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Trident infosol
...Transformational Technologies

SOLUTION SHOWCASE

www.tridentinfosol.com

COMPANY OVERVIEW

Trident Infosol is a AS9100D Certified Company, providing leading edge solutions on Embedded COTS Hardware, Signal Processing Systems, and Engineering Software catering to the Real-Time applications. We offer solutions for a wide range of application serving the Aerospace, Defence, Research & Development, Automotive, Telecommunications, Medical and Industrial segments. Trident represents reputed global OEMs in its endeavour to provide best-inclass products to its ever growing list of clients.

Trident has been consistently at the forefront of introducing the latest cutting edge technologies across a wide spectrum of products. Our strong technical background in Development, Integration and Deployment of solutions for challenging real-world applications coupled with our ability to provide complete end-to-end solutions for complete product development life-cycle with extensive application support, which being the key benefit and differentiator. Our approach towards optimized and fully integrated solutions has helped us develop a unique competence to fulfill our customer's requirement specifications, which helps our customers to deploy their systems faster.

VISION

"To emerge as the most preferred technological partner and be a potential business associate in the field of Strategic Electronics and Avionics for Defense and private sector companies by providing cost effective, competitive and customized solutions for Electro Mechanical application on an integrated approach and turnkey philosophy."

MISSION

To be a major supplier of Strategic Electro Mechanical and Avionic system for Global Military and Aerospace Industry.

To develop cutting edge and end to end solution by innovative design and development.

To be active partner in system level solutions for Defense, Aerospace and Industrial applications there by adding value to all stake holders".

WHY WE MATTER

The Trident group offers a Single Source for all your development needs related to Software, Hardware, Design Services and Fully Integrated Systems for a range of Applications. We are an End-to-End Solution provider catering to your complete product development life- cycle right from concept design to final acceptance test and beyond - meeting customer requirement specifications and standards, assuring continued product support. While bringing affordability for you with our cost-effective solutions, reuse of existing design for customization, flexibility to work on limited volume production, we also support your short development cycles with reduced risk ensuring faster time-to-market. The combination of our superior Technology and Engineering expertise along with our wide array of product and service offerings make us a unique technology partner.

WHAT WE DO

Recognizing the technological and economic challenges faced by the customers in today's competitive market place, we offer range of products, solutions and system integration services for various applications meeting demanding environmental conditions.

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INFRASTRUCTURE & FACILITIES

We have an integrated state-of-the-art Design, Development, Manufacturing and Testing facilities with extensive work-floor spanning over 35,000 sq. ft. Our sophisticated infrastructure is coupled with an array of advanced workstations, robust design & development tools (3D CAD, Structural & Thermal Analysis, Cabling, PCB and System Design), cutting-edge computing and network systems. This provides an ideal and excellent environment for our skilled professionals to support large and mission critical applications of various customers.

The sprawling Integration Labs help us combine our efforts in delivering fully integrated systems to our customers for their specific application requirements. Our advanced testing facilities include Set-up for PCB Inspection and Backplane Testing (SerDes), Power Supply Testing, Drip Test, Vibration & Shock Test, Thermal and Humidity Chamber.

With Design, Engineering, Manufacturing, Integration, Testing, Configuration Management, Project Management, Quality Assurance, Technical Support Services and Sales Teams under one roof, we provide expert services to all our customers enabling them to focus on their product/system development through its entire life-cycle. Trident Infosol has evolved and continuously improved on project management processes and quality management system culminating into an AS9100D certified company.

OFFERINGS AT A GLANCE

Conceptual Design

- Requirement Capture
- Requirement Traceability Tools
- Modeling
- CFD Analysis
- Mathematical Computation
- Analog/Mixed Signal Simulation tool chains
- Reliability Analysis
- Static & Dynamic Analysis

Product Design & Simulation

- Embedded Code Development & Debug
- Safety Critical RTOS
- Graphical Environment
- OpenGL Libraries - SC & ES
- RADAR Video Processing,Scan Conversion& Display Presentation
- Tracking Solutions
- ECDIS Solutions

Prototyping & Validation

COTS (Open System Architecture)

- SBC, I/Os, Video & Graphics
- Avionics & Communications Interfaces
- Signal Processing
- Multicore Multiprocessor Boards
- FPGA, GPGPU, IF & RF Processing
- Stand-alone (Small Form Factor)

COTS (Open System Architecture)

- Rugged - Servers, NAS
- Ethernet Switch
- Data Recorders & Playback
- Rugged Enclosures
- Backplanes
- Power Supply Units
- Mass Storage
- Rugged Displays & Display Computers

Integrated Telemetry

- Ground Systems
- Onboard Systems
- HILS

Integrated System Deployment

Systems & Sub-systems

- Rugged Racks
- Display Consoles
- SFF Computers & OSA Systems

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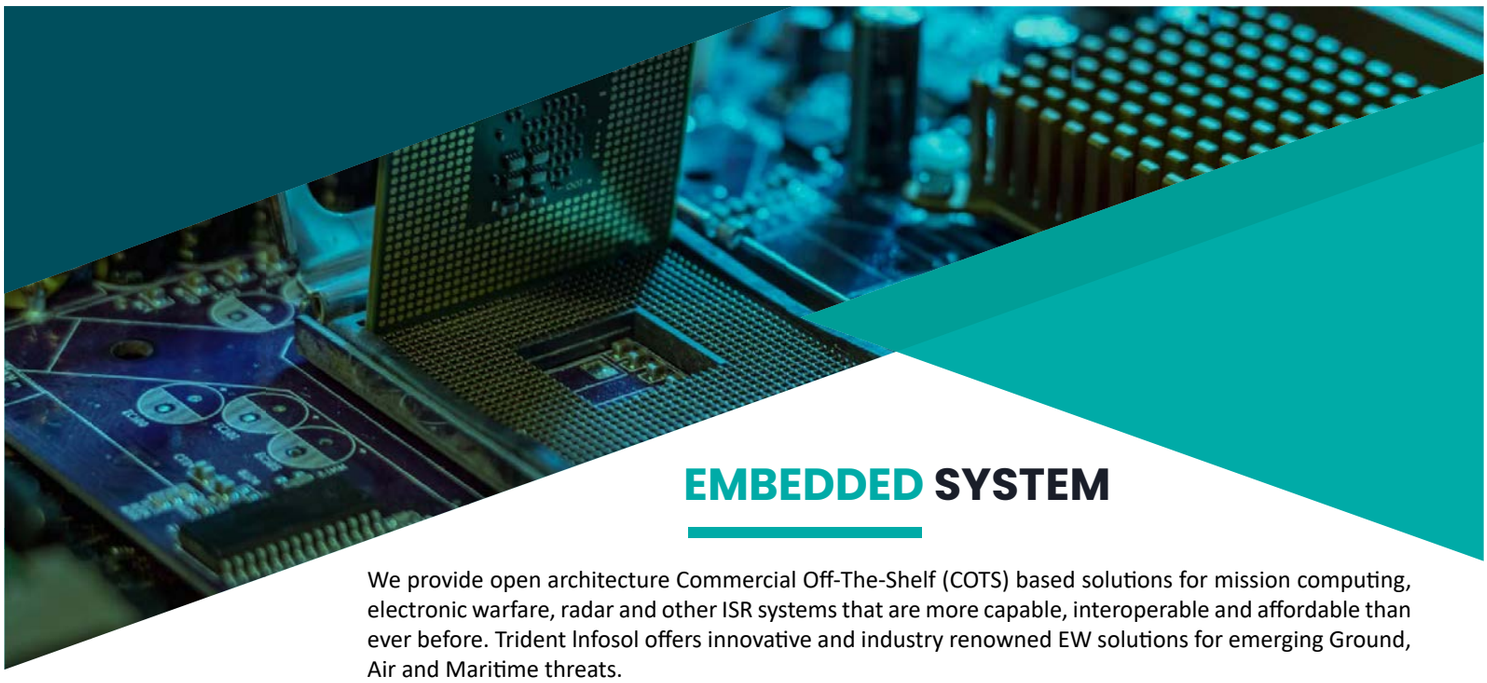


EMBEDDED SYSTEM

We provide open architecture Commercial Off-The-Shelf (COTS) based solutions for mission computing, electronic warfare, radar and other ISR systems that are more capable, interoperable and affordable than ever before. Trident Infosol offers innovative and industry renowned EW solutions for emerging Ground, Air and Maritime threats.

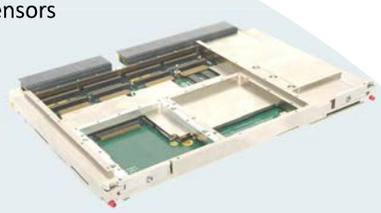
SINGLE BOARD COMPUTER

INTEL: SINGLE OR DUAL PROCESSORS SBC'S

- Atom, Core i7, Xeon E3 & Xeon-D latest Multi-Core Processors
- 40G/100G, Serial, on-board Flash, GPIOs, PMC/XMC Expansion Sites
- On-board mass storage interfaces like SATA & M.2 SSD (with RAID)
- Windows, Linux, VxWorks, Integrity, LynxOS & QNX support
- Single or Dual PMC/XMC Expansion Sites
- Fast Boot (<3 sec) for speedy startup application
- Platforms: cPCI, VME, OpenVPX & VITA 74
- Switch Configuration Tool for GbE & PCIe fabric products.
- Comprehensive BIT (Built-In Test) Software, Embedded Clustering Software
- Commercial, Rugged Air Cooled & Conduction Cooled Build Grades

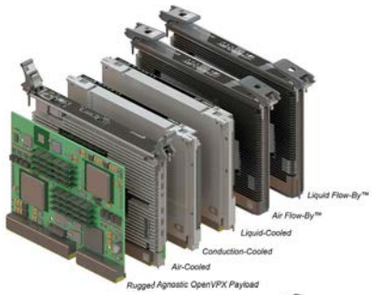
POWER PC'S: SINGLE OR DUAL PROCESSORS SBC'S

- Freescale QorIQ P-Series & T-Series, Multi-Core Processors (AMP, SMP)
- On-Board 4-Port GbE Switch, Multi-Protocol Serial Ports, up to 16GB on-board Flash, GPIOs
- 2 x PMC/XMC Expansion Sites, Watchdog, Timer Counters, Temperature Sensors
- Embedded Linux, VxWorks, Integrity, LynxOS Support
- BIT (Built-In Test) Software & Fabric Configuration Management Tools
- Commercial, Rugged Air Cooled, & Conduction Cooled Build Grades
- On-Board User Programmable FPGA-Option
- Flexible user I/O Routing-Flex I/O -Option
- Platforms: VME, OpenVPX



HIGH PERFORMANCE EMBEDDED COMPUTERS (HPEC)

HIGH PERFORMANCE COMPUTING HARDWARE



INTEL: CORE I7, XEON-E3, XEON-D, XEON-ES/E7

- Freescale (now NXP): T208x
- GPGPUs (NVIDIA & AMD)

High speed data interface and protocol (PCIe Gen3, 10/40GbE, Infiniband)

I/O CONNECTIVITY FOR HPEC:

- RDMA Over Ethernet (iWARP): Low latency, High throughput, Zero copy capability, OS/Stack bypass
- Multiware: Seamless PCIe data management in multiprocessor system.
- QPI, allows multiple server-class Xeon processors to be linked into a single SMP processing architecture

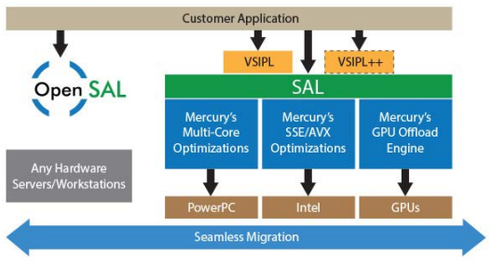
Micro Via Radial Interconnect (MVRI) technology has improved OpenVPX switch fabric interconnect data rates by three-fold, enabling switch fabrics and point-to-point connections to run faster and more reliably.
3U/6U VPX Module Agnostic Cooling:

3U/6U VPX MODULE AGNOSTIC COOLING:

- Air Cooling can handle up to a around 200W per module
- Conduction Cooling can handle up to a around 150W per module
- Air Flow-by Cooling can handle up to a around 200W per module
- Common to ALL these solutions is just one PWA

HIGH PERFORMANCE EMBEDDED COMPUTING SOFTWARE

- **Processing Libraries:** Hardware agnostic High Performance Libraries MKL, IPP, SAL, OpenCL, OpenMPI, CUDA
- **Diagnostic Support Tools:** Diagnostic Tools, System wide fault detection, Tools to build Built-in Test, Field Maintenance.
- **Distributed Computing Software:** Interprocess Communication Suite (ICS), Multiware (with services such as Virtual Ethernet over PCIe, shared memory, message synchronization with DMA powered transfers).
- **System Management:** Subsystem level System Health Monitors with GUIs, Ethernet, USB and/or RS 232 interfaces, data logging, field upgradable firmware, and data password protection.
- **Productivity Tools:** Open Development Suite, Trace Analysis Tool and Library (TATL), FPGA Development Kit.
- **Operating Systems Support:** Windows, Linux, VxWorks



GRAPHICS & VIDEO PROCESSING

EXTENSIVE RANGE OF EMBEDDED VIDEO PROCESSING MODULES, INCLUDING VIDEO CAPTURE, COMPRESSION, AND GRAPHICS OUTPUT

- GPGPU Capable High-Performance Graphics XMC & VPX Solutions.
- Latest AMD & nVIDIA (with CUDA support) many core GPU
- High-Speed PCIe Gen3 Interface.
- Frame Grabber with H.264 Compression.
- Independent Video Capture with up to 4 Video Inputs(DP/DVI/3G-SDI/A818/PAL/ NTSC/STANAG 3350).
- Up to 6-Independent Video Outputs (A818/DVI/HDMI/3G-SDI).
- Underlay & Overlay Supported.
- Video Streaming, Recording over TCP/IP (GbE o/p) & Recording to local disk.
- Supports KLV & CoT Metadata.
- Embedded OpenGL Vulkan Graphics Drivers.
- OpenCL Supported on Select Products.
- Commercial, Rugged Air Cooled, & Conduction Cooled Build Grades.
- Windows, Linux OS Support for IA32/64 Architectures.
- VxWorks, Integrity, & LynxOS RTOS Support including Intel & PowerPC Architectures.

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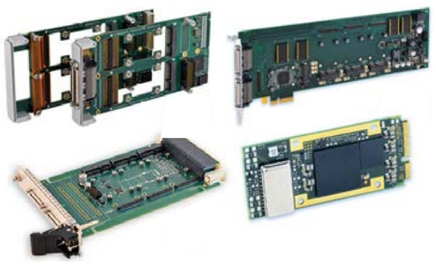
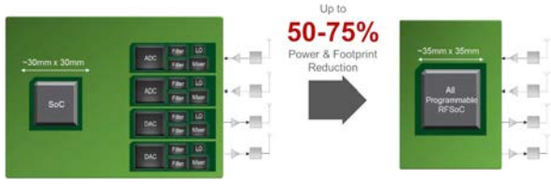
GENERAL PURPOSE I/O'S



- ADC, DAC cards up to 10MHz, 16-Bit Resolution, Isolated & Non-Isolated Options
- Digital I/O cards, supports TTL, LVDS, Solid State Relays, HV Inputs & Outputs, Isolated & Non-Isolated Options
- Multi-protocol Serial Communication cards: RS232, RS422, RS485
- Dual, Quad Port 1G,10G & 40G Ethernet cards
- Field Bus Communication: CAN, ARCNET, & INTERBUS
- Motion Control: Servo controllers, Absolute Encoders (SSI) interfaces,Incremental Encoders, Quadrature Decoders, & Synchro/Resolver-to-digital solutions
- Counters & Timer cards
- Commercial, Rugged Air Cooled, & Conduction Cooled Build Grades
- Embedded Windows, QNX, Linux, VxWorks, Integrity, LynxOS Support
- Platforms: PMC/XMC, AcroPack & IndustryPack Modules & Carriers for cPCI, VME & VPX

ACQUIRE & DIGITIZE

Programmable RFSoC



- Combines RF front-end with the MPSoC architecture on 16nm silicon.
- Eight 12bit ADCs @ 4 GSPS, Eight 14bit DACs @ 6.4GSPS
- Eliminates Discrete ADCs, DACs, FPGAs-to-Analog Interface
- Reduce foot print & power
- RF-design in the digital domain for greater flexibility
- Dual MPO optical connectors as per ANSI/VITA 66.4

FPGAs

- Kintex-7, Virtex-7, Zynq Soc, UltraScale/ UltraScale+ Family.
- Wide range of analog front ends - Up to 6 GHz A/Ds & D/As.
- Wide range of optical front ends - Up to 12/24, 10Gbs transceivers

FPGA IP

- A/D acquisition, D/A waveform generation, a controller for all data clocking and synchronization functions, a test signal generator & a PCIe Gen3 interface
- DDCs and DUCs for interfacing to IF ports of RF up/down-converters

MISSION COMPUTING & AVIONICS

- A/D acquisition, D/A waveform generation, a controller for all data clocking and synchronization functions, a test signal generator & a PCIe Gen3 interface
- DDCs and DUCs for interfacing to IF ports of RF up/down-converters

TRUSTED MISSION SOLUTIONS

- Secure Servers that includes both reliability and a trusted supply chain for both hardware and software.
- Cloud Computing Rackmount Servers with latest Intel Xeon Scalable processors.
- Supercomputing and Virtualization Servers with the latest NVIDIA® GPU accelerators (up to four GPGPU's)
- Modular High-Density Servers delivering high-compute density and low-latency.
- Hyperconverged Infrastructure Platforms integrates multiple RES form-factors, ethernet switches, and software-defined storage(SDS)/ hyper - converged infrastructure (HCI) software to deliver all-flash performance for virtualized applications.
- Datacenter in a briefcase, a tactical cloud that can host sensitive missions in theater and operate on almost any power source.
- Provide superior resilience to shock, vibration, and temperature extremes.

AVIONIC INTERFACES & BUS ANALYSIS TOOLS

- **TTE/AFDX (ARINC664}:** End Systems & Network Switches up to 24-Port, Development tools, Verification tools, Middleware.
- **TSN:** End Systems & Network Switches up to 24-Port, Development tools, Verification tools, Middleware.
- **MIL-STD-1553:** 1-4 Independent, Dual Redundant Channels of Dual Function BC/Mon & Full Function BC/Monitor and mRT (1-32)/ Monitor option available
- **ARINC-A429/575/717:** 4-30 Channels
- **Multi-Protocol Solutions:** MIL-STD-1553, ARINC 429, 708, CAN, RS232/422/485, & LVTTL interfaces on the single card
- **ENET**, the Ethernet Avionics converter, is a real-time UDP server engine (no IP software stack). Provides automatic 1553 BM or ARINC receive bridging without any host interaction. Fully rugged as per MIL-STD-704F/810G/461F and DO160 Sec 22.
- **Data Bus Components:** Bus Couplers, Bus Repeaters, Stub Extenders, Terminators, Connectors and cables
- Bus Analyzer for MIL-STD-1553/ARINC-429/AFDX and Protocol Validation Software
- Windows, Linux, VxWorks, Integrity, LynxOS support
- Commercial, Air Cooled Rugged, Conduction Cooled Build Grades
- Boards available in form factors like SFF (VITA74), mPCIe, PMC, XMC, 3U VPX & Standalone

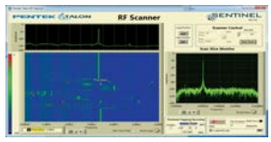
TTEthernet

NETWORK SWITCHES

- Fully managed 1G/10G/40G/100G Ethernet Switch
- Comprehensive network, configuration, management and monitoring using Switchware graphical user interface software
- Security features: 802.1x Port authentication, Multicast/Broadcast limiting, STP/RSTP protocol, Virtual cable tester On-Line, User authenticatio (certificate HTTPS / Key SSH), Mirror traffic and log recording
- Option of Link-state tracking redundancy, that binds the link-state of a downstream interface (or a group of interfaces) to the linkstate of a upstream interface.
- Up to 32 Configurable 1G/10G/40G Ports, fully managed **layer 2+/3** routing.
- Configurable front and rear I/O port combinations with copper and/or fiber.
- Switch Management by on-board Freescale Processor & Embedded OS.
- TCP offload engine (TOE processor), Traffic filtering
- Configurations with support for IPv4 / IPv6 with advanced networking.
- Commercial, air cooled rugged & conduction cooled versions.
- Open standards-based form factors such as VPX, VME, cPCI & standalone.

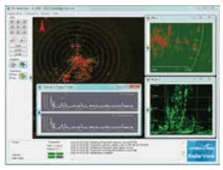
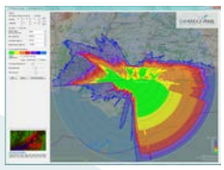
RECORDING & PLAYBACK SYSTEMS

- Ability to capture RF, IF signals, SFPDP, 10 & 40G, LVDS
- Radar & EW System Verification with Data Recorder and Playback System in Lab
- Multi-channel phase-coherent signal acquisition for Direction finding, phase array radars, etc.
- GPS and IRIG options for Precision time and position stamping of recorded signals
- API, GUI and Signal Viewer analysis tools
- Rack Mount, Portable, Rugged, Conduction Cooled options



RADAR PROCESSING & DISPLAY, SIMULATION

- SPx Server for Target Tracking, provides the functions of radar recording, network distribution of radar video, plot extraction and target tracking.
- SPx Fusion Server, for the fusion of primary and/or secondary (AIS, IFF, ADS-B) sources.
- SPx Radar Simulator, for the simulation of primary radar video, along with secondary sources and navigation data.
- Radar View Radar Visualisation, for the visualisation of primary radar video, along with graphics and secondary data.
- SPx Development is a package that supports the development of custom server and client radar applications.
- ASD-100 Air Situation Display, An integrated display application for the acquisition, display and tracking of primary and IFF targets.
- RDR Data Recorder, record and replay application for primary radar video, tracks, AIS, ADS-B, video, navigation data, screen capture and other network data formats.
- VSD Security Display, for the processing and display of radar and camera video, including camera control, slew-to-cue and integrated radar and video tracking.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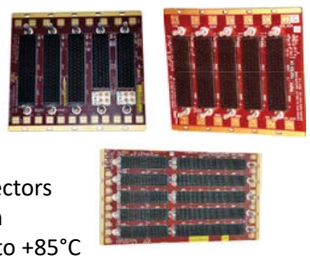
BACKPLANE – SYSTEM BUILDING BLOCKS

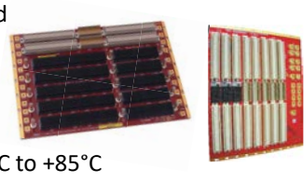
BLAZE – OPENVPX / VPX BACKPLANE



- Designed to meet ANSI/VITA 46.x 2007 & ANSI/VITA 65.0 2010
- 0.8" / 0.85" / 1.0" Card Pitch
- 3U or 6U Form Factor
- **VITA 67 backplanes available**
- Choice of High Speed Fabrics;
- PCI Express (Upto Gen 4)
- Gbit Ethernet (1G/10G/40G)
- High Speed Multi-Gig RT Connectors
- Keying & Alignment Mechanism
- Operating Temperature: -40°C to +85°C
- Power connections at rear for VSI, VS2, VS3, AUX & Ground
- Custom Designs

BLAZE – HYBRID BACKPLANE (VME+VXS & VME+VPX)

VXS + VME64x Hybrid Backplane
VME + VPX Hybrid Backplanes



- Designed as per VITA standard
- Superior Power Distribution
- PCB FR4/Rogers
- Zero Cross-talk
- Custom Designs
- Operating Temperature: -40°C to +85°C

BLAZE – CPCI & VME64X BACKPLANES

- Conforms to PICMG Standards & As per ANSI/VITA 1.1-1997; IEEE 1101.10 Mechanical Standards
- 02 to 21 slots
- Standard Rear I/0 & 3U or 6U Form Factor
- 32/64 Bit PCIbus, 8 layer or 12 layer(cPCI)
- FR4 PCB, 4.2mm thick or equivalent
- Excellent Signal integrity
- Superior Power Distribution; Active/Passive bus termination
- Excellent Power Distribution & +5, +3V3 & ±12V Interface Studs
- Operating Temperature: -40° C to 85° C
- Auto Daisy Chain & Custom Designs

SYSTEM HEALTH MONITORS

- Current & Voltage Monitoring
- Fan Speed & Fan Fail Monitoring
- Temperature Monitoring
- Analog & Digital Sensors
- HVHC & TTL Outputs
- RS232/USB/Ethernet Interfaces
- On-board Data Logging
- User Configurable GUI
- Operating Temperature: -40°C to +85°C
- Stand-alone, VME & VPX Form Factors

NETSPYDER – ETHERNET SWITCHES

- Designed for Industrial, Defence & Aerospace Environments
- 8/12/16/24 Gigabit Ports; Layer2/Layer 3 switching capability
- Flexible VLAN assignment- 802.lQ, port & protocol
- Quality of Service engine

Security features

- Multicast/Broadcast limiting & Virtual cable tester On-Line

Flexible management tools

- Enhanced Port mirroring & STP/RSTP algorithm for more reliable network

Operation Simplicity

- Auto-negotiation & Auto Cable Detection (MDI/MDI-X)
- On-line virtual cable tester with advance cable diagnose capability
- Conduction or Convection Cooled
- Custom Designs

NETSPYDER – CR

CISCO Powered Ethernet Switch

- Layer 3 and Layer 2 Support
- Operating System: CISCO Advanced I0S XE operating system
- Supports up to 24-ports Ethernet 1G ports
- Combination of Copper and Fiber
- Supports native PoE and PoE+
- Conduction cooled
- Power
  - AC Input: 230V AC
  - DC Input: 28V Nominal DC (18-36V)
- Interfaces:
  - Upto 24 port 10/100/1000 Ethernet Ports
  - Upto 4 x 1G Fibre Optic Ports (Build Option)
  - LED Indication per port (link / activity)
  - One RS-232 Console Interface
- Ruggedized for extreme environments
- Operating Temperature: -40°C to +71°C
- Connectors: Circular MIL
- Standards: Compliant to MIL-STD-810G and MIL-STD-461F
- Custom Specific Style & Layouts variant available.

HELIOS – POWER SUPPLY UNITS

- 200 W to 1.2 KW Power Output
- 18- 36VDC / 120 - 230VAC Input
- Single / Dual Slot Options
- Multi Output PSU
- 85% Efficiency (Typical)
- No Minimum Load
- Current Limit
- Input Power & Fault Status Indication
- Remote Power On/Off (Optional)
- IEEE 1101.1x Compliant Front Panel
- MIL-STD-810F & MIL-STD-461F
- MIL-STD-704F, 1275B (Optional)
- Air/Conduction Cooled Units

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UNICORN – ATR CHASSIS

Forced Air Cooled

- Airborne, Shipborne & Ground Deployment
- Compliance to MIL Specs
- IEEE 1101.10 Mechanical Standards
- Rugged Aluminum Construction
- Standard or Custom Vol./Sizes
- 3U / 6U or Custom Form Factors
- OpenVPX / VPX / VME64x or cPCI Backplane Options
- AC or DC input PSU Options

- Modular I/0 transition with I/0 PWB (No Cable harness required)
- ARINC or MIL-D-38999 Connector Style
- Hard Mount or ARINC Tray Mount
- Environmental - MIL-STD-810F/RTCA-DO-160E
- EMI/EMC as per MIL-STD-461E

RHINO – ATR CHASSIS

3U/6U Liquid Cooled ATR Chassis

- Milled block construction for optimal structural integrity.
- Adherence to IEEE 1101.20 mechanical standards.
- 3U/6U high ATR chassis, providing ample space for your cards.
- Support for up to 16 slots in the card area.
- Multiple backplane options, such as 3U/6U (VPX / cPCI/ VME).
- AC/DC input power supply for flexibility in power sources.
- Input transients in accordance with MIL-STD-704E /MIL-STD-1275D for reliable performance.

- Availability of single or dual cooled side walls, catering to diverse cooling needs.
- EMI/RFI power line filtering to mitigate electromagnetic interference.
- Cable harness-free design, ensuring simplicity and efficiency.
- MIL-C-38999 type connectors for power and I/O signals located at the rear for convenient connectivity.
- Hard mount configuration for secure installation.
- Custom design options to tailor the chassis to your specific requirements.

OYSTER SERIES – RUGGED CHASSIS

- Shipborne & Ground Deployment
- Compliance to MIL Specs
- IEEE 1101.10 Mechanical Standards
- 19" Rack Mount, Upto llU High
- Forced Air Cooled
- 3U / 6U or Custom Form Factors
- Upto 18 Slots

- OpenVPX / VPX / VME64x or cPCI Backplane Options
- AC or DC input PSU Options
- Modular I/O transition with I/O PWB (No cable harness required)
- MIL-D-38999 Connectors
- Environmental - MIL-STD-810F / JSS 55555
- EMI/EMC as per MIL-STD-461E
- Altitude upto 10000ft
- Custom Designs

AURORA SERIES – INDUSTRIAL CHASSIS

- As per IEEE 1101.1 Mechanical Standards
- 1U to 2U High, Rack Mount
- 2 to 21 Slots
- 3U or 6U Cards
- Forced Air Cooled
- OpenVPX / VPX / VXS / VM E64x / cPCI Backplane Options

- Rear I/O Supported
- AC or DC input PSUs
- Upto 1000 watts
- Standard Connectors

- Custom specific Switch Controls & Indications
- Custom Designs

CCORAL – DISPLAY CONSOLE

- Airborne, Shipborne & Ground Deployment
- Compliance to MIL Specs
- Single or Dual Head Display Consoles
- Airborne, Shipborne & Ground Deployment
- Compliance to MIL Specs
- Single or Dual Head Display Consoles
- As per MIL-STD-1472F Human Engineering
- Standard Display Sizes with Tilt Mechanism

- ATRs / Rugged Chassis based Sub-system
- VME / VPX / cPCI Compute Resources
- Touch Input Display with Controls
- With or Without Shock Isolation
- Environmental as per MIL-STD-810F
- EMI/EMC as per MIL-STD-461E
- Altitude upto 30,000ft
- Custom specific Switch Controls & Indications
- Foldable or Rigid Desk; Customized Foot rest
- ARINC or MIL-D-38999 Connector Style
- Custom Designs

TAURUS – RACKS

- Airborne, Shipborne or Ground Deployment
- Multiple Levels for 19" Rack Sub-Systems
- Custom Sub-Systems; Power Supply Sub-System
- ARINC or MIL-C-38999 Connector Style (Sub-Systems level)

- Efficient Thermal Management
- Structure Stability
- EMI protection front door
- Shock Mount Integrated
- Environmental - MIL-STD-810F / JSS 55555
- EMI/EMC as per MIL-STD-461E
- Custom Designs

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SMALL FORM FACTOR EMBEDDED COMPUTERS

FALCON – II

Configurable SFF Embedded Computer

- **CPU:** Intel Core i7/ Xeon E or latest
- **Cores:** Multicores
- **Memory:** up to 128 GB DDR4 RAM (with or without ECC)
- **Storage:** up to 4TB with M.2 Interface
- **Integrated Graphics:** Intel UHD Graphics Controller
- **Video Outputs:** 2 x Display Ports / DVI
- **I/O's** :
  - 2 x 10G Ethernet (Optional, Copper or Fiber)
  - 2 x 1 Gigabit Ethernet (PoE+ Option)
  - 2 x USB 3.0, 2 x USB 2.0, 1 x HD AUDIO
  - 4 x RS232 (TX/RX)/RS422/RS485,
  - 1 x RS232 (TX/RX - Console), 8 x GPIOs

- **Security:** TPM 2.0 (optional)
- **Dimensions:** 217mm x 260mm x 105mm
- **Weight:** ≤ 4.3 to 4.9 Kgs. (Configuration Dependent)
- **Connectors:** MIL-Circular
- **Storage Expansion - Option:** SSD Mass Storage Drive (with optional Secure Erase or Zeroize Function)
- **Health Monitor:** System Health Monitor & Control (Optional)
- **Power:** 28 VDC, MIL-STD-704F/MIL-STD-1275E
- **Operating Temp**: -40°C to +55 °C, up to +71°C (Depends on Thermal Load)
- **Storage Temp:** -40°C to +85 °C
- **Environmental:** MIL- STD-810H
- **EMI:** MIL-STD-461G
- **Cooling:** Fanless Conduction Cooled
- **Operating System Support:** Windows 10, Linux & VxWorks

KESTREL

Standards Based NANO Computers

- **CPU:** Intel ATOM, NXP ARM or Latest
- **RF:** Wi-Fi, Bluetooth, Cellular, GPS
- **Signal I/O:** Analog, Discrete, IRIG B, IMU
- **Standard I/O:** GigE, USB 2 / 3, Serial. Audio, GPIO
- **Data Bus I/O:** MIL-STD-1553, ARINC-429, CANbus
- **OS:** Linux, Windows, VxWorks, Integrity & others upon request.

LANIUS – II

Micro Embedded Computer

- **CPU:** Intel Core i7/ Xeon E or latest
- **Memory:** 16 - 64 GB (RAM)
- **Mass Storage:** Upto 1.9 TB (through M.2)
- **I/Os:** (through MIL-STD-38999 & Hercules Connectors)
  - 2 x 1G/10G, 2 x USB3.0, 2 x USB2.0, 1 x HD Audio,
  - 2 x UART, 8 x GPIO, 4 x miniPCIe + 2 x mSATA
- **Video Output:** 2 x DP / DVI

- **Dimensions:** 217 x 270 x 75 in mm
- **Weight:** ~3.2 Kg
- **EMI:** MIL-STD-461G
- **Environmental:** MIL- STD-810H
- **Power:** 12 - 36 VDC, MIL-STD-704F/MIL-STD-1275E
- **Operating System:** Linux and Windows 10

FALCON – III

High Performance Configurable Embedded Computing System

- **CPU**: Intel Core i7/ Xeon E or Latest
- **Memory**: up to 64 GB DDR4 RAM
- **Storage:** up to 1.9 TB through M.2 (SATA)
- **Integrated Intel UHD Graphics Controller**
- **Video Outputs:** 2 x Display Ports
- **I/O's** :
  - 2 x 10G Ethernet (Optional, Copper or Fiber)
  - 2 x Gigabit Ethernet (PoE+ Option)
  - 2 x USB 3.0, 2 x USB 2.0, 4 x RS232 / 422 / 485
  - 1 x Audio IN & 1 x Audio OUT, 8 x GPIOs
- **Removable Storage:** 2 x 2.5" SSD

- **Security:** TPM 2.0 (Optional)
- **Dimensions:** 300 x 115 x 270 in mm
- **Weight:** < 8KG including 5 x mPCIe & 2 x XMC (Configuration Dependent)
- **Connectors:** MIL-Circular
- **Health Monitor:** System Health Monitor & Control (Optional)
- **Power:** 28 VDC, MIL-STD-704F/MIL-STD-1275E
- **Operating Temp:** -40°C to +55 °C, up to +71°C
- **Storage Temp**: -40°C to +85 °C &
- **Environmental:** MIL- STD-810H
- **Operating System Support:** Windows 10, Linux & VxWorks

LANIUS – IA

Micro Embedded Computer

- **CPU:** Quad Core Atom or Latest
- **Memory:** 4 GB RAM
- 64 GB EMMC Flash
- **Video:** 1 x DVI Output / 1 x HDMI
- **Weight:** ~0.8 Kg
- **I/O:** 2 x GigE, 1 x USB 3.0 / 2 x USB 2.0, 2 x Serial, Audio, GPIO, I2C
- **Expansion:** 2 x mPCIe + 2 x mSATA
- **Dimensions:** 150 x 100 x 35 in mm
- **Power:** 28 VDC
- High Density Micro D Connector (Standard) / circular
- MIL-STD-810F, MIL-STD-461F, MIL-STD-704F/1275D
- **Operating System:** Linux, Windows

LANIUS – III

Micro Embedded Computer

- **CPU:** Intel Core i7 or ATOM x6000E Processors or latest
- **Memory:** up to 16 GB DDR4 RAM
- **Storage:** up to 512GB through mSATA
- Integrated Graphics Controller

- **Video Output:** 1 x Display Port
- **I/O's (Standard):**
  - 2 x Gigabit Ethernet
  - 1 x USB 3.0, 2 x USB 2.0
  - 2 x RS232 (TX/RX- Console), 8 x GPIOs
  - 2 x mPCIe expansion site
- **Security:** TPM 2.0 (optional)
- **Dimensions:** 72 (H) X 188(W) X 155.8 (D) all in mm
- **Weight:** < 2.2kgs (Configuration Dependent)
- **Power:** 28 VDC, MIL-STD-704F/MIL-STD-1275E
- **Operating System Support:** Windows 10 & Linux

WILLET – I

SFF System with Nvidia Xavier

- **CPU:** Intel Core i7/ Xeon E or Latest
- **Memory:** up to 64 GB DDR4 RAM (with or without ECC)
- **Storage:** up to 1.9TB with M.2 Interface
- **GPGPU:** NVIDIA or AMD-ATI GPGPU with 4GB DDR5 RAM with Teraflop Processing
- **Video Outputs:** Independent 2 x 3G-SDI, 2 x DVI/Display Port, 1 VGA (optional), 2 x ARINC 818 (optional)
- **Video Inputs:** Independent 2 x 3G-SDI and 2 x CVBS (NTSC/PAL/SECAM), 2 x ARINC 818 (optional)
- **Encode/Decode:** H.265 & H.264 Hardware Encoder/Decoder
- **Recording:** Synchronized Audio + Video Capture, Compression and Streaming/Write to Disk Support
- **I/O's :**
  - 2 x 10G Ethernet (Optional, Copper or Fiber)
  - 2 x 1 Gigabit Ethernet (PoE+ Option)
  - 2 x USB 3.0, 2 x USB 2.0, 1 x HD AUDIO
  - 4 x RS232 (TX/RX)/RS422/RS485
  - 1 x RS232 (TX/RX- Console), 8 x GPIOs

- **Security:** TPM 2.0 (optional)
- **Dimensions:** 217 (W) x 260 (D) x 120 (H) in mm
- **Weight:** ≤ 4.8 Kgs. (Configuration Dependent)
- **Connectors:** MIL-Circular
- **Health Monitor:** System Health Monitor & Control (Optional)
- **Power:** 28 VDC, MIL-STD-704F/MIL-STD-1275E
- **Operating Temp:** - 40°C to +55 °C, up to +71°C

WILLET – N

SFF System with Intel CPU + Nvidia GPU

- **CPU/GPU:** Jetson AGX Xavier or Orin
- **Memory:** 8GB/16GB/32 GB LPDDR4x
- **Storage:** 32 GB eMMC 5.1
  - Up to 512GB SSD (using mSATA Expansion site)
- **Video O/P:** DP1.2/HDMI 2.0
- **I/O's**:
  - 2 x RS232/2 x RS422 (Software Selection)
  - 2 x U SB 3.0, 1 x USB 2.0, 1 x CAN, 1 x HD Audio
  - 1 x 1 Gig Ethernet, 1 x 10 Gig Ethernet 1 x HDMI
  - 2.0/DP 1.2, 4 x GPIO
- **I/O's (Build Options):**
  - 1 x 10 Gig Ethernet, 4 x GPIO, Debug (Tx & Rx)
  - 2 x CSI (Dual Lane), 1 x USB 2.0, 1 x CAN, 1 x SPI
  - 2 x UART, 1 x I2C
- **Expansion Sites:** 1 x mSATA/1 x M.2 NVMe slot KEY M, 2 x mPCIe/1 x mSATA & 1 x mPCIe.

- **Dimensions:** 154 x 76 x 230 in mm
- **Weight:** < 2.5kg
- **Power:** 28 VDC Nominal (18-32 VDC), MIL-STD-704F/MIL-STD-1275E
- **Operating Temp:** -25°C to +65 °C
- **Environmental:** MIL- STD-810H
- **EMI**: MIL-STD-461G
- **Operating System:** NVIDIA Linux for Tegra (L4T) based on Ubuntu

SMALL FORM FACTOR – ETHERNET SWITCHES

NETSPYDER CA – 8 Port Unit Specifications

- **Dimensions:** 124 x 86 x 204 in mm (WxHxD)
- **Weight**: < 2.2 kgs
- **Voltage**: 28 VDC Nominal (18-32 VDC)
- **Power**: 35-Watt (200-Watt typ with POE configuration dependent)
- **Operating Temperature**: -40° to +71° Celsius
- **Environmental**: MIL- STD-810H
- **EMI**: MIL-STD-461G
- **Power**: MIL-STD-704F and MIL-STD-1275E

NETSPYDER CA – 24 Port Unit Specifications

- **Dimensions:** 124 x 142 x 204 in mm (WxHxD)
- **Weight**: < 3.3 kgs
- **Voltage**: 28 VDC Nominal (18-32 VDC)
- **Power**: 45-Watt (540 Watt with POE configuration dependent)
- **Operating Temperature**: -40° to +71° Celsius
- **Environmental**: MIL- STD-810H
- **EMI**: MIL-STD-461G
- **Power**: MIL-STD-704F and MIL-STD-1275E

NETSPYDER DA – 8 Port Unit Specifications

- **Dimensions:** 124 x 87 x 160 in mm (W x H x D)
- **Weight**: < 2.2 kgs
- **Voltage**: 28 VDC Nominal (18-32 VDC)
- **Power**: 30-Watt typ (configuration dependent)
- **Operating Temperature**: -40° to +71° Celsius
- **Environmental**: MIL- STD-810H
- **EMI**: MIL-STD-461G
- **Power**: MIL-STD-704F and MIL-STD-1275E

NETSPYDER DA – 24 Port Unit Specifications

- **Dimensions:** 160 x 87 x 180 in mm (WxHxD)
- **Weight**: < 4.4 kgs
- **Voltage**: 28 VDC Nominal (18-32 VDC)
- **Power**: 40-Watt typ (configuration dependent)
- **Operating Temperature**: -40° to +71° Celsius
- **Environmental**: MIL- STD-810H
- **EMI**: MIL-STD-461G
- **Power**: MIL-STD-704F and MIL-STD-1275E

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SMALL FORM FACTOR – VNX FAMILY

RAPTOR – VNX COTS COMPUTER

- **CPU:** Multicore Intel ATOM, ARM® & Intel Core i7
- **GPU:** Video/Graphics Processing
- **Standard I/O:** GigE, USB 2 / 3, Serial. Audio, GPIO.
- I/O Expansion: 2 /4 / 6 miniPCIe slots to support 1553, A429, Analog & Digital I/O etc. (contact factory for various options available).
- **Storage:** Fixed, Removable or Remote Options
- **Connectors:** Circular MIL
- **Power:** 28 VDC @ 10 to 60 Watts (Configuration Dependent), MIL-STD-704F 1275E with Optional Hold-Up to 50 mSec
- **Operating Temp:** -40°C to +55 °C (standard) up to +71°C (Configuration Dependent)
- **Storage Temp:** -40°C to +85°C
- **Environmental:** MIL- STD-810H
- **EMI:** MIL-STD-461G
- **OS:** Linux, Windows

RAPTOR – VNX+(VITA 90) COTS COMPUTER

- **CPU:** Multicore Intel Architecture (i7, Atom).
- **OS:** Linux, Windows
- **Other Processors:** NVIDIA Xavier/Orin GPU/GPGPU ,FPGA, MPSoC + ARM® (Consult Factory for Specific Details).
- **Dimensions:** 19 x 12.5 x 19 in mm
- **Architecture:** Control Plane, Data Plane, Expansion Plane, and Utility Plane per VITA 90.
- **Avionics I/O:** MIL-STD-1553B, ARINC-429, CAN bus.
- **Standard I/O:** GigE, USB 2/3, RS-232/422/485, Audio, GPIO, DisplayPort, HDMI, SATA.
- **Other I/O:** Wi-Fi, Bluetooth, Cellular Modem, 10GbE and other high-speed networking. GPS, IMU/INU, ARINC-818, FibreChannel.
- **Management:** System Management per VITA 46.11 & VITA 90.
- **Storage:** Fixed, Removable, Remote Options Available.
- **Power:** 28 VDC @ Up to 130 Watts, 50 mSec Hold-Up.

VNX FAMILY – VNX+ MODULES

VNX+ SBC

- **CPU:** Intel i7 to Atom Processor: 1 Cores / Threads: 2 / 4
- RAM, DDR4-2133, Non-ECC: 8 GB
- FLASH, eMMC : 64 GB
- **PCIe** x1: 4 | 10/100/1000BaseT : 1
- **USB** 2.0: 4 | USB 3.0: 2
- **HD Audio In**: 1 | **HD Audio Out**: 1
- UART RS-232 (TX/RX): 2
- HDMI/DVI/DP: 1
- SATA III (6 Gbps): 2

VNX+ GPGPU

- **GPU:** Jetson Xavier NX
- Nvidia Volta GPU with 384-CUDA Cores 48 Tensor Cores
- **CPU:** 6-core NVIDIA Carmel ARM®v8.2 64-bit CPU
- **Memory:** 16 GB 128-bit LPDDR4x
- **Storage:** 16GB eMMC
- 4x PCIe Gen 3 Interface | 2 x HDMI/DP
- 1 x GbE | 1 x USB 2.0 & 1 x USB 3.0
- 2 x GPIO | 2 x UART RS-232 (TX/RX)
- 2 x GbE SGMII Interface

VNX+ IO Carrier

- Standard PCIe interface upstream
- Two mPCIe / Acropack communication interface downstream
- Two USB 2.0 communication interface
- One SM BUS interface
- EEPROM storage 16 Mb
- Two slots for mini PCIe cards (Full Mini or Half Mini)
- Out of two slots one Slot is compatible for both mini PCIe and mSATA

VNX+ Ethernet Switch

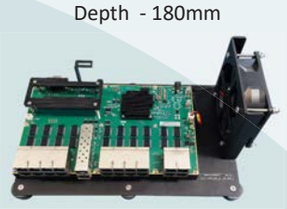
- 8 x GbE Ports (MDIO) on VNX Switch Module
- 3 x QSGMII Ports for 8 or 12-Port Expansion via optional expansion module
- 2 x 10GbE Ports
  - 2 x SFI Drive with 400-Pin with Zero-Aperture
  - 2 x MT Optical Interfaces with 320-Pin and Half-Aperture
- 1 x RS232 Console
- Ethernet Indication signals
- **Power:** 10 Watts typ.

VNX+ PSU

- **Line & Load Regulation:** Less Than 1%
- **Ripple & Noise:** Less Than 75 mV
- **Output Power** Max : 90 Watts (Limited by Cooling)
- **Efficiency:** 85% to 90%
- **Protection:** Short Circuit Protected
- Parallel Feature (Optional)
- **Power Supply** - ***Input Voltage :***
  +12 VDC to +36 VDC (+28 VDC Nominal)
  Output Voltage :
  +12 VDC @ 8 Amps -12 VDC @ 0.25 Amps
  +5 VDC @ 2 Amps +3.3 VDC @ 2 Amps

VNX+ Switch Test Jig

- **1GbE**: 20
- **10G SFP ports:** 2
- **120GB MLC SATAIII**: 2 SATA Connectors
- **NAND Flash**: SATA SSDs are on Raptor VNX 19mm Switch Module)
- **Dimensions:**
  Height - 119mm
  Width - 290mm
  Depth - 180mm



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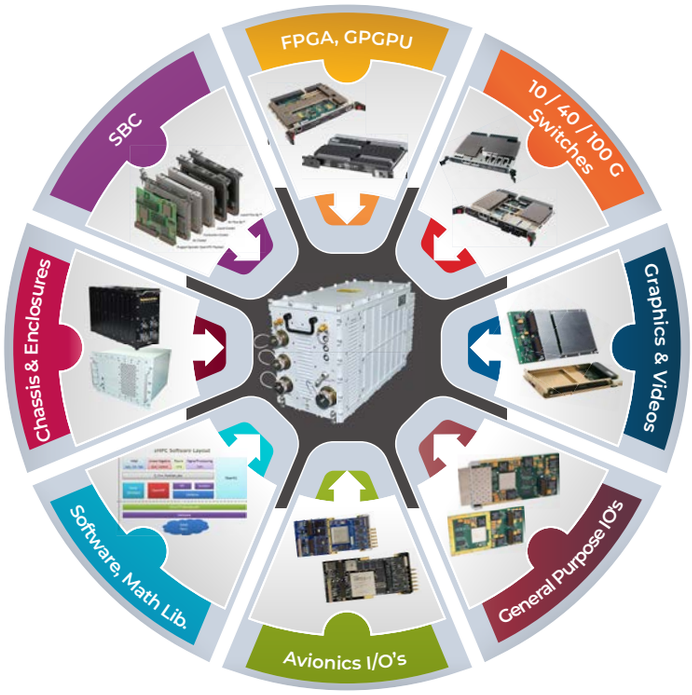
SYSTEM INTEGRATION

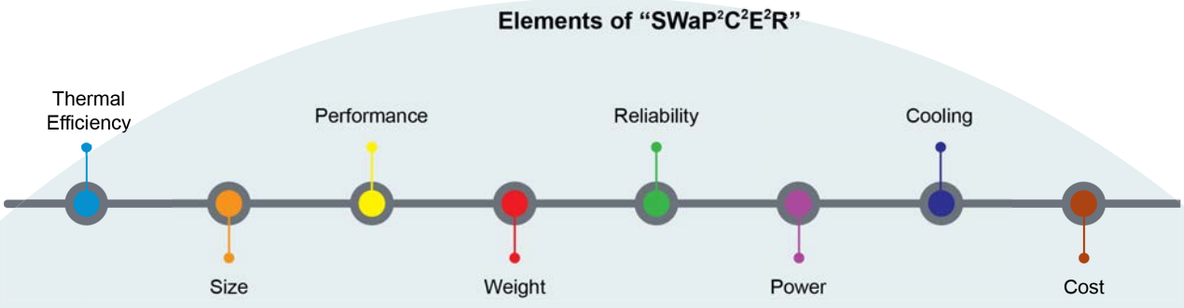
Trident offers System Integration Services for various applications meeting demanding requirements. From a basic configuration of COTS cards in a chassis to customized system configuration, including software, we reduce the risk of dealing with many suppliers. This minimizes delivery risk and the learning curve associated with Post-delivery Integration. Integrated systems are delivered more quickly and economically, allowing for higher productivity at the application development level.

- Electronic Warfare
- Unmanned Aerial/Ground vehicles
- EO/IR
- Sonars
- DO-178B & DO-254B Certifiable Avionics Systems
- Software Defined Radio
- Radars
- C31 & C41 Systems

INTEGRATED SYSTEM SOLUTIONS FOR LAND, SEA & AIR APPLICATIONS

System Packaging	Application Software	Computing Platforms
ATR, Racks, Command Consoles Displays, Enclosures, storage ..	Middleware Software & Drivers Integration	(SBC's-Intel/Freescale) Signal Processing H/W, I/Os Avionics, Acquisition, Graphic & Video





ENGINEERING SOFTWARE

Today Software is the key driver for all embedded systems. Trident Infosol offers a tightly integrated system development tool chain starting from requirement capture to integrated development environment, Compilers, Communication Middleware and more. In addition, there are a host of specialized tools for circuit simulation, Reliability Engineering, and Advanced tools for engineering complex control systems and HMI Development for Mission and safety critical application. Our comprehensive Engineering software tools cover all key concerns for designers of critical systems including standards compliance, verification and validation, and design tradeoffs. Our design and development tools help engineers working with mission and safety critical systems in varied fields like automotive, aerospace, military and medical.

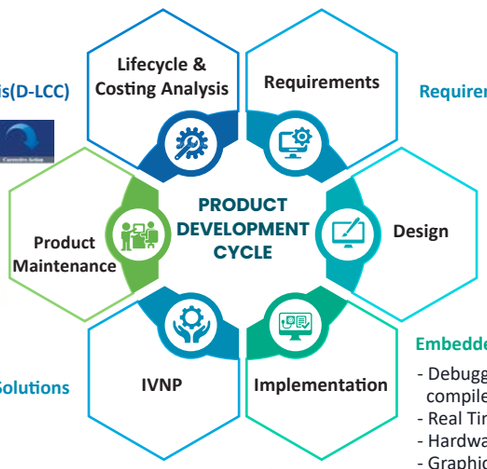
Connect with us to reduce your time-to-market by leveraging our end-to-end embedded engineering software offerings

- Requirements Traceability and Impact Analysis
- Embedded and System Design
- Embedded and System Implementation
- End-to-End Testing Solutions
- Failure Reporting, Analysis & Corrective Action System
- LCC & TCO Analysis Tools

LCC & TCO Analysis(D-LCC)

Failure Reporting, Analysis & Corrective Action System

End-to-End Testing Solutions



Requirements, traceability & impack analysis

Embedded Design
- Simulation & Modelling

System Design
- Simulation & Modelling
- Modelica Libraries
- Reliability Solution

Embedded & System Implemenation
- Debugging - Integrated Development Environment & compiler Solutions
- Real Time Operating System(RTOS)
- Hardware Debugger
- Graphics User Interface Development

Collaborative System & Software Governance

3DExperience ENOVIA - Highly Adaptive Software

VALUE PROPOSITION

END TO END TECHNOLOGY OFFERINGS

With partnership with world leading technology developers, we are a one stop technology provider across your embedded software and engineering systems development life cycle

ADHERENCE TO INDUSTRY SPECIFIC SAFETY AND SECURITY STANDARDS

All our technology offering adheres to industry specific safety & security standards ensuring absolute reliability of critical applications.

DOMAIN EXPERTISE IN DIVERSE INDUSTRIES

We have strong experience in providing solutions and services to diverse industries like aerospace, defense, automotive, atomic and more.

UNMATCHED CUSTOMER SERVICE, PRODUCT SUPPORT AND TRAINING

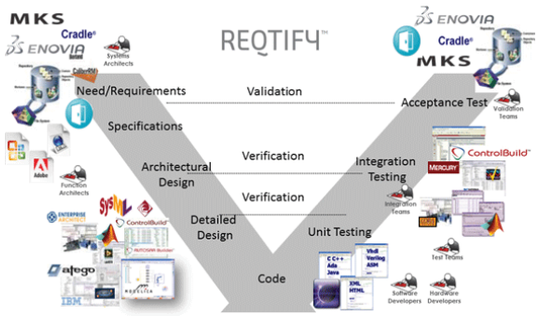
With more than a decade of experience in serving our customers, our customer service and product support capabilities are unmatched in the industry. Our people put in whatever work is required, whenever needed to keep our customers happy.

REQUIREMENT CAPTURE, TRACEABILITY SOLUTION AND DESIGN MANAGEMENT

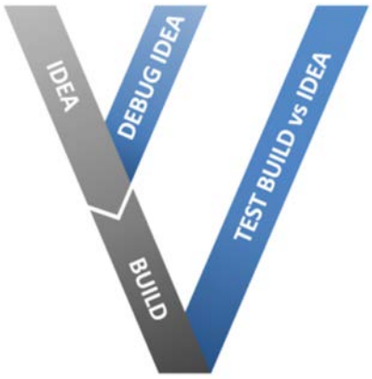
Trident Infosol offers user friendly application for managing requirement traceability and impact analysis across different systems, programs and project levels across the entire hardware and software development lifecycle.

The application provides connectors to a wide range of engineering tools to ensure easy integration into your existing engineering process.

- Interactive application for managing requirements
- Enables traceability and impact analysis across the entire hardware and software development lifecycle of a project.
- Automatically extracts data created by your current suite of tools.
- Manage your requirement engineering process and to ensure compliance with standards such as ISO61508, ISO26262, Spice, DO178C, DO258, FDA, GAMP, CMMI and many more.



REQUIREMENT – IN –LOOP



Our Requirements-in-loop solution allows you to debug a requirement specification in the same way you would debug a piece of code, more easily in fact.

The tool helps you identify conflicts, missing requirements, ambiguities, semantics and many more very early in the requirements specification sttage.

Key features

- End-to-end Requirement-based Validation Solution
- Software-In-The-Loop Validation
- Simulate System behaviour based on the requirement specifications. Consider requirements and state-machines as constraints imposed on the specified system behaviour.
- Use Cases are defined as a set of constraints on the inputs.

It is known that **70%** of the errors introduced during an embedded system development project are introduced during the specification phase, whereas only **4%** of the errors are discovered during this phase.

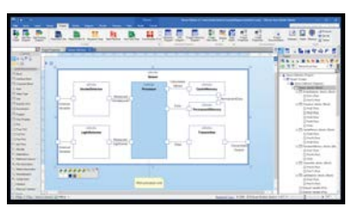
SYSTEMS MODELER

Systems Modeler™ is an cross-platform collaborative Model-Based Systems Engineering (MBSE) environment, which provides smart, robust, and intuitive tools to define, track, and visualize all aspects of systems in the most standard -compliant SysML models and diagrams. The environment enables systems engineers to:

- Run engineering analysis for design decisions evaluation and requirements verification
- Continuously check model consistency
- Track design progress with metrics

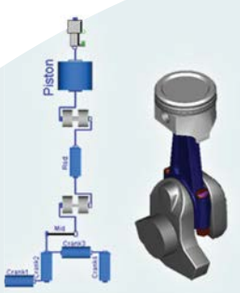
System models can be managed in remote repositories, stored as standard XMI files, or published to documents, images, and web views to address different stakeholder concerns.

OMG SYSTEMS MODELING LANGUAGE SysML™



SYSTEM DESIGN

MULTI ENGINEERING MODELING & SIMULATION



We offer a complete tool for modeling and simulation of integrated and complex system for use within automotive, aerospace, robotics and other applications with advantages including: Multi-engineering, intutive modeling, modelica - object oriented modeling language, open libraries, symbolic manipulation, animation and comprehensive model libraries.

Our creator suite offers the most advanced modelica-based mathematical engine on the market.

Modelica Libraries


Air Conditioning Library


Environmental Control Library

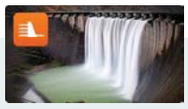

Engine Dynamics Library


Fuel System Library


Heat Exchanger Library

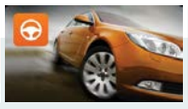

Hydraulics Library


Electric Power Library


Hydro Power Library


Jet Propulsion Control Library


Liquid Cooling Library


Vehicle Dynamics Library


Thermal Power Library

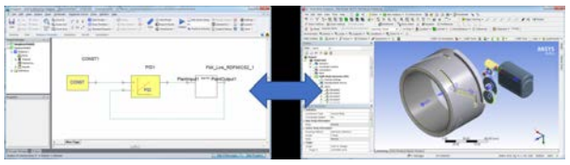

Vapor Cycle Library


Fuel Cell Library

OPTIMICA COMPILER TOOLKIT

OPTIMICA Compiler Toolkit, offers users a powerful solution for the automating, simulation and optimization of system behaviors throughout the model-based design cycle. **OPTIMICA** enables users to build multidomain physical systems by choosing from thousands of available model components.

fmi FUNCTIONAL MOCK-UP INTERFACE



FMI TOOLBOX

Supports all major workflows in control system development and system integration for virtual prototyping, from design and sizing to optimization and MIL/SIL/HIL validation & verification testing in MATLAB/Simulink. Integrate simulation models from more than 100 tools into your Simulink workflow.

The additional FMI Toolbox Coder Add-on provides extensive support enabling users to export FMUs from Simulink and import FMUs to a Simulink Coder target.

FMI ADD-IN FOR EXCEL

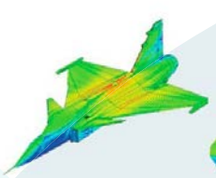
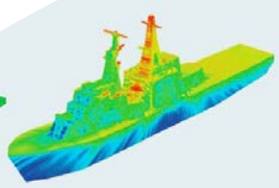
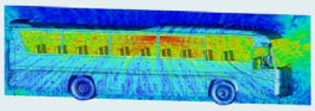
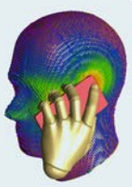
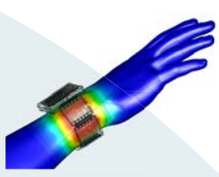
Combine the visualization and data management capabilities of Microsoft Excel with multicore simulations from FMI Add-In! FMI Add-In , a plugin for Microsoft Excel, is a powerful simulation software tool that enables users to import and simulate Functional Mock-up Units (FMUs) in a spreadsheet environment

ELECTROMAGNETIC SIMULATION

Our Software is a specialist tool for the 3D EM simulation of high frequency components. The unparalleled performance makes it the first choice in leading R&D departments.

- Enables fast and accurate analysis of high frequency (HF) devices such as antennas, fi lter s, couplers, planar and multi-layer structures and SI and EMC effects.
- Exceptionally user friendly,
- Quickly gives you an insight into the EM behavior of your high frequency designs.

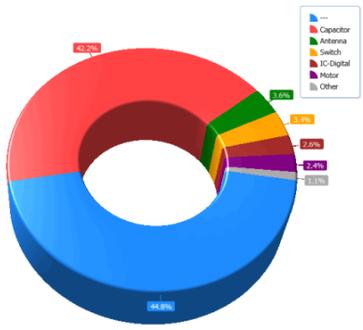
Analysis with EM software ranges from individual components such as antennas, sensors and chips up to entire devices, including aircraft smartphones and MRI.

RAMS SOLUTION (RELIABILITY, AVAILABILITY, MAINTAINABILITY & SAFETY)

Our software suite consists of a set of integrated tools covering Reliability prediction, Availabil i t y, Maintainability Analysis, Safety Assessment, Quality, Management, Safety Management, Industrial Process Control.

- MTBF - Mean Time Between Failure Calculation
- Failure Rate Calculation
- MTTR - Mean Time To Repair/ Restore Calculation
- Derating Analysis, Markov Analysis & Weibull Analysis
- Reliability Allocation
- RBD - Reliability Block Diagram
- Availability Calculation
- FMEA Failure Mode Effect Analysis (Design & Process)
- FMECA - Failure Mode Effect and Criticality Analysis
- FTA Fault Tree Analysis & Common Cause Failure Analysis
- ETA Event Tree Analysis
- SPO Spare Parts Analysis & Optimization
- MSG - Maintenance Steering Group & Reliability Centered Maintenance
- Reliability Growth Analysis
- Safety Assessment , Spare Parts optimization, Derating, FMECA and Testability Analysis and more
- Safety Analysis



As part of the safety assessment, we provide comprehensive Safety Database, which complies with safety standards such as SAE APR4 761, SAE 4754A, FAR/CS 25.1309, MIL-STD-882, IEC EN 61508, EN 50126-129 and others.

PHA- Preliminary Hazard Assessment
- FHA -Functional Hazard Assessment

SSA-System Safety Assessment
- SHA System Hazard Analysis

Safety Integrity Level
- Probability of Failure on Demand (PFD)
- Probability of Failure per Hour (PFH)

RELIABILITY SERVICES

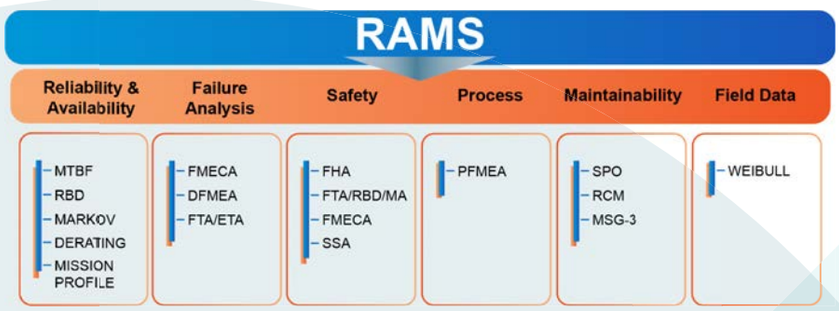
Optimize Your System's Reliability, Availability, Maintainability, and Safety with Us

Partnering in Reliability Engineering Services

We at Trident Infosol are known in the Industry for our expertise in the areas of Hardware Reliability Engineering Services for. The Reliability Consulting Team at Trident has a varied degree of expertise covering the entire scope of Reliability Availability Maintainability & Safety (RAMS).

We at Trident Infosol specialise in offering the Complete RAMS studies which include :

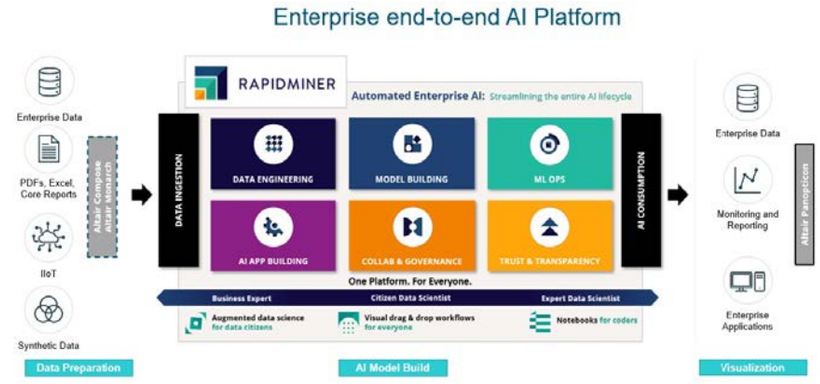
- Reliability Prediction and Failure Analysis for Electronics & Electro-Mechanical Systems(Systems /Sub-Systems /Board Level Study) based on globally accepted standard like MIL-HDBK-217, Telecordia Issue-4 , Siemens SN29500 etc.
- Reliability Prediction after considering Electrical & Thermal Stresses & Component De-Rating.
- Reliability Block Diagram analysis to compute MTBCF & System Availability, Monte-Carlo Simulation.
- MTTR (Mean Time To Repair) according to MIL-HDBK-472 Proc 5A
- Fault Tree / Root Cause Analysis along with Domain CutSet
- FMEA / Component Criticality Studies based on MIL-STD- 1629A
- Process & Design FMEA compliant to QS9000
- System Safety Assessment according to MIL-STD-882, SAEARP-4761
- Reliability Centered Maintenance (RCM) including MSG-3 Guideline
- Online/Web Based dynamic FRACAS Implementation



DATA ANALYTICS & AI PLATFORM

Data Analytics & AI Solutions - Enables data-driven enterprises by providing teams the power to use data analytics and AI to gain competitive advantages and drive next-level business results. Advancements in the fields of AI and machine learning (ML), combined with the increased availability of robust simulation, testing, and field data sets has made engineering data science a critical component of the modern product development lifecycle.

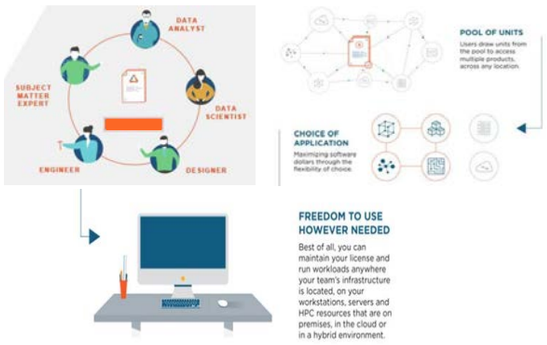
Trident offers end to end analytics capabilities right from getting the data from various sources and preparing the data for downstream analytics, building AI/ML models, and deploying them along with monitoring and analytics dashboards. This all is offered with Trident's unique and patented licensing model, offering all these solutions within the same solution trident units license.



Trident Units are a non-consumable, token-based model where tokens can be transferred from one person to another and from one trident product to another. Which means, instead of buying different products, Trident customers effectively buy a level of concurrent usage or "bandwidth" and get access to the entire suite. This allows for the same Unit pool to be used, by different users, for different products.

Data Analytics & AI solutions very well addressed every phase of a typical data science project. CRISP-DM cross-industry process for data mining standard is followed as below.

CRISP DM Workflow



Key Features

- Platform
- Data Engineering
  - Data Access
  - Data Preparation
  - Feature Engineering
  - Data Visualization
- Model Building
- Model Operations:
- Visualization & AI App development

EMBEDDED DESIGN, DEVELOPMENT AND DEBUGGING SOLUTION

Software plays a vital role in all Embedded systems. It's important to choose right Embedded tools, right from development to deployment of safety mission critical systems.

RTOS (REAL-TIME OPERATING SYSTEM)

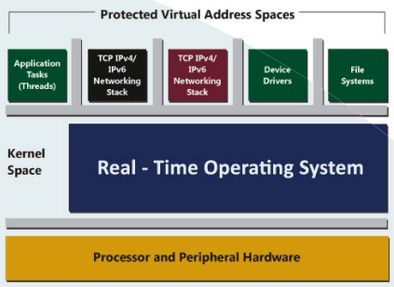
RTOS was designed so that embedded developers could ensure their applications met the highest possible requirements for security , reliability, and performance .

Our RTOS is built around an advanced partitioning architecture to provide embedded systems with total reliability, absolute security , and optimum deterministic real-time response .

Integrated middleware and platforms:

We offer an extensive array of middleware integrated , including :

- FFS, FAT, NFS, and journaling file systems
- IPv4/IPv6 host and routing networking stacks
- FIPS 140-2 certified Suite B enabled embedded encryption library
- Advanced Layer 3 routing protocols
- web services : HTTPS, SOAP, AJAX, JS ON, XML
- Wi-Fi supp ort : WPA2 , Bluetooth, 3G
- USB host stack , device stack and class drivers
- 2d, 3D, and OpenGL graphics



Platform Support


Automotive

Secure IoT


Avionics

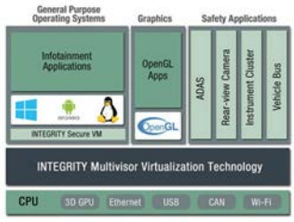

Secure Networking


Industrial safety


Software Defined radio


Medical Devices

Our Hypervisor is the industry's most powerful, reliable , and flexible embedded virtualization solution. The platform can host arbitrary guest operating systems alongside a comprehensive suite of real-time applications and middleware



COMPILERS

The pace of microprocessor innovation continues to accelerate, application developers can rely on compiler to unlock hardware's full potential and realize maximum performance and functional safety in their next generation applications .

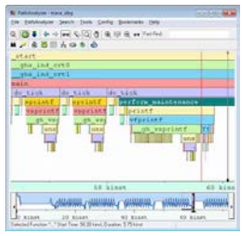
Our Optimizing Compilers have led the embedded industry by generating the fastest, smallest, and most reliable code.

- Maximize performance - Generate fast er, smaller code
- Various languages support - C/C++, Ada, Embedded C++, GNU C/C++ extensions
- Find bugs automatically- Integrated Static Analyzer
- Ensure safety & security - certified to meet the highest levels of tool qualification and C/C++ runtime certification
- Lower production cost , faster time-to-marketBroad processor support - All major 32 and 64-bit architectures are supported.

EMBEDDED SOFTWARE DEVELOPMENT TOOLS

Quickly develop, thoroughly debug, completely test, and fully optimize embedded and real-time applications . Whether pinpointing a hard-to-find bug, resolving a memory leak, or maximizing system performance - our IDEs consistently work.

- Find and fix bugs faster
- Boost productivity
- Easily debug process start-up code
- Pinpoint performance bottlenecks
- Debug embedded Linux
- Handle breakpoints with minimum performance cost
- Multicore Debugging
- Functional safety confidence



Operating systems support - INTEGRITY RTOS, µ-velOSity RTOS, Linux, ThreadX, VxWorks, OSE, Windows , Solaris

UNIVERSAL DEBUG PROBES

The Probe/Emulator is an advanced hardware debug device that connects to the onboard debug ports present on most modern micro processors , such as IEEE 1149.1 JTAG and BDM .

If you are in need of an embedded software development platform that does more than just debugging, then our family of hardware Probes and Trace tools are the hardware you are looking for. Fully integrated into our IDEs, these hardware tools provide the link between your chosen microcontroller platform's on-chip debug implementation and your development PC.

- 100+ MHz sustained JTAG TCK rates
- 10+ MB/second sustained download speeds
- Gigabit Ethernet
- Captures up to 4 GB of trace data, enabling analysis of hundreds of millions of instructions
- Collects trace data at core clock rates up to 1.2 GHz and trace port speeds over 300 MHz

Our Probes support more than one thousand devices from over thirty manufacturers,Covering most of 8,16, 32 and 64 bit processor.

CAN/CAN-FD/LIN

The relationship between system buses and embedded software execution is becoming more relevant during development, and system integration and testing. To bridge this, the CAN/- CAN-FD and LIN bus network data can be captured and displayed in parallel to the microcontroller code execution domain.

PARALLEL DEBUGGING

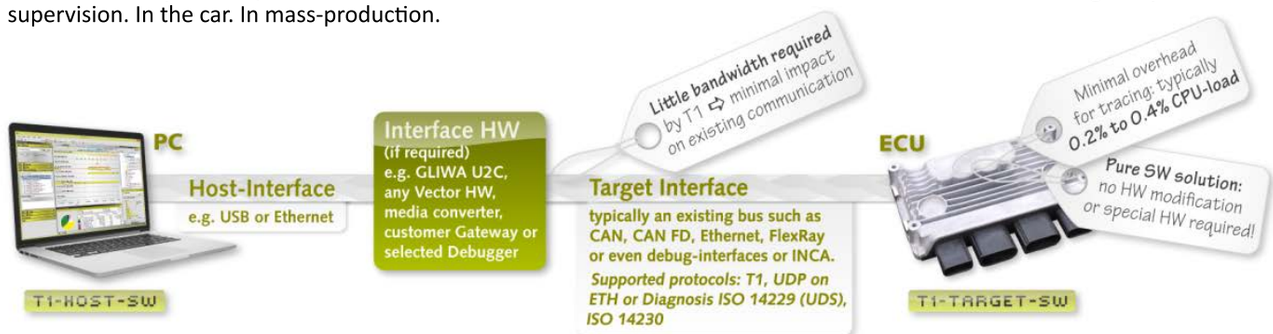
Complexity seemingly knows no bounds and neither do we, as embedded developers, on a daily basis. Our Advanced Solution offering includes FBridge ports to run/stop control of two or more parallel Hardware Probes for your Processors' synchronization.

You can combine our CAN/LIN data capture, analog and digital capture and control, and debug and trace via our Active Probes, all from one central hardware tool

ADVANCED TIMING ANALYSIS

STATE OF THE ART TIMING ANALYSIS WITH INDUSTRY-HARDENED METHODS AND TOOLS

As a worldwide premiere, the ISO 26262 ASIL-D certified TARGET-SW allows safe instrumentation based timing analysis and timing supervision. In the car. In mass-production.



Key benefits include:

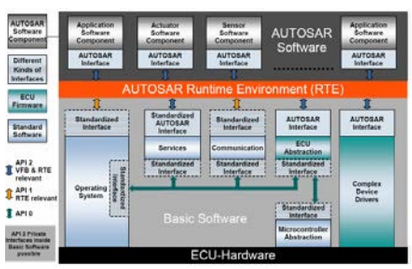
- Intuitive **visualization of what is actually going on in the software** – it has never been easier to track down the cause of timing issues.
- Pure software instrumentation-based approach: **no hardware modification or special hardware required**
- Minimal **overhead of typically only 0.2% to 0.4% CPU-load** for tracing all tasks and all interrupts in a typical set-up of an ECU for engine management or chassis control
- Detailed profiling: capturing of CPU-load and all kinds of **timing parameters with min/-max/average/distribution information**
- Constraints: verification of **timing requirements**

AUTOSAR

The need to develop and reuse emdedded systems across vehicle platforms, models and variants demands new ways of developing and delivering these complex systems.

The AUTOSAR standard serves as a platform for implementing embedded systems in a way that greatly simplifies their development and reuse.

We offer an open and extensible Eclipse-based software suite for the design and development of **AUTOSAR**-compliant systems and software.



SAFETY AND CRITICAL CERTIFICATIONS

Our Solutions have received a number of certifications and accreditations that testify to its leadership pedigree and also enable developers to achieve the highest levels of safety, security, and reliability in their designs:

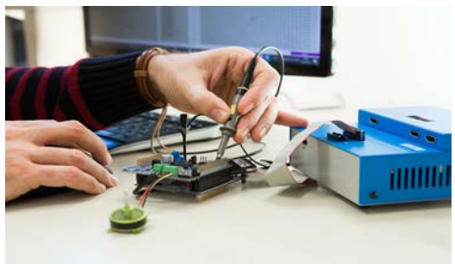
- ISO 26262 ASIL D automotive electronics
- NSA-certified secure mobile phones
- FAA DO-178B Level A-certified avionics controlling life-critical functions on passenger and military aircraft
- FDA Class III life-critical medical devices
- EN 50128 SWSIL 4-certified railway control and protection systems
- IEC-61508 SIL3-certified industrial control systems

ISO International Organization for Standardization

NIST National Institute of Standards and Technology U.S. Department of Commerce

IEC International Electrotechnical Commission

VERIFICATION AND VALIDATION



ON-TARGET UNIT TESTING

Regular testing of application code, especially reusable software modules, is simplified with our unique testing solution. Making use of the debug interface to the microcontroller, tests are executed **'on-target'**, allowing potential issues with tool chain and microcontroller configuration to be factored into the test results.

AUTOMATED SOFTWARE TESTING & APPLICATION SECURITY

1. Static Analysis
2. Unit Testing
3. Code Covernge and Traceablllty
   - Functional Test Automation
   - Service Virtuallzatlon
   - Load, Performance, and Security Testing
4. Reporting & Analytics

STATIC ANALYSIS

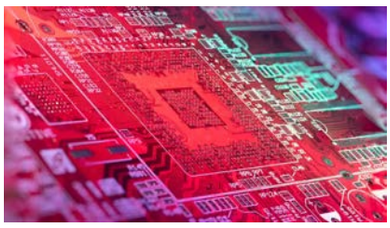
We offer Software Suite for unified C and C++ development testing for enterprise and embedded applications, testing Java and .NET applications.

- Unit & Integration Testing
- Functional Safety & Compliance
- Security Testing

RUNTIME ANALYSIS

The ultimate memory debugger for C and C++. Our Software helps you find the nasty defects that have been plaguing you for weeks. Identify sporadic memory corruption defects that cause system crashes and expose security vulnerabilities in the field but are impossible to find during normal testing.

- Memory Debugging
- Total Coverage
- Dynamic Memory Visualization



LOAD, PERFORMANCE & SECURITY TESTING

Automated end-to-end API testing, load & performance testing, security testing, and integrated service virtualization, our efficient test automation Software helps you mitigate the risk of accelerated delivery.

VIRTUALIZATION

It gives you the ability to create, deploy, and manage simulated dev/test environments while reducing the constraints that arise from inadequate test data. Unlike other service virtualization solutions, our Solution can create realistic simulations by monitoring existing behavior, enabling users with limited expertise to quickly create reliable test environments.

CONTINUOUS TESTING PLATFORM

Our Testing Platform allows users to create test cases, virtual services, and test data and these can then be combined into powerful environment templates, which can be deployed on-demand using the Continuous Testing Platform's environment manager.

- Test Environment Management
- Test Data Assistance
- Virtual Asset Management
- Test Orchestration

ADVANCED ANALYTICS AND REPORTING

Intelligent Analytics - The smartest way to assess the quality and risk of your software development process.

Understand the impact of changes in your codebase and provide actionable insights to the team to ensure the delivery of high-quality software.

REAL TIME SIMULATION AND TESTING

Trident Infosol offers products that help to continuously verify and validate their designs along a complete Model-Based Design workflow including requirements specification, simulation , rapid control prototyping, hardware-in-the-loop (HIL) simulation, and deployment .

- A real-time target machine
- I/O modules
- Communications protocols support
- Simulink programmable FPGAs

REAL-TIME TARGET MACHINES

TWe support a range of high performance multi core, multi CPU target computers (target machines) with i3 and i7 CPUs up to 4. 2 GHz, and up to 20 cores . Each is optimized for a different application area, from mobile controller prototyping (RCP) to multitarget rack systems for Hardware-in-the-Loop (HIL).

We also offer complete rack systems with multiple interconnected equipment such as real-tie target machines , uninterruptible power supplies, inverters and power amplifiers.

Performance real-time target machine

Mobile real-time target machine

Baseline real-time target machine

Education real-time target machine

Audio real-time target machine

I/O CONNECTIVITY

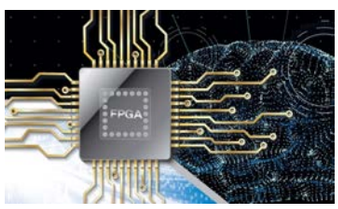
The system offers a vast range of I/O connectivity options to connect your real-time target machine with your hardware for real-time simulation and testing. 150+ fixed-functionality I/O modules are available, as well many multifunctional, Simulink programmable FPGAs which can be used for FPGA code modules

COMMUNICATIONS PROTOCOLS

To communicate with your devices, the system supports a wide range of industrial protocols with dedicated I/O modules and FPGA code modules running on Simulink programmable FPGAs .

- Aerospace (e .g. ARINC, AFDX, MIL-STD-1553, SDLC/HDLC)
- Automotive (e .g. FlexRay, LIN, CAN FD, CAN, J1939, XCP, SENT)
- Industrial automation (e .g. PROFIBUS, PROFINET, Et h erCAT, M odbus, POWERLINK, EtherNet/IP)
- Multi-industry (e.g . Aurora, real-time UDP, SPI, I2C, RS-485, PTP, IRIG with GPS)

FPGA TECHNOLOGY



Controls, signal processing, vision, and plant-simulation applications designed with Simulink® frequently require high frequency acquisition and signal generation support of analog and digital data using ADCs and DACs, I/O connectivity, fiber-optic transceivers as well as high speed protocols. This FPGA Technology provides high frequency I/O connectivity, communication protocols and closed-loop rates up to 10 MHz.

BATTERY MANAGEMENT SYSTEMS

We offer a range of real-time solutions for the measurement and emulation of batteries for rapid control prototyping or hardware in-the-loop testing. You can quickly connect your hardware with complex electrical motor, battery pack or drivetrain Simscape models. Typical applications include rapid control prototyping of battery management systems (BMS) for fully-electric cars, hardware in-the-loop testing of airplane battery packs, and automated testing of battery control modules.

BMS Features:

- scalable battery emulation with charge and discharge support
- high-impedance voltage measurement
- seamless integration with Simulink Real-Time and Simscape
- Can source current to emulate portable battery power supplies, emulate battery stacks for electric vehicles or sink current to simulate batteries under charge.

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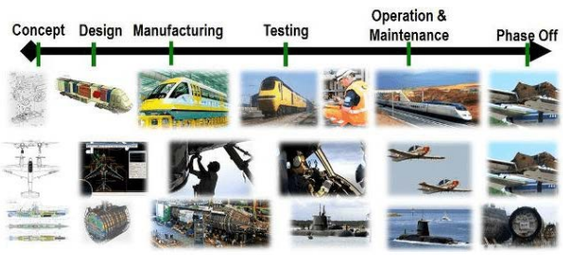
PRODUCT MAINTENANCE

FRACAS

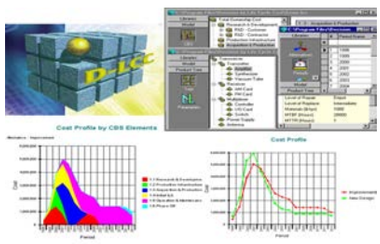
Our web based and user configurable Failure Reporting, Analysis and Corrective Action System **(FRACAS)** that captures information about equipment or a process throughout its life cycle, from design, production testing, and customers support .



FRACAS application can seamlessly communicate with any given ERP system **(SAP, ORACLE, MFGpro, etc.)**, while providing a user friendly, flexible yet robust failure management, analysis and corrective action platform.

LIFE CYCLE AND COSTING ANALYSIS

Life Cycle Cost (LCC) analysis and Total Cost of Ownership evaluating are the basis for decision making for the wide range of industries and equipment. LCC analyzes the total ownership costs of various design alternatives and system's components over the projected life cycle of a system.



TEST AND MEASUREMENT

POWER SUPPLY DC & LOADS

DC Power Supplies

Laboratory power supplies for bench-top or remote control and system use.

Electronic Loads

Flexible electronic DC loads for general purpose applications.

PRECISION MEASUREMENT

Multimeters

Bench-top digital multimeters for professional applications. High accuracy and resolution.

Source Measure Units

High speed precision characterization.

Frequency Counters

Handheld and bench - top frequency counters up to 6GHz

LCR Measurement

Precision component measure ments

Current Probes

Innovative DC to 5MHz current probes for PCB tracks, component legs etc.

WAVEFORM GENERATORS

Function Generators

Analogue and Digital (DDS) function generators with frequencies up to 160M Hz.

Pulse Generators

Dedicated pulse generators and function generators with true pulse capability.

Arbitrary Generators

True variable-clock arbitrary waveform generators, single or dual channel.

Waveform Amplifiers

Used to increase generator output level up to 30V pk-pk.

RF & EMC TEST EQUIPMENT

Spectrum Analyzers

Low cost handheld RF spectrum analyzers with bandwidths up to 6GHz.

RF Signal Generators

Performance RF generators from 1.0GHz to 6.0GHz

EMC Analyzers

For EMC measurements to EN61000-3-2 and EN610 00-3-3.

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Trident infosol
...Transformational Technologies

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ALL PRODUCT NAMES, TRADEMARKS OWNED BY THE RESPECTIVE OWNERS ARE ACKNOWLEDGED

GENERATION 1.0