SMART AIRSPACE SECURITY

DRONE DETECTION

FOR CRITICAL INFRASTRUCTURE, DEFENSE & LAW ENFORCEMENT

Jan Peter Schween, VP Sales EMEA

May 14, 2023

Biggest challenge with drones is unauthorized access …

1000+

Drone Incidents worldwide

We have collected thousands of drone-related incidents globally that have been officially published. We know from our customers that the number of unreported incidents is very high.

Drone Incidents Center
www.dedrone.com/incidents

Gatwick's December Drone Closure Cost Airlines $64.5 million
– Fortune

'Drone Swarm' Invaded Palo Verde Nuclear Power Plant twice
– Forbes

Drugs, weapons 'smuggled to prisoners by drone'
- BBC

IS fighters are launching an ever-wider assortment of deadly drones
– Defense one

...and as a result, security must go from 2-D to 3-D

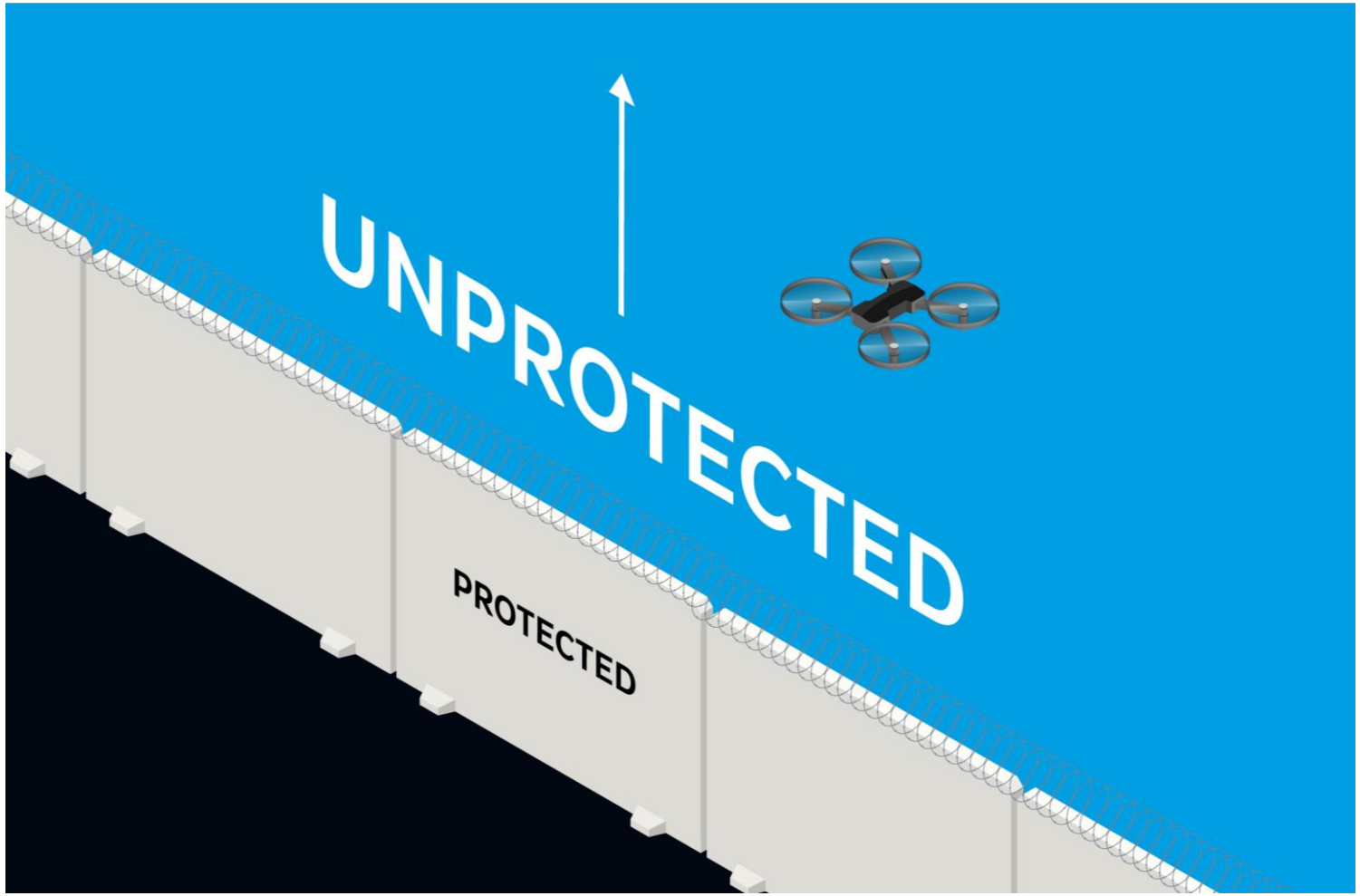
Airspace Security Starts Where the Fence Ends

US fence budget[1] alone is $10B in 2021 and a $500 drone defeats this

– IBIS World Research

Dedrone helps mitigate security risks in a rapidly expanding market

– Security Info Watch



Dedrone Protects with Smart Airspace Security

Our Mission & Vision

We Protect People, Property and Information from Malicious Drones.

And Enable the “Good Drones” to Fly Safely.

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City-Wide Drone Detection

Powered by Aerial Armor

DedroneTracker.AI

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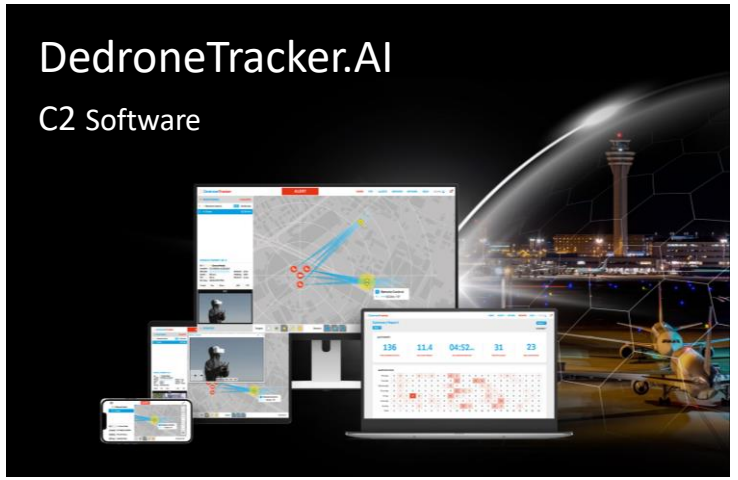


DedroneFixedSite

Layered Solution On Site

DedroneRapidResponse

Mobile Multi-Layered Unit

DedroneTactical

Complete CsUAS Kill-Chain Solution

DedroneDefender

Smart Counter sUAS device

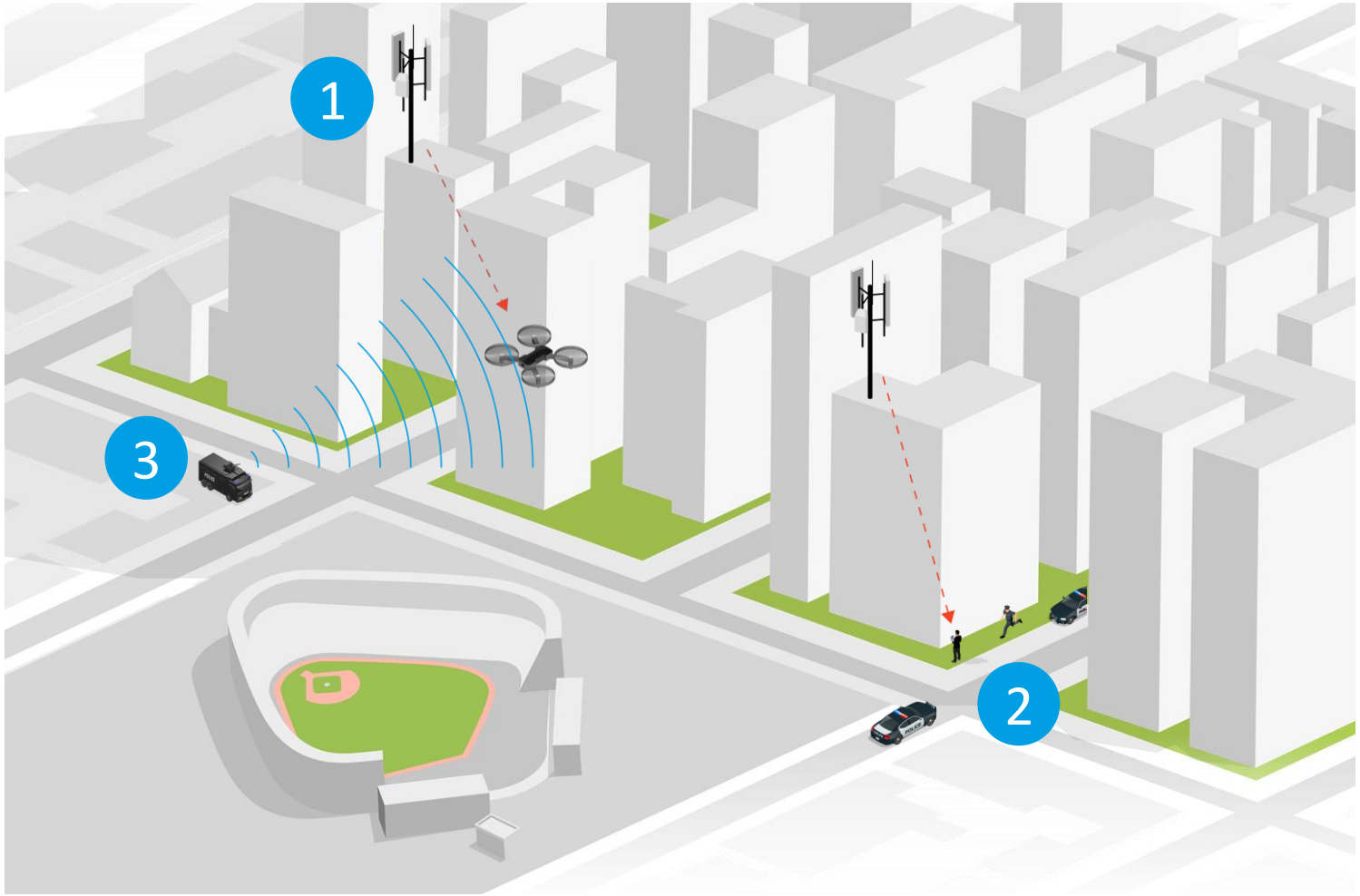
City-Wide Drone Detection

Powered by Aerial Armor

Detect, Track, and Identify Drones and their Pilots through a Service

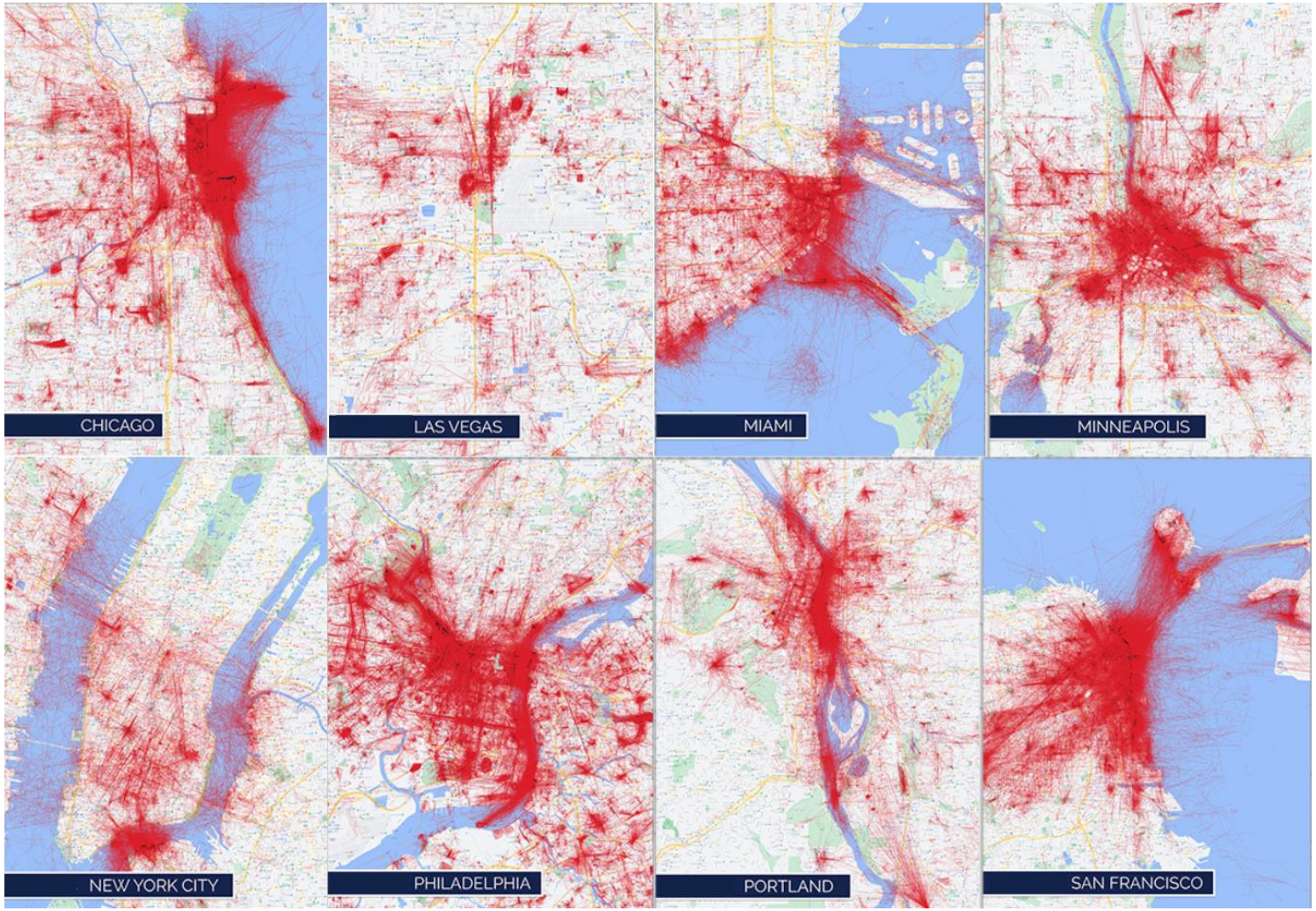
City-Wide Drone Detection
Powered by Aerial Armor

1. Leverage existing sensor network available across city
2. No hardware necessary at your site location
3. Detect, Track, and Identify drones as well as locate pilot location



National Network and Database USA

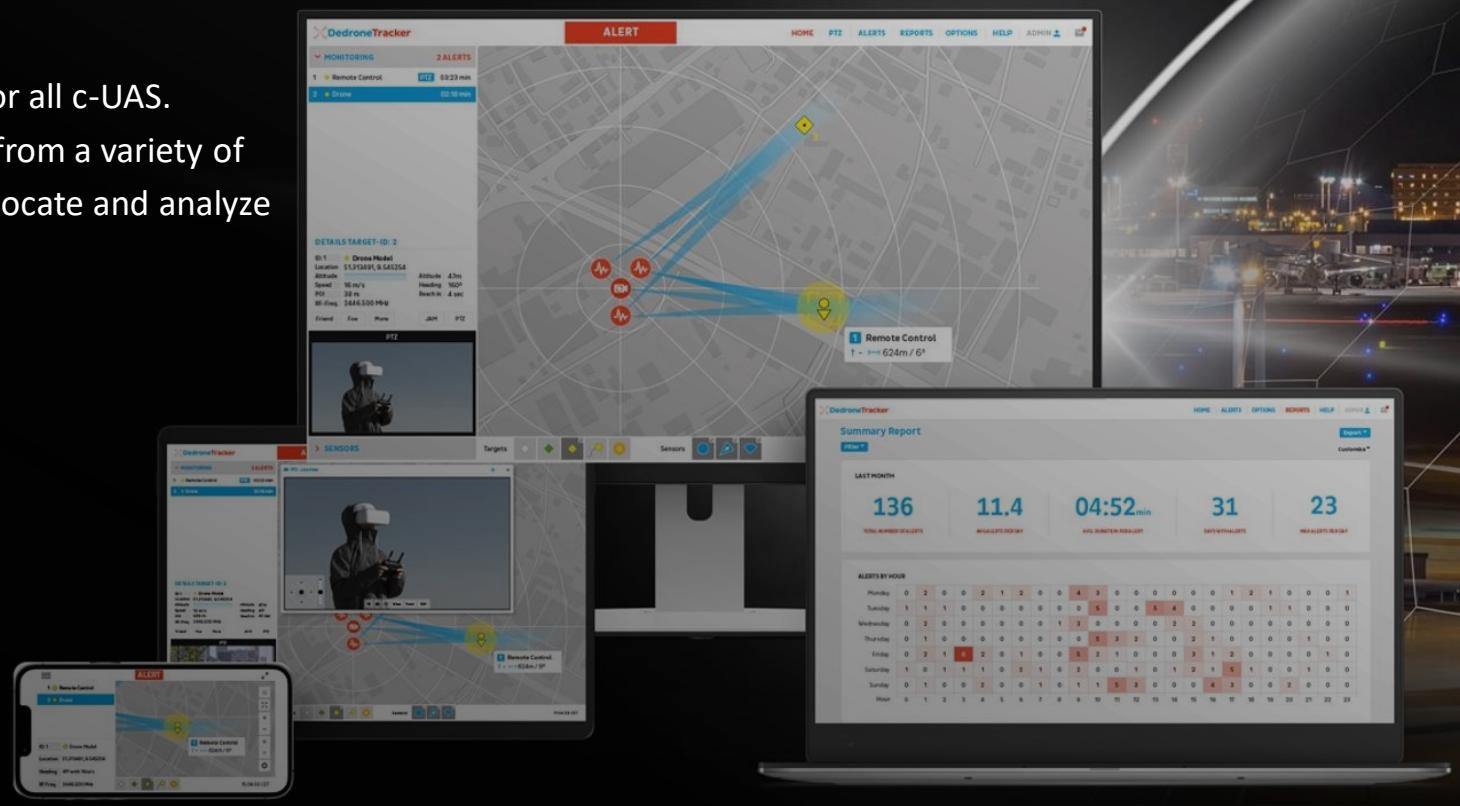
City-Wide Drone Track Samples



Dedrone®

DedroneTracker.AI

Command and Control solution for all c-UAS. DedroneTracker.AI analyzes data from a variety of sensor inputs to detect, identify, locate and analyze drone activity.



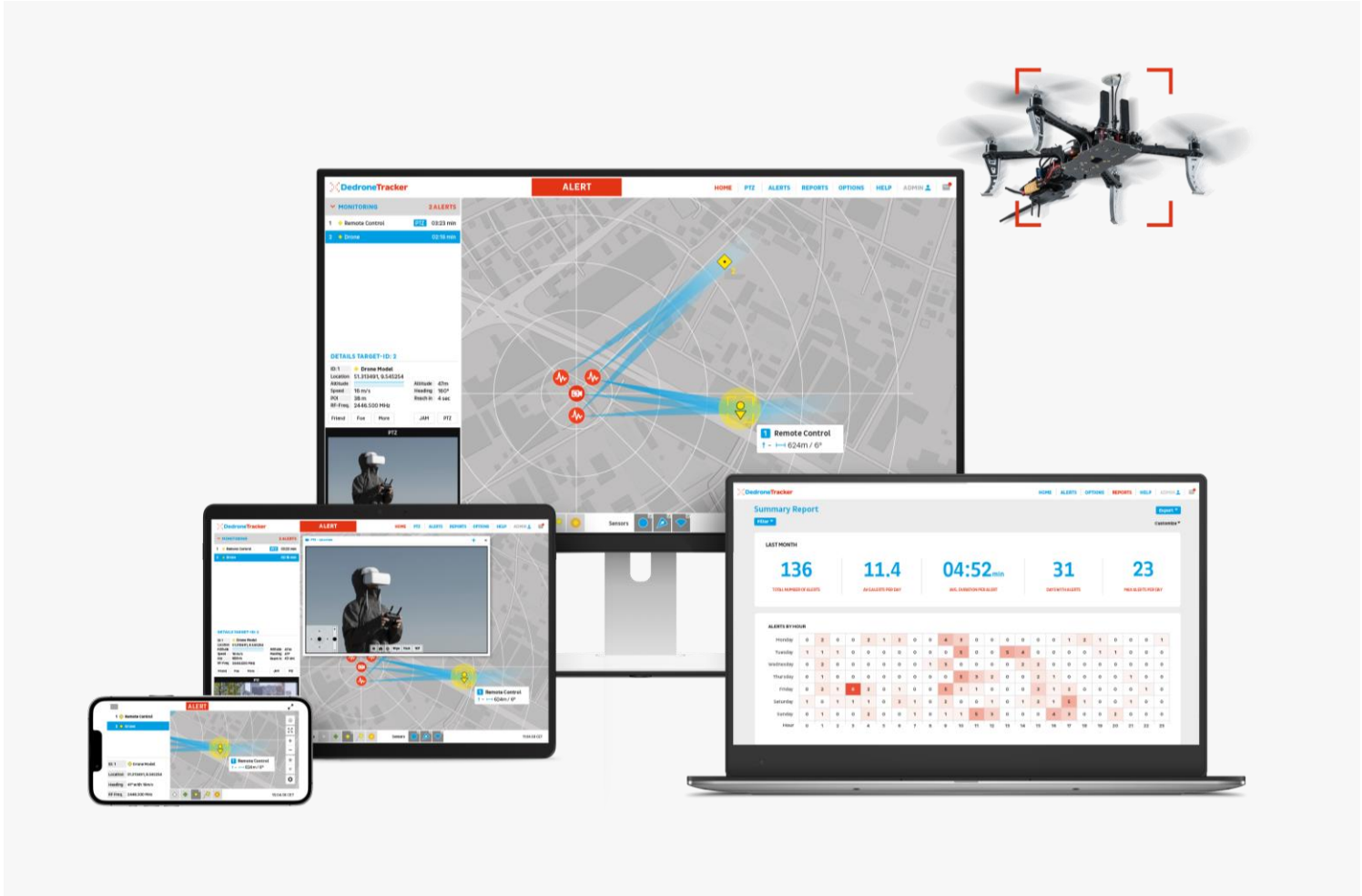
Leading C2 Platform Against Drone Threats in Use at 180+ Sites

DedroneTracker.AI

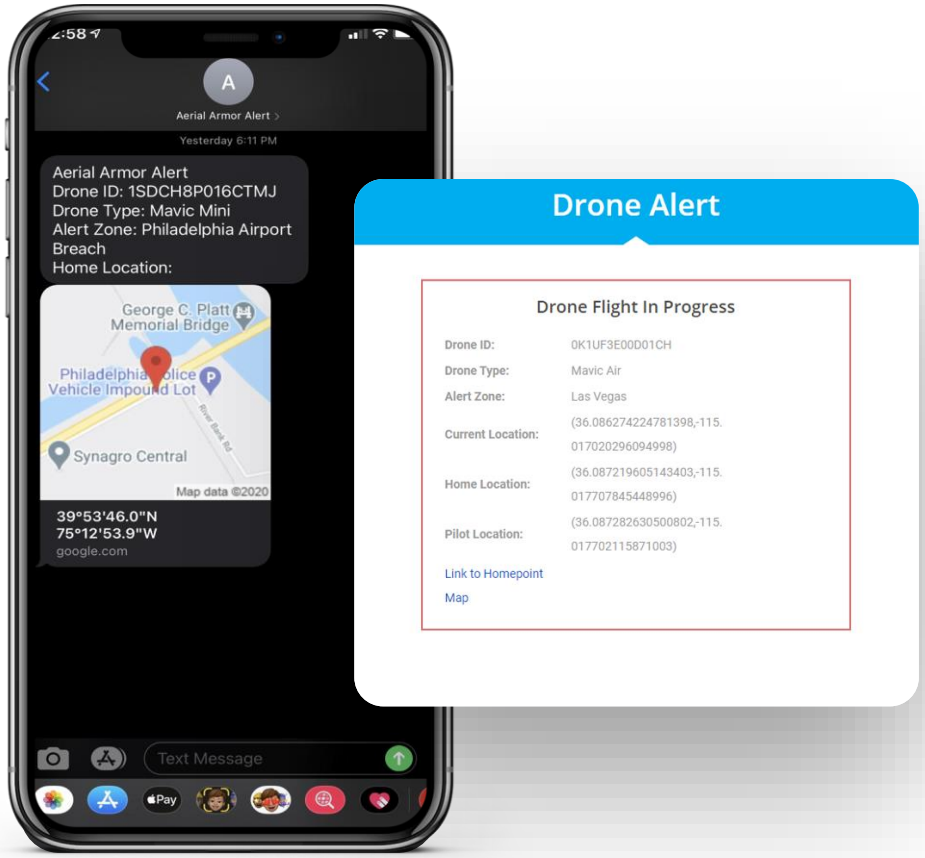
Detect, Track, Identify, Analyze and Mitigate* Drone Threats

- Fully autonomous; no dedicated operator required
- All detections logged and recorded for playback
- Identify 300+ drone types
- Cloud or air-gapped on premises deployment
- Connectivity: Fixed LAN or LTE (Sim)

* where allowed



City-Wide Drone Detection Notification System



Email Notifications

Instant notification to user defined email distribution lists for active drone intrusion information.

Text Alerts

Streamline your dispatch process with instant Text Alerts the moment your alert zone(s) are breached. User will receive notification as well as map link for Pilots GPS location.

Create Custom Email/Text Distribution Lists

Enable one or many to receive alert notifications utilizing our simplistic distribution platform.

Drone Detection App Available on iOS and Android

Download on the App Store

GET IT ON Google Play

Easily Monitor Live Drone Flights

A simple interface allows you to monitor all critical drone data in one screen.

Identify Drone S/N And Flight Data

Gain access to drone data such as model, serial #, Drone & Pilot location and altitude.

Data-Driven Threat Intelligence

Based on 3 years and over 240 million drone detections

Quickly Identify Pilot Location

Instantly reveal the Pilots real time GPS location.

Get Alert Zone Notifications

Get push notifications directly to your phone the moment an Alert Zone has been breached.

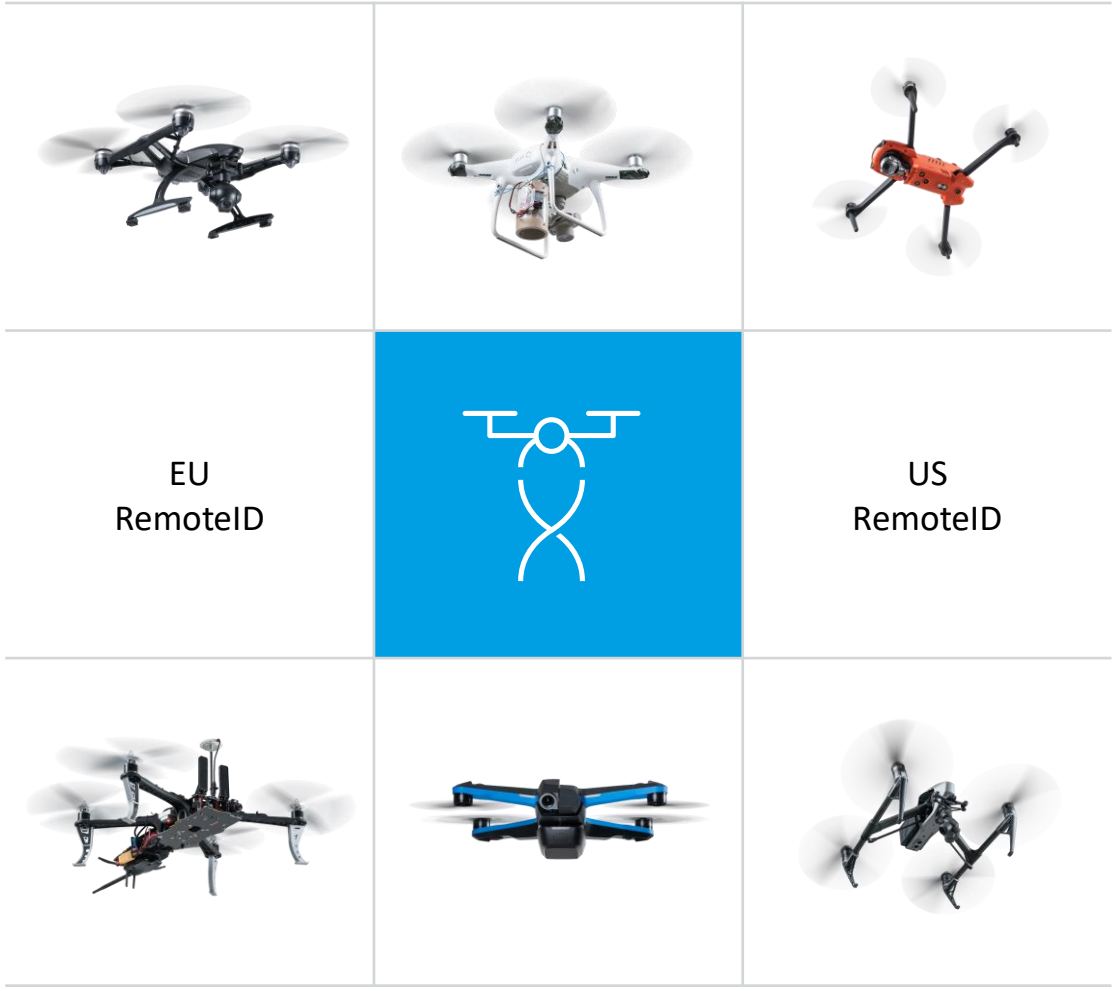
Add Comments To Drones Of interest

Keep track of specific drones or flights and archive critical data through a simple tap and comment feature

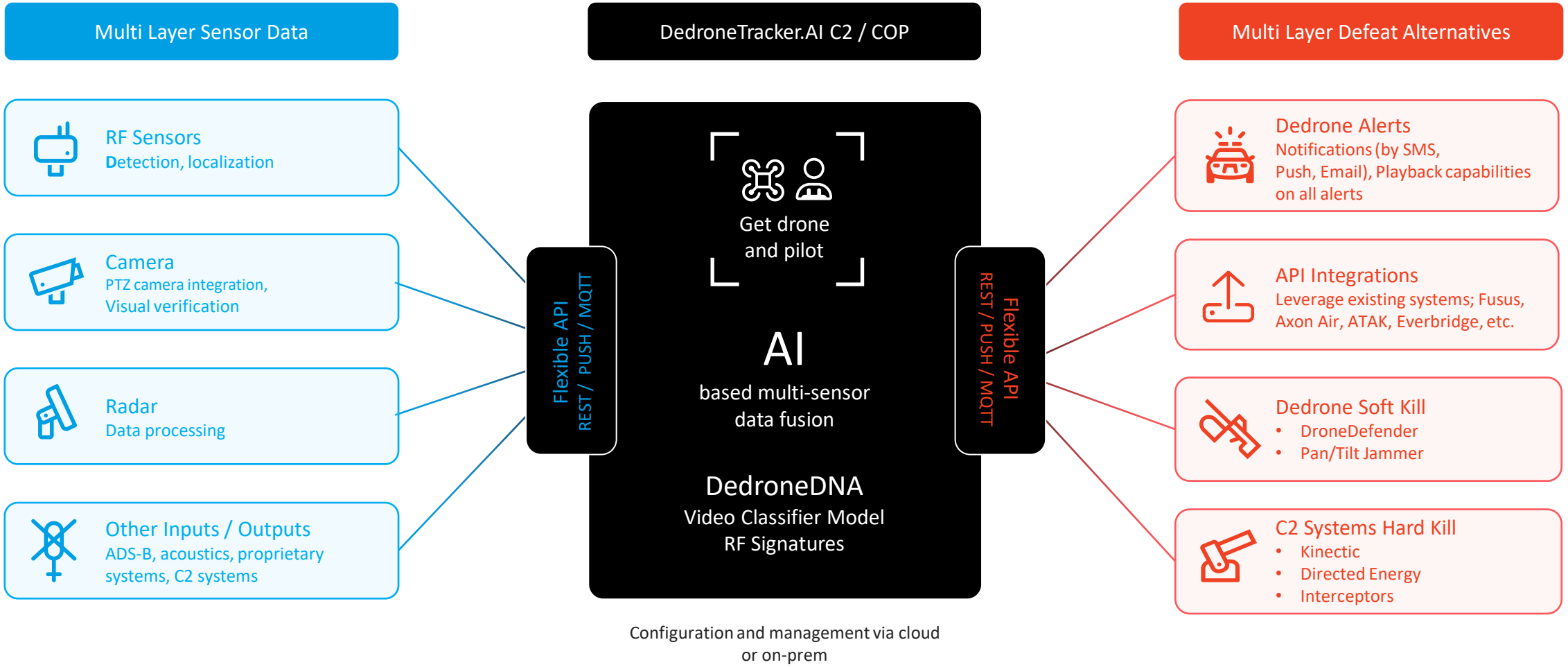
3D precision Detection and Location of Virtually All Drones

- DJI Ocusync (Mavic, Phantom4 Pro v2.0, ...)
- DJI EnhancedWifi (Mavic Mini, Mavic Air, ...)
- Parrot Disco, Bebop, Bebop 2, ...
- Hubsan H501S and others
- Yuneec H520 and similar
- Mavlink/Sikradio
- Drones transmitting Draft ASD-STAN prEN 4709-002 (European RemoteID)
- Drones transmitting Draft ASTM F38.02 (US RemoteID)

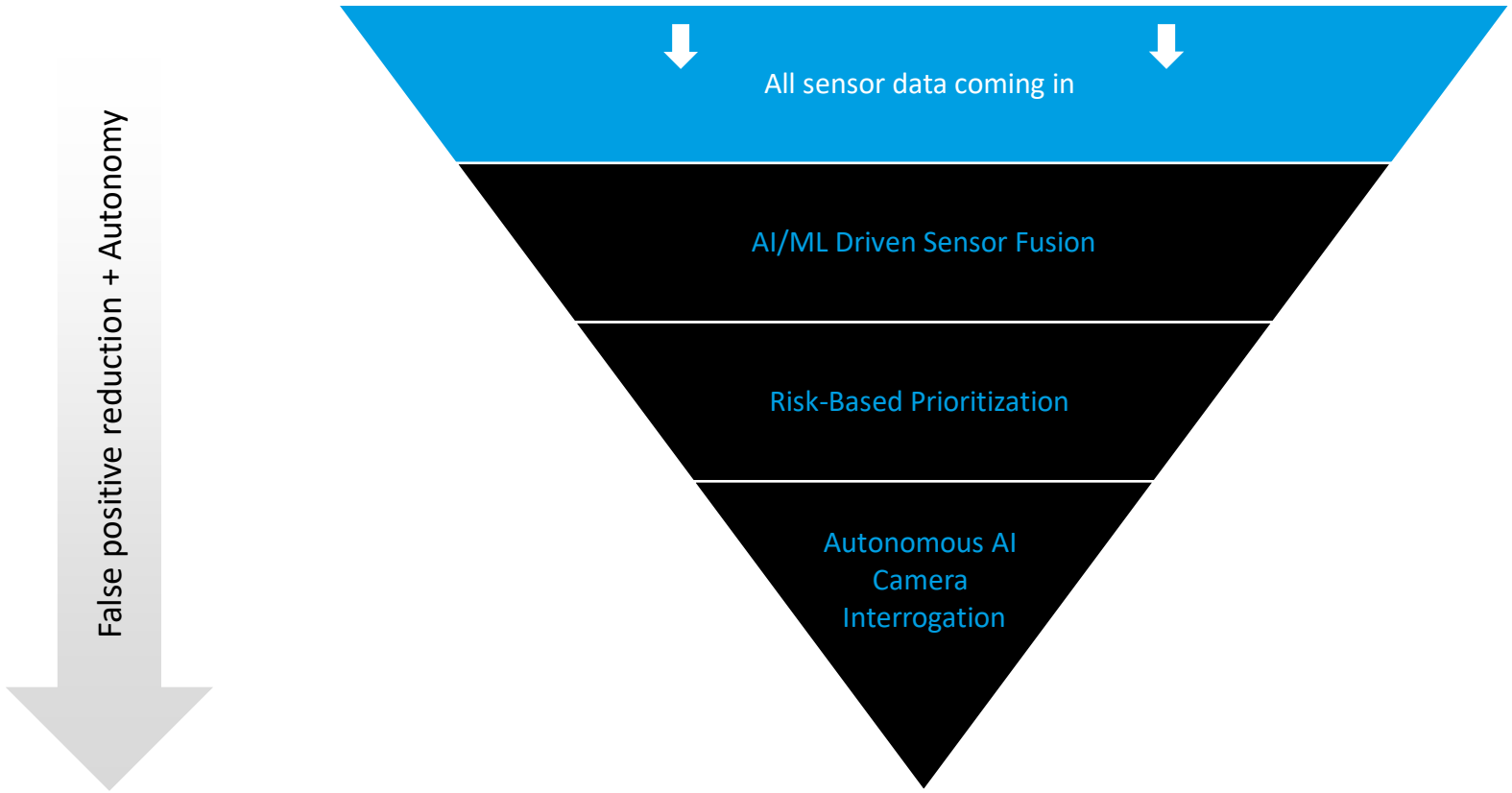
The DedroneDNA library currently identifies nearly 300 different drone models!



Sensor Fusion Software: Enabling “Single Pane of Glass”

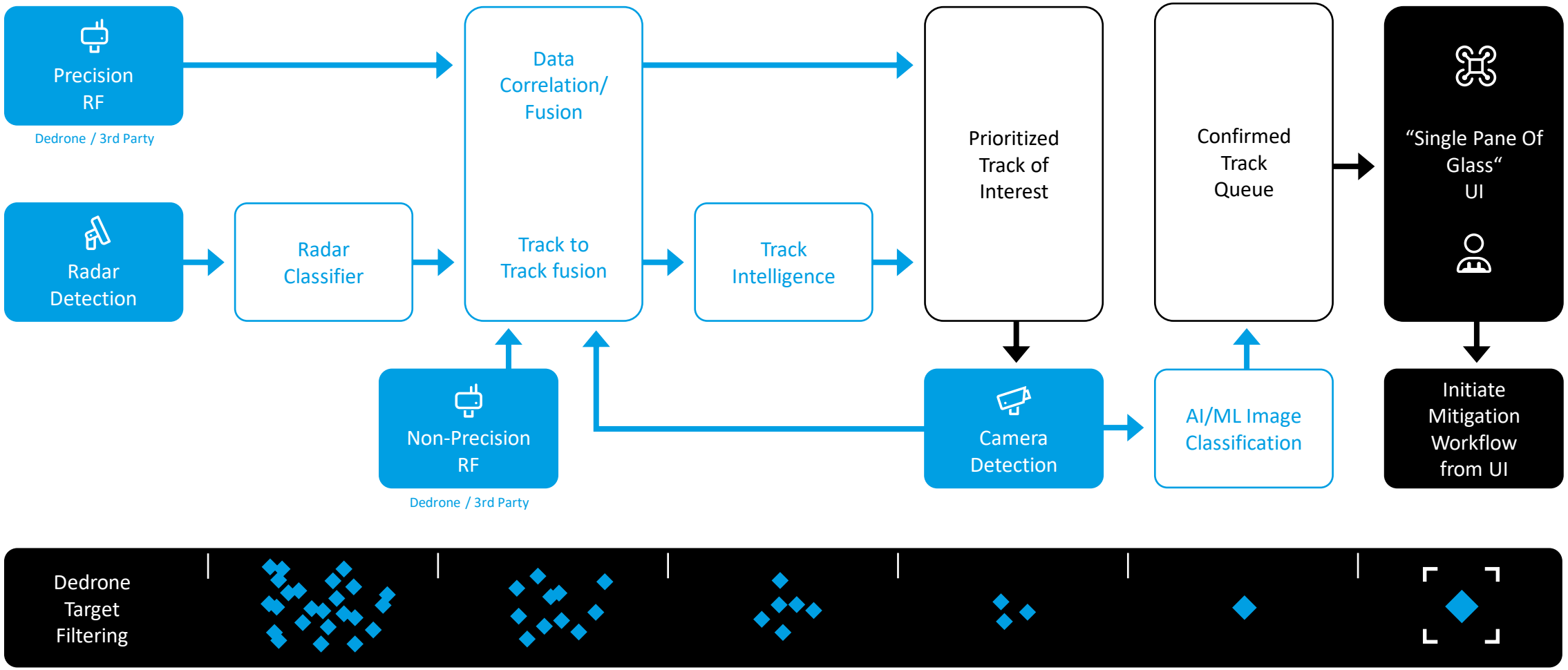


Sensor-Fusion Engine



Autonomous track promotion → UI → Mitigation Workflow

CsUAS C2 AI/ML Software Stack



Dedrone®

DedroneFixedSite

DedroneSensors (RF), radar and PTZ cameras can be combined to secure vulnerable airspace and effectively address their specific threat profile.

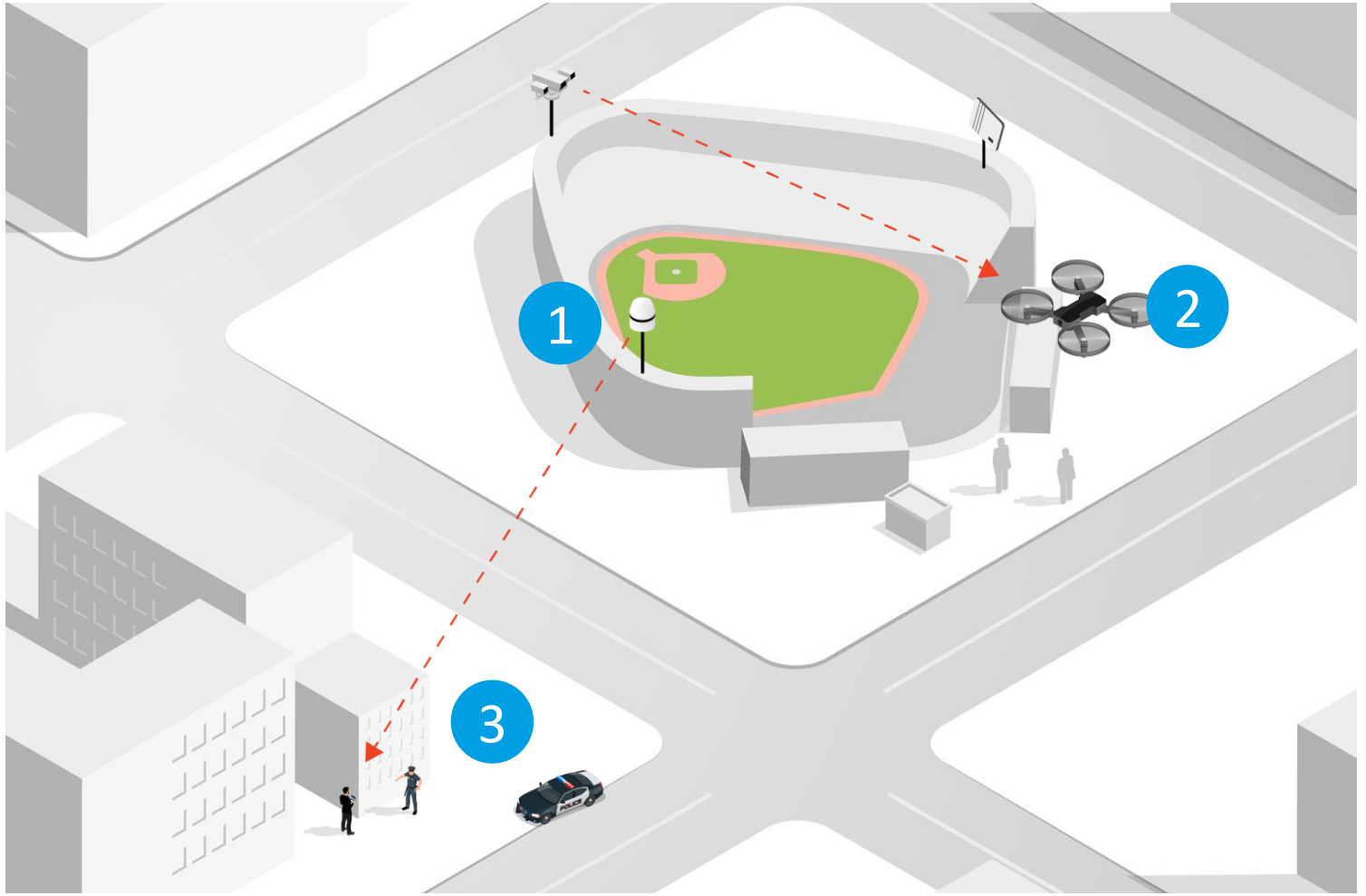
Permanent Multi-Layered Drone Protection on Site

DedroneFixedSite

1 DedroneSensor (RF), PTZ Camera and Radar deployed at Stadium

2 DedroneTracker.AI with integrated multi-sensor–fusion detects drone

3 DedroneTracker.AI provides pilot location, Officers approach pilot & serve notice



Dedrone®

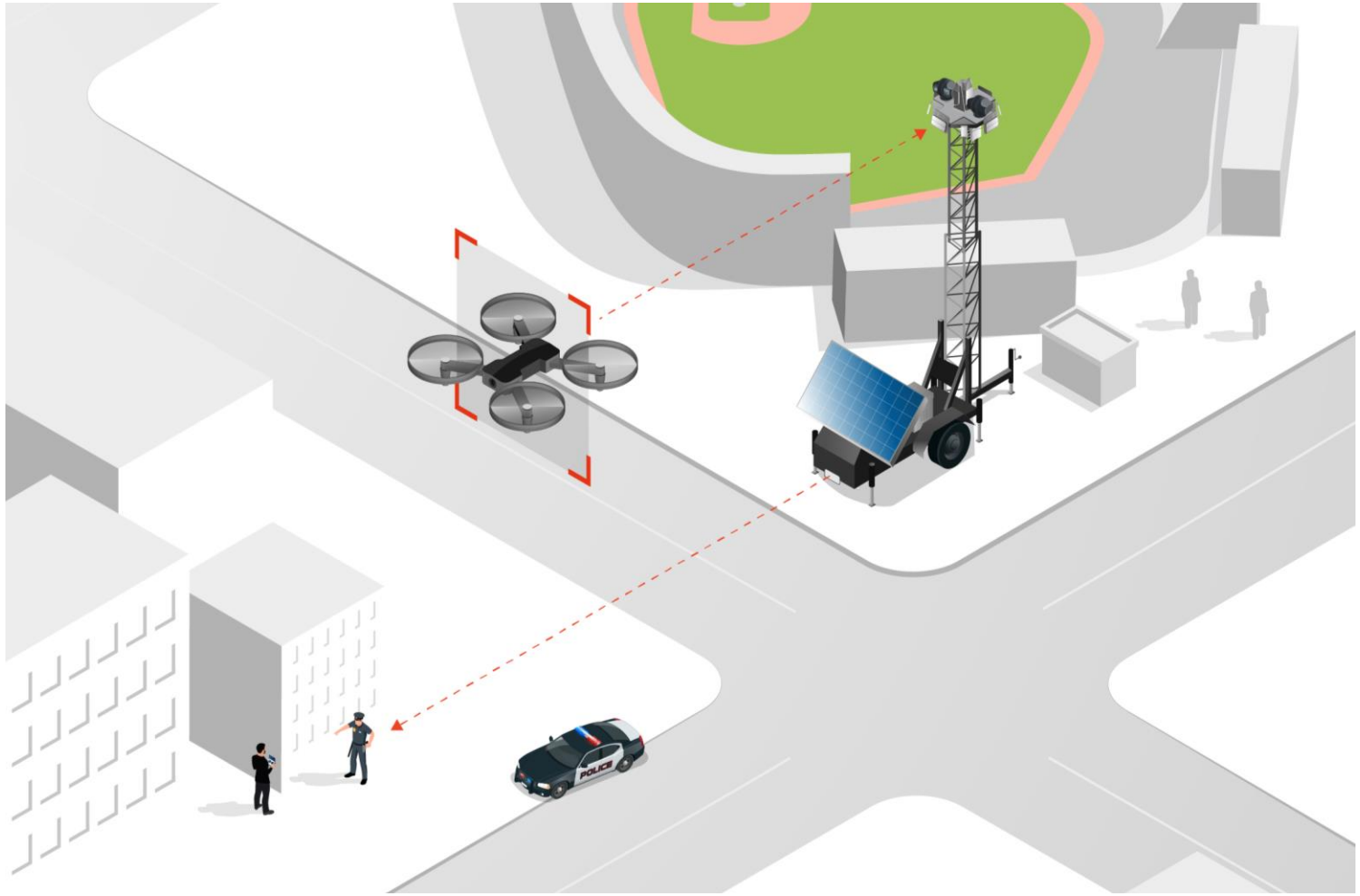
DedroneRapidResponse

Mobile drone detection unit for rapid and targeted use to protect the public from drones.

Mobile Multi-Layered Drone Detection Unit for Rapid Response

DedroneRapidResponse

1. Single Command and Control for all CUAS needs
2. DedroneTracker.AI with integrated multi-sensor–fusion detects, identifies and locates drone
3. DedroneTracker.AI provides pilot location; Officers approach pilot



Dedrone®

DedroneTactical

Complete CsUAS Kill-Chain Solution

Agile CsUAS Expeditionary Kit for any sUAS-based threat profile and location

- **Modular and Scalable**
  Plug-and-play RF detect, radar, camera and defeat
- **Easy Transport and Set-Up**
  Packed in cases; quick and easy toolless set-up and tear-down
- **AI-Driven**
  Autonomous C2 threat prioritization on one screen

Optional: Smart Jammer For Urban Environments

DedroneDefender®

Light-weight smart jammer

- Ultra-portable jammer
- Minimize collateral damage through narrow-band jamming technology
- Handheld of Pan-Tilt version available
- Integrated with DedroneTracker.AI for optimized targeting

Optional Mitigation: Smart Counter sUAS device

DroneDefender®

Strategic End-to-End Detect and Defeat Capability

- Breaks communication link from the pilot to the UAS. UAS enters preprogramed safety mode.
- GPS disruption on a separate trigger can be used if:
  - UAS preprogrammed via GPS waypoints
  - Enters return to home mode and capture is desired
- Effective against drone swarms

Dedrone®

Trusted Worldwide to Deliver Comprehensive Solutions at 500+ Sites

40 Airports	**20+** Non-US Gov'ts	**15+** US Federal Entities	**120+** Public Safety
60+ Stadiums	**190+** Critical Infrastructure	**30** Countries	**5** G7 Nations

CNBC DISRUPTOR 50 2023

VERACODE VERIFIED STANDARD

AI Artificial Intelligence Excellence Award 2023

National Protective Security Authority

ASTORS American Security Today 2022 Platinum Award Winner Homeland Security Awards

cisco Innovation Grand Challenge Finalist

SAPIENT COMPLIANT

WE ONLY LET THE GOOD DRONES IN

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www.dedrone.com

IndyCar: Firestone Grand Prix

City of St Petersburg
POLICE DEPARTMENT

Industry	Attendees	Location
Public Safety	200,000	St. Petersburg, FL, USA

Solution

The IndyCar Firestone Grand Prix is a 100-lap race that includes turns throughout the streets of downtown St. Petersburg and a section of runway at the Albert Whitted Airport.

During the event, Dedrone's technology was displayed directly in the Emergency Operation Center (EOC) at St. Pete's headquarters downtown, with the ability to message alerts direct to officers in the field. Dedrone and the St Pete's PD were able to collaborate on pilot location and enforce the no-fly zone during operations.

Customer Quote

"The Firestone Grand Prix is an international event, equivalent to the Super Bowl or World Series for the St. Petersburg community. It requires a strong police presence to ensure the safety of our citizens and of all participants in the race. Dedrone was the ideal partner to help us provide an 'eye in the sky' and protect against illegal drones in the no-fly zone. We are proud to be the first police department in the US to deploy such sophisticated technology, as part of our larger commitment to ensuring that our entire community remains safe and secure."

Chief Anthony Holloway,
St. Petersburg Police Department

Preakness Stakes 146

PREAKNESS 146

Industry	Attendees	Location
Public Safety	10,000	Baltimore, MD, USA

Solution

The Preakness Stakes is an American Thoroughbred horse race and one of the largest sporting events in the United States.

As a result of the pre-event threat assessment, DedroneTracker.AI provided security personnel with predictive analytics, identifying hotspots and likely positions of unauthorized drone pilots. On multiple occasions before race day, unauthorized drone pilots were detected and located using Dedrone, and enabling security teams to respond to the threat in real-time. By race day, Pimlico Race Course experienced zero drone disruptions, broadcasters were able to film the event without any interruptions, and the 146th Preakness Stakes (G1) was won handily by Rombauer.

Customer Quote

“As the Chief Security Officer for 1/ST, owners of the Preakness Stakes, and as former Chief of Operations for the FBI’s Counter UAS Unit, I knew Dedrone was the ideal airspace security partner to provide detection, analytics and protection for our event. Dedrone allowed our team to focus on executing the safe, stellar race day operations that 1/ST is known for.”

Rob D’Amico,
Chief Security Officer

NASCAR Cup Series

NASCAR

Industry	Attendees	Location
Public Safety	47,000	South Carolina, USA

Solution

Dedrone partners Threat Management Group (TMG) retained Dedrone to protect a NASCAR race, the first major U.S. sporting event after the COVID lockdowns had been lifted.

TMG leveraged Dedrone to identify areas with the highest drone activity, and to locate and halt any unauthorized drone flights.

Dedrone's airspace security solution detected drone take-offs and tracking data, enabling TMG to locate the pilots and ensure a safe, drone-free race day.

Customer Quote

“The White House complex has its own technology to mitigate drone threats, but it was always an issue. When the president or vice president were outside on the grounds, we were very cognizant of drones. It’s your basic domestic terrorist threat, so the technology is really worth its weight in gold.”

Billy Davis, Special Agent In Charge, U.S. Secret Service
Vice Presidential Protective Dicvision

Scottsdale, USA Police / PGA Tour - Phoenix Open

PGA PHOENIX

Industry	Attendees	Location
Public Safety	700,000	Scottsdale, Arizona, USA

Solution

The Phoenix Open is a professional golf tournament on the PGA Tour, held at the Tournament Players Club of Scottsdale, Arizona.

Dedrone partner Aerial Armor oversaw the installation and deployment of Dedrone-Sensors and other passive sensors including cameras. Scottsdale PD kept a live feed of DedroneTracker and provided daily status updates on airspace activity, with hundreds of intruding drones recorded over the 5-day installation. DedroneTracker.AI immediately began tracking activity, with over 20 drones detected within the first day of installation. Scottsdale PD actively monitored airspace activity and was able toprotect PGA athletes, media, and attendees from drone interruptions every day of the event.

Customer Quote

“Every year that we do this, we look for technology that will keep people safe. Technology advances in the private sector, so we have to follow suit. Drones are more prevalent than ever before, they’re easy to obtain, they’re cheap, and they pose risks to people out in sporting events like this.”

Sergeant Austen George,
Scottsdale PD To Fox 10 Scottsdale

Hamilton, CA Police / RBC Canadian Open

Industry	Prize money	Location
Public Safety	$7.600.000	Ontario, CA, USA

Solution

The Canadian Open is a professional golf tournament in Canada. It is co-organized by Golf Canada and the PGA Tour.

The RBC Canadian Open airspace security system deployed four DedroneSensors to detect and classify drones up to one mile away, feeding information into its Dedrone-Tracker software platform. On installation day, Dedrone immediately detected drones in the airspace. Hamilton Police Service was able to deploy resources to confront a drone pilot. The pilot was then educated about the risks of flying in a no-fly zone during tournament play and let off with a warning. This community outreach and education proved effective as there were no additional unauthorized drone flights throughout the four-day event.

Customer Quote

“This partnership enhanced security at the event for all spectators, professional athletes, volunteers, and staff.”

Inspector David Hennick,
Incident Commander, Hamilton Police Service

Graubünden, CH Police / Global Economic Forum

GLOBAL ECONOMIC FORUM

Industry	Attendes	Location
Public Safety	3,000	Davos, Switzerland

Solution

The Global Economic Forum is the International Organization for Public-Private Cooperation.

The Canton police airspace security program began in 2017, and each year since then, security leaders continued to rely on Dedrone's technology to monitor drone activity and protect attendees from airspace threats. The Dedrone system monitored the airspace around the clock and was able to detect and locate any drone and track its flight path. All information about invading drones was transmitted in real-time to the security forces, enabling them to identify and mitigate any threats. The safety and security of all participants were of paramount importance, and the operations and security of the event was a success.

Customer Quote

“With Dedrone, we have found a completely reliable and innovative partner who complements our protective measures in the area of drone defense with their technology.”

Spokesperson, Canton Police of Graubünden, Switzerland

Newcastle International Airport

Solution

Newcastle International Airport is the sixth largest airport in the UK and is run as a Public Private Partnership. During 2019, Newcastle Airport welcomed over 5 million passengers.

Dedrone, a CPNI-approved technology, is installed at multiple UK international airports and provides the tools Newcastle Airport needs to quickly integrate drone detection and threat mitigation into its daily operations. Newcastle Airport now has a clear understanding of drone activity surrounding its airfield including the average flight time, frequent times of the day when drones appear, and information to locate drones. Newcastle Airport now has the visibility to detect drones and therefore build a comprehensive set of response protocols to safeguard its passengers from this emerging threat.

Customer Quote

“Following the Gatwick Airport shutdown in 2018, Newcastle Airport understood that unauthorised drones were an eventuality that we needed to plan for. Dedrone’s success supporting UK international airports, as well as their technology validation from CPNI, made them a natural choice to protect our operations. With Dedrone, Newcastle Airport can be alerted of any impending drone incursions, protect passengers and operations from drone-based disruptions, and continue to be the number one international gateway of choice for travellers to and from North East England.”

Richard Knight, COO

Perth Airport

Solution

Perth Airport is home to the ACS Flight Training, as well as the Scotland's Charity Air Ambulance, delivering front-line care for time-critical emergencies across Scotland.

Critical to Peth Airport's operation is clear airspace that is free of any intruding or unwanted drones, which would disrupt operations and pose a serious risk in the event of a drone collision with light aircraft. Dedrone technology, including the DedroneSensors and the DedroneTracker.AI software was installed at Perth Airport to detect, classify, and locate drones. Automatic alerts were provided to Perth Airport's air traffic controllers, so they could be immediately apprised of any intrusions in their airspace and adjust operations or deploy security staff as needed.

Customer Quote

"After experiencing drone incursions at Perth Airport, we realized we needed to take a proactive approach to understand our local drone activity and ensure a rogue or unwanted drone did not threaten our operations' continuity. Dedrone's airspace security technology provided us awareness of our drone activity. With Dedrone, Perth Airport can detect drone activity, understand our airspace, and protect our flight programs from any harm."

Graeme Frater, ACS Director at Perth Airport

Maine Department of Corrections

STATE OF MAINE
DEPARTMENT OF CORRECTIONS

Industry	Inmates	Location
Correctional Facilities	1,600	Maine, USA

Solution

Maine Department of Corrections (Maine DOC) is responsible for the direction, supervision, guidance, and safety of adult and juvenile correctional facilities throughout the state.

A spokesperson from the Special Operations Group at Maine DOC shares: “Having seen the consequences of drones at correctional facilities in the U.S., Maine Department of Corrections understood that it was only a matter of time before we needed to expand our security system into the airspace.”

By collecting and analyzing this data from DedroneTracker.AI, Maine DOC has been able to advance standard operating procedures when there is a drone in the airspace and reinforce the safety of their facilities and those who live and work there.

Customer Quote

“Instead of waiting for a crisis, we decided to be proactive and begin collecting data of our airspace activity with DedroneTracker.”

Spokesperson, Special Operations Group, Maine DOC

JVA Halle Prison

SACHSEN JVA Halle

Industry	Inmates	Location
Correctional Facilities	650	Halle, Germany

Solution

The German correctional facility JVA Halle accommodates more than 650 prisoners in closed and open custody.

JVA Halle's Dedrone system is built with DedroneSensors to provide detection and early warning of an approaching drone. The DedroneSensors are connected to Dedrone's smart software, DedroneTracker.AI, to provide information about the drone, including classification location and speed data. Early warning and real-time alerting ensure that drones no longer enter the prison's airspace unnoticed. Automatically generated analytics, which include data such as drone manufacturer and model, as well as flight duration and route, can reveal patterns in drone activity and can be considered when building a comprehensive set of response protocols.

Customer Quote

"Dedrone ensures that no drone can enter our correctional facility unnoticed anymore. This capability increases the safety of our employees and inmates."

Michael Klinger, Head of Building Administration at JVA Halle Prison

Consolidated Edison, Inc.

conEdison

Industry	Customers	Location
Energy	10,000,000	New York City, USA

Solution

Consolidated Edison, Inc is one of the largest investor-owned energy companies in the United States, providing all electric, gas, and steam services for New York City and Westchester County, NY.

ConEdison approached Dedrone to create a customized airspace risk assessment. After the threat profile has been completed, ConEdison's security managers make data-driven decisions on whether they need to implement additional counter-drone sensor technology to gain situational awareness and take further action to protect their critical sites. As additional sensors are integrated into the Dedrone platform, built-in predictive analytics help local authorities identify popular takeoff and landing locations to directly approach and apprehend unlawful drone pilots resulting in investigations or prosecution.

Customer Quote

"After years of researching the counter-drone market, ConEdison has identified Dedrone as the market leader and our choice for complete airspace security. The first step in ConEdison's complete airspace security program with Dedrone is to define all drone activity in our area. By using Dedrone's airspace security technology, ConEdison integrates real airspace data into our security processes and responds immediately to any drone activity."

Scott Gross, Security Manager

Korea Power Exchange

KPX 전력거래소
KOREA POWER EXCHANGE

Industry	Companies	Location
Utility	900	Seoul, South Korea

Solution

Korea Power Exchange (KPX) manages South Korea's entire electricity market and power network.

To gain an accurate overview of the nature and extent of drone activity, KPX installed Dedrone's market-leading drone detection technology at its headquarters. In combination with the DedroneSensors, DedroneTracker.AI detects and identifies drones entering restricted airspace. With Dedrone, KPX protects their employees, critical facilities, and intellectual property from drone threats. KPX can now apply information gathered from their Dedrone installation to build a comprehensive set of response protocols to secure South Korea's national power grid from unauthorized or malicious drones.

Customer Quote

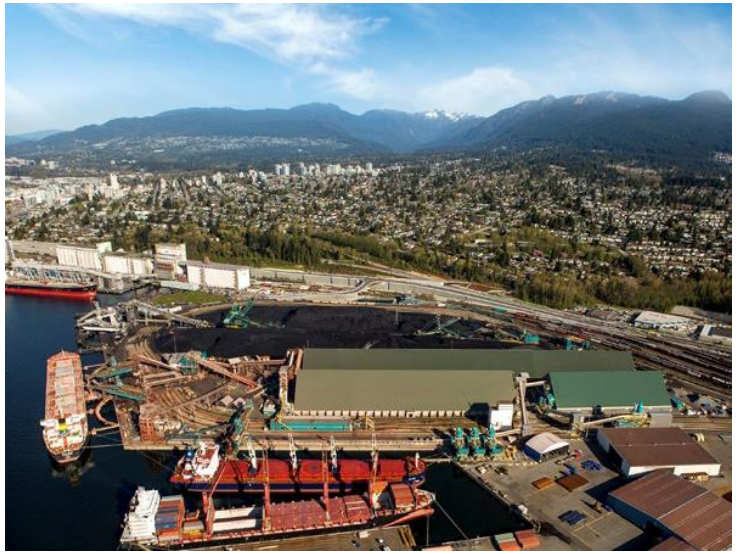
"KPX recognized the potential threat of drones to critical infrastructure early on. With the safety of our people and assets paramount, our safety experts were among the first to look at airspace safety technologies for critical infrastructure. We have been successfully testing the Dedrone system at our headquarters for several years, with the goal of deploying the Dedrone solution at all of our utilities in the medium term."

Choil Young-Il, General Manager at KPX

Neptune Terminals

Neptune TERMINALS

Industry	Employees	Location
Critical Infrastructure	350	Vancouver, CN



Solution

Neptune Terminals plays a crucial role in the global economy as one of the largest distributors of Canadian products to global markets.

With a minimal investment, Neptune Terminals took the first step and installed the DedroneSensor RF-100. Dedrone's plug and play drone detection technology has allowed Neptune Terminals to collect accurate data, quantify unwanted drone activity in their airspace, and better understand their vulnerability to drones. As they collect more data, their vulnerability to drones will continue to reveal itself, allowing them to make data-driven decisions, develop a complete counter-drone technology strategy, expand their current capabilities, and increase safety and security for their employees and operations.

Customer Quote

"Unauthorized drones at Neptune Terminals threaten the safety of our workers, our facilities, and daily operations. With the Dedrone counter-drone system, we can quantify our drone threat and apply DedroneTracker analytics to better understand the vulnerabilities to our lower airspace. We look forward to advancing our airspace security program this year with additional Dedrone technology, and ensuring our operations remain secure from interruptions."

System Specialist, Neptune Terminals

U.S. Department of Defense

U.S. DEPT OF DEFENSE

Industry	Employees	Location
Fed. Gov. and Military	2.8M	USA

Solution

The USDOD is an executive branch department of the federal government charged with coordinating and supervising all agencies and functions of the government directly related to national security and the United States Armed Forces.

After an initial deployment at a single site, military leaders recognized the value of the data and insight on airspace activity and unwanted drones that the Dedrone solution provides. The Dedrone solution has been successfully deployed at a number of military bases across the U.S. As these bases have continued to collect data about unwanted drones in their airspace, they've been able to keep a close eye on their airspace and better prepare themselves to protect against the drone threat.

Customer Quote

"Our partnership is an opportunity to work directly with military installations and inform leaders on how to protect military airspace against rogue drones."

Jörg Lamprecht,
EC, Co-Founder Dedrone

F.E. Warren Air Force Base

F.E. WARREN

Industry	Employees	Location
Military	29,000	Wyoming, USA

Solution

Warren Air Force Base is a strategic missile base which operates and maintains intercontinental ballistic missiles.

Dedrone's DedroneTracker solution is a complete technology platform that collects and aggregates sUAS data and displays it in real-time. DedroneTracker.AI detects, classifies and tracks sUAS, and can be configured to automatically trigger alerts and countermeasures when a sUAS threat is confirmed.

F.E. Warren's solicitation notice justified the need to continue licensing the Dedrone solution. "Without this system, F.E. Warren AFB will not have a reliable sUAS detection capability for specific areas of interest."

Customer Quote

"Without this system, F.E. Warren AFB will not have a reliable sUAS detection capability for specific areas of interest. DedroneTracker is the only system which provides passive RF detection and immediate alerts to the appropriate parties. Loss of this detection capability will adversely affect the installation's ability to defeat possibly hostile sUAS."

F.E. Warren Solicitation Notice