓	✓	✓	-	✓	-	-	✓	✓
In-House Defeat									
Dismounted	✓	✓	-	✓	✓	✓	✓	-	-
Vehicle Mounted	✓	-	-	-	-	-	-	✓	-
Fixed Site	✓	-	-	✓	-	-	-	✓	✓
Commentary									
Platform information	<ul style="list-style-type: none"> ✓ Most extensive product range in the market ✓ Large in-house IP portfolio ✓ Market leading performance 	<ul style="list-style-type: none"> ✓ Integrator-only via its Lattice platform ✓ Acquired Copius Imaging sensing technology 	<ul style="list-style-type: none"> • Substantially an integrator • Acquired AVT, a smaller integrator 	<ul style="list-style-type: none"> • Substantially an integrator 	<ul style="list-style-type: none"> • Lower-performance technology • Focus on prison and police 	<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 detect-and-defeat- a halfway solution between a portable and vehicle product • LOCUST laser defeat 	<ul style="list-style-type: none"> • Offer an expensive, competing product to DroneSentry • Lacks a full product suite
Detection	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
Defeat	RF smart jamming	Drone on drone – Anvil product	-	Catching net, RF jamming	RF jamming	RF jamming	RF jamming	RF jamming, Laser	RF jamming
Geography focus	Global	USA, UK, Australia	USA	USA	Global	USA	Global	USA	USA
In-house technology portfolio	RF, EW, waveforms, AI, sensorfusion, computervision	Sensor integration	EO / IR sensors, gimbals, RF	Sensor integration	RF	Waveforms	RF	RF, Laser	RF, EW, radar



DRONESHIELD

Key Execution Priorities and Growth Strategy

Strategy | Continue Leadership in Counterdrone, Grow Adjacent Capabilities and SaaS



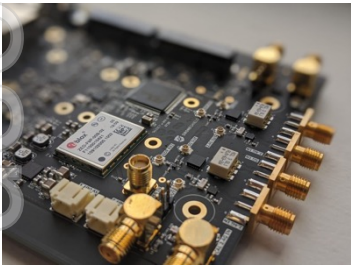
Three-part Strategy



Continue Leadership in the Counterdrone/Unmanned Threat Sector

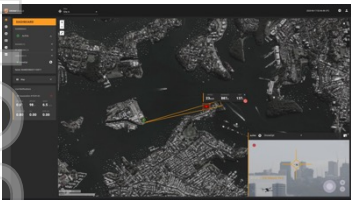
- The counterdrone market is growing rapidly, especially in the US
- DroneShield is well positioned as the industry pioneer, with on-the-ground US team, and Australia being part of the Five Eye intelligence alliance (US, UK, Australia, NZ and Canada)

Grow Adjacent Capabilities



- **Electronic Warfare (EW):** currently delivering on the second, \$3.8m contract with the Australian Defence Force
 - EW includes obtaining intelligence of the radiofrequency signals on the battlefield and applying directed energy to jam, degrade, disrupt or neutralise an adversary capability
- **Command-and-Control and Tracking Systems:** providing a central display/control for numerous assets deployed in the field by military, law enforcement and Government agencies
- **Optical Detection and Tracking:** using proprietary AI algorithms to enhance optical/thermal camera capabilities to detect, identify and track objects for military, law enforcement, Government, airport and prisons

Grow SaaS (Software as a Service) element



- 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
- Adjacent capabilities are purely or mostly software based, either with subscription or longer term R&D cashflows (including counterdrone training and simulation market)

Contact details



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Appendices

Drones - A Critical and Growing Threat Vector



Otago Daily Times

cloudy Dunedin 18 | 8 Monday, 6 September 2021 Send us news & photos

News Sport Life & Style Entertainment Business Regions Fea

Friday, 23 April 2021

Helicopter pilot horrified at close drone encounter

courier journal

Sports Life Opinion USA TODAY Obituaries E-Edition Legals

CRIME / COURTS

Drug cartels attack enemies and spread terror with weaponized drones in US, Mexico

Karol Suárez

Published 6:01 a.m. ET May 24, 2021

World Africa Americas Asia Australia China Europe India Middle East United Kingdom

Edition

Police hunt drone pilots in unprecedented Gatwick Airport disruption

By Sheena McKenzie and Gianluca Mezzofiore, CNN

Updated 0050 GMT (0850 HKT) December 21, 2018



News & buzz



'Almost intentional' Doctor reacts to Tru vaccine...



Analysis: Blow to Me and Harry with UK w ruling but...

Forbes

Aug 3, 2021, 09:05am EDT | 18,681 Views

Drone Striking World Trade Center Is A Wake-Up Call



David Hambling Contributor @ Aerospace & Defense I'm a South London-based technology journalist, consultant and author



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New York Post reports that a small drone has slammed into a building at the World Trade Center complex. No terrorist threat is suspected, but the incident is a wake-up call to the potential threat posed by such drones.

Ultimate Heliport briefly shut down due to illegal drone activity

Written by defenceweb - 4th May 2021

f t in e



The Ultimate Heliport in the Waterfall precinct in Midrand was shut down for an hour on Monday after drones were observed flying in the helicopter flight path.

On 3 May shortly after 08:00, an Ultimate Heliport employee reported seeing two drones operating directly in the helicopter flight path of Ultimate Heliport while it was in use. Ultimate Heliport said it was shut down for an hour on Monday.



STOCK MARKET

Home > Nation

Army opens fire on two drones found hovering over Ratnuchak-Kaluchak military areas in Jammu

One drone was spotted at 11:45 pm on Sunday night and the other at 2:40 am, officials said. Both were destroyed.

Middle East

Fire extinguished on oil tanker off Syria after suspected drone attack

IDF Shoots Down Hamas Drone That Crossed Into Israeli Territory

by I24 News



A drone that Israeli troops recovered in southern Israel that the military said entered Israeli airspace from the Gaza Strip two days earlier, on August 13, 2021. Photo: Israel Defense Forces.

Saudi Arabia Plants Aftermath

TRENDING

"Sidharth Shukla Sent Money During Lockdown": Pratyusha Banerjee's Father

"If We Die...": What Afghan Resistance Leader, Killed, Had Told NDTV

Inside Rishi Kapoor's Birth Anniversary Party: The Cake Stole The Show



Multiple drones hit northeast of Erbil, no casualties: sources

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

Drone activity at Augusta Correctional Center in Craigsville causes lockdowns

Drone Attack Damages Hangar at US-Coalition Air Base in Iraq

By Edward Yeranlian May 08, 2021 01:54 PM

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



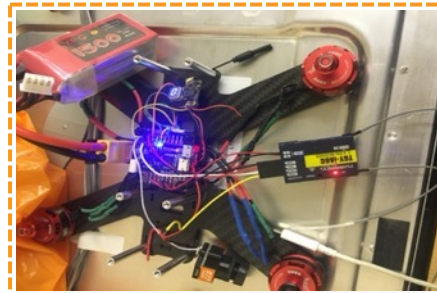
- DroneShield safe defeat solutions force drones to pre-set emergency protocols causing the drone to fly back to its starting point, hover, or land, allowing for the safe defeat of drones
- Alternatively, kinetic solutions could see a destroyed drone fall on crowds of people or inflict "friendly fire" from fired ammunition

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

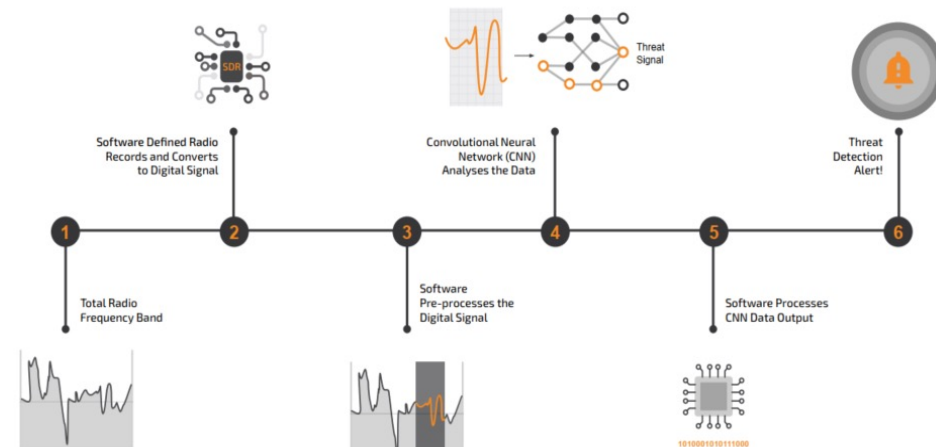
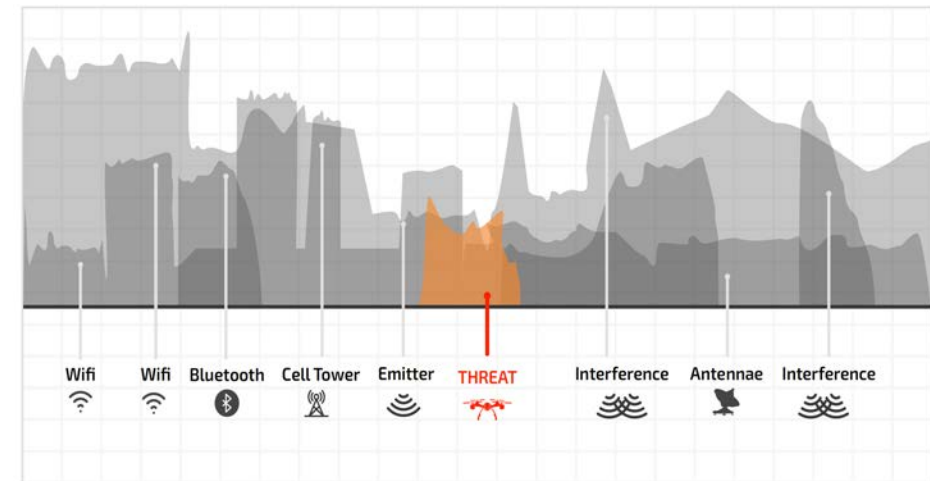


World leading proprietary RF AI platform for protection against advanced threats, such as drones

- Drones operate in arguably 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
 - Consequently, counter-drone detection technology needs to be able to pull a signal out of all the other “noise”, while still maintaining a low false alarm rate
 - Achieving this using traditional techniques, especially in a very cluttered environment, is very difficult – if not impossible

Consequently, DroneShield has developed a cutting-edge spectrum awareness capability using proprietary Artificial Intelligence techniques through its RFAI™ engine

- The RFAI™ engine receives quarterly updates (intra-quarter updates also available) which get pushed to the devices deployed across the globe in a variety of ways suitable for the security of the end user



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
- Further development is currently under way, funded by the Australian Department of Defence



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 2021, DroneShield received a A\$3.8 million, 2-year R&D contract with the Australian Department of Defence
 - Contract was awarded on a sole source basis. Importantly, the contract was not in counter-drone, but EW and Signals Intelligence, an adjacent area utilising an existing DroneShield skillset, but with much wider applications.



Additional, and larger, contracts are expected with the Australian Department of Defence, as DroneShield builds up its AI capabilities in the EW and Signals Intelligence arena



Seasoned senior sales and engineering teams



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 April 2016 Over 30 years of experience in the Technology, Telecommunications and Media Industries Chairman of ASX-listed companies including Macquarie Telecom and Nearmap 	 <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 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>Katherine Stapels General Counsel</p> <ul style="list-style-type: none"> Kat started her legal career in litigation and moved to an in-house role in 2018 Kat's previous in-house experience includes manufacture and supply of complex Australian defence technologies Registered practitioner of the High Court of Australia
 <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>Hedley Boyd-Moss Vice President, Engineering</p> <ul style="list-style-type: none"> 30 years of global RF and Electronic engineering Working knowledge of regulatory compliance standards Specialist knowledge in areas such as antenna manufacturing and RF communication modulation techniques 	 <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>Lyle Halliday Chief Operating Officer</p> <ul style="list-style-type: none"> Lyle is an experienced Systems Engineer with a background in medical device product development Responsible for implementation of processes to ensure customer expectations Engineering experience spans electrical, mechanical, manufacturing and software 	 <p>Carl Norman Embedded Product Engineer</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 anti-drone technology company DroneShield has won a \$1.8 million contract with the US Department of Defence and says the win will open doors to [significantly larger contracts](#) with the world's biggest military.

In what is the company's largest US sale to date, DroneShield will provide dozens of DroneGun MKIIIs – a two kilogram pistol that sends a signal which neutralises an attacking drone or drone swarm.

RELATED QUOTES



DroneShield (ASX:DRO) selected for ISREW panel

ASX News, Technology

ASX:DRO MCAP \$71.36M



Julia Seymour
Markets Presenter/Reporter
julia.seymour@themarket Herald.com.au
07 September 2022 15:23 (AEST)



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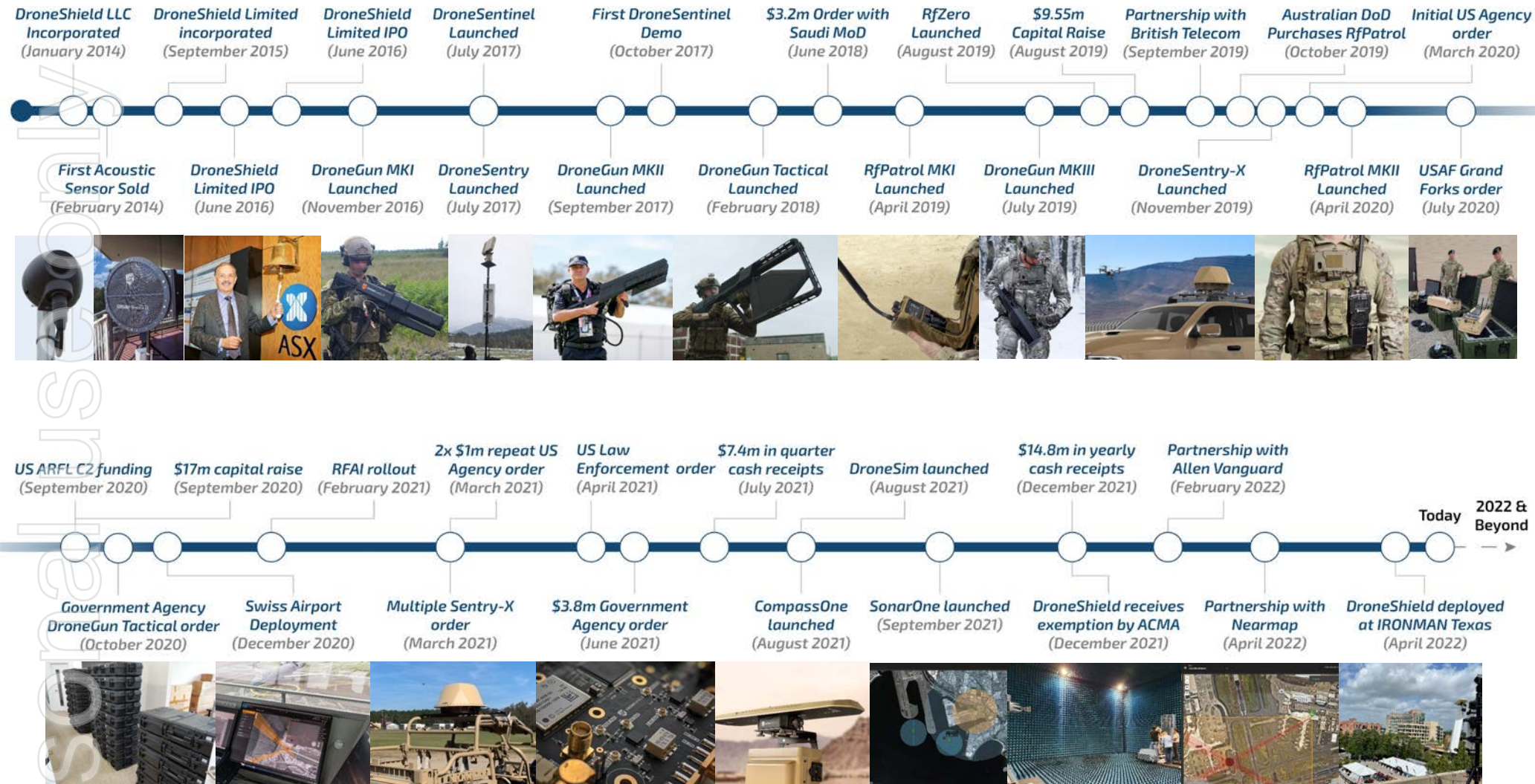


DroneShield Launches Regional NSW Testing Facility





Never Standing Still



Capital Structure



Enterprise Value (A\$)

DRO Shares	16.5c / share ¹	\$71.4m ²
Cash	As at 30 September 2022	\$7.5m
Debt	As at 30 September 2022	nil
Enterprise Value		\$63.9m

¹ Shareprice as at 11 October 2022. 432,541,985 ordinary shares outstanding

² Excluding unlisted options. 40,025,001 unlisted options outstanding

Director and Employee Shareholdings

Oleg Vornik, CEO and Managing Director	15,310,356 shares 11,000,000 options ²	3.54% ¹
Peter James, Independent Non-Executive Chairman	9,301,688 shares 5,530,000 options ²	2.15% ¹
Jethro Marks, Non-Executive Director	666,666 shares 1,083,334 options ²	0.15% ¹
Other Employees	22,938,954 shares 16,366,667 options ²	5.30% ¹

¹ Based on the shares held and excluding options

² Options issued at various strike price and maturities. For full information please refer to ASX releases

Research Coverage

BELL POTTER

PELTON
CAPITAL



Image: RfPatrol™ at the Rheinmetall and Team SABRE (Safran, Nova Systems, BAE Systems) stands at Land Forces 2022

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