

# REPERION

OPERATIONAL RESILIENCE. SECURED.

## CORPORATE PRESENTATION

July 2023

NEXT GENERATION SECURITY TO PROTECT ASSETS FROM CYBER AND DRONE ATTACKS

## REPERION RESEARCH CONTINUES TO UNCOVER A **DETERIORATING THREAT LANDSCAPE AND BROADENING ATTACK SURFACES**

There is a growing focus on opportunities to attack transportation assets, industrial plants, and critical infrastructure using next-generation —



### **GRAY ZONE METHODS**

that put people, assets, and the environment at risk

## **WHAT IS THE GRAY ZONE?**

---

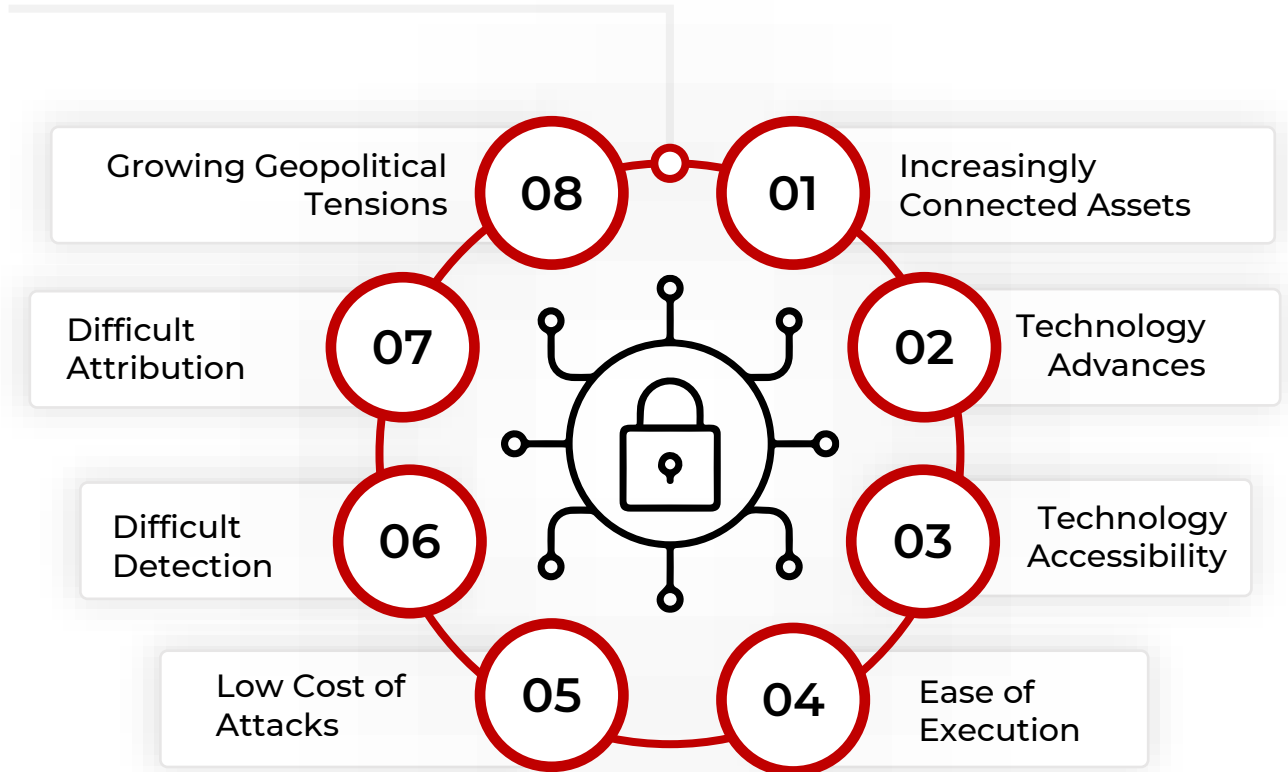
Ever-expanding space between peace and war in which unconventional means are used by state and non-state actors to achieve geopolitical objectives without escalation to armed conflict



## KEY GRAY ZONE ATTACK VECTORS

Cyber and drone attacks have become the most effective next generation attack vectors on transportation assets and critical infrastructure

## KEY DRIVERS



 **Reperion is a next generation security business that protects transportation assets across sea, land, and air from cyber attacks and critical infrastructure from drone attacks**

01

**Protect People, Assets,  
And The Environment  
From Harm**

02

**Protect Companies From  
Financial, Reputational And  
Business Continuity Risks**

# Increasingly Costly, Complex, And Common Problems

THE PROBLEM

One Vessel Grounding  
or Explosion  
+**\$50-800 million**



Vehicle Recall  
+**\$1 billion**  
(\$500/vehicle)



Fleet Grounding  
**\$500k/day**  
(\$20/scooter/day)



Drone Intrusion  
or Attack  
+**\$1 billion**



COLLATERAL RISKS:

**LOSS OF LIFE, ENVIRONMENTAL DISASTER, BRAND VALUE DESTRUCTION, AND  
GEOPOLITICAL TENSIONS**

### SEA

#### State-Sponsored GPS Spoofing

UK-flagged tanker Stena Impero, seized by Iranian forces in July after being spoofed to cause the vessel to shift course into Iranian waters.

*Rivieramm.com, 30<sup>th</sup> August 2019*

#### Coordinated Cyberattack

Six vessels simultaneously lost power and navigational control in the Gulf of Oman.

*Times of Israel, 3<sup>rd</sup> August 2021*

#### The Current Cyber Threat

The next Suez Canal blockage could be the result of a hack.

*Bloomberg, 30<sup>th</sup> March 2021*

### LAND

#### Costly Vehicle Cyberattacks

US\$200 million class action lawsuit settled by Hyundai and Kia to cover losses of over 8 million vehicle thefts using USB chargers.

*Wall Street Journal, 19<sup>th</sup> May 2023*

#### Another Tesla Hack

A Tesla Model 3 was hacked in under 2 minutes...the attack gave hackers deep access into subsystems that control the vehicle's safety...

*InsideEVs.com, 27<sup>th</sup> March 2023*

#### E-Scooter Theft

..each month thieves steal more than 15% of Spin's San Diego [e-scooter] fleet, about 150 of the roughly 900 the company deploys.

*Los Angeles Times, 17<sup>th</sup> April 2023*

### AIR

#### Drone Attack on Vessel

Israel linked Mercer Street oil tanker attacked by an armed drone in the Arabian Sea killing 2 crew members.

*CNN, 2<sup>nd</sup> August 2021*

#### Offshore Infrastructure Drone Intrusion

Norway's Petroleum Safety Authority (PSA)...urged oil companies to be more vigilant over unidentified drones seen flying near Norwegian offshore oil and gas platforms, warning they could pose a risk of accidents or deliberate attacks.

*Reuters, 26<sup>th</sup> September 2022*

#### Drone Attack on Vessel

The drone attack on the...Pacific Zircon...off the coast of Oman appears to be part of the long-running shadow war between Israel and its archenemy Iran that has included the targeting of Israeli-linked ships in strategic Mideast waterways.

*Associated Press, 22<sup>nd</sup> November 2022*

## OPERATIONAL TECHNOLOGY CYBERSECURITY FOR TRANSPORTATION ASSETS

---

More advanced technology than IT or fixed asset  
OT cybersecurity

## COUNTER-DRONE MEASURES AT SCALE

---

Affordable Military Level Counter-Drone  
Capabilities

### SEGMENT COMPETITIVE ADVANTAGE

Integrated solution for mobile  
assets across sea, land and air

01

### SEGMENT COMPETITIVE ADVANTAGE

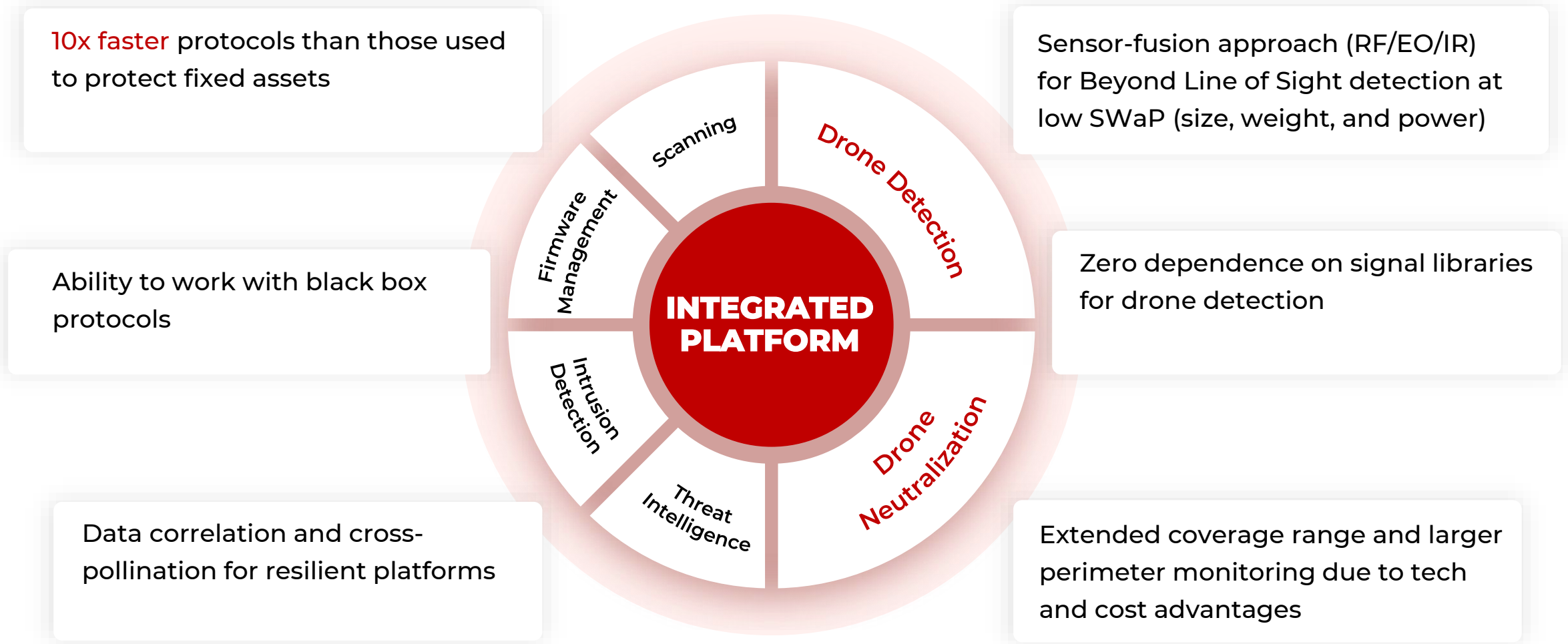
Larger perimeter protection

02

**STRONGER DEFENSES. SIMPLER RISK MANAGEMENT. REDUCED  
VENDOR SPRAWL.**

# Integrated Technology Platform To Simplify Risk Management

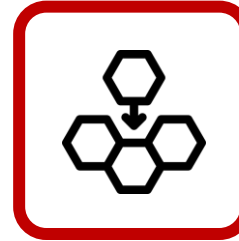
TECH  
PLATFORM





## DIFFERENT ASSETS HAVE DIFFERENT RISK PROFILES

- Asset Type
- Asset Value
- Asset Owner/Brand
- Locational/Regional Political Risk Profile
- Transport Risk Profile  
(people, assets, environment)
- Cargo risk (where applicable)
- Ease of Attack



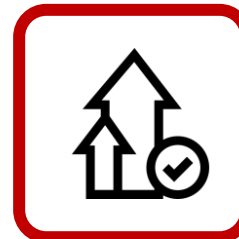
### **MODULAR**

Our products are completely independent of each other but individually accretive to achieving defense in depth



### **RISK-BASED**

Product selection can be configured based on asset risk profile



### **VALUE-DRIVEN**

Range of price points and execution complexity to accommodate different risk profiles, client cyber maturity levels, and regulatory requirements

## PROTECTING MOBILE OPERATING ASSETS AT SEA, ON LAND, OR IN THE AIR, IS THE FRONTIER OF CYBERSECURITY

Reperion is building the most resilient cybersecurity platform for transportation assets by offering niche cybersecurity products across sea, land and air



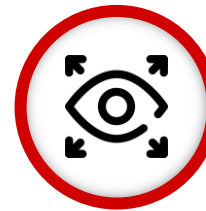
### HACKERS

are opportunists who seek to spend the least amount of money and time to achieve success. They focus on the best opportunities rather than specific industries

**CYBERSECURITY RESILIENCE IS BEST  
ACHIEVED BY BEING AS DIVERSIFIED  
AS HACKERS THEMSELVES ARE**

Our competitors across individual transportation segments are narrow niche players

Narrow niche player focus limits cyber-resilience



**BROADER  
PERSPECTIVE**



**DEEPER  
INSIGHTS**



**STRONGER  
DEFENSES**

Our cutting edge cybersecurity products can be plugged into existing IT or OT cybersecurity platform

### Scanning

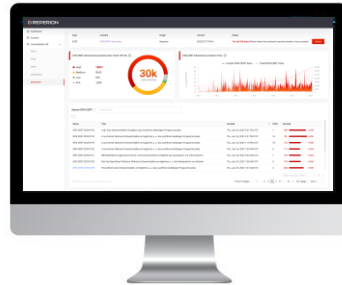


Scanning tools are used to identify vulnerabilities before anomalies are detected

- These tools can be used to uncover network vulnerabilities, to assess cyber-maturity, to detect unauthorized devices, and to assess the cybersecurity of plugged-in devices
- A light touch, high impact method of securing assets

01

### Intrusion Detection

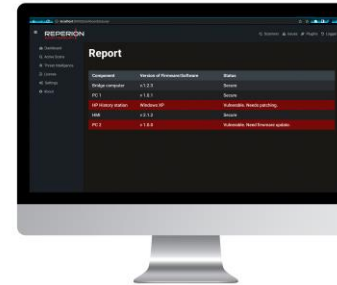


Intrusion Detection Systems are used to identify anomalies in IT/OT network traffic

- Software installed on an asset's existing hardware or a separate IIoT component
- Protect the mobile asset at the key gateway to detect passively any illegal connection to the asset or any anomalous activity on the asset's network

02

### Firmware Management



System to ensure that firmware which controls hardware components is up to date and cybersecure

- Reperion's firmware management systems are industry-specific and customized to asset types
- Reperion is capable of patching without source code without interrupting asset operations

03

### MDR & Intelligence Tools



Security Incident & Event Management to analyze data and respond to incidents

- *SIEM*: Correlating and cross-pollinating event data powers effective Management, Detection, and Response and identifies threats at a Client's Security Operations Center
- Threat Intelligence (maritime): early detection of potential attacks targeting specific locations, specific companies, or specific types of assets

04

# Counter-Drone Capabilities

Counter-Drone companies are typically defense industry players



**Defense Industry Pricing**

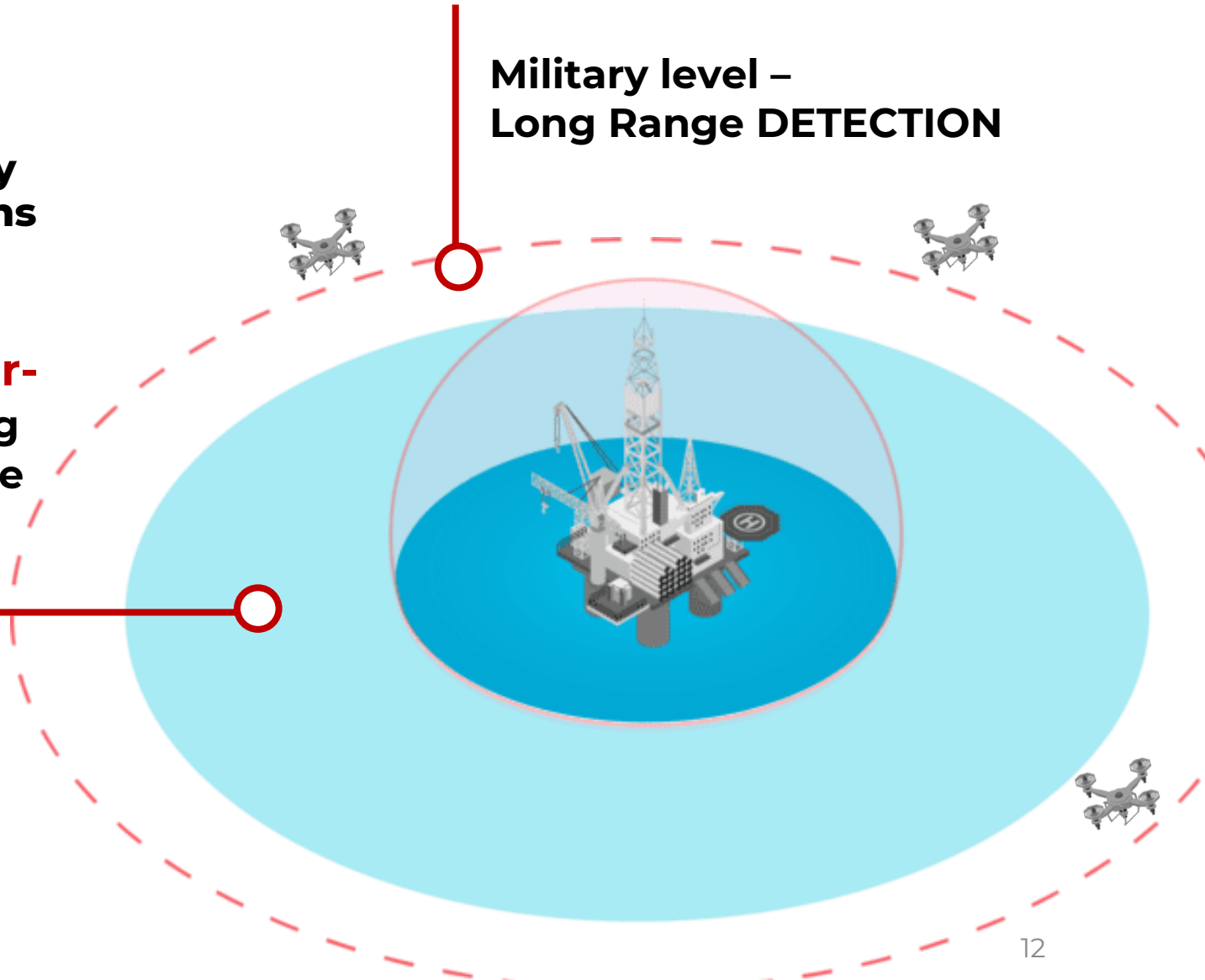


**Regulatory Restrictions**

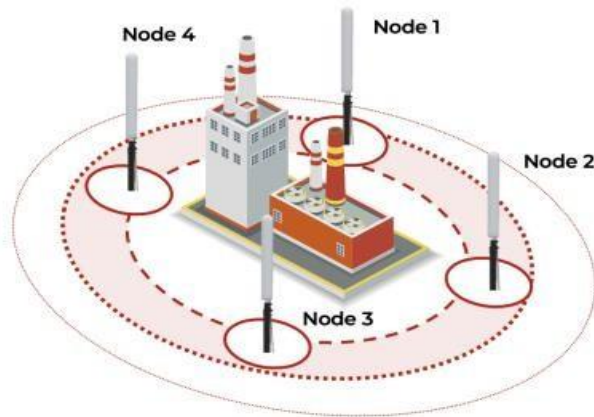
We are solving the problem of **counter-drone protection at scale** by offering affordable **Military Level Counter-Drone Capabilities**

Due to a significant cost advantage over military grade solutions, our military level advanced detection allows mass scale deployment and increases the perimeter of secured airspace

**Military level – Long Range DETECTION**



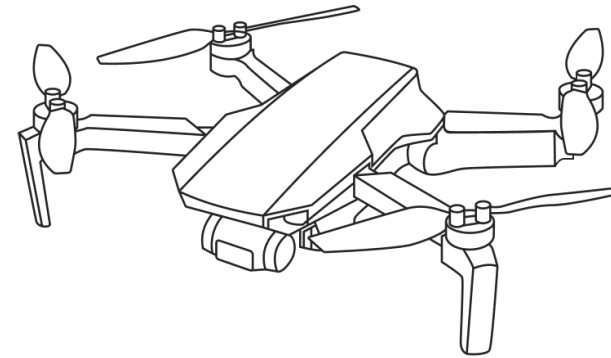
## DRONE DETECTION



### A hardware-software complex

- Detect unauthorized drones in controlled airspace leveraging RF direction finding, electro-optical, infrared, and acoustics technology

## DRONE NEUTRALIZATION



### Drone neutralization service to tackle airborne threats

- Long-range and short-range C-UAS non-destructive neutralization along with directed UAV landing
- Neutralize non connected drone using GPS spoofing and jamming



## Discover Vulnerabilities, Assess Cybersecurity Maturity

### VSAT Scanner

- It's important to strengthen defenses of VSAT infrastructure because ~90% of successful attacks penetrate vessels through satellite communication
- Since VSAT infrastructure vulnerabilities can largely be mitigated by onboard personnel, vulnerability levels indicate cyber-maturity levels
- **Key Advantage:** No specific satcom subscription or hardware required

## Strengthen Safety and Security

### Firmware Management System

- Prevent accidents caused by corrupted firmware installed on critical vessel operating components. Firmware cybersecurity is critical to achieving defense in depth
- **Key Advantage:** Binary firmware patches without access to source code that can eliminate vulnerabilities without affecting vessel operations

## Gain Visibility in IT and OT Networks

### Intrusion Detection System

- Reperion's Intrusion Detection System monitors traffic on IT/OT networks passively to detect and flag anomalies
- Our IDS has a proven capability of working with black box protocols and not interfering with operating systems
- **Key Advantage:** Our system is already certified by Kongsberg Maritime, a leading maritime tech OEM

## Become Proactive with Situational Awareness

### Maritime Threat Intelligence

- Reperion has developed the leading database of maritime signatures, using a maritime specific honeynet system
- **Key Advantage:** Reperion's Maritime Threat Intelligence is the first of its kind



## Crane Protection

- Protect cranes from unauthorized RF communication to block different types of attacks (replay, command injection, e-stop, re-pairing, re-programming)
- **Key Advantage:** Can be combined with drone detection

## Firmware Management System

- Prevent accidents caused by corrupted firmware installed on critical components of port vehicles and cranes. Firmware cybersecurity is critical to achieving defense in depth
- **Key Advantage:** Binary firmware patches without access to source code that can eliminate vulnerabilities without affecting vessel operations

## Intrusion Detection System

- Reperion's intrusion detection system, installed on an asset's hardware such as the key gateway to detect any illegal connection to the asset or any anomalous activity on the vehicle's network
- Our IDS has a proven capability of working with black box protocols and not interfering with operating systems
- **Key Advantage:** Reperion's intrusion detection system was the first (and one of only two) to be approved by Kongsberg Maritime— a global leader in maritime technology

## Improve Port Defense in Depth

- Vessels plugging into a port's wi-fi network whilst moored at the quayside create vulnerabilities for the port
- A port can mitigate its cyber-risk by scanning a vessel before its arrival to assess and mitigate its cyber risk. The port could generate revenue by charging the vessel for the scan
- **Key Advantage:** No specific satcom subscription or hardware required

## Become Proactive with Situational Awareness

- Reperion's Maritime Threat Intelligence tool is an early detection system to identify and assess potential threats in a port's local or regional vicinity
- Our maritime threat intelligence is based on our database of +23,000 signatures and strategically deployed honey nets
- **Key Advantage:** Believe to be the only company offering this product



## VEHICLE USE CASES



- **Firmware Scanner**  
Assembly Line Scanner positions vehicles for a cybersecure start to their useful lives and facilitates compliance with ISO/SAE 21434
- **Aftermarket Cybersecurity Platform**  
Scans the vehicle to ensure that devices plugged into vehicle are approved and certified by the OEM for cybersecure use.
- **IDS**  
To protect assets from hacks across all segments



**SIEM and ANALYTICS SUITE** to power Management Detection and Response from a Security Operations Center (SOC)



**Our products improve the cybersecurity of assets and enable our customers to improve safety outcomes**

## MOTORBIKE AND SCOOTER USE CASES



- **Firmware Scanner**  
Evaluate existing equipment and potential equipment acquisitions before procurement
- **IDS**  
To protect assets from hacks across all segments
- **Road Safety**  
Combine cybersecurity with road safety feature

## REVENUE OPPORTUNITY:

**OEMs generate revenue by charging Accessories Manufacturers to have their products verified and certified on an Aftermarket Cybersecurity Platform**



## OUR PRODUCTS PREVENT AIRBORNE ASSETS FROM BECOMING **TARGETS OR TOOLS OF CYBERATTACKS.**

### HELICOPTER/VTOL USE CASES

---

#### ○ **Firmware Scanner**

to evaluate existing equipment and potential equipment acquisitions before procurement

#### ○ **IDS**

to protect VTOLs and helicopters



**SIEM** and **ANALYTICS SUITE** to power Management Detection and Response from a Security Operations Center (SOC)

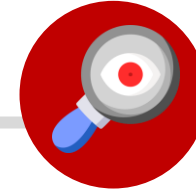
# Drone Detection Applications



Mitigate against corporate espionage and unauthorized surveillance



Mitigate attacks on urban, industrial, and critical infrastructure



Reinforce border patrol and perimeter security in controlled airspaces

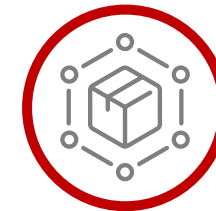
## COLLATERAL RISKS:



**ESPIONAGE:  
LOSS OF IP**



**INFRASTRUCTURE  
ATTACK: INJURY  
AND LOSS OF LIFE**



**SUPPLY CHAIN  
DISRUPTION**



**CIVIC  
DISRUPTION**



**GEOPOLITICAL  
TENSIONS**



## LAND

- 01 Buildings and other Urban Structures
- 02 Industrial Plants
- 03 Critical Infrastructure
- 04 Borders and other Government Controlled Airspace

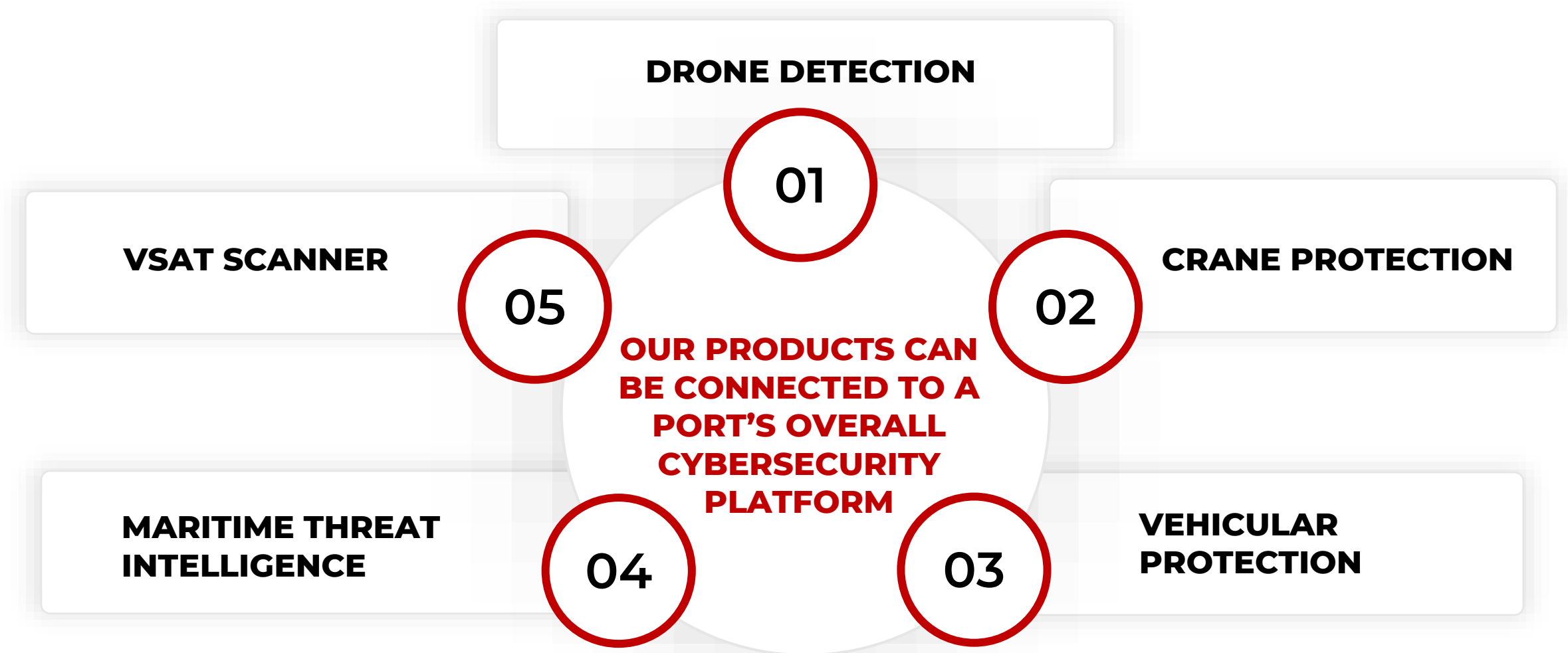


## MARITIME

- 01 Port Infrastructure
- 02 Offshore Infrastructure
- 03 Vessels

# Use Case: Modular Approach to Vessels

VESSEL TYPE	VESSEL TYPE	VESSEL TYPE	VESSEL TYPE
1,800 TEU Containership	Offshore Dive Support Vessel	LNG Vessel	24,000 TEU Containership
CARGO RISK	CARGO RISK	CARGO RISK	CARGO RISK
LOW	NOT APPLICABLE	HIGH	MEDIUM
TRADING PATTERN RISK	TRADING PATTERN RISK	TRADING PATTERN RISK	TRADING PATTERN RISK
LOW	HIGH	HIGH	HIGH
SUGGESTED SECURITY	SUGGESTED SECURITY	SUGGESTED SECURITY	SUGGESTED SECURITY
VSAT Scanner	VSAT Scanner Intrusion Detection Counter-drone measures (depending on location)	VSAT Scanner Intrusion Detection Drone Detection & Neutralization	VSAT Scanner Intrusion Detection Drone Detection & Neutralization



**OUR INTEGRATED APPROACH ENABLES DEFENSE IN DEPTH FOR CUTTING EDGE RISK WITH SIMPLIFIED RISK MANAGEMENT AND REDUCED VENDOR SPRAWL**

# Use Case: Securing the Oil & Gas Value Chain

INDUSTRY  
USE CASES



## Offshore Oil Platform

- Intrusion Detection
- Drone Detection
- Drone Neutralization



## Offshore Vessel

- VSAT Scanner
- Intrusion Detection



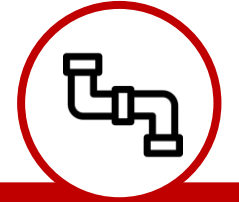
## Tanker

- VSAT Scanner
- Intrusion Detection
- Drone Detection
- Drone Neutralization



## Refinery

- Drone Detection
- Drone Neutralization
- White listed drones vs Intruder drones

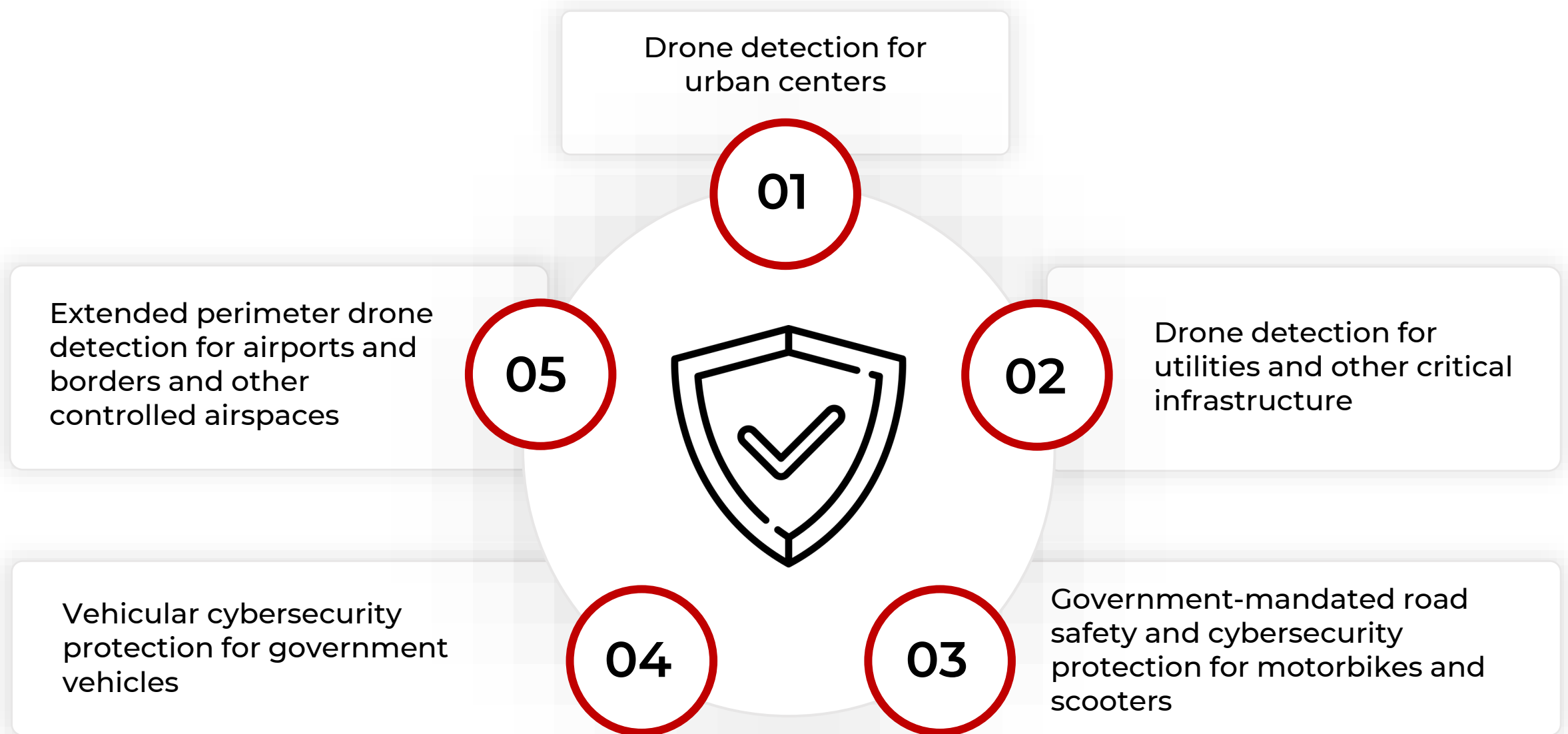


## Pipeline

- Drone Detection
- Drone Neutralization

**OUR INTEGRATED APPROACH ENABLES DEFENSE IN DEPTH FOR CUTTING EDGE RISK WITH SIMPLIFIED RISK MANAGEMENT AND REDUCED VENDOR SPRAWL**

# Use Case: Integrated Approach to Government



### COMPANY BACKGROUND

Reperion is a Singapore-headquartered next generation security business that protects transportation assets from cyberattacks across sea, land, and air as well as critical infrastructure and controlled airspaces from drone attacks

Reperion's tech leadership team holds relevant positions at University of Bristol and Carnegie Mellon University; we are at various stages of collaboration with:



### CYBERSECURITY AWARDS



Midnight Sun CTF 2020  
Quals (1st place)



1st place at Midnight  
Sun CTF Quals 2018



1st place at Midnight  
Sun CTF Finals 2018



1st place at CTFZone  
2017



1st place at CTFZone  
2017 Finals



1st place at CTFZone  
2018 Quals



1st place at OpenCTF  
2016



1st place at Meepwn  
CTF Quals 2018



1st place at OCTF 2016  
Finals



1st place at OCTF  
2017



1st place at Insomnihack  
2019



1st place at Real World  
CTF 2018 Finals



1st place at WhiteHat  
Grand Prix 2018 - Final  
Round



1st place at TUM CTF  
2016



## Key Management Team



**Andrew W. Sallay**  
CEO & CO-FOUNDER

Entrepreneur with finance background. Founded and headed companies and projects across B2B Enterprise services and industrials. Raised in excess of US\$20 million for startups and ventures. MBA from University of Chicago. BA from Swarthmore College



**Dr. Dmitry Mikhaylov**  
CSO & CO-FOUNDER

Cybersecurity thought leader and academic. Co/authored 10 books and obtained 15 patents in cybersecurity. United Nations Expert. PhD in Cybersecurity from National Research University MEPhI. MBA from University of Warwick. Most recently, Visiting Associate Professor at National University of Singapore (NUS Enterprise)



**Kushagra Dixit**  
HEAD OF TECHNOLOGY  
& PRODUCTS

Top cryptography researcher in the UK and part of the University of Bristol's world-renowned Cryptography Research Group in England. Visiting Researcher at Carnegie-Mellon University. Leading our drone segment because of his defense background

The team comprises 15 FTEs including a VP with an automotive background, a Head of Research, and a development resource base in India

## Key Advisory Board Members

Head of Cybersecurity Business

**LEADING AMERICAN BIG DATA  
ANALYTICS COMPANY**

Digital Forensics and Incident Response Expert with cyber experience in finance and big data industries. Track record of sales to corporates and governments. Extensive network in Middle East and Europe

Head of Strategy & Tech

**LEADING CYBERSECURITY THREAT  
INTELLIGENCE COMPANY**

20 years of cybersecurity experience in strategy and implementation roles; deep experience in product development and customer. Tenures at BHP, Deloitte and Accenture

Stephane Degenne, Head of  
Origination and Structured Trade

**GUNVOR**

De facto CEO of Gunvor, 4<sup>th</sup> largest global commodities trader. 29 years in Oil & Gas trading including tenures at Total, Elf, and Addax. Extensive top level O&G network in Middle East, Europe, Africa, and Asia