



# How Resilient PNT is Transforming Mobile Military Missions

**Jean-Yves Courtois**  
Orolia  
Chief Executive Officer  
[jyc@orolia.com](mailto:jyc@orolia.com)  
+1 240.495.4787

The Global Leader in Resilient PNT

Providing the world's most critical applications real-time, accurate, reliable positioning, navigation, and timing data.

Safety, Security and Reliability



**DSEI Exhibition**

*September 10, 2019*



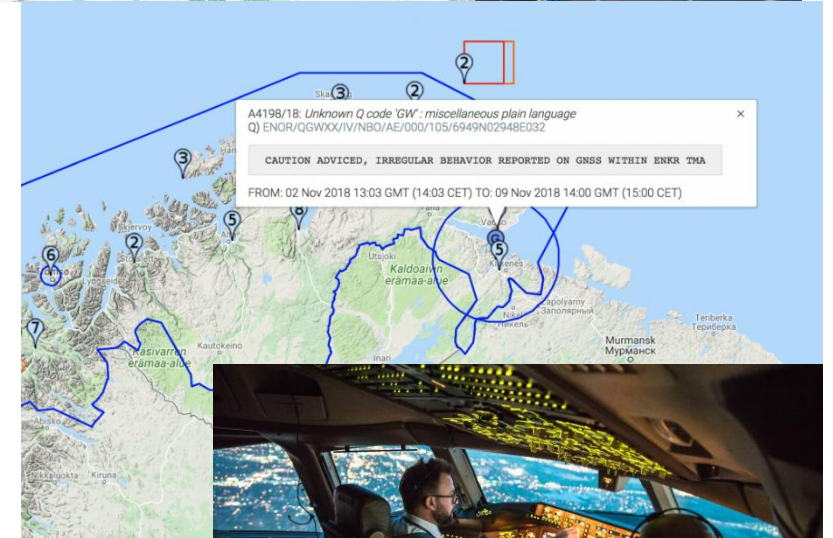
# GPS/GNSS SPOOFING AND JAMMING ATTACKS: A CONCRETE AND RISING THREAT FOR MOBILE MILITARY OPERATIONS

**June 2017:** Spoofing Attack in Black Sea

**Mar 2018:** GPS Disruptions in Eastern Mediterranean

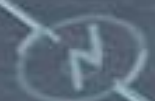
**Nov 2018:** Northern Finland Jamming in the Arctic Sea

**June 2019:** Israeli Airports GPS Signal Loss



BEING ABLE TO OPERATE IN **GPS DENIED OR CHALLENGED ENVIRONMENTS** BECOMES TOP OF THE AGENDA FOR BOTH GOVERNMENT AND COMMERCIAL CUSTOMERS

CODE assets are locally controlled



UAV



Role: Comms relay

UAV

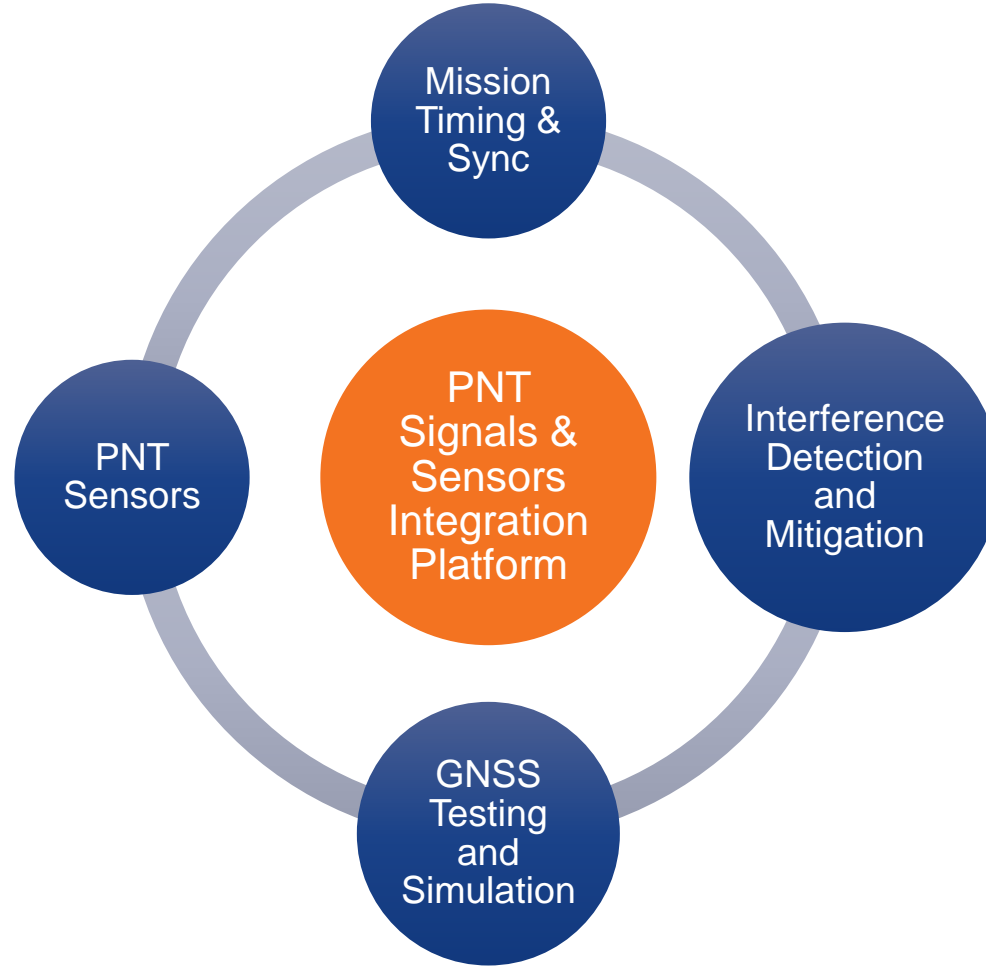
Role: Comms/Nav fix

**GOAL:  
ENSURING  
PNT  
AVAILABILITY**

# OROLIA IS THE WORLD LEADER IN RESILIENT PNT

The only provider of complete Resilient Positioning, Navigation and Timing (PNT) solutions.

Proven GNSS signal protection & countermeasure technology that is available now



Continuous improvement cycle to adapt to emerging threats over time

Bolt-on, retrofit solutions that are ready to deploy

# OROLIA PROFILE: TIME AND LOCATION YOU CAN TRUST™



EU Headquarters in Paris France

US Headquarters in Washington DC



Global Employee Base

Focus on Internal self-funded R&D and Innovation



A Commercial Presence in More than 100 Countries



Built through Worldwide-renowned brands in target segments

spectracom

spectratime

McMURDO

kannad

SARBE

Netwave

Skydel

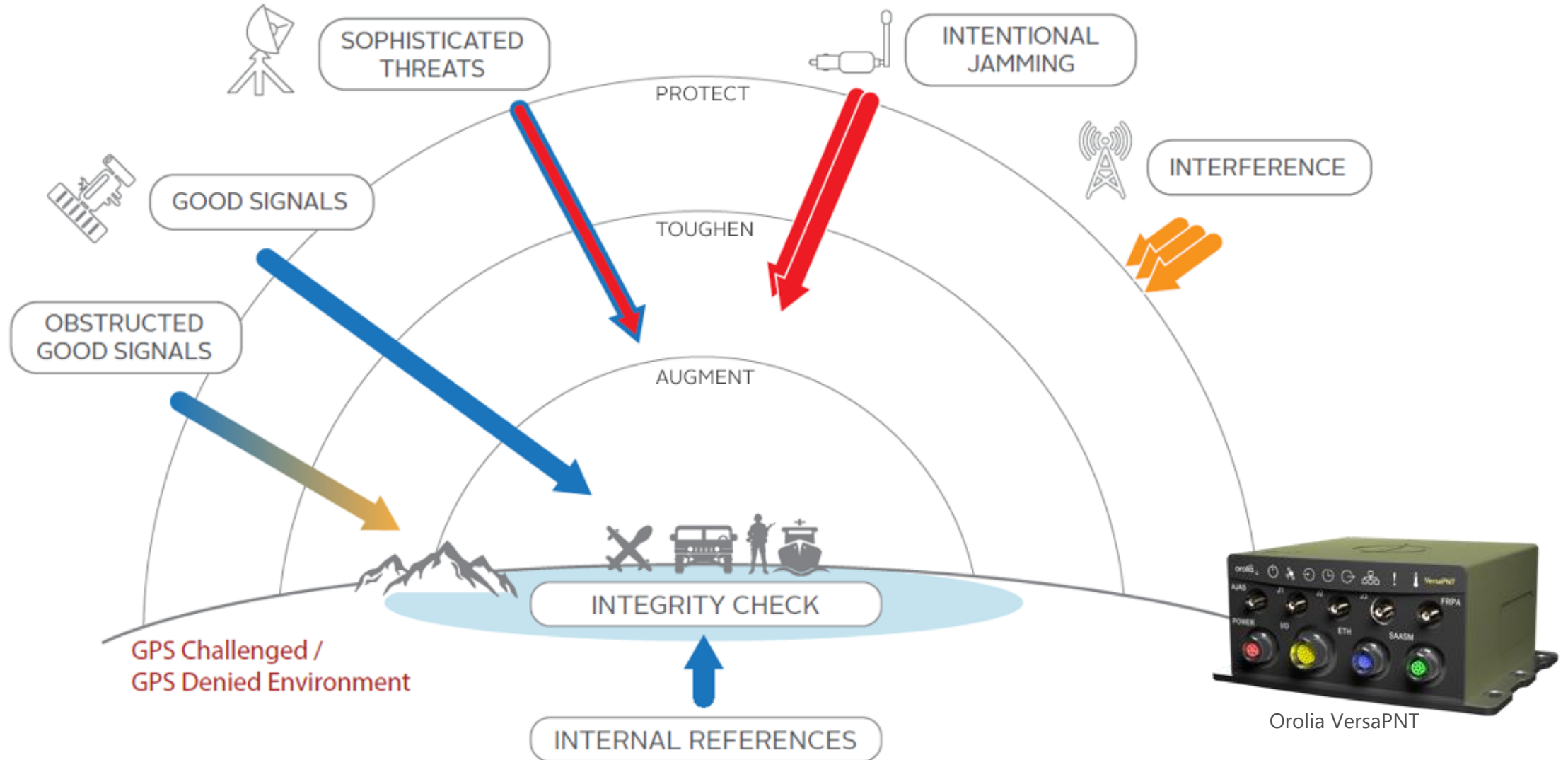
Talen-X



US Headcount Organic Growth



# OROLIA'S TECHNOLOGIES ENSURE PNT RESILIENCY, RELIABILITY, AND PROTECTION WITH INTEGRITY & TRUST

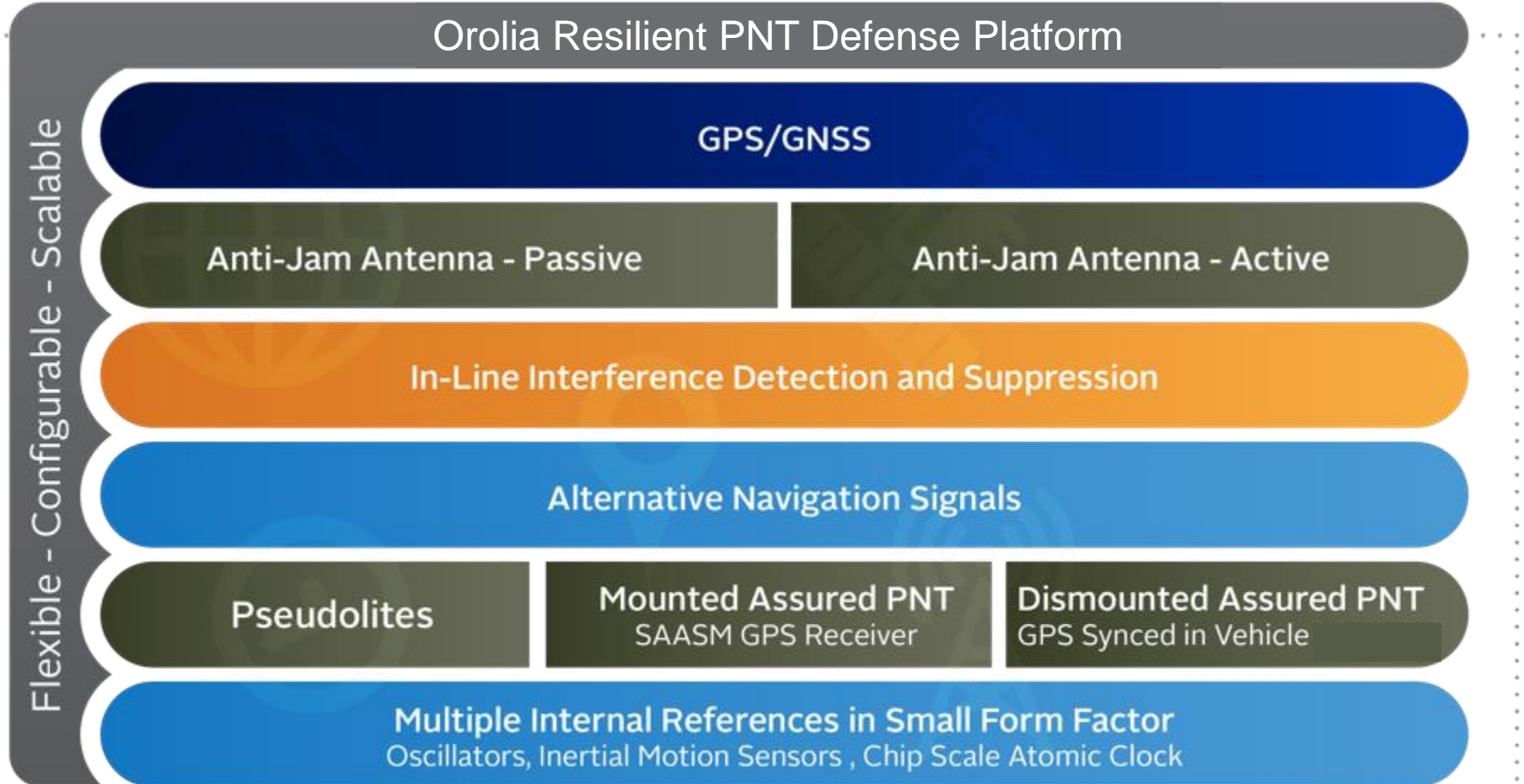


# A LAYERED APPROACH

## RESILIENT



## DEFENSE PLATFORM



# GROUND FORCES RESILIENT PNT



VersaSync Mobile Time and Frequency Solution



G2R-PLB Locator Device



G2R-ELT Locator Device



Anti-Jam Antenna



VersaPNT Mobile Time, Position and Navigation



SecureFind Combat Rescue Beacon



GPS/GNSS Interference Suppression



SecureSync Time Server



## Mission Success Solutions

### Precision Timing

- Fixed/mobile time servers
- Synchronize critical networks
- Ensure system integrity

### Continuous PNT

- Mission assurance
- Mounted/wearable
- Failsafe PNT data
- Rugged MIL-810G and MIL-461

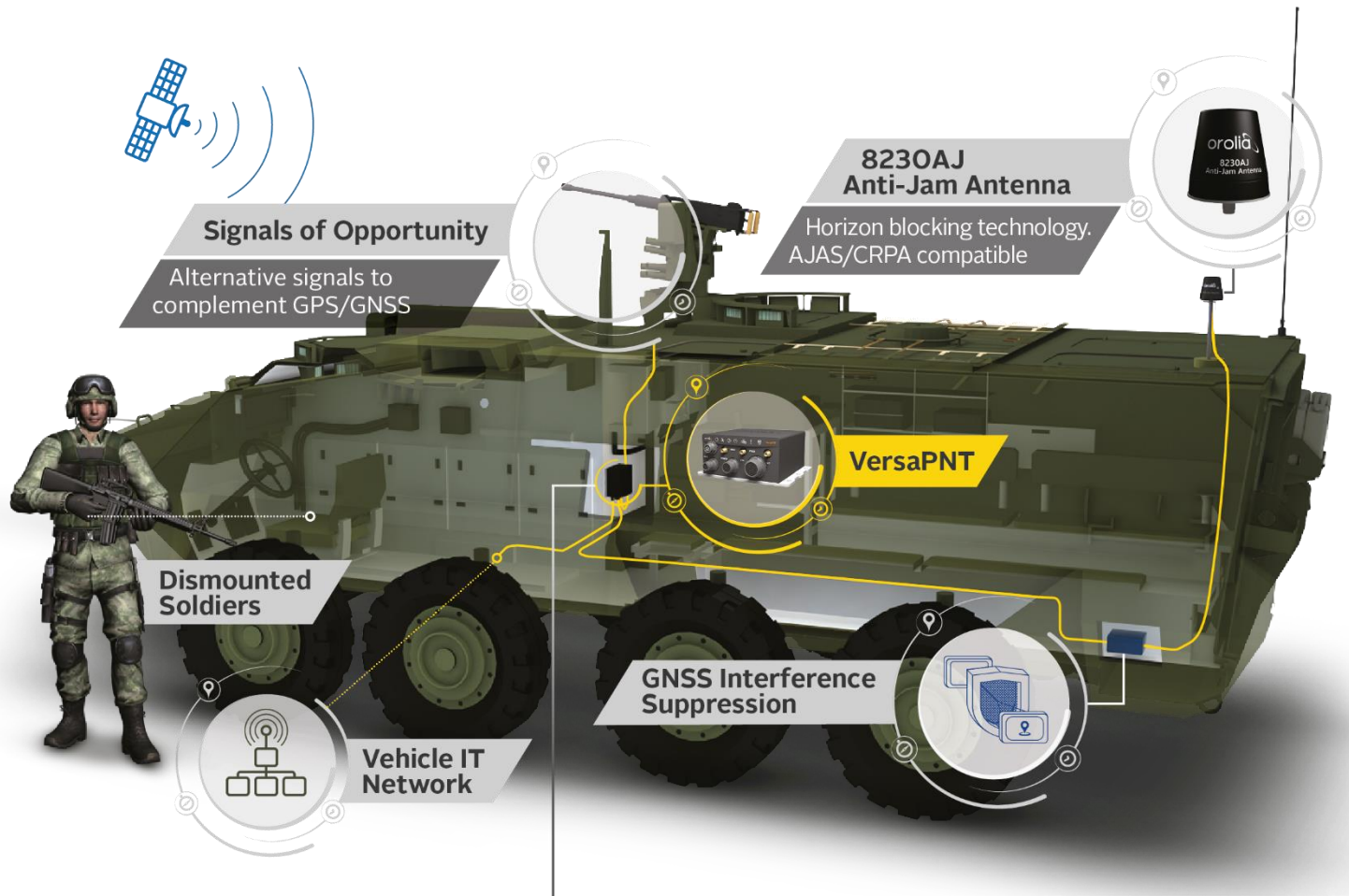
### Threat ID and Mitigation

- GNSS threat detection and protection
- Anti-jamming/spoofing
- Systems monitoring
- Vulnerability testing



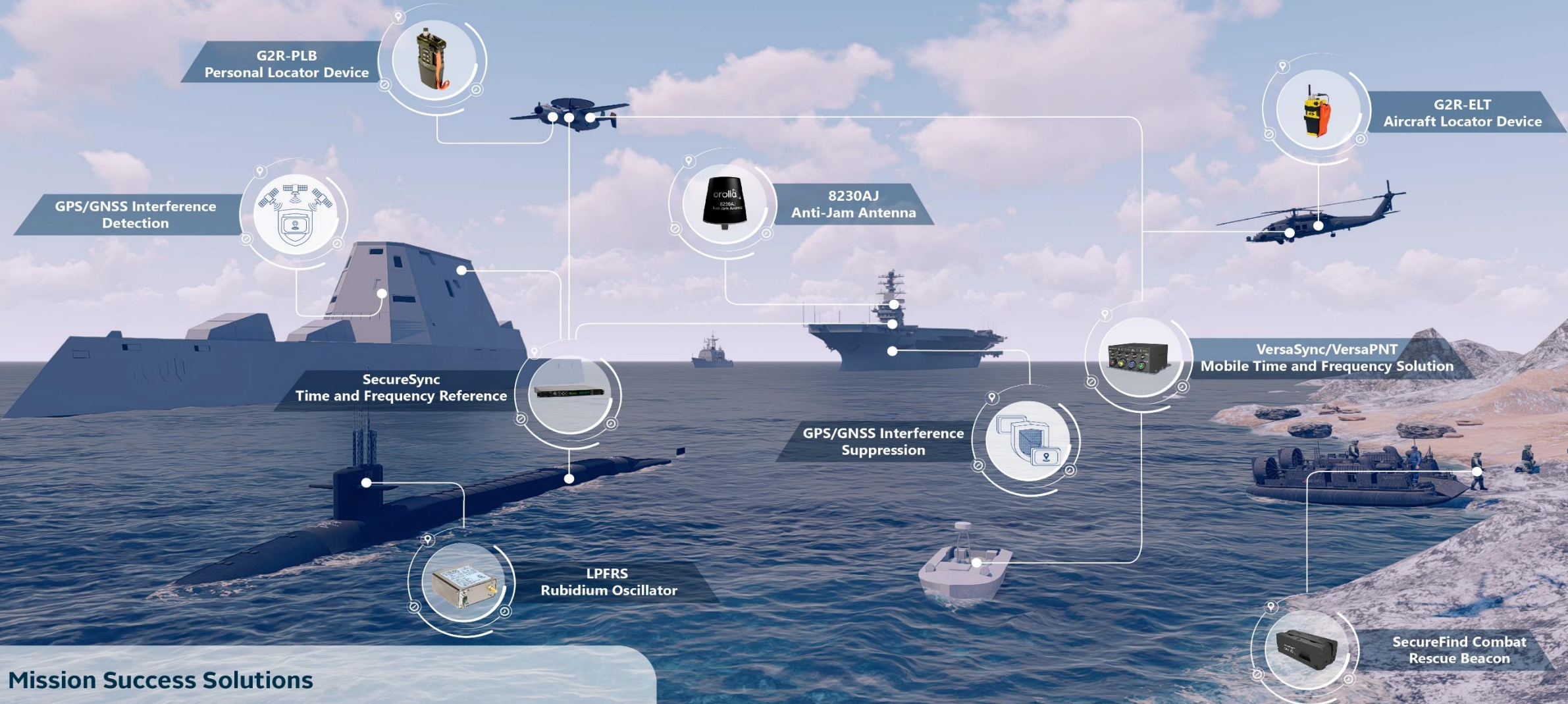


# VERSA PNT: MOBILE RESILIENT PNT HUB



**VersaPNT** Rugged, small SWaP continuous PNT solution

- FlexFusion™**  
Flexible/scalable sensor fusion software for Assured PNT
- Signals of Opportunity**  
Other satellite signals, cellular, odometer, etc.
- Inertial Measurement Unit (IMU)**  
Internal MEMS, External FOG
- Internal Timing Oscillators**  
Chip Scale Atomic Clock, OCXO, Rb, Microclock
- PNT Reference Receiver**  
GPS, SAASM, M-Code, eLoran, Iridium.
- GPS/GNSS Interference Detection**  
Embedded jamming and spoofing detection



### Mission Success Solutions

#### Precision Timing

- Fixed/mobile time servers
- Synchronize critical networks
- Ensure system integrity
- C5ISR systems on mobile platforms

#### Continuous PNT

- Mission assurance
- Mounted/wearable
- Failsafe PNT data
- Rugged MIL-810G and MIL-461

#### Threat ID and Mitigation

- GNSS threat detection and protection
- Anti-jamming/spoofing
- Systems monitoring
- Vulnerability testing



# WHAT IS OROLIA'S 2019 INNOVATION LEAP FOR RESILIENT PNT?

# HISTORY OF OROLIA

... leading to world leadership in Resilient PNT Technology

2014



Acquisition of Techno Sciences, an American provider of Search and Rescue Satellite Solutions. This acquisition establishes Orolia as the premier supplier of the Cospas-Sarsat market.



Orolia becomes the #1 world leader in Cospas-Sarsat Technology

2015



McMurdo, Boatracs and Techno-Sciences combined under the McMurdo Brand



McMURDO

2016



Orolia becomes a Eurazeo Portfolio Company and is delisted from NYSE Euronext



eurazeo

2016



Orolia's Strategic Alliance with Satelles



Satelles

2017



Acquisition of Netwave a Voyage Data Recorder World Leader



netwave

2018



Orolia's Strategic Alliance with QuasarDB



quasar db

2019



Acquisition of Skydel and Talen-X, innovative leaders in GNSS testing and simulation



skydel



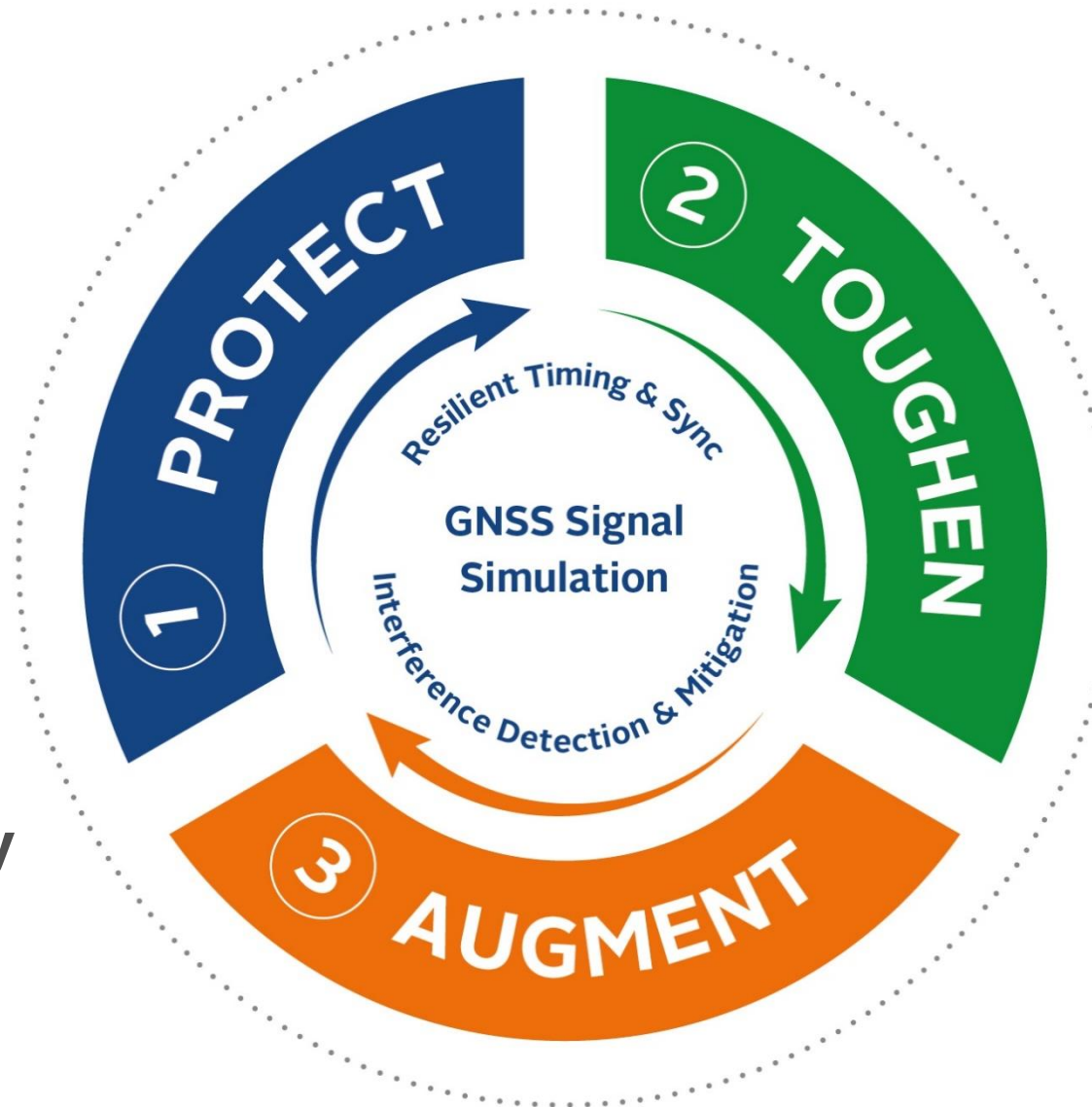
TALEN-X

Orolia becomes the #2 world leader in GNSS Simulation

# INTERFERENCE SIMULATION, DETECTION AND MITIGATION SUITE

**Interference  
Scenario  
Simulation**

**Threat Alert &  
Identification**



**PNT Vulnerability  
Testing Systems**

**Threat Mitigation &  
Countermeasures**

# SIMULATORS OVERVIEW – SIGNAL GENERATION

A powerful, feature-rich platform with industry-leading value and affordability for any GNSS and PNT testing requirement

## GSG-5 / GSG-6



## GSG-8



## Skydel



## GSG Anechoic / Wavefront



# PREMIERE AT DSEI: NEW GSG SIMULATOR SUITE



GSG-8



GSG Wavefront



GSG Anechoic



# ADVANCED SIMULATION SOLUTIONS

Two solutions to provide the advanced simulation features required for CRPA or system-level testing, along with the COTS hardware benefits of configuration flexibility and cost effectiveness



GSG Wavefront



GSG Anechoic



# INTERFERENCE DETECTION & MITIGATION (IDM) SUITE

Detect and defeat PNT signal and data integrity threats to critical systems.

## BroadShield



## BroadSense



## ThreatBlocker



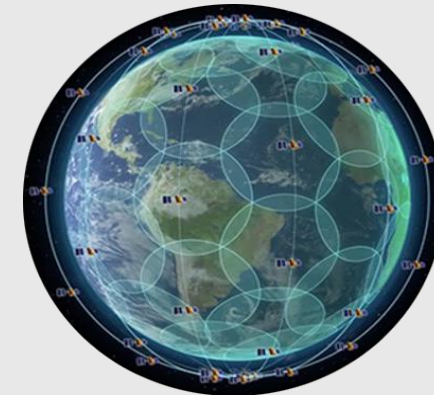
## 8230AJ Horizon Blocking Anti-Jam Antenna



## GPSDome Advanced Anti-Jam Antenna



## Signals of Opportunity



# TIME AND LOCATION YOU CAN TRUST

**At Orolia, we understand that** when it comes to military applications – where the smallest discrepancy in data accuracy, availability and integrity can result in a defense system outage or loss of life – **failure is not an option.**

We are dedicated to delivering **Resilient PNT** solutions with **time and location you can trust.**



**PLEASE JOIN US FOR CHAMPAGNE AT  
OROLIA BOOTH N2-225  
AFTER THIS PRESENTATION**

**Demos of New GSG-8 Advanced Simulator  
and Orolia's Resilient PNT Solutions**

