Taking Control of the Drone Threat in Sensitive Environments and Scenarios: Capabilities and Considerations

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D-FEND SOLUTIONS | COUNTERING DRONES

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D-FEND SOLUTIONS

About us:

Leading provider of counter-drone solutions for complex, sensitive and challenging environments and scenarios.

Our Mission:

Provide comprehensive, safe, and scalable solutions for securing sensitive and important assets, critical infrastructures, defense forces and people from the ever-growing threat of rogue drones

Our partners:

AOA THE VOICE OF UK AIRPORTS

DEFENSE INNOVATION UNIT

IAI

RAS CONSULTING & INVESTIGATIONS

Session Speaker: Martin Broomhead

Aerospace Industry Business Development

- Boeing, Thales, QinetiQ
- Now D-Fend Solutions UK GM

Military

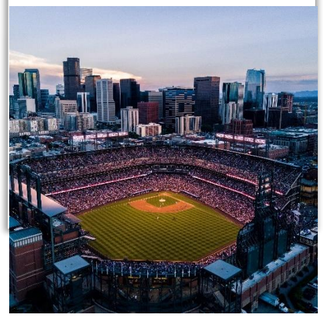
- British Army Air Corps for 25 years.
- Groundcrew Soldier, Helicopter Pilot, Army Officer.
- Germany, Hong Kong, Brunei, Belize, Northern Ireland.
- Awarded the Air Force Cross by HM Queen Elizabeth II

Agenda

- Environment and Threat
- Challenges & Considerations
- Traditional C-UAS Technologies
- Required Capabilities for Safe and Efficient C-UAS

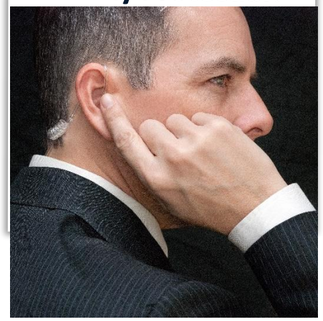
Representative Sensitive Environments and Use Cases

Mega Events



Critical Infrastructure

VIP and Government Facility Protection



Prisons

Airports

Military / Battlefield

Urban Density

Rogue Drone Threat:
Complex Environments and Complex Challenges Require New Capabilities

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Mega Events

Critical Infrastructure

VIP and Government Facility Protection

Rogue Drones Enable Lone Actors to Harm Events, Assets, and Government

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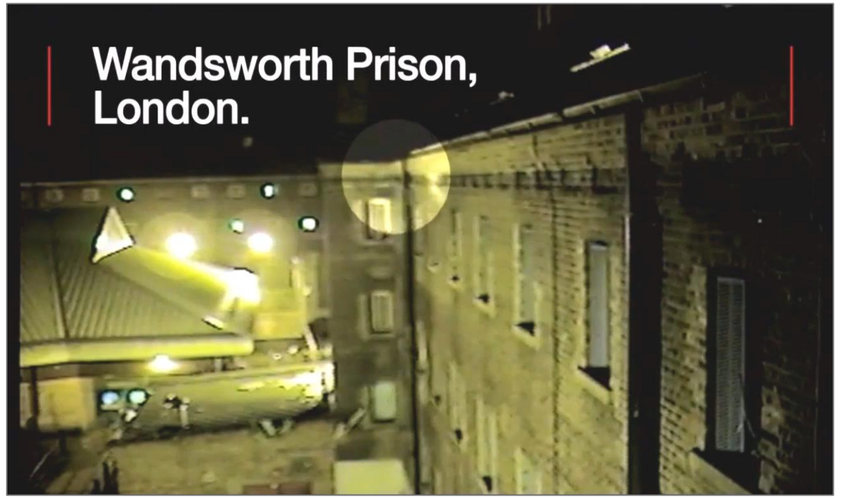
VIP and Government Facility Protection



Prisons

Drone attack in Caracas Venezuela

VIP and Government Facility Protection

Rogue Drones Enable Lone Actors to Harm Government and Disrupt Law and Order

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Airport Use Case

London Gatwick Airport

December 19, 2018

Madrid's Barajas Airport

February 3, 2020

Rogue Drones can cause Massive Disruption and Chaos to Transportation

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Airports: High Risk Factor

Impact damage risk posed by carless users as well as the drone's **lithium-ion battery shattering** and causing a **high-impact explosion**

Videos by drones operated carelessly

Simulation

The drones in these Incidents :

- **Commercial** drones (cost < US$ 1,500)

  …or…

- Do It Yourself (DIY) drones – **built from off-the-shelf commercial parts**

Low Cost Barrier

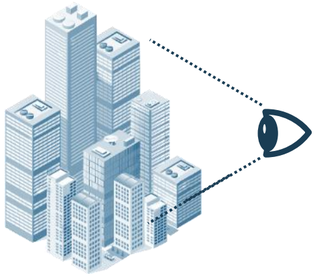
Traditional Counter Drone Solution Challenges

Detection

- Radar
- Optical
- DF
- Acoustic

Flying Objects
False Positives

No Clear Line-of-Sight



Mitigation

- Radio control & GPS jamming
- Kinetic

Signals Disruption

Collateral Damage

Rural Environments ← → **Urban Environments**

Core Capabilities for Sensitive Environments

Detection

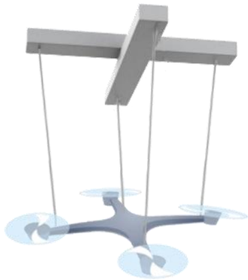
- Radar
- Optical
- DF
- Acoustic

Remote Control <-> Drone Communications

Mitigation

- Radio control & GPS jamming
- Kinetic

Disconnect, Take Over and Control, Safe Route, Safe Landing



Rural Environments ← → **Urban Environments**

Traditional C-UAS Solutions - Kinetic

Can be ineffective and dangerous in dense environments

Traditional C-UAS Solution – Jamming

In addition to Communication Disruption

…also…

Potential for Collateral Damage

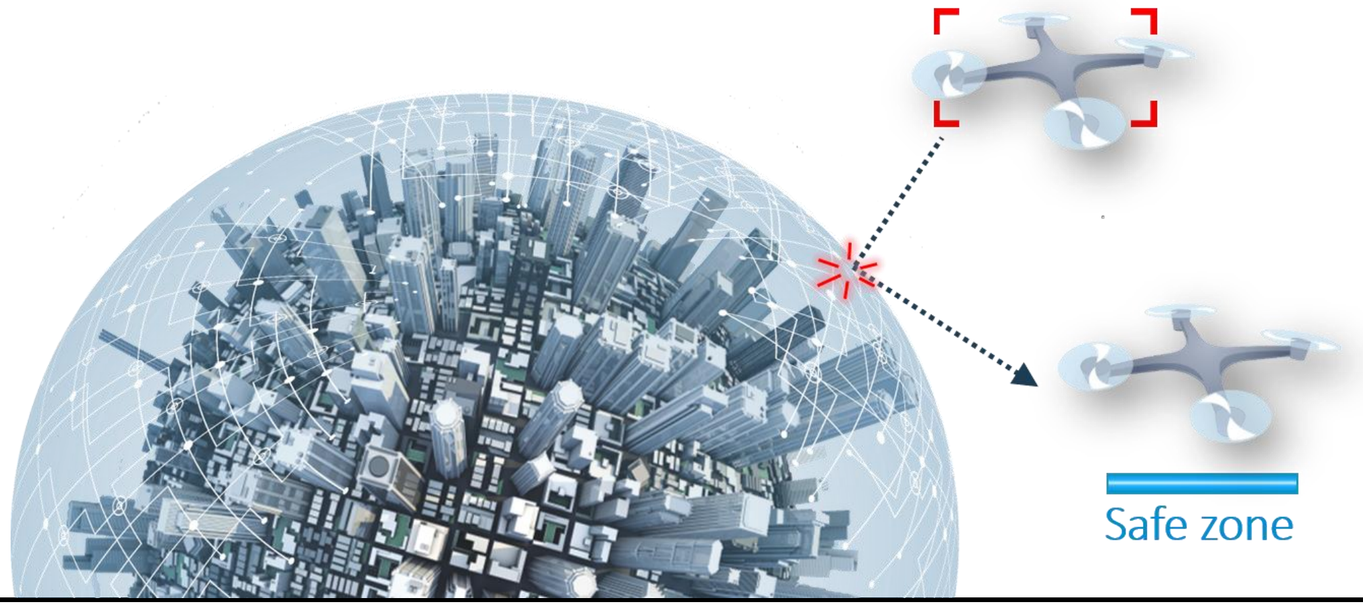
Sensitive Environment Counter Drone System:

Critical Capabilities

- **Autonomous**
- End-to-end - full incident life cycle
- **Take Over** communication link of rogue drones using a low power signal
- Drones land **Autonomously & Safely** at predesignated safe landing point

Dense Environment Requirements:

- Non-Jamming
- Non-Kinetic
- No Need for Line-of-Sight
- Selective



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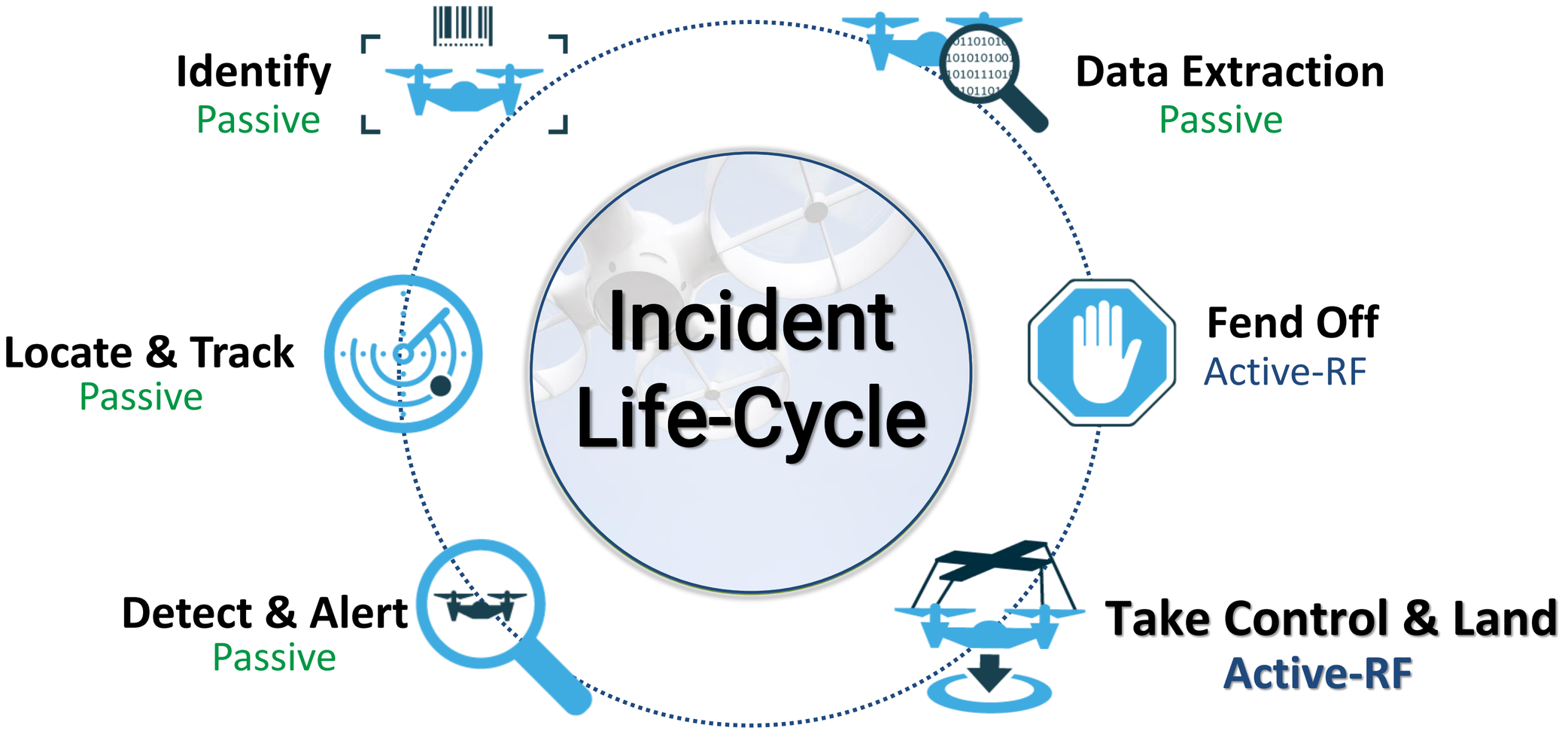
Identify
Passive
Data Extraction
Passive
Incident
Life-Cycle
Locate & Track
Passive
Fend Off
Active-RF
Detect & Alert
Passive
Take Control & Land
Active-RF

ADAPT WITH AGILITY – THREAT CLASSIFICATION AND PRIORITIZATION

High-Endurance Drones (HED), Long-Range Communication

Do It Yourself (DIY) Drones, & Fixed Wings

WiFi - Small, Short-Range Drones

<u>Critical Factors:</u> Rapid Continuous Response Based on:

Drone Installed Base, Drone Market Share, Drone Danger, Drone Risk Level

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Readiness for emerging complex scenarios

Such as Drone Swarming

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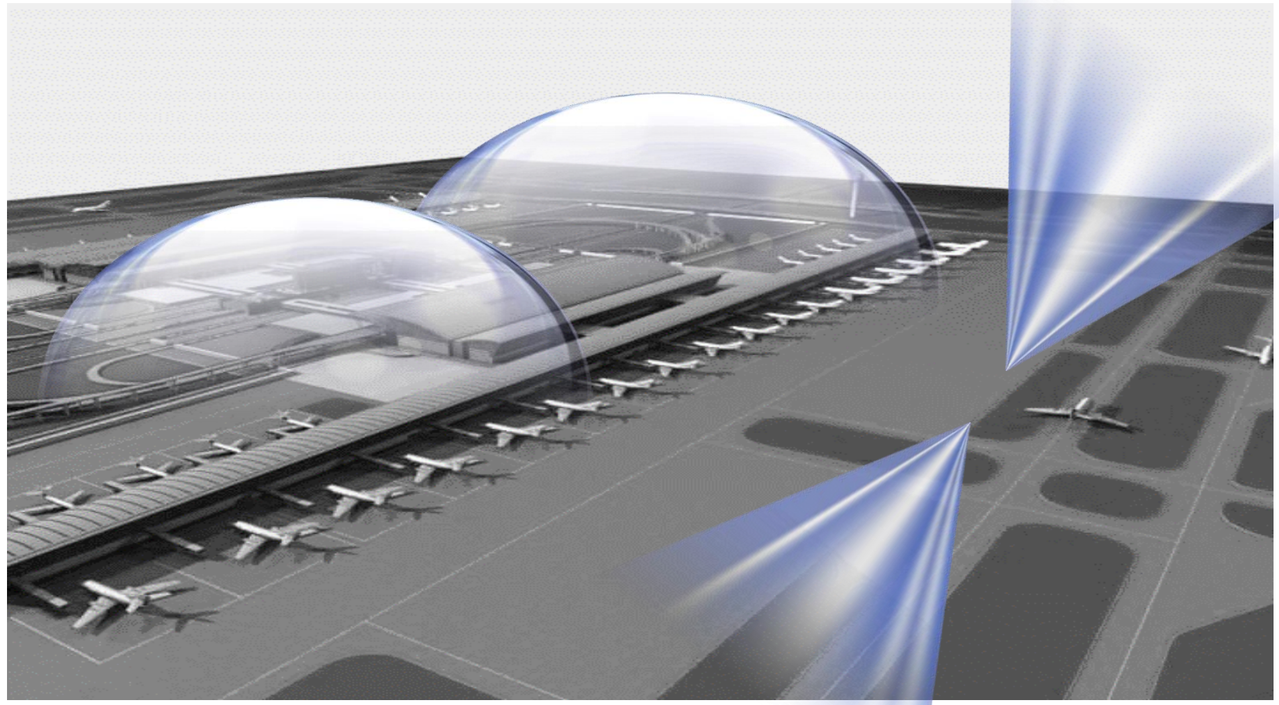
IDENTIFICATION FRIEND OR FOE

Mission Critical Use Case: The Airport



Airport solution challenges:

Protect airport perimeters, ground terminals and runways including approach & departure flight paths

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Flexibility and Form Factor:
Adapt to Use Case and Environment

Deploy for High efficiency in any terrain, climate and altitude, whether mobile or stationary.

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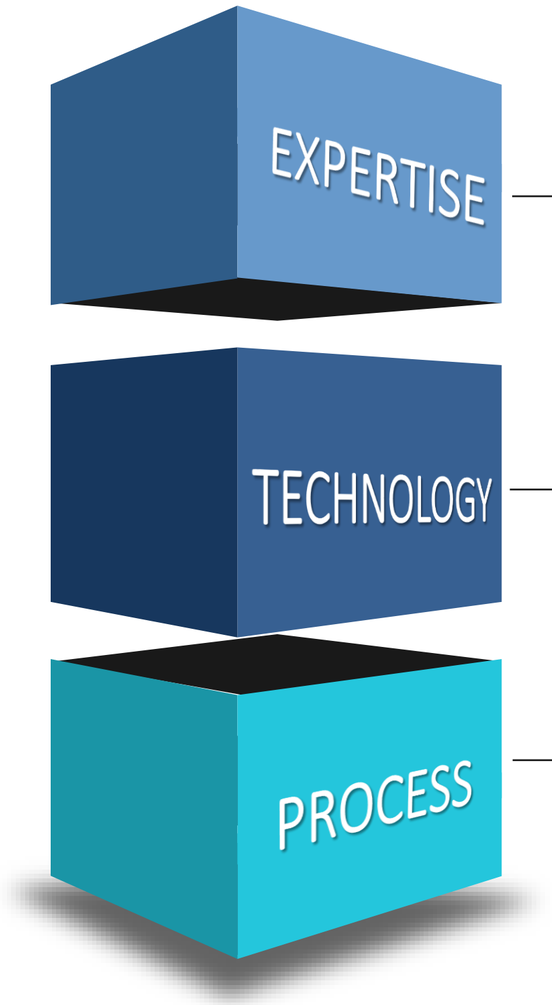
Ongoing Access to Critical Domain Expertise



Choose a Partner, Not Just a Vendor

Advanced skillsets, competencies, and experience core to ongoing c-UAS threat reaction and response

Broad Multiple Domain Technology Infrastructure

Ongoing Updates

Future-proof protocol control

Must have access to sustained drone coverage through timely updates via library of current and emerging drone platforms

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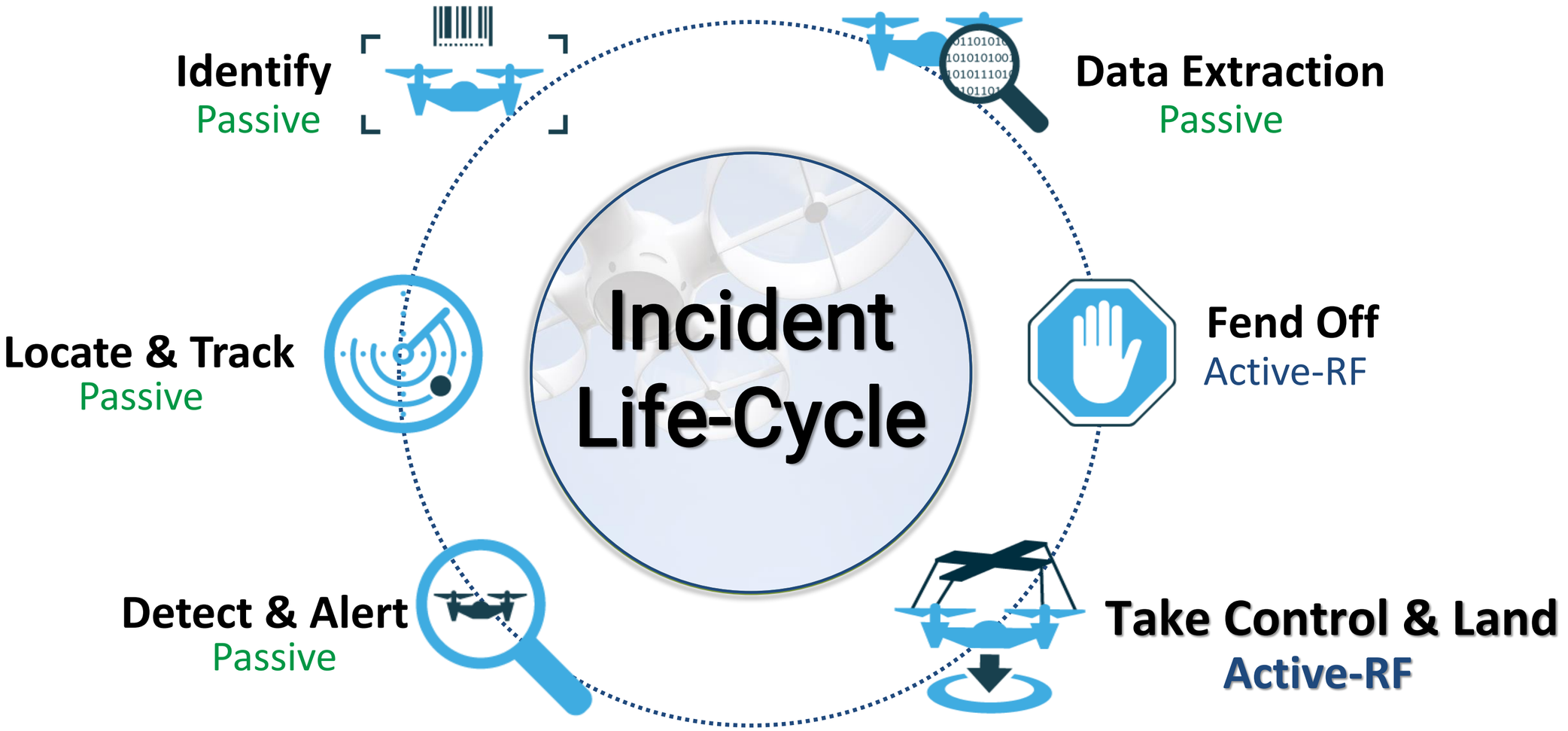
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Thank You!

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