# DroneShield Cash Receipts Surge in 2021

DroneShield Limited (ASX:DRO) ("DroneShield" or the "Company") is pleased to report strong results for the 2021 Calendar Year.

The Company has reported approximately doubling of its revenues compared to 2020, to $10.5 million, and approximately tripling of customer and grant cash receipts to $14.8 million. Customer and grant cash receipts for the last quarter were approximately $2.7 million.

These results are subject to an audit of the Company's accounts which is expected to be completed and reported to the market with the release Appendix 4E and annual report in February.
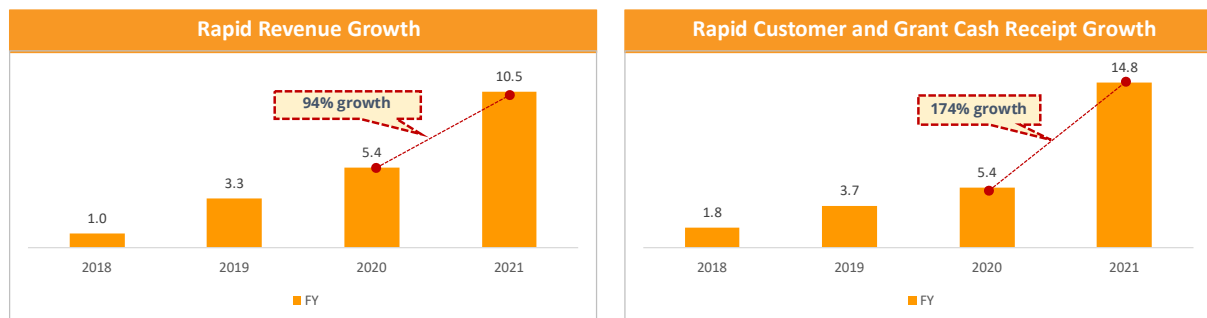
The closing cash balance for the December 2021 quarter was $9.5 million.

Oleg Vornik, DroneShield CEO, commented, "We are pleased to deliver another year of strong top line growth. 2021 was a pivotal year with our first multi-year, $3.8m contract with the Department of Defence, doubling of the global team from 30 to over 60 staff, and entering into larger scale Artificial Intelligence contracts with our customers that are adjacent to the counterdrone sector.

"2022 is shaping as another record year, with over $200m in sales pipeline diversified across geographies and products, underpinned by our talented staff who are global leaders in their respective technology segments."

"We have also taken advantage of our supply chain relationships to secure access to material amounts of complex circuit board and other inventory, which serves as a further differentiator to our customers, reducing final product delivery lead times, in the current environment of supply chain disruptions for much of the industry."

"Importantly, Software as a Service (SaaS) and, generally, software-related revenues are expected to continue increasing as total percentage of customer cash receipts."

Strong 2021 – Year in Review

The United States Department of Defense and other U.S. government agencies

The United States governmentis the largest counterdrone customer globally. As a result of its commitment to its U.S. customer base, DroneShield experienced many highlights throughout 2021 and looks to build upon this success in 2022 and beyond.

Last week, DroneShield promoted Matt McCrann, its U.S. Vice President of Sales, to CEO of its U.S. based, DroneShield LLC. As a substantial amount of near term anticipated growth is expected to originate from the United States, DroneShield continues to grow its team and footprint within the market.

DroneShield will continues to expand its US operations, including doubling the size of its U.S. headquarters within Warrenton, Virginia. The Company has also continued to expand its US team, across sales, engineering and support roles.

DroneShield has continued to participate in a number of invite-only U.S. Government led Test and Evaluation (T&E) exercises, most notably the Joint Counter-sUAS Office (JCO) led evaluation at Yuma Proving Grounds (YPG). There are many entry points and influencers within the C-UAS market in the US. Due to its market size and the wide-ranging requirements for C-UAS, trials and evaluations like these, serve as key milestones towards subsequent purchases by each primary agency.

DroneShield continues to increase its presence and visibility within the U.S. market, which now includes a customer base that spans Department of Defense, Federal and State level government, Public Safety, and commercial organisations and integrators. In 2021, DroneShield successfully delivered several orders across the U.S. Government to include Military, Federal, and State level law enforcement agencies. Several of these were follow on orders and expansion projects with existing customers, which is a testament to the quality of the products and solutions provided.

Image: U.S. Government agency DroneSentry™ trials

Image: DroneSentry^{TM} system deployed in the U.S.

DroneSentry-X^{TM} successfully completed a demonstration exercise with the U.S. Navy. The system was deployed on the Stiletto experimentation vessel for six weeks, successfully completing a range of performance and evaluation metrics.

DroneSentry-X^{TM} is a high-performance detection and mitigation solution for a wide range of environments including ground mobility operations, maritime security and fixed-site base requirements. DroneSentry-X^{TM} is powered by RFAI, DroneShield's cutting-edge AI/ML signal detection and classification engine, providing unparalleled performance in the C-UAS space. DroneSentry-X^{TM}'s open architecture and interoperability allows users to easily integrate DroneSentry-X^{TM} with other solutions to further enhance existing mission systems or counter-UAS capabilities.

The system demonstrated overall detection capability, detection and defeat ranges, on-the-move operation in various sea states, and effectiveness against drone swarms, involving a wide range of unmanned robotic threats.

Image: DroneSentry-X^{TM} on the US Navy Stiletto vessel

The successful U.S. Navy demonstration validates other recent DroneSentry-X^{TM} evaluations by the U.S. Department of Defense, Department of Homeland Security, and both Federal and State Law Enforcement agencies.

The Company entered into a new Cooperative Research and Development Agreement (CRADA) with the U.S. Department of Homeland Security Science and Technology Directorate ("DHS S&T"). The research will involve DroneShield's multi-sensor Unmanned Aerial System ("UAS") detection and mitigation capabilities, with the primary focus on DroneSentry^{TM} and DroneSentry-C2^{TM} solutions for fixed and semi-fixed site applications.

Image: DroneShield's DroneSentry-X^{TM} system on a vehicle

In the Law Enforcement sector, the ease of use and cost-effectiveness of DroneShield's solutions have led to multiple orders from State and Local law enforcement and Homeland Security agencies.

Australian Department of Defence and other government agencies

Being an Australian sovereign industrial defence capability business, DroneShield is well positioned for work with the Australian Department of Defence ("DoD") and other Government agencies.

During the year, the Company successfully completed its first Artificial Intelligence contract with the Department of Defence.

DroneShield subsequently received a $3.8 million, 2-year R&D contract with the Department of Defence. The contract was awarded to DroneShield on a sole source basis. Importantly, the contract was not in the C-UAS, but Electronic Warfare and Signals Intelligence, an adjacent area utilising existing DroneShield skillset, but with much wider applications.

DoD has further awarded a third, 12-month $800,000 contract relating to Artificial Intelligence in multi-domain applications including sensor fusion of these separate domains, such as computer vision and electronic warfare. The work relates to both the counterdrone space as well as more general military/Government agency applications.

Additional, and larger, contracts are expected with the Department of Defence, as DroneShield builds up its capabilities in the Electronic Warfare and Signals Intelligence arena.

As part of the engagement with the Department of Defence, as DroneShield is in the business of understanding, and minimising, defence and Government customer vulnerabilities, secret clearances are important for closer and more productive customer engagements as the Company scales its business. During the year, the Company was accordingly approved for Defence Industry Security Program ("DISP") process and became eligible for a defence clearance.

Australian Army has recently released images of DroneShield's equipment in their deployment, in a mobile configuration on a vehicle. These can be viewed here.

In December 2021, the Australian Communications and Media Authority (ACMA), the Australian Federal Government agency regulator of the communications spectrum nationally, has granted DroneShield the first exemption permit of its kind to both undertake advanced testing of the Company's Electronic Warfare and counterdrone portfolio in Australia. The exemption has appropriate safeguards in place to balance the need to develop and test advanced technologies in Australia, while maintaining restrictions around impact on the broader community. This permit substantially accelerates the development and optimisation of advanced Artificial Intelligence-powered electronic warfare and counter-terrorism technologies here in Australia, and we are excited to rapidly move forward in undertaking the work, at DroneShield and University of Technology Sydney (UTS) facilities.

Image: DroneShield's AI-powered body-worn RfPatrol sensor

Middle East

DroneShield received earlier in the year, the outstanding $2.3 million (in addition to the funds previously received by DroneShield under this order) for a shipment of the remaining DroneGun

Tactical™ units under a prior Middle Eastern Ministry of Defence order. Receipt of the payment has successfully concluded the contract.

Completion of the contract has been an important milestone, demonstrating DroneShield's ability to successfully navigate doing business in one of the most challenging yet most lucrative regions globally for Western companies, in terms of successful management of stakeholders and achieving outcomes.

It also highlighted the global leadership positioning of DroneShield products, and its best-in-breed performance, as confirmed by this customer who faces daily UAS threats on their home soil, like no other customer globally.

DroneShield also continues to pursue the $65 million to $75 million potential order (US$45-55 million), with a fully completed form of contract awaiting execution by the sovereign customer.

The United Kingdom – Partnership with BT

DroneShield continues its partnership with BT, with UK Ministry of Defence ("UK MOD") as the prime focus, along with law enforcement and airport customers. DroneShield and BT have made substantial inroads within the UK customers over last 12 months, despite the COVID-19 slowdown.

Europe

During 2021, DroneShield completed multiple order deployments and trials through Europe, participating in a number of military, airport and prison opportunities.

Image: DroneSentry™ deployments in Europe

Image: DroneShield system deployment (RfOne™ on the right) at a major European airport

Image: DroneSentry^{TM} deployment in Europe

DroneShield has participated at a number of key European trials and exhibitions including Interpol's Oslo Airport C-UAS evaluation and the MILIPOL exhibition in France.

Rest of the World

DroneShield has made high profile sales and is in active ongoing project discussions around the world, ranging across Brazil, Mexico, Latin America, Indonesia, Japan, Malaysia, and many others. These markets are seeing extensive use of drones for nefarious applications, and material budgets have been allocated, and continue to be allocated, to combat the drone issue.

Product Development

DroneShield continues to position itself at the cutting edge of solutions for detection and response to a wide variety of asymmetric multi-domain threats, as the greyzone conflict continues to rapidly rise, at both non-State actor level and State-on-State warfare.

Image: DroneShield application software team meeting

Next Gen Artificial Intelligence Software Rollout

In February 2021, DroneShield announced the rollout of its first fully Machine Learning/AI based detection and classification software to all its existing customer systems, with the April quarterly update continuing to build on this world leading platform, with several break-through enhancements.

The subsequent quarterly updates have included an increase in ruggedness and versatility of the system and incorporated a number of user-suggested features from the global deployment base of DroneShield's body-worn, on-the-move and base protection systems. The updates also included compatibility of the DroneSentry-C2^{TM} command-and-control ecosystem with additional partner sensor products.

DroneShield utilises its proprietary techniques in signal processing and Machine Learning/AI to do near-real time detection and identification of unmanned robotic systems and, more broadly, other potential threats in the Electronic Warfare fields. The 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 the DroneShield systems.

One of the key achievements that sets DroneShield's technology substantially ahead of the existing technologies globally, is a very lightweight machine learning architecture designed to run on low power FPGA (Field-Programable Gate Array) hardware. This enables the system to be deployed for long term periods in power scarce, air-gapped environments.

Image: DroneShield RF embedded team undertaking software field testing

The software runs on all DroneShield platforms including RfPatrol^{TM}, DroneSentry^{TM} and DroneSentry-X^{TM}.

Future device software updates will build on this system architecture and increase performance and the number of detectable threats.

DroneShield customers receive regular software updates via enrolling in a Subscription-as-a-Service (SaaS) model at the time of purchase of their systems. Importantly, the software also has capabilities for deployment outside of the C-UAS space, on a hardware agnostic basis.

Image: DroneSentry^{TM} system

Image: DroneSim^{TM}, a lightweight and rapidly deployable UAS/drone simulator that is able to mimic common drone signals

Secure Software Portal

As DroneShield continues to place an increasing number of deployed devices with software subscriptions, it launched a secure portal, providing an easy and secure way for its customers to access periodic software updates.
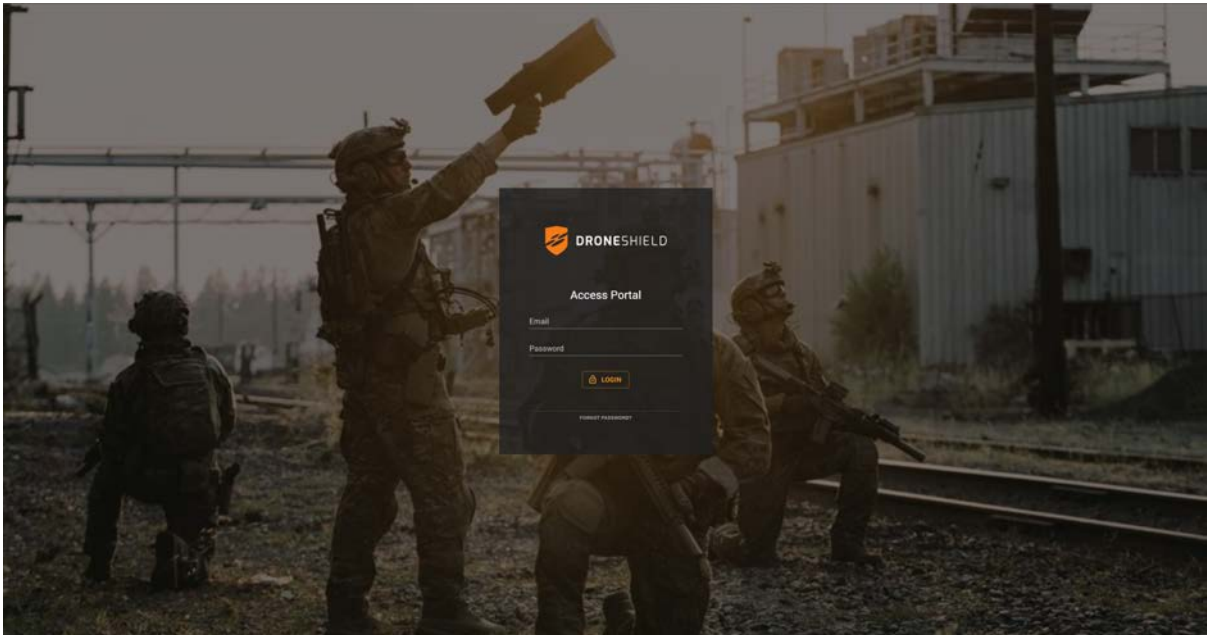
Image: DroneShield's secure software portal

Immediate Response Kit (IRK)

In June 2021, DroneShield announced the release of Immediate Response Kit (IRK^{TM}), a rapidly deployable C-UAS detection and defeat kit.

IRK^{TM} consists of an RfPatrol MKII^{TM} portable (1.2kg incl battery) detection device and a DroneGun MKIII^{TM} (2.1kg incl. battery) defeat device, in a single rugged carry case.

Image: Immediate Response Kit (IRK)

DroneOptID^{TM} 2.0

In 2021, DroneShield released DroneOptID^{TM} 2.0, the second-generation version of its optical Artificial Intelligence/Machine Learning based software.

The original DroneOptID^{TM} system, developed in collaboration with the University of Technology Sydney (UTS) under a grant from the Australian Government, is a sophisticated AI engine to detect, classify and track small, rapidly moving UAS, as well as their payloads.

The updates include effectiveness in a wider range of environments including night-time via thermal sensors, improved detection and classification of UAS payloads and cutting-edge technology estimating the target distance and altitude from the sensor.

DroneShield utilises its proprietary techniques in signal processing and Machine Learning/AI to do near-real time detection and identification of unmanned robotic systems (UAVs, UGVs and USVs). Its DroneOptID^{TM} the optical sensor stream works in parallel with RFAI cutting edge software engine in the radiofrequency spectrum sensing space.

In addition to enabling camera-agnostic substantially enhanced capabilities of target tracking via a layer of software, DroneOptID^{TM} also opens the door to a variety of sophisticated target tracking applications on battlefield, cluttered urban and other complex environments, for a variety of threats, which is of interest to the Company's existing and prospective Government and military customer
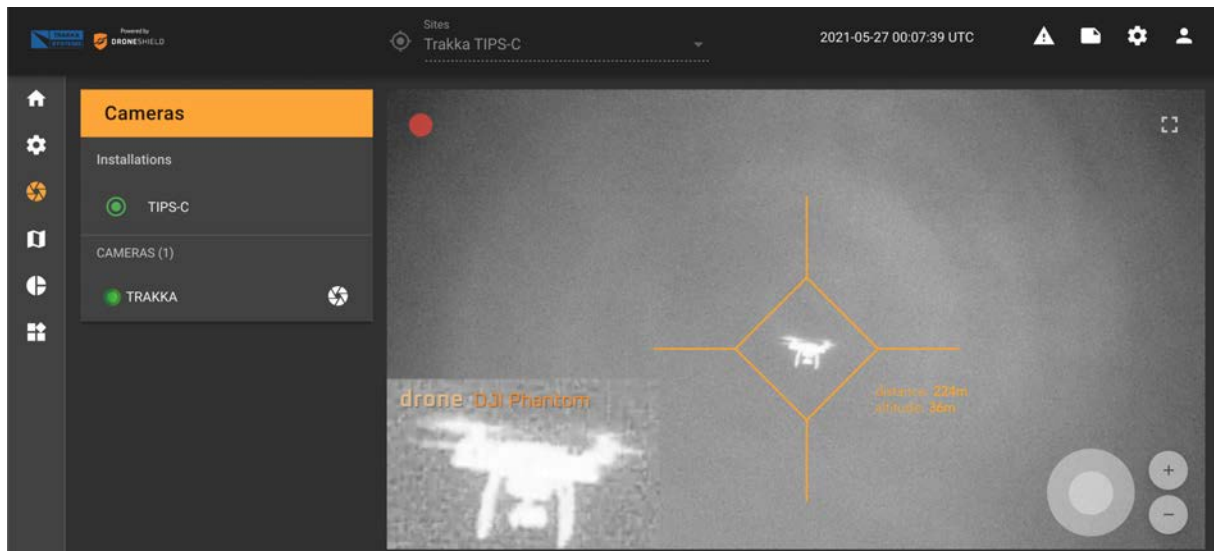
base.

Image: DroneOptID^{TM} module in thermal mode within the DroneSentry-C2^{TM} system

Team and Operations

DroneShield team is now at 60 staff (doubling from 30 staff 12 months ago) - substantially engineers, sales and field support, and production technicians.

Image: Gold Patrol (named after DroneShield RfPatrol^{TM}) monthly ceremony, DroneShield's Oscars where each team competes for the award based on an achievement that month

DroneShield continues outsourcing of larger production runs to an experienced defence manufacturing contractor in Adelaide (a fully Australian owned and operated medium size specialised electronics manufacturer). The manufacturer has completed initial large production runs (50-100 units), successfully working through the scalability considerations (the earlier production runs were of 10-20 units quantity).

DroneShield continues to do its own manufacturing of smaller batches of its products (co-located with its main R&D premises in Sydney, enabling agile product refinement).

Image: RfPatrol MKII^{TM} units following final QC testing

Image: DroneSentry-X^{TM} heatsinks during the manufacturing process

Having successfully undertaken production runs of 100-unit batches across multiple product lines, enables confidence in scaling capabilities, at its own and its outsourced facilities.

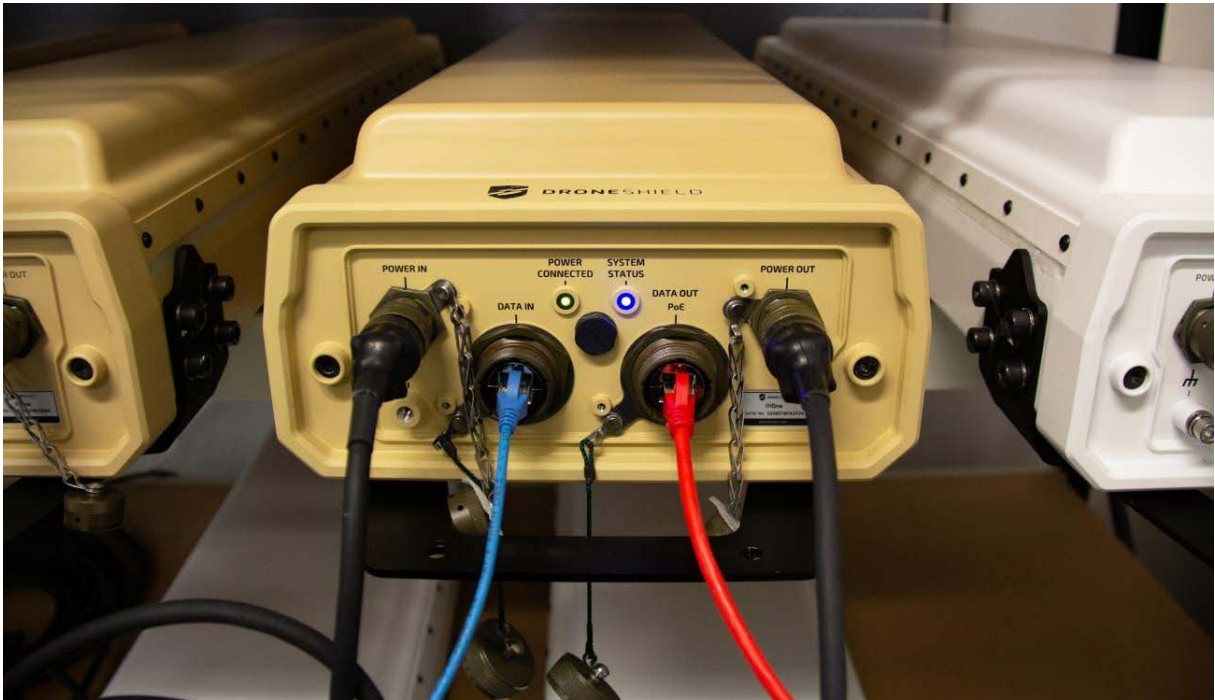The production processes have continued through 2021, in a COVID-compliant manner.

Image: RfOne MKII^{TM} units undergoing final QC testing

Image: DroneSentry-X^{TM} prepared for shipment by the DroneShield team

ISO 9001 Certification

During 2021, DroneShield was awarded the international standard ISO9001:2015 Quality Management Systems certification.

The certification was awarded by SAI Global, the internationally recognised certifying body.

ISO 9001 specifies global best practice in quality management systems, using a process-driven approach. It shows organisations how to improve and maintain leadership, governance, communications and employee engagement to deliver unique, high-quality customer and brand experiences.

Certification recognises that the processes and procedures implemented by DroneShield are aligned with global best practices.

The certification covers DroneShield's Quality Management System for the engineering design, software development, manufacture and field services, including specifically for counter-drone technology.

Market Insights for Counterdrone

In December, DroneShield released an infographic highlighting the $10bn Counterdrone market:
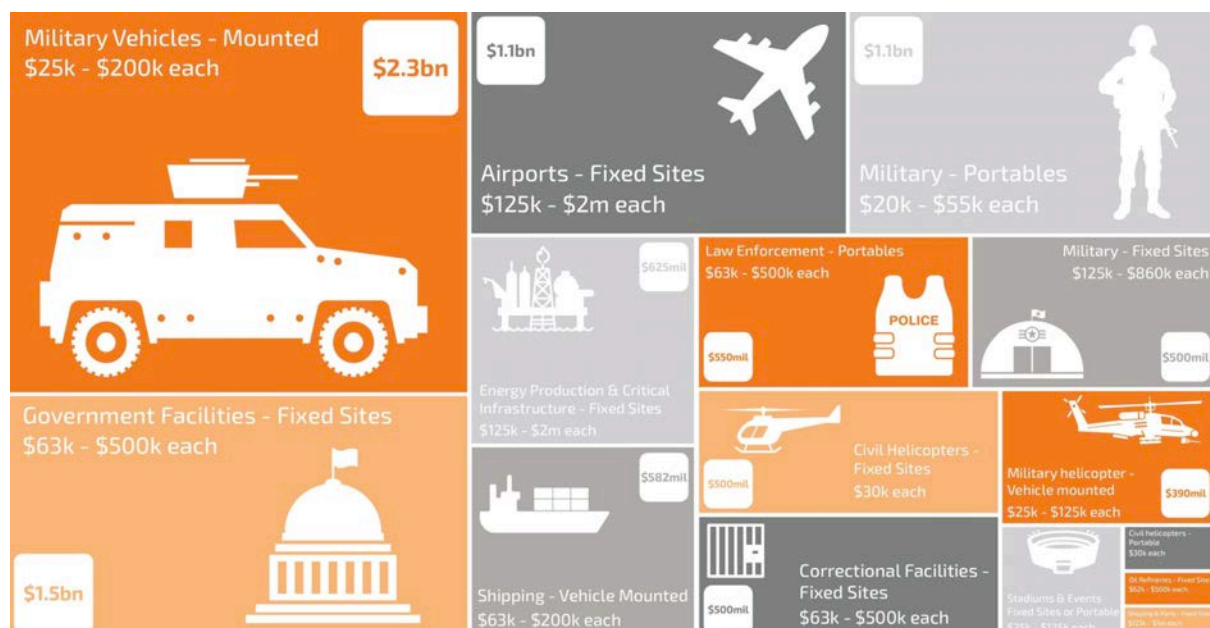
While most trade shows continue to be postponed or held virtually due to COVID during the quarter, DroneShield participated continued to participate in key events, directly or via partners.

In Australia, these events included the Army Robotics Exposition (ARX) and Land Forces Expo, both in Brisbane, where the Company exhibited both in its own stand and at the stands of its exhibiting partners.

Image: DroneShield CEO Oleg Vornik and Sales Director Red McClintock, with Hon Stuart Ayres, Minister for Jobs, Investment, Tourism and Western Sydney of New South Wales, at Land Forces 2021

Image: DroneShield's DroneSentry-X™ system on an Unmanned Ground Vehicle, and the DroneShield stand, at the Australian Army's Robotics Expo (ARX)

DroneShield was included, for another consecutive year, in the Australian Defence Sales catalogue, unveiled by Hon Melissa Price, Australian Defence Industry Minister. The Catalogue is a key brief by the Australian Government for foreign defence purchasers looking for Australian capability providers.

DroneShield's US events included West Virginia Mock Prison Riot, the National Sheriff's Association meeting in Phoenix Arizona, and the 19th Law Enforcement Equipment and Technology Expo hosted by U.S. Customs and Border Patrol (CBP). DroneShield also participated at the US Army's AUSA Conference, Defense in Depth (DiDEX) and Maneuver and Fires

Integrated Experiment (MIFX) events, as well as Sea Air Space.

Image: DroneSentry-X on ForcePro vehicle (DroneShield's Netherlands partner)

Industry Recognition

DroneOptID^{TM} Artificial Intelligence/Machine Learning computer vision software won two awards at the 2021 NSW iAwards - the Australian Information Industry Association's awards program that celebrates excellence in Australian Innovation. DroneOptID^{TM} was developed with the University of Technology Sydney (UTS) under the Defence Innovation Network (DIN) grant scheme.

Image: DroneShield engineer Guillaume Jounel winning the 2021 iAwards, for the DroneOptID computer vision AI project, developed in conjunction with UTS under a defence grant

DroneShield was selected as the Advanced Technologies Award winner in the Premier's NSW Export awards:

DroneShield has won Defence Innovator of the Year and Engineer of the Year Awards at DefenceConnect event in late 2021:

The Company has also won InnovationAus award in the Defence category:

DroneShield launched a major website upgrade, enhancing its brand presence and enabling additional content, with an increased amount of digital engagement since start of COVID-19.
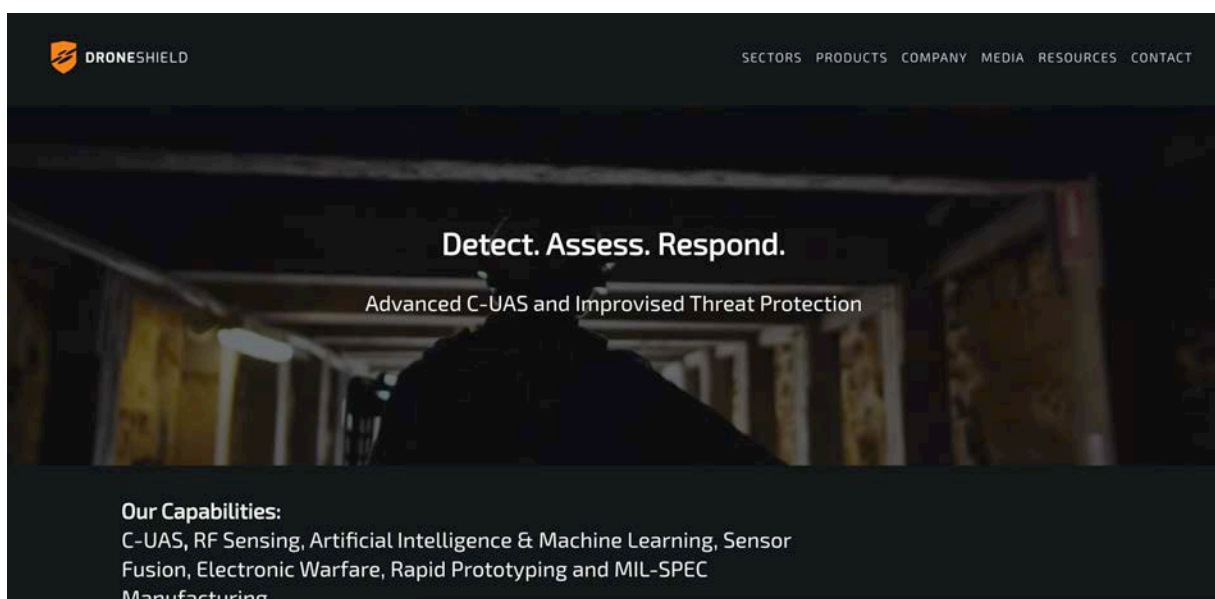

Image: enhanced DroneShield website (www.droneshield.com)

DroneShield CEO Oleg Vornik authored a number of opinion articles on greyzone/asymmetric and robotic warfare, published in a range of mainstream and defence media channels, underscoring DroneShield's thought leadership:

OPINION: Of [Robotic] Mice and Men: When Cyborgs Go to War - APDR
asiapacificdefencereporter.com • 4 min read

Hit the biggest guy first: Vulnerability of vehicles in a modern battlezone
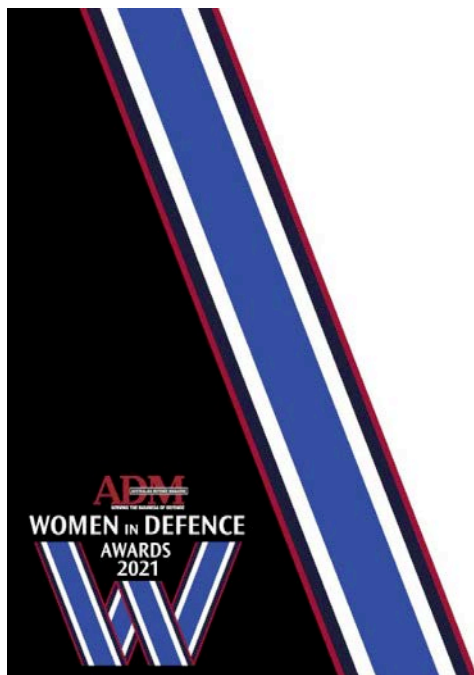defenceconnect.com.au • 4 min read

Op-Ed: AI warfare – Faster, un-emotional and needing microprocessors
defenceconnect.com.au • 3 min read

Hi-tech warfare leaves Australia vulnerable
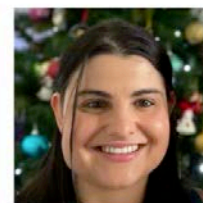theaustralian.com.au • 5 min read

Carla Balanco, DroneShield's CFO and Company Secretary, was recognised as a finalist in the ADM Women in Defence Awards:
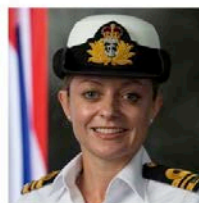

Image: DroneShield CFO Carla Balanco recognised as a finalist in ADM's Women in Defence Awards during the 2Q21 quarter

This announcement has been approved for the release to ASX by the Board.

Further Information

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About DroneShield Limited

DroneShield (ASX:DRO) provides Artificial Intelligence based platforms for protection against advanced threats such as drones and autonomous systems. We offer customers bespoke counterdrone (or counter-UAS) and electronic warfare solutions and off-the-shelf products designed to suit a variety of terrestrial, maritime or airborne platforms. Our customers include military, intelligence community, Government, law enforcement, critical infrastructure, and airports globally.

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