# Inside One of Amazon's Warehouses
More than 10 miles of conveyor belts

# Visit DINI Group
## at DAC 2019 in Vegas
FPGA Design Services
Virtex Ultrascale+ / Kintex Ultrascale
DNPCIE 400G

# Digital Twin
## real time digital replica
Siemens Virtual testing of SIPROTEC 5
protection devices in the cloud

# EN 50155 certificate system
## rugged COTS
## for the rail industry

# Avionics Industry is Ready
## for 2021 Autonomous
## Distress Tracking

# In this Edition:

• FPGA Design Services Virtex Ultrascale+ / Kintex Ultrascale DNPCIE 400G - Visit DINI Group at DAC 2019 in Vegas

• ADLINK Announces New Driver Machine Interface Touch Panel Computer Designed for Train Control and Rail Signaling

• Inside One of Amazon's Warehouses
More than 10 miles of conveyor belts weave through the building

• Acromag Receives Editor's Choice Award from Military Embedded Systems for VME Single Board Computers

• What is DigitalTwin?
Here is an example from Siemens
Virtual testing of SIPROTEC 5 protection devices in the cloud

• Embedded Computing Boards Overview, ADLINK

• OIP Sensor Systems – A Century of Science and Technology for Defense (OIP is a very old customer of e2mos folks)

• congatec enters the 3.5 inch single board computer (SBC) business - congatec premieres with 40% performance boost

• Challenges of Debugging Heterogeneous Multicore SoCs. By Mentor.

• Advantech Launches USM-500 Medical-Grade Edge Server for Diverse Hospital Applications

• Kontron and Regional Partners Announce Major Russian and Chinese Avionics Contracts.
Over 500 aircraft to be outfitted with Cabin WiFi and IFE&C equipment.

• Qualcomm and Green Hills Software Team Up to Deliver Advanced Platforms for Next-Generation Automotive Cockpits

• Ensuring Product Integrity with Intel® Boot Guard by Concurrent Technologies

• Concurrent Technologies joins the VMware Technology Alliance Partner Program

• X-ES Announces Rugged, Configurable Xpedite2500 XMC Module with High-Density Xilinx Kintex® UltraScale™ FPGA. Formidable Signal Processing Capabilities on an XMC Form Factor

• Avionics Industry is Ready for 2021 Autonomous Distress Tracking

Daniel Dierickx
CEO & co-Founder
at e2mos
Acting Chief Editor

*Over 3 Decades Semiconductors & Computer Systems Market Expertise*

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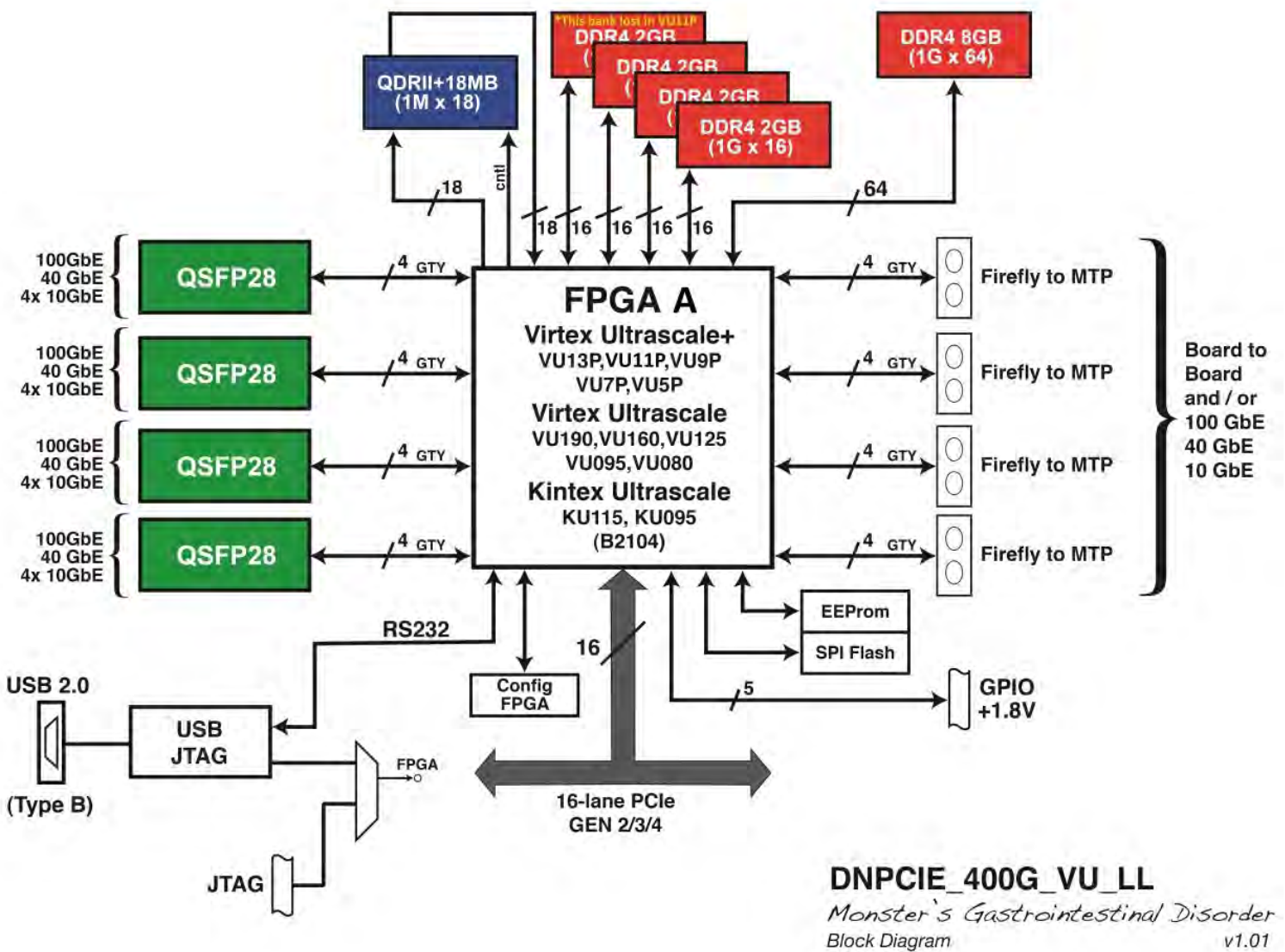**ATCA World**

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DESIGN
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# Visit DINI Group
# at DAC 2019 in Vegas



https://www.dinigroup.com/web/DNPCIe_400G_VU_LL.php

# ADLINK Announces New Driver Machine Interface Touch Panel Computer Designed for Train Control and Rail Signaling

## The DMI-1210 is an EN 50155 certified system that further strengthens ADLINK's extensive rugged, cost-effective COTS portfolio for the rail industry

San Jose | 26-Jan-2019 -- ADLINK Technology, Inc., a global provider of advanced Edge Computing products, today released its latest Driver Machine Interface (DMI) touch panel computer, the DMI-1210, designed specifically for train control and driver information display.

Powered by the Intel Atom® x5-E3930 processor (formerly Apollo Lake) and featuring a 12.1" (4:3) high resolution color display, 5-wire resistive touch screen and securable I/O interface, the DMI-1210 can be deployed as an HMI unit for driver's desks, control panel for passenger information systems, surveillance system control/display unit or in railway diagnostics and communications applications.
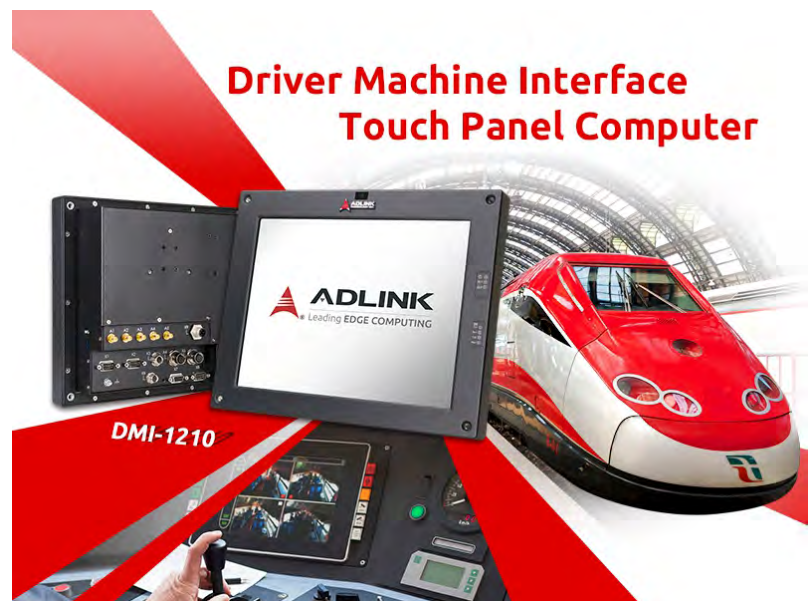


The DMI-1210 is an EN 50155 certified, cost-effective, commercial-off-the-shelf (COTS) driver interface that offers train radio display, electronic timetable, and diagnostic display functions and additional functionality such as train data recorder. The DMI-1210 supports full range DC power input from +16.8V to +137.5V DC. Optional MVB, GNSS, 3G/LTE, WLAN, and Bluetooth through add-on modules give system integrators the necessary tools to expand use case possibilities. With ADLINK's built-in Smart Embedded Management Agent (SEMA) management and status LEDs on the front panel, the DMI-1210 provides easy and effective health monitoring and system maintenance. In addition, system robustness and reliability are provided by careful component selection for extended temperature operation, isolated I/Os, conformal coated circuit boards, securable I/O connectors and high ingress protection rating (IP65 front, IP42 rear).

By leveraging more than 20 years of expertise in developing highly reliable and available embedded computing systems, ADLINK is a premier supplier to the rail market, enabling both wayside and onboard applications, such as Communications Based Train Control (CBTC), Automatic Train Protection (ATP), Automatic Train Operation (ATO), Automatic Train Supervision (ATS), Computer Based Interlocking (CBI) and Train Control Center (TCC), Passenger Information, and Passenger Wi-Fi. We offer not only a field-proven, cost-effective and extensive COTS portfolio, but also a variety of fast time-to-market custom solutions with best-in-class ODM capabilities," said Crystal Tseng, ADLINK senior product manager. "The addition of the DMI-1210 further strengthens our EN 50155-compliant product portfolio and enables us to better serve our customers with its superior reliability and versatility. By leveraging our long-standing strategic partnerships with major processor and software vendors, we ensure best practices in lifecycle management and product obsolescence to deliver the supply longevity required by the industry. ADLINK offers design services in every major geographic region, benefiting customers with increased responsiveness, short delivery lead-time and ease of doing business."

Designed to meet harsh operating requirements, ADLINK's industry standard compliant, rugged product portfolio provides customers with a great level of flexibility in technology and roadmap planning. ADLINK focuses on continued development to build an even more comprehensive and cost-effective product portfolio to help customers effectively mitigate budget constraints while smoothly and seamlessly taking on technology migration and product integration. ADLINK is committed to helping customers gain competitive advantages by allowing them to focus their development efforts on differentiating end applications.

For more information about ADLINK's DMI-1210 and other rail solutions, please visit the product and solution webpage.

# Inside One of Amazon's Warehouses

## More than 10 miles of conveyor belts weave through the building.

John Reid Blackwell, Richmond Times-Dispatch // IEN Industrial Equipment News

CHESTER, Va. (AP) — The giant Amazon warehouse in Chesterfield County, Virginia is constantly bustling with activity.



In this Tuesday, May 7, 2019, photo Brooke Pizzetti, left, Grant Frith work at the Amazon Chester Fulfillment Center in Chester, Va. Alexa Welch Edlund/Richmond Times-Dispatch via AP

At about 1.2 million square feet — roughly the size of 28 football fields — the fulfillment center stores, packages and ships what Amazon officials would only describe as "tens of millions" of products. More than 10 miles of conveyor belts weave through the building.

"We are shipping hundreds of thousands (of orders) a day," said Dan Miller, general manager of the Chesterfield fulfillment center.

While the speed of shipment varies by product, "we can turn around a package and get it on a truck in under two hours," he said.

The Chesterfield facility has 2,200 employees, a number that can swell by as much as 1,000 seasonal workers during the peak of the holiday shopping season.

Amazon opened the center in the Meadowville Technology Park and another one in Dinwiddie County in late 2012, investing more than $135 million. Since then, the company has added other operations in the Richmond region and around Virginia.

In 2017, Amazon leased a 328,000-square-foot building on Lakeridge Parkway in the Enterchange at Northlake business park in Hanover County to serve as a package sorting facility employing about 300 people.

The company said it now employs more than 8,500 people in Virginia, including at its facilities in the Richmond region and in Virginia Beach and Springfield.

Last November, Amazon announced plans to open HQ2, or second headquarters office, in Northern Virginia, an investment expected to create about 25,000 jobs over 20 years.
As its presence grows in Virginia and the Richmond region, the online retail giant is opening its doors to let more people see what happens behind the scenes in its order fulfillment operations.

# Inside One of Amazon's Warehouses

**The giant Amazon warehouse in Chesterfield County, Virginia is constantly bustling with activity.**

The company is now offering more public tours of its massive fulfillment center in Chesterfield, one of 175 fulfillment centers the Seattle-based company operates to store, package and ship the vast quantities of products that customers order from the company every day.

For the past five years, Amazon has held four tours a month at the Chesterfield fulfillment center, and about 11,400 people have visited the site.

Under an expanded program being offered at 23 Amazon facilities in the United States and Canada, the number of tours is increasing tenfold. The Chesterfield site is offering two tours a day, Monday to Friday.

"I think it is a phenomenal experience to get out and see one of these fulfillment centers, to see what the scale is, and meet the people who are behind all that hard work that goes into making the magic happen in getting that box to your doorstep," Miller said.

A recent walk through the facility on a media tour revealed items in the "stow" area ranging from bottled soap to Bisquick. The stow area is a vast array of tall shelves where items are stored before shipping.

Amazon has made some investments in technology upgrades at the Chesterfield facility, most recently in a new robotic arm that palletizes totes, and in an expanded package sorting system that helps speed delivery times.

While the fulfillment center can ship orders anywhere, Amazon's recent announcement that it was expanding its one-day shipping option for its Prime member customers means the local plant is seeing some of its volume shift more toward shipping orders within a 300-mile radius.

"We really kicked up more of that volume about two weeks ago," said Miller, a Marine Corps veteran who joined Amazon eight years ago as an entry-level manager. Miller has been working at the Chesterfield site for 13 months and became general manager in January.

While Amazon relies on computer algorithms to manage its orders, logistics and shipping, much of the work at the fulfillment centers is still being done the old-fashioned way, by people.

It's the work of "stowers" like Glenn Frith to make sure the millions of items in the facility are stored in a way that they can be most efficiently retrieved when an order is placed.

"The critical part is we have to make sure the process guarantees an exact match, virtually and physically, for what we are stowing," said Frith, a Hopewell resident who joined Amazon five years ago after retiring from a 35-year career in public administration and in substance-abuse prevention.

"It is a very precise process," Frith said. "Amazon has an extraordinarily high standard for accuracy. They also give us the skillset and tools to achieve that."

When an order is placed, it is routed to "pickers" such as Brooke Pizzetti, who walk among the shelves with yellow totes to fetch ordered items that are then sent to packaging.

"One of Amazon's innovations is they have these algorithms that direct you to the right place," said Pizzetti, who commutes from Gloucester to work at the warehouse.

"A lot of the innovations that you see in the center — the way that we process stuff — actually comes from the associates," she said.

More information about tours of Amazon facilities in North America can be found online at www.amazonfctours.com.

**Source:** https://www.ien.com/supply-chain/news/21069457/inside-one-of-amazons-warehouses?lt.usr=38943702

## EDITOR NOTE
### Electronic Components, Embedded Computers & IT Equipment Distribution Warehouses

Large Distributors of Electronic Components & Systems serving many OEMs and Industries like Arrow, Avnet and others have quite similar warehouses and logistics, they are also global but not as big as Amazon. e2mos has visited a lot of those warehouses (with customers) mainly in the US, Germany, UK, France, Italy, Belgium, The Netherlands, Switzerland. Any stock item can be delivered next day of order in 80 countries. _ Daniel Dierickx, www.e2mos.com.

**Key Figures for example from Arrow Electronics** https://www.arrow.com/
  - Sales 2018: $29.7 billion (46% AMERICAS, 30% EMEA, 24% ASIA PACIFIC)
  - Locations: 349 worldwide serving over 80 countries
  - Customers: 200,000 worldwide, including all top OEM customers
  - Line Card: 870 Total Manufacturers, including the Chip & Computers Leaders

# Acromag Receives Editor's Choice Award from Military Embedded Systems for VME Single Board Computers

Acromag is honored to have their XVME-6510 6U VME single board computer selected as an Editor's Choice product for the April 2019 issue of Military Embedded Systems magazine.



April 25, 2019 | **Wixom, MI:** Acromag's XVME-6510 VME SBC features a FPGA-based VME to PCIe-bridge that solves the end of life issue with the TSI148 VME interface chip. As written in Military Embedded Systems, "The XVME-6510 from Acromag is a high-performance 6U VME SBC based on the 4th-generation Intel Core i7 processor and uses the Intel 8-Series QM87 PCH chipset for extensive I/O support. Two ruggedized SODIMM offer up to 16 GB of high-speed DDR3L removable memory with 32 GB of flash memory. The air-cooled XVME-6510 features dual PMC/XMC sites, DVI-D display, and programmable CPU power limits for heat-sensitive applications.

The XVME-6510 SBC features a FPGA-based VME-to-PCIe bridge that addresses the end-of-life issue with the TSI148 VME interface chip. The XVME-6510 also enables increased expansion capabilities through two PMC/XMC sites on the board. In lieu of one PMC/XMC module, the optional XBRD-9060 expansion I/O carrier module may be installed. The XBRD-9060 allows for two SSD mSATA drives, as well as another gigabit Ethernet port, RS-232 port, and two USB 2.0 ports. The XVME-9640 rear transition module is also available for further storage, networking, and access to the P2 connector I/O."

OpenSystems Media has been a leading publisher of electronics magazines, e-mail newsletters, websites, and product resource guides for more than 30 years. OpenSystems Media offers E-casts and Techcasts for engineers and provides interactive tools where engineers can communicate directly with presenters and top industry editors. Current publications include: DSP-FPGA.com, EDA Digest, EmbeddedStar.com, EDAGeek.com, FPGABlog.com, EDABlog.com, Embedded Computing Design, Military Embedded Systems, PC/104 and Small Form Factors, VITA Technologies, Industrial Embedded Systems, and PICMG Systems & Technology.

Acromag is a multi-million-dollar international corporation that combines more than 60 years of process monitoring and control experience with a solid background in high-tech computer design. We are focused on developing industrial I/O solutions that provide the best long-term value in the industry. A complete line of industrial I/O products including process instruments, signal conditioning equipment, data acquisition boards, distributed I/O modules, and network communication devices are available. Industries served include manufacturing, water services, power generation, mining, defense, and transportation. Acromag I/O is ideal for a broad range of monitoring and control operations where controllers communicate with instrumentation on the plant floor or in the field

For more information about Acromag products:
call the Inside Sales Department at +1 (248) 295-0310, fax to +1 (248) 624-9234 or e-mail solutions@acromag.com
You can also visit us online at www.acromag.com,

Acromag at 30765 S. Wixom Rd., Wixom, MI 48393 USA.

# What is DigitalTwin?
# Here is an example from Siemens

Virtual testing of SIPROTEC 5 protection devices in the cloud

## SIPROTEC DigitalTwin

The SIPROTEC **DigitalTwin is real time digital replica of a physical SIPROTEC 5 device** including interfaces, functionality and algorithms.

The new innovative cloud based SIPROTEC DigitalTwin offers comprehensive test of your SIPROTEC 5 devices as part of the energy automation system with high efficiency, performance, security and availability 24/7 from everywhere without any hardware.

Three steps to success: 1 - Upload your engineering data and your automated test cases. 2 - Simulate and test your energy automation system in the cloud. 3 - Get test reports of your engineered system



## Features & functions:

- Video
- Functions
- Applications
- Benefits
- Downloads
Click Here

# Embedded Computing Boards Overview

## Direct Link Click on the Pictures


ADLINK TECHNOLOGY INC.

### Qseven



Intel-based: several CPU 's
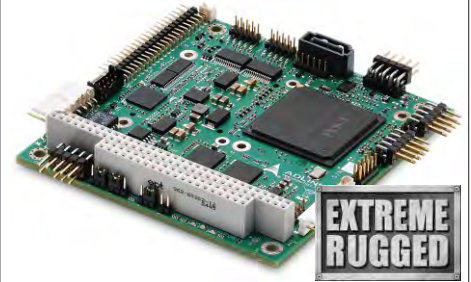Standard Size (70 mm x 70 mm)

### SMARC
#### Smart Mobility ARChitecture



Intel-based: several CPU 's
Short Size  (82 mm x 50 mm)
Full Size (82 mm x 80 mm)

### PC/104
### PCI/104 Express



EXTREME RUGGED

Intel-based: several CPU 's
PCI/104-Express (V3.0)
Size (117.4 mm x 96 mm)

### COM Express



**Type 6**
Basic Size (125 x 95 mm)
Compact (95 x 95 mm)
**Type 7 - Intel Xeon-based**
Basic Size (125 x 95 mm)
**Type 10**
Mini Size (84 x 55 mm)
**Type 2**
Basic Size (125 x 95 mm)
Compact (95 x 95 mm)

Intel-based: several CPU 's
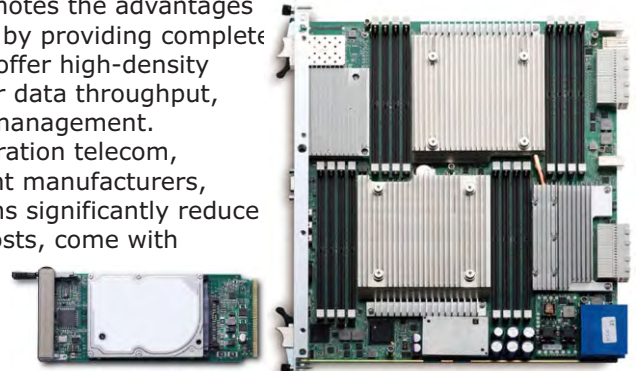
### 3U-6U VPX
#### Conduction & Air-cooled



### 3U-6U CompacPCI, Plus & Serial



Conduction & Air-cooled

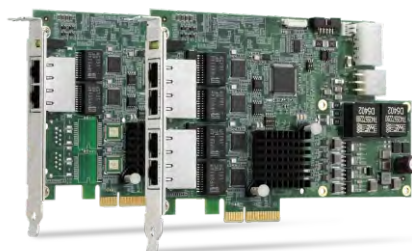### AdvancedTCA - ATCA -AMC - MicroTCA

ADLINK vigorously promotes the advantages of the ATCA technology by providing complete platform solutions that offer high-density processing power, faster data throughput, and intelligent system management. Designed for next-generation telecom, datacom, and equipment manufacturers, ADLINK's ATCA platforms significantly reduce over-all development costs, come with extended operating lifecycles, and speed up critical time-to-market.



### Ind. Motherboards Mini-ITX



### PCIe



Frame Grabbers
Video Capture Cards

### PXI - PXIe

# OIP – A Century of Science and Technology for Defense

Founded 100 years ago in Ghent, Belgium's Optique et Instruments de Précision (OIP) has evolved into one of Europe's leading electro-optics centers, providing sensors and systems for defense, aerospace, homeland security and naval applications around the world.

Starting as a modest workshop, manufacturing high quality optical components, OIP quickly became a renowned supplier of optical lenses and objectives for military and medical precision systems such as binoculars and microscopes, becoming a major supplier of military hardware to the Belgian Army and NATO members.

Through the 1960s OIP has pioneered many technological breakthroughs, from the infrared sight display of the Starfighter jet, to fire control systems for the Leopard tank, and electro-optical instruments for satellites and space stations. The end of the Cold War opened new market opportunities for collaboration and technology exports, enabling the company to expand into holography, image intensification night vision and fiber optics.

Given its multi-disciplinary knowhow and extensive scientific and technical background, OIP also provides instruments and payloads for satellites, space stations and space-based experiments, supporting space exploration missions.

Since the 1980s instruments developed by the company have embarked on missions around three planets - Earth, Venus and Mars.

Today OIP offers a complete range of systems for air, land and naval combat systems. One such system is the Sentinel 360° day/night panoramic observation system, enabling crews of armored fighting vehicles to operate safely under armor, while monitoring the vehicle's surrounding. Comprised of six cameras mounted on the vehicle, Sentinel automatically monitors the vehicle's surrounding and employs video motion detection to alert the crew on any suspicious activity around the vehicle.



After a century of progress OIP expands its activities beyond electro-optics. Responding to the growing demand for surveillance in civil and homeland security OIP provides sensors, intrusion detection, surveillance, command and control and turnkey solutions for coastal, border and transportation security.
Another unique activity is the Wise Intelligence Technology (WiT), a data processing platform providing information management and investigation infrastructure for intelligence organizations. Based on the company's experience in information gathering, WiT elevates the user's operational capability to utilize numerous tools and techniques to perform information discovery, analysis and visualization.

Under a recent cooperation with the Dutch naval company Damen, OIP introduces the MCM ToolBox, a technological breakthrough in maritime security, employing unmanned systems technology to safeguard the busy maritime waterways along the Belgian and Dutch coastline. OIP's MCM ToolBox harnesses unmanned boats, underwater robots and pilotless, mini helicopters to search and destroy sea mines, a complex and hazardous task that up until now was handled by specialized manned boats.
The use of unmanned vehicles enabled by OIP removes the risk to human life and dramatically accelerates counter-mine operations, rapidly clearing waterways to safe marine activity.

These achievements are the results of the joint efforts and commitment of hundreds of skilled employees, from dedicated technical and electronic engineers to talented optical experts.
Over a century of dedication to precision, quality and support, OIP and its employees have mastered in optics, electro-optics, holography, opto-mechanical, electronic miniaturization, and system engineering.
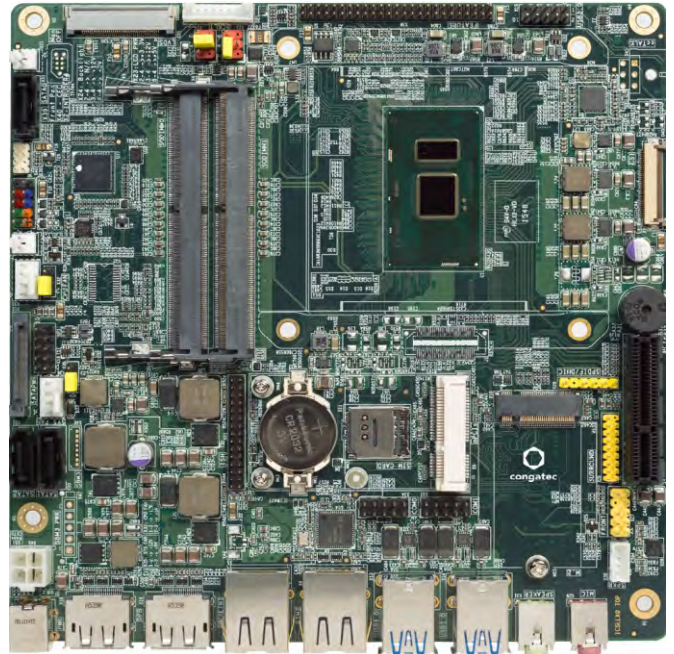The legacy of the past 100 years with the talent, innovation and passion of its young workforce, positions OIP on the path leading Belgian defense technology into a second century of achievements.

**MORE:** OIP nv - Westerring 21 - 9700 Oudenaarde - Belgium - T: +32 55 33 38 11 - http://www.oip.be/en

# congatec enters the 3.5 inch single board computer (SBC) business

## congatec premieres with 40% performance boost

**Deggendorf/Nuremberg, Germany, 26 February 2019**

congatec – a leading vendor of standardized and customized embedded computer boards and modules – enters the 3.5 inch single board computer (SBC) business with a 40% performance boost for existing applications. To achieve this impressive performance increase, the new conga-JC370 3.5 inch SBCs are equipped with consumer-grade 8th Generation Intel® Core™ i7 Mobile processors, codenamed Whiskey Lake. This makes congatec – as far as is known – the first company worldwide to offer this new processor generation in an embedded form factor, allowing the company to play a pioneering role in the rollout for the harsh environment. OEM customers benefit from the very early stage access to new high-end BGA processor technology with the opportunity to realize first-to-market advantages. In the future, congatec will support all major processors suitable for this compact SBC form factor, including various embedded variants of the brand new 8th Generation Intel® Core™ i7 Mobile processors.

"With this launch, 3.5 inch board users benefit from a new player in the market differentiating itself through added value that other providers cannot or will not afford," explains Jürgen Jungbauer, Product Line Manager for SBCs at congatec. "For example, customers profit from lower design-in costs thanks to comprehensive consulting, personal integration support and extensive BSPs. The high design quality of the boards also results in lower maintenance and service costs, less replacement during operation, less system downtime, lower design change costs, lower power consumption and longer board life."

With the entrance in the 3.5 inch SBC business, congatec is driving the constant expansion of its product portfolio on the board level. Customers benefit in several ways from this broader board level and solution platform offering: There is a wider product range to choose from, and the development of application-ready computing cores for boards and modules is spreading to more and more products, which reduces costs through reuse and lowers prices. Ultimately, even developers using different form factors can take advantage of this access to identical components, BSPs and documentation, which also reduces costs for the OEM.

## The feature set of the new 3.5 inch SBC in detail

The new 3.5 inch SBC is equipped with the 1.8 GHz quad-Core™ Intel® Core™ i7-8565U Mobile processor that impresses with a performance increase of up to 40% compared to previous U-Series processors (codenamed Kaby Lake) enabled by a leap from 2 to 4 cores along with the improved micro architecture. The memory is designed to match this performance boost: Two DDR4 SODIMM sockets with up to 2400 MT/s are available for a total of up to 64GB. For the first time, USB 3.1 Gen2 is now supported natively. This USB SuperSpeed+ interface is capable of transferring up to 10 Gbps or 1.25 GByte/s, which makes it possible to transfer even uncompressed UHD video from a camera to a monitor. The new conga-JC370 provides this performance via a rear USB-C connector that also supports 1x DisplayPort++ and power delivery for peripheral devices, thereby enabling monitor connection with a single cable. Further interfaces include the support of overall 3 independent 60 Hz UHD displays with up to 4096x2304 pixels as well as 2x Gigabit Ethernet (1x with TSN support). The new conga-JC370 offers all this and many more interfaces with an economical 15 W TDP, which is scalable from 10 W (800 MHz) to 25 W (up to 4.6 GHz in Turbo Boost mode). Next to the Intel® Core™ i7-8565U processor, a variant with i3-8145U processor is available, which offers two cores and a clock rate of up to 2.1 GHz. Of course, these processors will also be available on all other relevant form factors from congatec.

Further information on the new conga-JC370 3.5 inch SBC can be found at:
https://www.congatec.com/en/products/35-sbc/conga-jc370.html

# Challenges of Debugging Heterogeneous Multicore SoCs

**On-demand Web Seminar
VIEW NOW**

## Overview

Today's complex heterogeneous SoC architectures create new and difficult challenges for the embedded software developer. Debugging an OS on a single core or an SMP-enabled OS on a homogeneous multicore processor is well understood. The modern day SoC now combines asymmetric multiple cores, graphics processing units, offload engines and more on a single piece of silicon. This webinar will discuss the key issues and challenges of debugging heterogeneous software environments on these complex heterogeneous systems.

You will learn how to debug complex multi operating system, multi-core and heterogeneous architecture based systems independently and simultaneously with the latest version of Sourcery™ Codebench combined with Mentor Embedded Linux, the Nucleus® RTOS, and Mentor Embedded Multicore Framework.

## What You Will Learn

• Debug challenges introduced by heterogeneous Multicore SoC

• Powerful debugging techniques for multicore and heterogeneous systems

• Techniques to visualize interactions between heterogeneous operating systems on heterogeneous multicore SoCs

## About the Presenter Kathy Tufto

Kathy Tufto is a Senior Product Manager in the Platform Technology group at Mentor, A Siemens business. She is responsible for Mentor Embedded Linux and Mentor Embedded Sourcery CodeBench. She has over 18 years' experience in Embedded Systems Software development. Kathy holds an engineering degree from Boston University.

## Who Should Attend

• Embedded software developers

• Embedded systems architects

## Products Covered

• Multicore Framework

• Sourcery Analyzer

• Sourcery CodeBench

# Advantech Launches USM-500 Medical-Grade Edge Server for Diverse Hospital Applications

Taipei, Taiwan, January 31, 2019 – Advantech, a leading provider of certified medical computing systems and digital healthcare solutions, is pleased to announce USM-500 – a medical-grade edge server aimed at diverse hospital applications. Equipped with an 8th Gen Intel® Core™ i7i5/i3 processor with 10 years longevity support and 4 x PCIe slots for integrating graphics and data capture cards to enable video recording and analysis, the USM-500 server is a cost-effective and scalable solution for edge-to-hospital information system (HIS) applications.

The flexible design of the front cover allows the server to be easily customized with a specific logo/color, additional control button, LCD panel, hot-swappable HDD, or integrated DVDRW for a reduced time-to-market. Certified to IEC-60601-1-2 (Edition 4) medical safety standards, the USM-500 server can be deployed as an intelligent operating room solution, picture archiving and communication system (PACS), CT/MRI workstation, or hospital edge server. Additionally, USM-500 supports Microsoft® Windows 10 and Linux CentOS operating systems to provide an open source environment that enables easy software development.



## Cost-Effective Solution with Medical-Grade Certification
Compliant with the CE, FCC, and IEC-60601-1-2 regulations for medical equipment, USM-500 is a medical-grade edge server designed to provide a cost-effective server solution for a wide range of hospital applications. The server's hole-free front cover prevents the accumulation of dust and foreign contaminants to ensure effective hygiene and infection control for medical applications.

## Extensive Expansion Options to Support Diverse Applications
The USM-500 server is equipped with 4 x PCIe expansion slots for integrating diverse add-on cards, such as graphics card, data capture cards, and LAN cards. This allows easy and rapid platform development and expansion according to specific application requirements. For example, with the inclusion of a data capture card and a graphics card, USM-500 can be deployed for computer-assisted diagnosis of endoscopic images. Moreover, the USM-500 server features a medical-grade 500-W power supply to provide sufficient power to support any additional add-on cards.

## Flexible Design for Easy Customization and Rapid Time-to-Market
USM-500 features a flexible front cover design that can be easily customized with a specific brand logo, color, or even additional buttons for enhanced functionality and increased brand awareness. The ease of customization and expansion allows system developers to rapidly develop unique solutions based on the suitable USM-500 server, reducing the overall time-to-market.

## Key Features
• 8th Gen Intel® Core™ i7/i5/i3 processor with 10 years longevity
• Medical-grade design with IEC-60601-1-2 (Edition 4) certification
• 4 x PCIe expansion slots for integrating diverse add-on graphics/data capture/LAN cards
• Customizable logo and color for easy integration with existing systems
• Extensive expansion options for diverse applications

Advantech's USM-500 medical-grade edge server is available for order now.

For more information regarding USM-500 or other Advantech Digital Healthcare solutions, contact your local sales representative or visit our website at http://www.advantech.com

# Kontron and Regional Partners Announce Major Russian and Chinese Avionics Contracts

## Over 500 aircraft to be outfitted with Cabin WiFi and IFE&C equipment

**Augsburg / Hamburg, Germany, April 2, 2019 –  Kontron, a leading global provider of IoT/Embedded Computing Technology (ECT), today announced that it has signed contracts to supply integrated In-flight Entertainment & Connectivity (IFE&C) equipment for more than 500 Russian and Chinese aircraft projected to be installed over the next two years.**

Specifically, Kontron is providing flight hardware for open architecture IFE and IFE&C systems, including ACE FlightTM Servers, Cabin Wireless Access Points (CWAPs), Removable Storage and Cabin Control Panels.

Kontron's regional partners, RTSoft in Russia and Kontron Beijing Technology Co. in China, are providing local technical, certification and logistics support to the airlines and integration partners. Aircraft installations are well under way on these initial programs, and Kontron anticipates that the latest new contracts will help the company further solidify its position for additional business with both Russian and Chinese airlines.

"Based on our history of successful deployments, Kontron has earned its position as the number one supplier of open architecture systems and LRUs for the global IFE&C market," said Andy Mason, VP of Technology at Kontron America. "We anticipate even faster growth for this segment in regional markets such as Russia and China, which have large aircraft fleets that are not yet WiFi or connectivity enabled."

These new programs could not have been achieved without the strong support of our regional partners in Russia and China," continued Mason, "RTSoft is headquartered in Moscow. Kontron Beijing Technologies, also known as Kontron China, is a Kontron sister company headquartered in Beijing, with regional offices throughout China."

Alexander Kovalev, Head of Business Development at RTSoft: "RTSoft has developed a close working relationship with Kontron over many years, spanning both sales and engineering programs. In 2016 and 2017, RTSoft and Kontron jointly sponsored the IFE&C Technology Conferences in Moscow, with many of the Russian airlines and aviation system integrators attending. These meetings proved to be important steps in setting the groundwork for RTSoft and Kontron to secure our initial contracts in Russia's IFE&C business. We see further growth within this area in the future."

Vincent Wang, General Manager at Kontron China: "Chinese airline customers are driving demand for additional services, such as wireless IFE and inflight connectivity. Passengers will soon expect to have access to the same smartphone, internet and WiFi device services that they can use on the ground. Kontron America and Kontron China have been in close collaboration over the past several years to capture this business when the growth ramp-up occurs."

Kontron and parent company S&T are both global companies, and this corporate reach allows the Kontron Avionics team, mainly based in San Diego, California, to support airline and aviation customers throughout the world.

Kontron has built a strong reputation for providing groundbreaking IFE&C platforms that help accelerate development for quick time-to-market at the lowest cost of deployment. There are currently more than 4000 commercial aircraft and business jets operating worldwide with Kontron equipment on board.

The entire line of rugged, open architecture hardware platforms, software and services for IFE and IFE&C systems was showcased at the Aircraft Interiors Expo, April 2-4, 2019 in Hamburg, Germany.

For more information on Kontron's avionics product portfolio, please visit:
https://www.kontron.com/industries/avionics

# Qualcomm and Green Hills Software Team Up to Deliver Advanced Platforms for Next-Generation Automotive Cockpits

## Companies Offer High Performance Solutions to Support Safe and Secure Consolidation of Android and Linux-based Infotainment with Safety-Critical Applications

LAS VEGAS, NV — January 8, 2019 — CES 2019 —Green Hills Software, the worldwide leader in embedded safety and security, and Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated (NASDAQ: QCOM), announced today their efforts to support global automakers and Tier-1 suppliers with purpose-built, scalable solutions, designed to support a safe, secure consolidation of Android and Linux-based infotainment processing with critical ASIL-certified vehicle services into a single multicore-based electronic control unit (ECU). As a part of the relationship, Green Hills is working with Qualcomm Technologies to feature the Green Hills INTEGRITY® real-time operating system (RTOS), INTEGRITY Multivisor™ secure virtualization, and integrated MULTI® ASIL D-qualified software development environment as part of the new Qualcomm® Snapdragon™ Automotive Cockpit Platforms. Designed with a focus on production-readiness and consolidation of diverse safety and security requirements, customers can quickly and confidently design, develop and deploy these high performance, complex next-generation automotive systems.

Green Hills Software's INTEGRITY RTOS and Multivisor virtualization solutions are the certified software foundation that safely and securely combine open-source Linux and Android infotainment environments with critical vehicle functions such as vehicle gateways, instrument clusters, telltales, advanced driver-assistance systems (ADAS) and heads-up displays (HUD), which in many cases, require adherence and certification to the ISO 26262 automotive safety standards.

**Snapdragon Automotive Cockpit Platforms**
 The Snapdragon Automotive Cockpit Platforms are the third-generation automotive platforms from Qualcomm Technologies. Designed to support future intelligent automotive cockpits to meet rich intuitive user experiences and stringent automotive industry standards, the third-generation Snapdragon Automotive Cockpit Platforms are engineered with immersive graphics, multimedia, computer vision and artificial intelligence capabilities and feature truly heterogeneous computing capabilities, leveraging the multicore Qualcomm® Artificial Intelligence (AI) Engine, Qualcomm Spectra™ Image Signal Processor (ISP), fourth generation Qualcomm® Kryo™ Central Processing Units (CPU), Qualcomm® Hexagon™ DSP and sixth-generation Qualcomm® Adreno™ Visual Subsystem. The Snapdragon Automotive Cockpit Platforms also feature the Qualcomm® Secure Processing Unit (SPU), engineered to help protect personal and vehicle data, and Qualcomm® Vision Enhanced Precise Positioning solution's camera sensors and computer vision capabilities to enable differentiated use-cases on lane-level navigation and crowdsourcing of drive data for building high definition map layers.

The new Snapdragon Automotive Cockpit Platforms also provide fully scalable architecture with differentiated experiences, leveraging the same software architecture and framework allowing consumers to enjoy a harmonized user experience independent of the vehicle tier while leveraging the same software framework.

"Today's integrated cockpits mandate a scalable software architecture to safely and securely combine Linux and Android infotainment functions with critical vehicle functions that require automotive-grade safety and certification. When used with a third-generation Snapdragon Automotive Cockpit Platform, the breakthrough INTEGRITY RTOS and Multivisor virtualization solution allows global Tier 1s and OEMs to overcome this challenge," said Nakul Duggal, senior vice president of product management, Qualcomm Technologies, Inc. "We look forward to further strengthening our relationship with Green Hills as we share the commitment to offer the highest levels of safety-conscious and security-rich, performance solutions that define the future of high-performance, scalable vehicle cockpits."

**INTEGRITY Safe and Secure Consolidation**
 The INTEGRITY RTOS architecture was designed from the beginning for use in the most life-critical, mission-critical embedded systems. Its impenetrable separation partitions help software teams to safely and securely partition software running at different levels of criticality on the same multicore processor while guaranteeing the system resources required for the proper execution of applications. When Linux or Android environments are added, the INTEGRITY Multivisor secure virtualization safely runs these high-level operating systems in safe, secure partitions, assuring freedom-from-interference while achieving near native execution speeds, secure and flexible inter-process communications and the option to share GPU or other critical acceleration resources on the Snapdragon Automotive platform. "The third-generation Snapdragon Automotive Cockpit Platforms are based on an impressive high-performance multicore automotive grade system-on-chip. With customers already deploying our solution built with the Qualcomm® Snapdragon™ 820A platform, we are pleased to be using these highly advanced automotive platforms with our safe and secure software solutions for inclusion in potentially millions of vehicles starting in 2020," said Dan Mender, vice president, business development, Green Hills Software. "The INTEGRITY RTOS with Multivisor secure virtualization provides the essential software foundation to protect and partition the complex, mixed-criticality integrated cockpit software components." **GHS International Sales Contact:**+44 (0)2380 649660

# Ensuring Product Integrity with Intel® Boot Guard

28th January 2019 | Concurrent Technologies, a leading supplier of processor solutions for demanding environments, now ensures that all their processor boards based on recent Intel® chipsets are running the correct, authorized firmware having implemented Intel Boot Guard.  This is important as many of these products are used in defense applications that depend on the firmware acting as the root of trust for subsequent checks on their operating system and application software.

Concurrent Technologies has now implemented all aspects of Boot Guard.   The boot firmware in the processor board BIOS is signed using a private key and the board is locked with the public key during the manufacturing process, ensuring that it can only boot Concurrent Technologies signed firmware.  Any attempt to use non-authorized firmware will result in the board failing to boot.  The firmware can still be updated for maintenance purposes but only with an image signed by the same private key held securely by Concurrent Technologies.

All these processor boards are manufactured by Concurrent Technologies in their own facility in Colchester, UK.  Well documented controls are in place to make sure that the correct firmware is loaded according to the product variant ordered.  Once these processor boards are delivered, the responsibility for keeping the boards secure passes to the customer.  A concern raised by some customers was that the firmware could be interfered during transit to their facility.   Boot Guard safeguards against this risk and any subsequent attempts to use non-authorized firmware during the product life-cycle.

Jane Annear, Commercial Director of Concurrent Technologies, commented:
*"We are committed to being able to provide our customers with products that meet their needs. Ensuring that our processor boards are running the correct firmware is an example of the way we differentiate our products and respond to customers' requirements. While security is now a hot topic, it is something we've invested in for many years as we continue to improve our portfolio and capabilities."*

RELATED PRODUCTS

**Military, Industrial, Scientific, VME**
**VP B7x/msd – VME Processor Board**
• VME processor board
•6-core Intel® Xeon® processor E-2176M
• PMC/XMC site(s) for local expansion

**Military, VME**
**VP B7x/msd-RC – Rugged VME Processor Board**
• VME rugged conduction-cooled processor board
• 6-core Intel® Xeon® processor E-2176M
• PMC/XMC site(s) for local expansion

# Concurrent Technologies joins the VMware Technology Alliance Partner Program



January 2019 – Concurrent Technologies, a leading supplier of boards and solutions for critical embedded applications, today announced it has joined the VMware Technology Alliance Partner (TAP) program as a standard level partner. Members of the TAP program collaborate with VMware to deliver innovative solutions for virtualization and cloud computing. The diversity and depth of the TAP ecosystem provides customers with the flexibility to choose a partner with the right expertise to satisfy their unique needs.
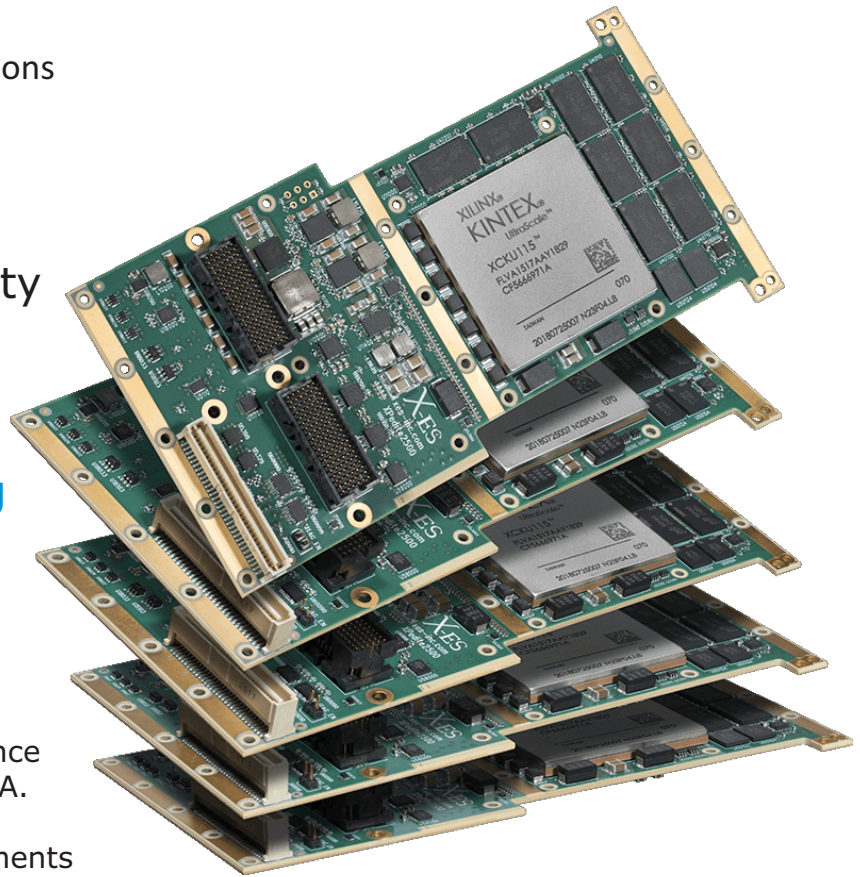
With thousands of members worldwide, the VMware TAP program includes technology partners with the shared goal to bring the best expertise and business solutions for each unique customer environment.

"We welcome Concurrent Technologies as a valued member of the VMware TAP program," said Kristen Edwards, Director, Technology Alliance Partner Program, VMware. "This membership means customers can take full advantage of a streamlined cloud infrastructure experience. By joining the program, Concurrent Technologies is working with VMware to develop technologies that can transform customers' environments."

Concurrent Technologies' product information, collateral and other assets are listed within the online VMware Solution Exchange.  The VMware Solution Exchange is an online marketplace where VMware partners and developers can publish rich marketing content and downloadable software for our customers.

# X-ES
Extreme Engineering Solutions

# X-ES Announces Rugged, Configurable Xpedite2500 XMC Module with High-Density Xilinx Kintex® UltraScale™ FPGA

## Formidable Signal Processing Capabilities on an XMC Form Factor

Introducing the XPedite2500, a rugged XMC module based on the high-performance Xilinx Kintex® UltraScale™ XCKU115 FPGA.
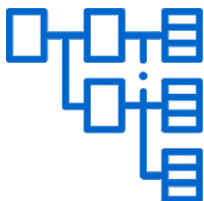
Featuring the highest density of logic elements in its family, up to 8 GB of DDR4 SDRAM in four independent channels, and numerous options for high-bandwidth I/O, this mezzanine card is a powerful, yet cost-effective, solution for a wide range of embedded applications.

Excels in Extreme Environments

## High-Density FPGA Arrives on the Mezzanine

The XPedite2500 is the first mezzanine card from X-ES to feature the Xilinx Kintex® UltraScale™ family of FPGAs and it is based on the Kintex® UltraScale™ XCKU115, which has the highest density of logic elements in the Kintex® UltraScale™ family. This user-programmable device boasts ample resources for high-end logic and signal processing.

These devices provide an ideal blend of performance and cost-effectiveness for the next generation of embedded applications, delivering the best price/performance/watt at 20 nm and the highest signal processing bandwidth in a mid-range device.

## Xilinx Kintex® UltraScale™ XCKU115 FPGA

**1.4 M**
System Logic Cells
Expansive amount of configurable logic cells to support large user functions

**5,520**
DSP Slices
Efficiently supports complex math function and signal processing applications

**75.9 Mb**
System Block RAM
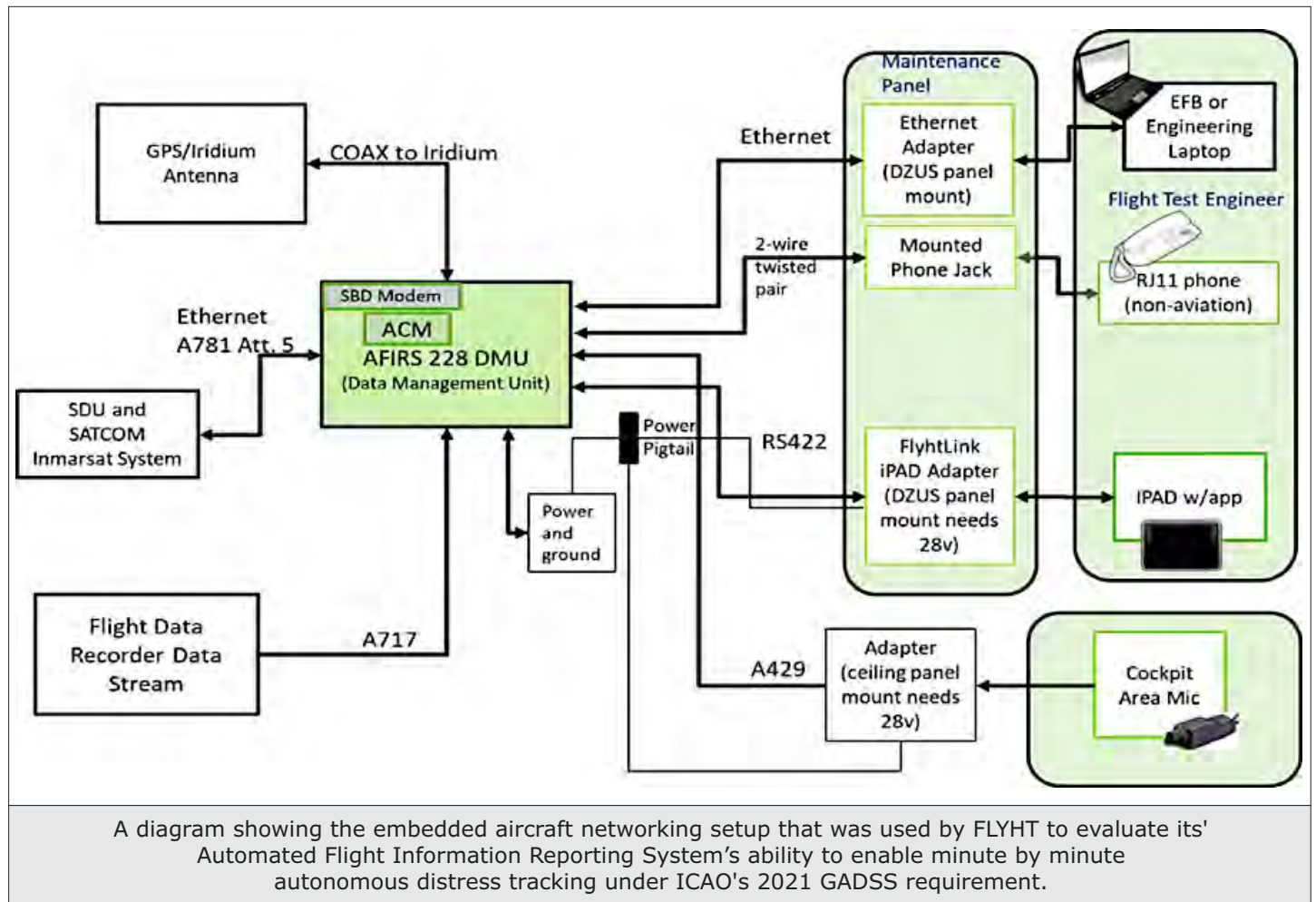Rapidly process data in parallel with minimal power and resource consumption

## Simplified Software Development with the X-ES FPGA Dev. Kit

More Click Here

# Avionics Industry is Ready for 2021 Autonomous Distress Tracking

By Woodrow Bellamy III | April 26, 2019 | Avionics International

**Editorial Note:** This article provides an overview of several aircraft hardware and software technologies that have demonstrated the ability to enable minute-by-minute distress tracking in accordance with ICAO's 2021 GADSS Annex 6 changes. For a more in-depth look at new regulations and some of the technologies airlines are embracing, check out the full version of this article in the April 2019 edition of Avionics International.



A diagram showing the embedded aircraft networking setup that was used by FLYHT to evaluate its' Automated Flight Information Reporting System's ability to enable minute by minute autonomous distress tracking under ICAO's 2021 GADSS requirement.

Airlines are already adopting new technologies to meet the International Civil Aviation Organization's (ICAO) 2021 autonomous distress tracking requirement. In some cases, modification of aircraft electronics or operating software is required. In other cases, an update to the way their web-based flight data monitoring technology of choice triggers automatic streams of distress data off an aircraft are all that's needed.

All aircraft with type certification later than Jan. 1, 2021, weighing more than 60,000 pounds and capable of transporting more than nineteen passengers must feature the ability to autonomously transmit aircraft position reports minute-by-minute when flying with conditions considered to be life-threatening to passengers and flight crews onboard.

This concept is known as autonomous distress tracking (ADT). It becomes applicable in 2021 under changes related to the Global Aeronautical Distress Safety System (GADSS) that the International Civil Aviation Organization (ICAO) first adopted to its Annex 6 aircraft operating standards and recommended practices in 2016.

While the ADT requirement becomes applicable to Annex 6 in 2021, civil aviation regulators are adopting that ICAO airworthiness standard as individually interpreted mandates. Avionics suppliers already have the capabilities to meet the requirement today.

# Avionics Industry is Ready for 2021 Autonomous Distress Tracking
## ... from previous page

Texas-based Sabre, for example, provides flight following and aircraft data management software that enables minute-by-minute autonomous distress tracking with no avionics upgrades required.

Sabre's ACARS Manager is an aircraft communications management software that can interface with every and all aircraft data link service provider networks, including those using satcom and very high-frequency radio on oceanic or polar routes. The position reports generated through this software are displayed to an operator on a Gantt chart and a moving map display depicting the flight path of the aircraft.

The company is meeting the autonomous distress tracking requirement by analyzing the ACARS messaging set coming off of the aircraft.
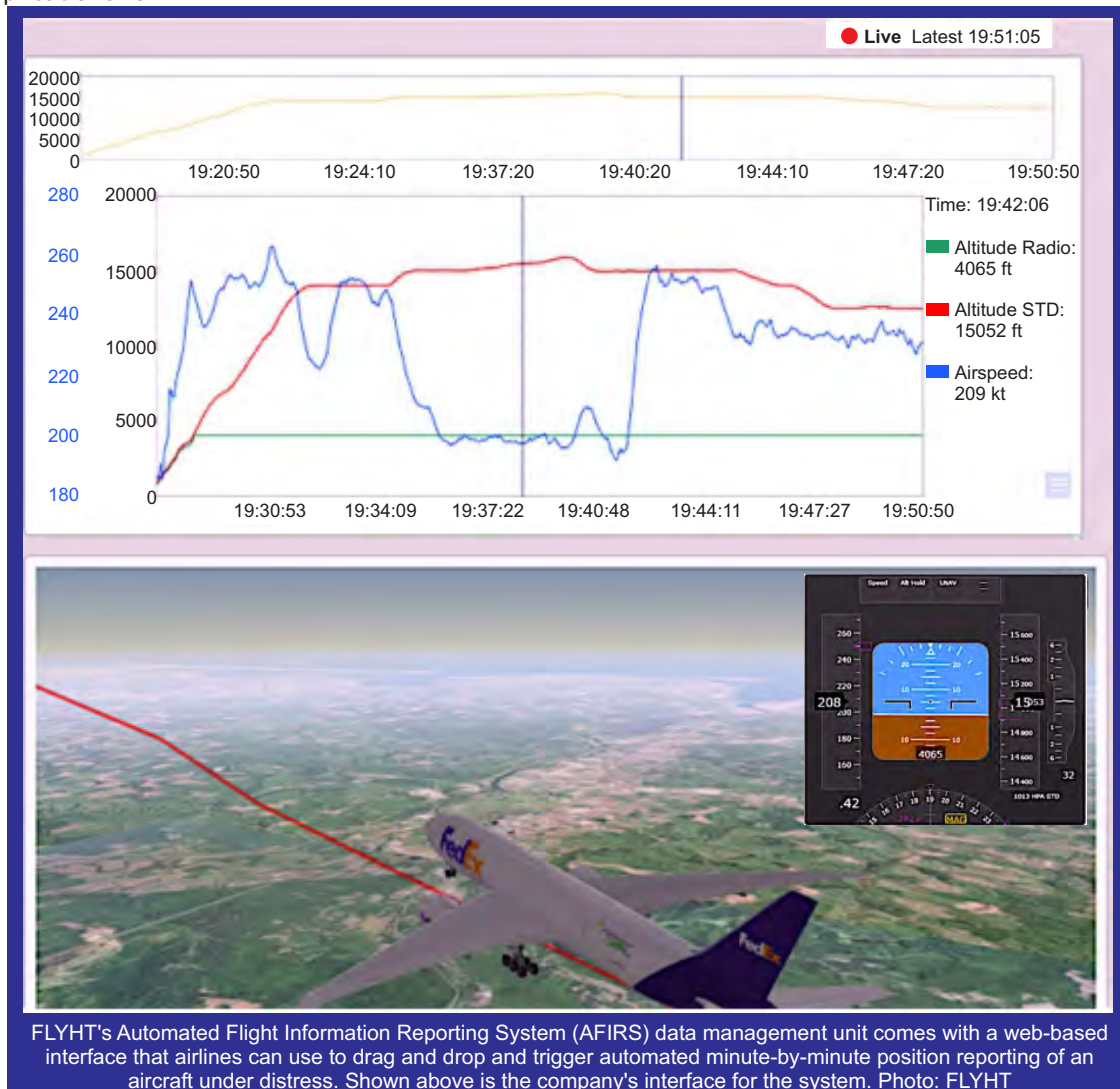
"We've found it's possible to determine whether an aircraft has had an electrical failure or an engine is out of parameters or another distress condition based off the ACARS messaging data that's coming down from the aircraft," said Richard Landeck, global supervisor of Sabre's airline solutions division.

Elsewhere, some avionics makers have already proven their ability to meet minute-by-minute tracking requirements in flight technology demonstration projects, a list that includes Canadian manufacturer and aircraft data streaming service provider FLYHT.

The company demonstrated this capability during the 2018 Boeing ecoDemonstrator program, where a FedEx 777 was equipped with its Automated Flight Information Reporting System (AFIRS) satellite communications computer. The AFIRS system uses a proprietary software known as the embedded launching application to determine what information an airline wants to capture about its aircraft's performance.

That application also compresses the collected data before it is transmitted across Iridium's satellite system and down to the company's cloud-based Uptime server, where the file is unzipped and distributed to an airline's maintenance or flight operations department in an actionable format.

"The ARINC 717 data, the same data that goes to the FDR, is going to the AFIRS unit," said Kent Jacobs, director of advanced applications for FLYHT.
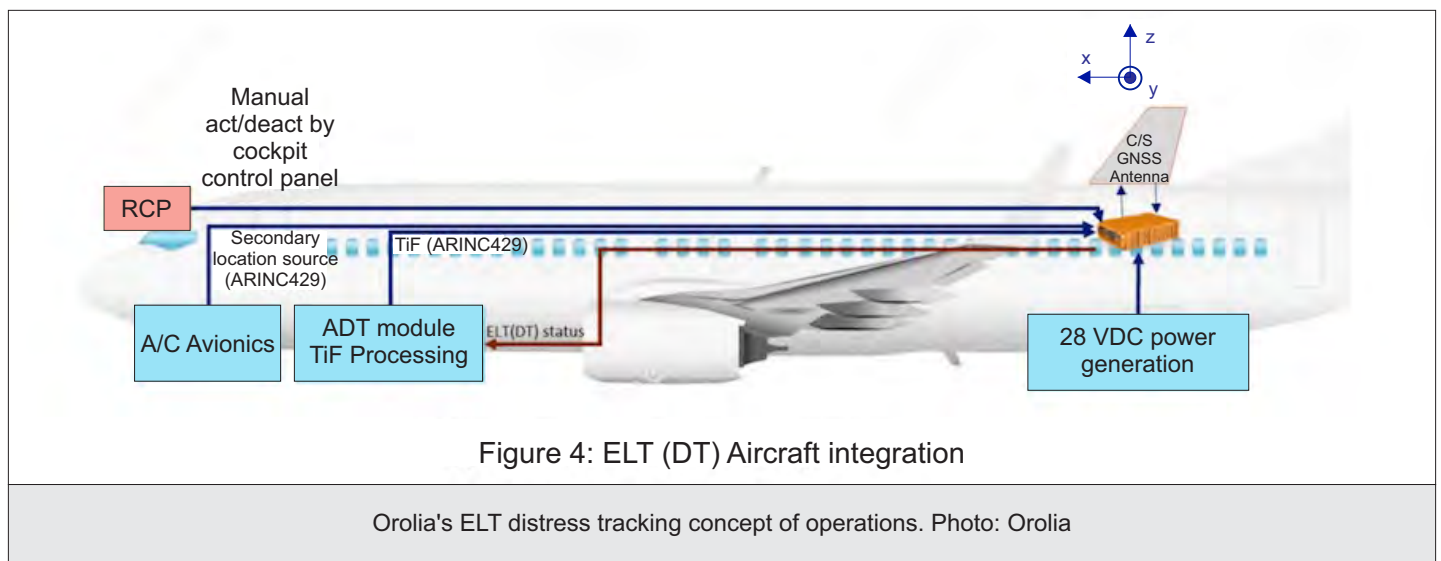


FLYHT's Automated Flight Information Reporting System (AFIRS) data management unit comes with a web-based interface that airlines can use to drag and drop and trigger automated minute-by-minute position reporting of an aircraft under distress. Shown above is the company's interface for the system. Photo: FLYHT

# Avionics Industry is Ready for 2021 Autonomous Distress Tracking

Some of the automatically triggered conditions that were set for the trial included unusual attitude, a bank angle above 30 degrees or a pitch exceeding 15 degrees lasting more than 2 seconds. If the AFIRS system detected any of the pre-defined conditions occurring throughout the flight, it would autonomously trigger a streaming session of 1,024 words per second using Inmarsat's Swiftbroadband satellite network.

During the ecoDemonstrator trial, the AFIRS unit was configured with both an internal inertial navigation system to detect when pitch, attitude or ground speeds should be triggered, streamed and monitored. Jacobs said they also used the system to stream cockpit audio in real time.

Another approach to enabling ADT operations is provided through a new breed of emergency locator transmitter (ELT) technology.



Figure 4: ELT (DT) Aircraft integration

Orolia's ELT distress tracking concept of operations. Photo: Orolia

Paris, France-based aircraft ELT manufacturer Orolia is leading the deployment of this technology and is in the final stages of certification for its new "Ultima" distress tracking ELTs for Air France's fleet of Airbus A320s.

Their new ELT system is lithium ion battery-powered with an internal antenna capable of transmitting 406 and 121.5 MHz signals. The antenna also has embedded global navigation satellite system reception and Orolia also provides a separate ADT module that gets installed within the aircraft's cockpit control panel.

When the ADT module captures a distress signal or condition and transmits it to the ELT, a a distress message can be remitted to air traffic controllers, search and rescue agencies and the aircraft operator's ground-based personnel. The module's signaling of a distress condition then also triggers minute-by-minute tracking.

In the event of an aircraft experiencing a power failure, the new ELT still transmits distress signals to the COSPAS SARSAT satellite system, which has provided free search and rescue satellite emergency locator service to the aviation industry for more than two decades.

"The idea is to have the distress trigger occur in-flight before the aircraft crashes," said Christian Belleux, director of Orolia's aviation and military product lines. "The previous generation of ELTs were activated by G forces at the impact of the crash."

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