ACCELERATING DIGITAL TRANSFORMATION

Detect Earlier, Decide Faster, Force Multiplier
Staying Ahead of Today's Defense Breaches

With evolving technologies in warfare, there is a need to be well prepared in the defense arena. As a pioneer and leader in defense electronics solutions, we leverage our deep defense technology and expertise to advance defense products, systems and solutions to meet mission-critical needs.

Harnessing Our Deep Expertise and Advanced Technology

We leverage Command, Control, Communications and Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) to provide sophisticated state-of-the-art warfighting solutions and realistic training and simulation systems. Our proven track record of driving digital transformation has empowered our customers to rapidly assimilate operational capabilities that greatly enhance their situational awareness for faster combat decision-making.

Transforming Today’s Defense Capabilities to Meet Tomorrow’s Battlefield Needs

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Connecting Forces, Fortifying Defenses

DEFENSE PLATFORM ELECTRONICS (DPE)

The digital revolution is transforming the way land tactical forces engage their enemy, particularly in close combat. With better information sharing and network connectivity, new capabilities like collaborative engagement, manned-unmanned teaming (MUM-T) and Enhanced Situation Awareness (ESA), are fast becoming a reality in the modern battlefield.

The Defense Platform Electronics (DPE) seamlessly integrates advanced C4ISR with cyber security systems. This advanced technology equips friendly manoeuvre force with 'see-through' vision system for 360-degree ESA views to enable fighting units to operate as a single collaborative networked force.

By maintaining information superiority and providing real-time secure data analysis, commanders on the ground can detect earlier, make combat decisions faster and defeat the adversary with force multiplier impact.

NAVAL PLATFORM ELECTRONICS (NPE)

The rise of digitalization has enabled increased interconnectivity among naval forces. As the defense industry continues to evolve, naval units are seeking solutions that support collaborative planning, engagement and shared operational images among forces. The objective is to achieve persistent surveillance and sustained influence in wide ranging missions from high intensity warfare to Sea Lines Of Communication (SLOC) security.

The Naval Platform Electronics (NPE) provides secure communications, network and system management for heterogeneous C4ISR platforms. Combining the latest technologies with advanced communications, this highly advanced system enhances information sharing and network connectivity for seamless ship-ship and ship-shore operations.

Leveraging modular, scalable and open IP architecture, the NPE can be integrated with combat systems. It is also capable of C3 operation with unmanned platforms such as Unmanned Surface Vehicles (USV) and Unmanned Underwater Vessel (UUV).

It enables interoperability with unmanned systems and allow ships equipped with NPE to operate independently in high threat environments.

UNMANNED SYSTEM

Autonomous technology is fast becoming the next big disruptor of everyday life, and unmanned systems are rapidly proving invaluable in a major way. Advancements in ship intelligence herald an exciting future for maritime applications. With the ability to perform roles like detecting and clearing sea mines, as well as surveying of ocean beds, unmanned systems alleviate the need for man to carry out dangerous or mundane tasks, freeing up manpower for higher value-added combat functions.

TRAINING & SIMULATION

Live training in the defense sector can be resource intensive, logistically challenging and costly. With defense simulation, training scenarios can be customized to the needs of the trainee in a safe and realistic environment. Designed for air, land and sea, our simulation systems reduce the initial training cycle to enable defense forces to achieve better operational efficiency, optimal performance and, most importantly, a higher level of safety.
1. Vehicular Integrated Communications System (VICS) Crew Station
   - Tactical network for digital transformation
   - High-speed network for mission-critical communications
   - Open-vehicle architecture for easy integration

2. Mil-Spec Vehicular Computer
   - High performance including real-time video processing
   - Intel® Core™ computing power
   - Capacitive touchscreen and extensive I/O interfaces

3. Integrated Battlefield Management System (iBMS) 2.0
   - Modernized soldier-centric combat UI design
   - Common crew station
   - Augmented Reality display
   - Digitalized mission planning
   - Health and utilization system

4. Communications-on-the-move
   - Enables Beyond Line of Sight (BLOS) C2 (Command and Control) while on the move
   - Enables real-time, high data rate transmission
   - Full auto tracking for ease of operation

5. SATCOM Integrated Module (SIM)
   - Integrated and ruggedised baseband SATCOM solution
   - Optimised Size, Weight and Power (SWaP) for space constrained platform

6. Fusion Driver Sight
   - Day / Infrared (IR) Fused Camera
   - Uncooled Microbolometer

7. Dual Ring IP C4ISR Backbone
   - Low Latency Network (LLN) for voice/data/video
   - Configurable to meet varying Quality of Service (QoS) and redundancy requirements

8. Vehicular Network Node
   - Ground Data Terminal for Manned-Unmanned Teaming (MUM) Command and Control (C2) / telemetry
   - Soldier Network Gateway

9. Communications Processor
   - Open standard architecture
   - Server farm
   - CyberGuard protection

10. Embedded Training
    - Safely practice skills and drills in a simulated environment
    - Allows soldiers to sharpen their combat skills

11. GNSS Anti-Jam Antenna
    - Anti-jam Global Navigation Satellite System (GNSS) protection against multi-jammer scenarios
    - Adaptive digital nulling offering excellent interference suppression
    - Robust response to narrow and wideband interference

12. Hand-held Target Acquisition System HD
    - 2 HD day colour cameras with Wide Field of View (WFOV) and Narrow Field of View (NFOV)
    - HD uncooled thermal channel
    - Target location display
    - Menu-based operation
    - Live video streaming with data and file transfer

13a. See Through Vision System
     - Immersive interactive augmented display for better situational awareness
     - Alpha blending of videos to provide seamless panoramic image for safe closed hatch driving in day and night

13b. Head Up Display
     - Provides see through armor capability
     - Helmet mounted option
     - Wide FoV (Field of View)
     - Adjustable contrast
     - Connected to VICS
NAVAL PLATFORM ELECTRONICS (NPE)

1. Navigation and Data Management System (NDMS)
   • Amalgamation of disparate navigation data into a unified message format
   • Modular design for scalability and redundancy
   • Highly reliable Mil-Spec compliant system

2. GNSS Resilient Time Source
   • Robust Global Navigation Satellite System (GNSS) spoofing detection
   • Machine-learning algorithm for enhanced timing holdover

3. Maritime Enforcement Radar System (MERS)
   • Interface and transform commercial navigational radar to surveillance radar
   • Detection of small targets
   • Behavioral analytics to automatically identify suspicious vessels

4. GNSS Anti-Jam Antenna
   • Anti-jam GNSS protection against multi-jammer scenarios
   • Adaptive digital nulling offering excellent interference suppression
   • Compact and lightweight

5. Satellite Communication System
   • Broadband-enabled for voice, video and data
   • Network management system for ease of operation
   • Built-in encryptors

6. Multi-Function Consoles
   • Highly configurable to host multiple naval applications
   • Built on open computer architecture
   • Highly reliable Mil-Spec compliant system

7. Scanned Panoramic EO System
   • Distributed Aperture System (SPEOS-DAS)
   • Fully stabilized panoramic infrared (IR) camera
   • Distributed aperture system
   • Automatic target detection and tracking

8. Training System
   • Enables simulated shipboard training at sea with actual combat systems
   • Offers diverse training scenarios with mix of live and virtual entities
   • Supports multi-ship or cross-platform training with instrumented vessels or aircraft

9. Shipboard Integrated Communications System (SICS)
   • Single IP platform to unify disparate analog and digital communications systems
   • Distributed and scalable architecture with built-in redundancy
   • Centralized network management and system administration

10. Vessel Traffic Mobile System
    • Rapid deployable Command and Control System
    • Complete situation awareness with track management
    • Suitable for small boat deployment
The AUV is a mid-weight autonomous underwater vehicle with a modular design that suits different operational requirements. It is capable of conducting surveys in challenging underwater environments and provides effective and high-quality underwater seabed data for Mine Counter Measures (MCM) operations.

Unlike traditional remote-operated underwater vehicles, the AUV carries out missions autonomously, unlimited by the length of a tether. This allows it to travel longer distances and go deeper in the sea without risking the mother craft during mine hunting. Multiple vehicles can also be deployed to increase the operational effectiveness of missions.

The versatile AUV is a cost-effective solution and a force multiplier. It is equipped with advanced sensors, navigation and communications features to provide effective seabed survey and is engineered to be easily deployed from shore or any Craft of Opportunity (COOP) without the need for costly handling equipment.

Key Features:
- Modular design, configurable payload
- High positional and localization accuracy
- Easy deployment from Craft of Opportunity (COOP)

Applications:
- Mine Counter Measures (MCM)
- Harbor Security Operations
- Environmental Monitoring
- Search and Salvage Operations
- Scientific Research

The Venus Unmanned Surface Vehicle (USV) is a modular USV platform designed to meet growing interest of USV re-configurable for multi-missions. The modular approach facilitates the integration of multi-mission modules to the USV which can then be configured for various missions without risking human lives.

Key Features:
- Autonomous navigation
- Lean operation: 1 person manning 1 USV
- Supports prolonged operation up to 48 hours
- Collision avoidance
- Dynamic positioning
- Line-of-Sight (LOS) and Very Small Aperture Terminal (VSAT) communications
- Remote operations of payloads
- Virtual anchor
- Anti-grounding with power-assisted braking and geo-fenced boundaries

Applications:
- Protection of Coastal Installation, Harbor or Oil-rig / Ship Protection
- Stand-off Surveillance and Water-space Monitoring
- Target Tracking and Acquisition

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The Tactical Vehicle Driving Simulator (TVDS) offers operators of combat vehicles a complete simulation system built on an integrated and scalable architecture. The TVDS can be easily networked to maximize individual and team-based multi-level mission training in a common virtual environment.

**Key Features**
- Highly scalable for multiple cabins to be networked, and flexible configuration based on requirements
- Multi-level training for individuals or teams in integrated operation scenarios
- Realistic vehicle controls and dynamics to enable familiarization
- Instructor Operating Station for real-time monitoring and performance review of trainees through comprehensive analytics

**Training Applications**
- Cross-terrain Convoy Driving
- Route Familiarization
- Customizable Weather and Time Of Day

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The Shiphandling Simulator offers a realistic bridge environment with immersive out-the-window views that trains shipboard officers to maneuver ships safely under different environmental conditions. Integrated with a Combat Information Center, trainer that simulates weapon, sensor and radar systems, trainees get to rehearse naval tactics in reaction to different threats.

**Key Features**
- Realistic simulated maritime environment populated with automated Computer Generated Forces (CGF) (e.g ships, boats)
- Virtual Reality (VR) Watch Stations offer increased depth perspectives for berthing training
- High Fidelity Visuals with 360° Projection
- Instructor Operating Station (IOS) with debriefing facilities
- Supports networked fleet training

**Training Applications**
- Berthing
- Bridge Watch Keeping
- Navigation
- Weapon Operation
- Machinery Operation
- Naval Tactical Training