

An aerial photograph of a port area with several ships docked at a pier. A large, semi-transparent blue wireframe dome is superimposed over the port, representing a surveillance or protection zone. Four red dashed circles are also present, each tracking a specific object: a small boat in the upper right, a jet aircraft in the middle left, a submarine in the lower left, and a small boat in the lower right.

# MARSS

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 NiDAR™ 4D

Multi-Domain Surveillance & Protection



# THE WORLD'S FASTEST EVOLVING THREAT...

Unmanned Systems (UxS) represent an operational step-change in asymmetric warfare, with the ability to strike in any domain - air, land, sea, and underwater. They continue to demonstrate an ability to exploit gaps in conventional defenses' intel and surveillance and cause significant damage to national infrastructure and strategic resources. This is largely due to their highly effective autonomous hunt and attack capability. Constructed from readily available technology and easily accessible by hostile forces due to low cost, this threat continues to evolve in terms of autonomy, range, and destructive payload. As offensive measures evolve, so too must the defense of the those tasked with protecting critical civil and military infrastructure, assets, and people.



# UxS THREAT CATEGORIES

	CATEGORY	ALTITUDE	PAYLOAD	RADIUS	DEPLOYMENT
	MICRO	200ft AGL	200g - 2kg	5km LOS	Hand deployed, ISR mission
	CAT I	3,000ft AGL	2kg - 20kg	>25km LOS	Hand deployed, loitering munition
	CAT II	5,000ft AGL	20kg - 150kg	>25km LOS	Hand deployed, loitering munition
	CAT III 150kg - 600kg	18,000ft AGL	>150 kg	>200km LOS	Tactical formation
	CAT IV >600kg	65,000ft MSL	>600 kg	Unlimited BLOS	Operational theatre
	UGV	N/A	N/A	>100KM	Operational threater
	USV	N/A	N/A	>200KM	Operational theater
	Subsurface	100ft	N/A	>200KM	Operational threater



# INTRODUCING NiDAR 4D

## MULTI-DOMAIN PROTECTION, ACROSS AIR, LAND, SEA AND UNDERWATER

NiDAR 4D is a turnkey solution for surveillance and infrastructure protection, automatically detecting, classifying, and responding to multi-domain asymmetrical threats – aerial drones, fast moving small craft, divers and mini-submarines. MARSS core technology, NiDAR integrates several intelligence and surveillance streams (sensor fusion) to create operator situational awareness. Consolidated into a single tactical picture, multi-domain information is viewed and controlled via an easy-to-use C4i interface that leverages artificial intelligent's (AI) superior threat recognition, alerting users to only mission-critical events. This process reduces operator burden and human factors and increases decision-support that leads to a more rapid and accurate response.



# NIDAR 4D FEATURES/BENEFITS

## INTEGRATES STATE-OF-THE-ART SENSORS

Several surveillance and intelligence streams work together in unison for real-time operator situational awareness

## FULLY MODULAR AND SENSOR AGNOSTIC

Integrates with existing systems or latest sensor solutions. Highly scalable with growth capability based on requirements

## 24/7, 360-DEGREE PROTECTION

NiDAR is always on alert, monitoring for UxS threats day and night, protecting from all approaches, reducing human factors or errors

## UTILIZES NIDAR AI ENABLED TRACKING

NiDAR AI optimizes radar detection and camera positioning to track fast moving UxS, ensuring operators always have a prime view of the threat

## HARNESSES AI THREAT RECOGNITION

Analyses object pattern behaviour (over 1000 objects known), ensuring operators are only alerted to critical events.

## INTUITIVE USER INTERFACE

Complex information is made simple, controlling multiple data sources with AI enabled decision-support. Includes blue force tracking

## ACQUIRES DATA FROM PAST EVENTS

Utilizing machine learning, system becomes even more efficient with use, logging UxS speed, approach and manoeuvrability

## FULLY INTEGRATED COUNTERMEASURES

Fixed or mobile systems capable of defeating fast, high manoeuvring targets with speed and accuracy.

## NATIONAL AND MOBILE C4I UNITS

Enables communication centrally with remote and local operators. System available in 2 fully integrated mobile platforms

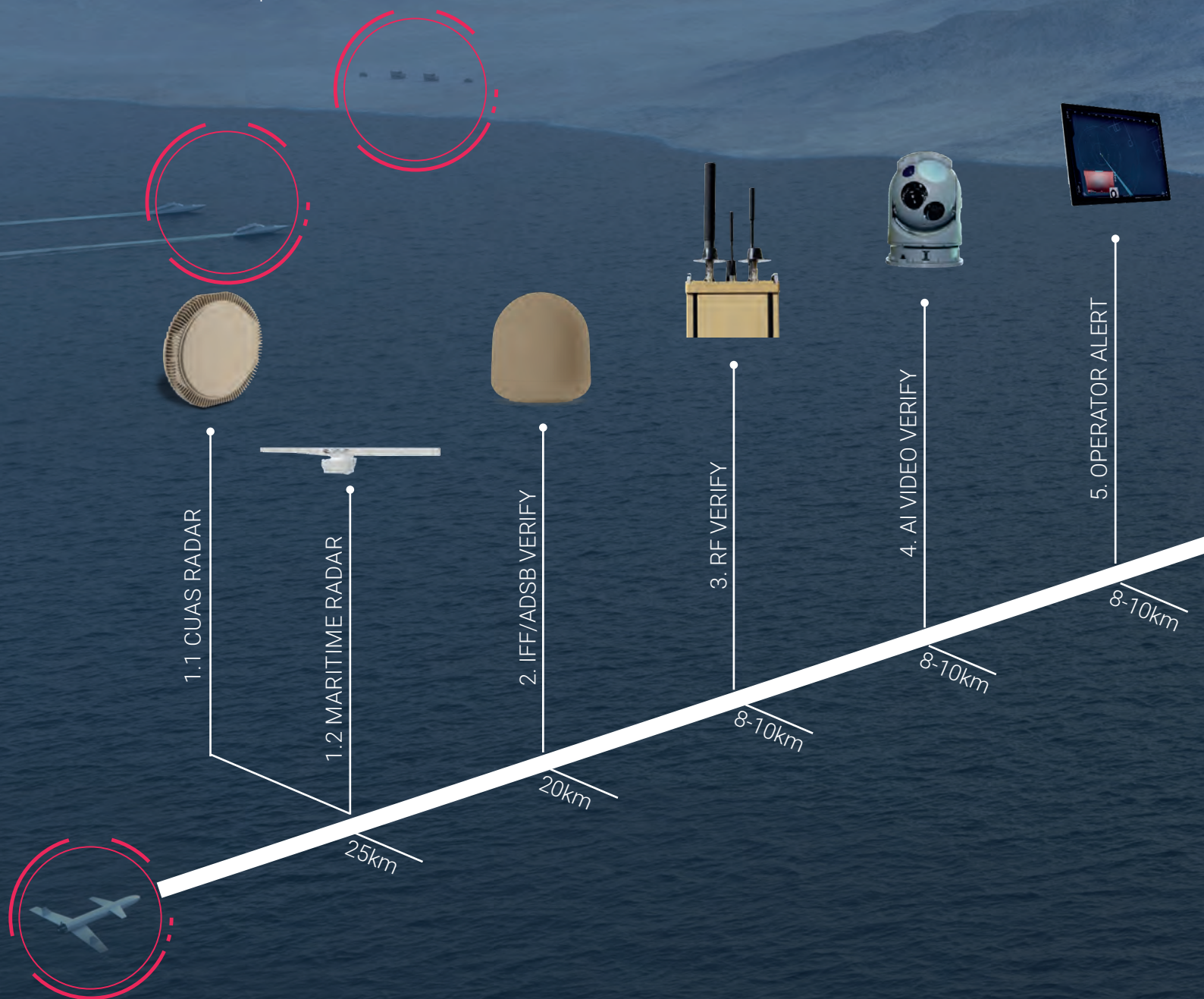
## INSTALLATION, INTEGRATION & SUPPORT

All software, sensors and effectors installed and integrated by qualified engineers. Operator familiarization training available

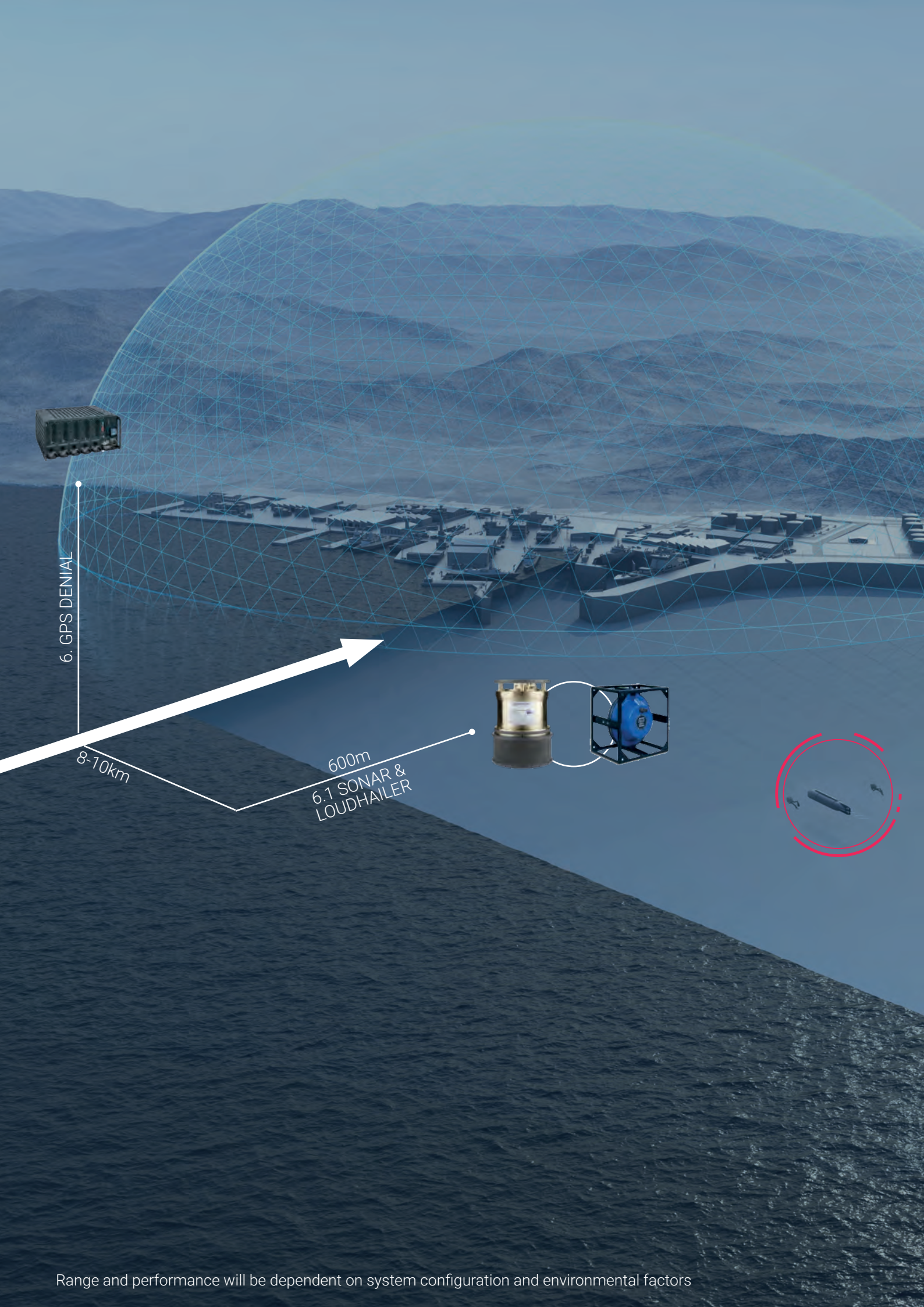


# NiDAR 4D LAYERED PROTECTION

NiDAR 4D provides a full end to end protective chain against UxS, integrating several sensors and effectors, optimizing their interoperability and performance. Beginning with detection, the UxS is discovered, its intent is verified using NiDAR AI and the operator is alerted with decision support on how best to respond with countermeasures. As NiDAR 4D is sensor agnostic, each component is selected from MARSS qualified supply chain and integrated based on customer requirements.







6. GPS DENIAL

8-10km

600m  
6.1 SONAR &  
LOUDHAILER



# NiDAR 4D OPERATOR ALERT

A SINGLE, INTUITIVE INTERFACE FOR ALL  
MARSS NIDAR APPLICATIONS, SENSORS  
AND COUNTERMEASURES

1. **REAL-TIME TRACKING**  
1000+ objects, including blue force
2. **LIVE VIDEO FEEDS**  
Automated tracking/camera handover
3. **MULTI-TOUCH CONTROL**  
Intuitive operation of sensors/effectors
4. **BACKGROUND**  
Satellite image and electronic map
5. **SMART ALERTS**  
Real time visual/audio alarms
6. **EVENT TIMELINES**  
Geo-located/time stamped data
7. **PROTECTION ZONES**  
User defined warning and alarm zones
8. **SECURITY LEVELS**  
User defined based on threat scenario
9. **OBJECT MONITORING & INTEL**  
Critical data on object bearing
10. **COUNTERMEASURE MENU**  
Selection based on type of target

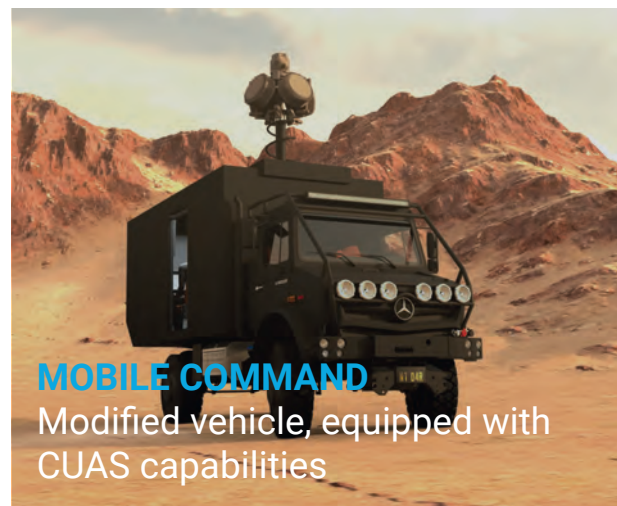
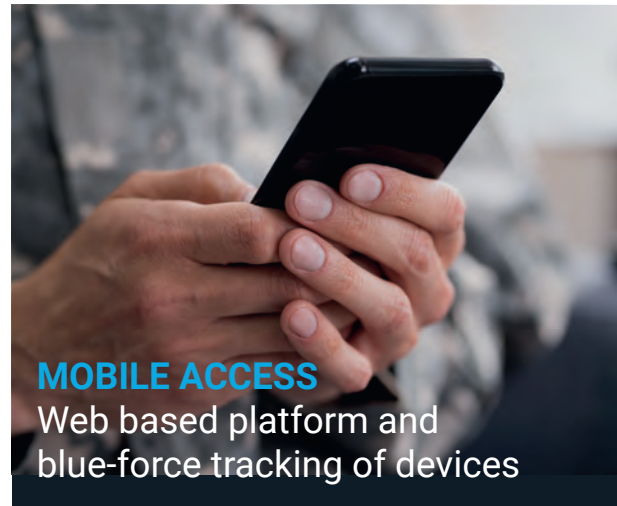




# NiDAR 4D CROSS PLATFORM COMMAND

## COMPLETE CONTROL IN ANY LOCATION


With complete integration on existing or new platforms, NiDAR is easily accessible through a range of fixed and mobile command centers. This grants operators the full power of NiDAR virtually anywhere.





# NiDAR 4D ASSET INSTALLATION

NiDAR 4D is a turnkey solution. It is modular, scalable, and fully customizable to any port, base, or vessel. Each configuration, including the number of sensors and effectors, is developed in collaboration with our customers and installed based on their security requirements.

  
CUAS  
RADAR



  
INFRARED OPTICAL  
CAMERAS



  
MARITIME  
RADAR



  
SONAR  
SYSTEM







NIDAR C2  
INTERFACE



RF TARGETED &  
GPS JAMMER



RF MONITORING &  
DETECTION



LOUDHAILER









# NiDAR 4D SUPPORT



## 1. SITE

### CLIENT INFRASTRUCTURE ASSESSMENT

- Threat and/or vulnerabilities evaluation
- Optimal location of sensors/effectors
- Network communication requirements



## 4. TRAINING

### OPERATOR AND MAINTAINER TRAINING

- Training needs analysis
- Sensor maintenance training
- NiDAR operator and administrator training



## 2. DESIGN

### SYSTEM DESIGN AND VALIDATION

- Functional and performance requirements
- Hardware and software specifications
- Individual and system level testing



## 5. OPTIMIZATION

### NiDAR SYSTEM OPTIMIZATION

- 14-45 day post install diagnostics
- Modifications based on operator input
- Discussion of potential design expansion



## 3. INSTALLATION

### MARSS ON-SITE COMMISSIONING

- Setup and calibration of all systems
- Full sensor configuration
- Functional verification tests



## 6. MAINTENANCE

### SUPPORT AND MAINTENANCE SERVICES

- Regular health-check visits
- Software updates, and enhancements
- Full turnkey warranty and repair services





# MARSS

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