



MULTIFORTE
RESOURCES LIMITED

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OFFSHORE SECURITY

AMASS (Advanced Maritime Security System).

Multiforté has developed a comprehensive integrated marine security system known as AMASS (Advanced Maritime Security System). The system employs radar surveillance and vessel tracking technology capable of tracking vessels within national territorial waters and beyond. It is capable of alerting security operatives if a vessel at sea

- a). Is boarded by unauthorised persons,
- b). Becomes stationary while out of port,
- c). Is in close proximity adjacent to an unknown vessel(s)
- d). Diverts from its expected route.

AMASS provides target tracking coverage using a distributed network of multi sensors strategically located onshore. The system maximises asset coverage by employing multiple sensor facilities (radar, camera, LRIT, asset trackers, and automatic identification system transponders). It integrates the various surveillance data streams provided by each facility-based sensor system into a combined view of the entire surveillance area and transmits data via the network to the primary center.

This capability provides centralised communication and control, and operations personnel the ability to quickly assess the status of vessel traffic in the entire area in order identify any potential threats

to vessels. The most senior management levels can also access information and status.

AMASS is also capable of tracking vessels that do not have an AIS or LRIT system installed. This gives it the ability to assess threats from approaching unknown vessels and identify vessels involved in suspicious activities e.g.. piracy, theft, vessel de-bunkering etc.

AMASS ensures that total maritime domain awareness is achieved through the use of the multiple facility mounted sensors such as;

- 1). Automatic Identification Systems (AIS): Ship and shore based broadcast system, operating in the VHF maritime band.
- 2). Radars: For target detection and coastal surveillance (12nm range).
- 3). LRIT Communication Systems: Satellite based Long Range Identification and Tracking (LRIT) and Inmarsat C.
- 4). Cameras: Day and night, long range (6NM), stabilized and non-stabilized cameras.
- 5). Vessel/Asset Tracking (AT) Systems: Vessels fitted with Asset Trackers provide the system with valuable data on a vessel' position, speed, and heading.



AMASS FEATURES

Multiforte's AMASS software suite for Vessel Traffic Management (VTM) and Marine Domain Awareness (MDA) applications provides:

- Sensor Track data processing and fusion from a variety of sensor types and data sources.
- Automatic and Manual contact classification.
- Display of live vessel position data over customisable ENC chart backgrounds.
- User defined regions with associated alerting behaviours.
- A Behaviour Engine allowing customisation of alerting logic.
- Flexible multiple camera display, control, and recording.
- Full logging of contact behaviour to support post-incident analysis within the Google Earth™ mapping service.
- Support for multiple radar and camera types for straightforward integration and update of existing sensor installations and definition of economic custom sensor solutions to meet specific user requirements.

Scalable Architecture

AMASS supports multiple sensors per site, multiple sites per installation and a site hierarchy allowing aggregation to central sites and redundancy between sites. The modular AMASS system can be scaled in complexity, allowing a small single sensor system to be

expanded into a full coastal surveillance solution.

AMASS achieves this via a flexible and secure architecture which allows centralized control with remote multi-site networked capability.

Command & Control

An operator may perform the following from an AMASS Control Centre:

- Configure and view the overall status of sites, regions, devices and contacts
- Monitor vessel traffic within the area via live map display
- Manage the alert status associated with sites, regions, devices and contacts
- Operate remote devices such as cameras to observe contacts
- Identify and classify contacts
- Communicate with sites and vessels
- Check the status of co-operative vessels
- Retrieve and review logged recordings, and
- Perform system wide administration and maintenance activities.

Sensors and Devices

Primary sensors common to AMASS based maritimesecurity and surveillance systems are:

Automatic Identification Systems (AIS)	Ship and shore based broadcast system, operating in the VHF maritime band.
Radars	For small target detection and coastal surveillance.
Communication Systems	Satellite based Long Range Identification and Tracking (LRIT) and Inmarsat C.
Cameras	Day and night, long range, stabilised and non-stabilised. Includes CCTV.
Vessel/Asset Tracking (AT)	Systems Vessels fitted with Asset Trackers provide AMASS with valuable data on a vessel's position, speed, and heading.

Complementary sensors are available for AMASS portland coastal surveillance systems and can be investigated for integration as part of a specific customer solution, or as system options. The following solutions are available through L-3 and third party suppliers:

- Weather Stations
- Wave Height Monitoring Systems
- Ground Based Radars
- Active Fence Monitoring
- Diver Detection Systems
- Undersea Sensors
- Biological, Nuclear, Chemical Detection Systems

AMASS can be integrated with non-lethal effectors such as:

- Long Range Acoustic Devices (LRADs)
- Underwater Loud Hailers
- Floating Fences and Barriers
- Water Cannons
- Strobe Lights and others



RADARS

Using radars installed at land based sites or offshore facilities, the AMASS System can detect contacts within radar coverage zones. Whilst the individual coverage zone around each site may vary (e.g. due to physical obstructions),

AMASS compensates by using multiple radars. The result is an integrated view of the surveillance area that minimises radar blind spots.

Commonly used radar systems for medium to very long range applications covering littoral and off shore waters are used for monitoring conventional maritime traffic.

For maritime security applications, AMASS can support Small Target Radar Systems designed to track targets such as small fast craft, small open boats of fibreglass, wood or rubber, and even surface swimmers in local waterways and ports.

Electro-optic and Camera Systems

AMASS has the capacity to display, control and log camera data for MDA applications. Features include:

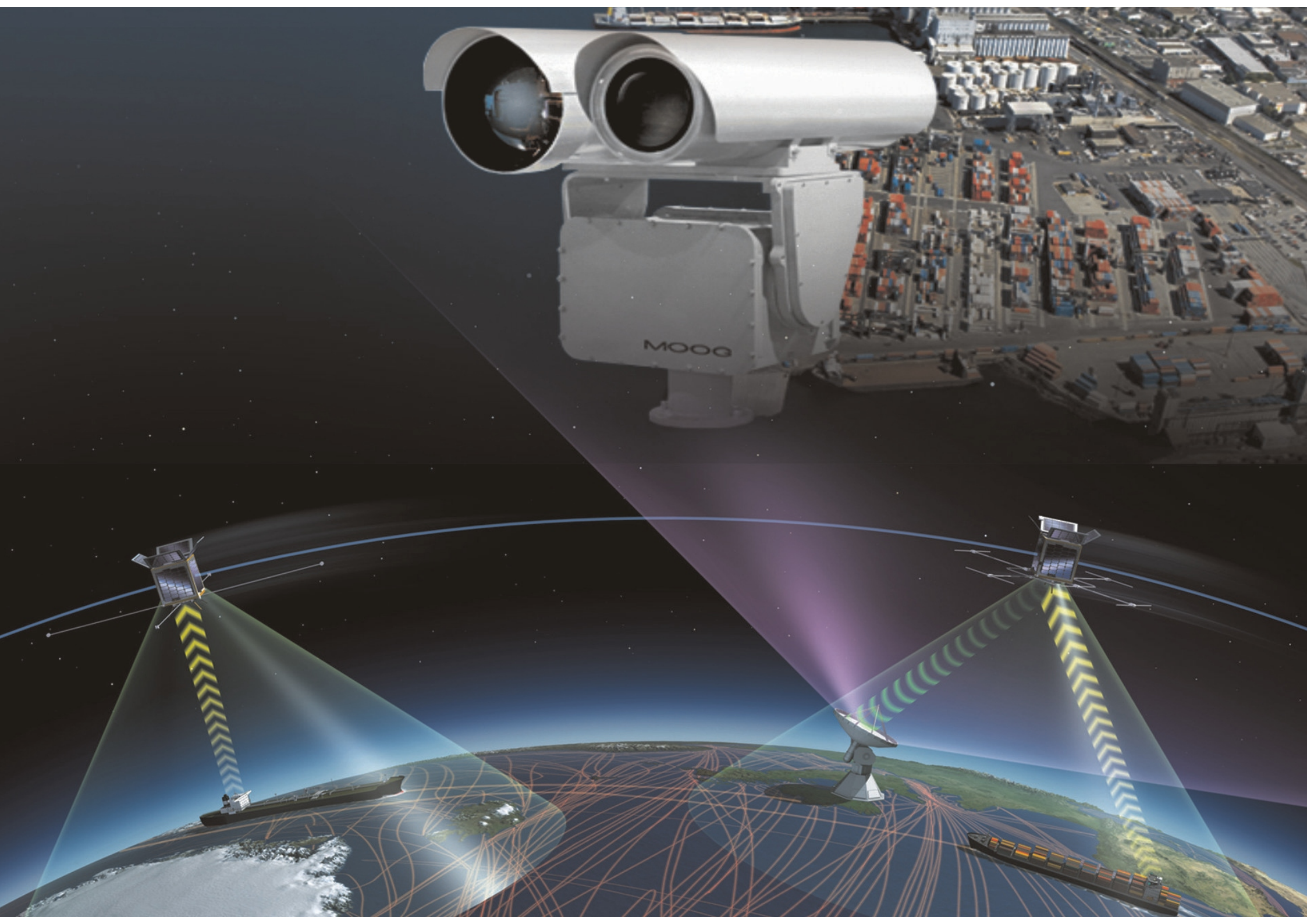
- *Flexible operator displays and controls for interfacing and recording multiple camera views*
- *Flexible camera gateway software for interfacing to multi-vendor products*
- *Centralised control and viewing of multiple cameras by multiple operators remotely across multiple sites (including offshore)*
- *Automatic camera operation for the tracking of highest priority contacts.*

AMASS Software Features Summary

- Map Display supporting:
 - *Interactive S57/S63 ENC's*
 - *Full pan and zoom with adaptive display eliminating overlap*
 - *IEC 62388 and STANAG-2525 contact symbology with dimension information, look ahead vectors/trails, and custom labels*
 - *User defined regions (e.g. intrusion zones and transit regions)*
 - *Surveillance camera arcs*
 - *Measurement tools*
 - *Feature query*
 - *Integration with third party digital maps*

- Sophisticated and fully autonomous Fusion Engine integrates live vessel data from available sensors
- Flexible Behaviour Engine allowing rapid customisation of alerting logic (e.g. proximity, vessel type and behaviour)
- Automatic and manual contact classification
- Surveillance and CCTV monitoring capability includes:
 - *Versatile operator display and controls for interfacing and recording multiple camera views*
 - *Automatic tracking of contacts*
 - *Manual camera pan, tilt and zoom control*
 - *Optimisation for video stream quality*
 - *Centre/trim function*
 - *Spotlight and loudspeaker controls*
- *Event logging and reporting capability using Google Earth™*
- *Simulation based training option with virtual maritime scenarios*





ONSHORE SECURITY

Onshore Facility Security Management System

As an independent specialist integrator, Multiforte Resources has the ability to bring together products and services from any suitable vendor into integrated security systems that effectively protect clients' personnel and assets

Facility protection, of necessity, requires a variety of methods, ranging from intruder detection & monitoring, to perimeter protection & access control for personnel and vehicles. Likewise, diverse facility types and locations necessitate a broad-based approach to securing vulnerable sites, such as:-

- Onshore oil processing and storage plants
- Onshore Liquefied Petroleum Gas (LPG) plants
- Refineries
- Onshore pumping stations
- Power Stations
- Storage facilities, e.g. high value content warehouses
- Ports
- Prisons
- High sensitivity and critical national infrastructure

Multiforte has the expertise to design and deliver state-of-the-art security and safety systems that protect the environments in which you operate, be they large or small, or in demanding locations. We fully engage our clients, enabling them to make informed decisions about their security measures that meet their needs now and in the future. We consider the following to be imperatives in providing effective solutions for our customers:-

- Listen to our clients to gain a clear understanding of their

requirements and expectations, in specific 'immediate counter-threat' requirements and in longer term objectives

- Investigate threats, potential technologies and methods, challenges
- Provide clear and accurate presentations of our proposals and recommendations
- Total engineering capability; from front end to detail design, scheduling, procurement, logistics, installation and commissioning
- Full support services, eg; training and maintenance

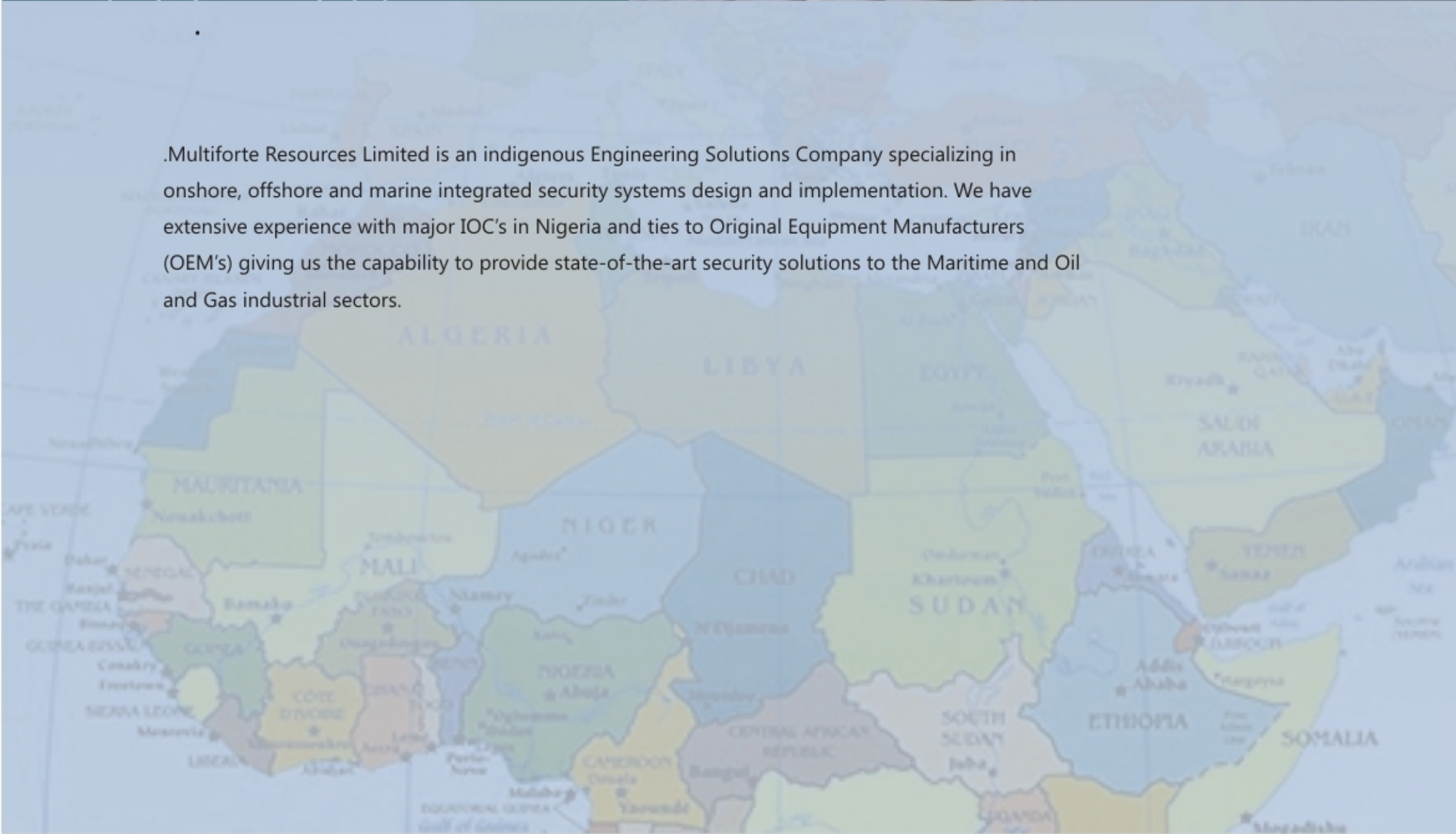
Working with Multiforte, our customers will have the right defences to defeat trespassers and those of ill-intent. We can provide security systems ranging from small stand-alone detection or monitoring arrangements, to multi-site, multi technology networked systems. We have the expertise to provide various methods of protection, such as:-

- Movement detection utilising a variety of technologies appropriate to site conditions, eg; internal detection, external perimeter protection
- Internal and external CCTV
- Access control (personnel and vehicle)
- Security lighting
- Security fencing, gates & barriers
- Fire & Gas detection and alarm systems
- Integration, transmission and Control Centre requirements]

For all your onshore security and safety system needs, engage Multiforte Resources – together we are an effective integrated team whose goal is to combat those who would transgress against you.



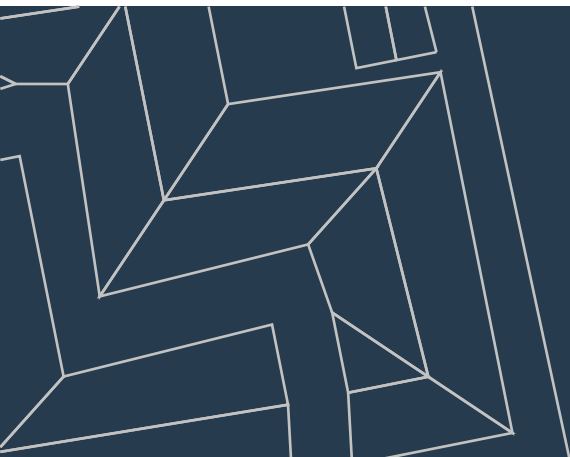
Multiforte Resources Limited is an indigenous Engineering Solutions Company specializing in onshore, offshore and marine integrated security systems design and implementation. We have extensive experience with major IOC's in Nigeria and ties to Original Equipment Manufacturers (OEM's) giving us the capability to provide state-of-the-art security solutions to the Maritime and Oil and Gas industrial sectors.





"Our Great Lakes, harbors, ports, and rivers provide not only vital resources for us to live, but an entire maritime way of life for so many people. The least we can do is protect it, and the way of life it provides for so many."

Candice S. Miller



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