

# Market Research

## *VITA Market Developments*

March 2022

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*Embedded Market Research*



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### **Brian Arbuckle Autobiography**

*Brian Arbuckle is a market analyst specializing in embedded computing. Brian has an engineering degree from the University of Warwick and an MBA. His career has spanned marketing management roles in industry for electronic and mechanical components and systems and communications networks. He has worked in analyst roles for technical market research organisations, IHS Markit and Informattech and in recent years has authored an annual market research report on the embedded computing industry.*

## Forward

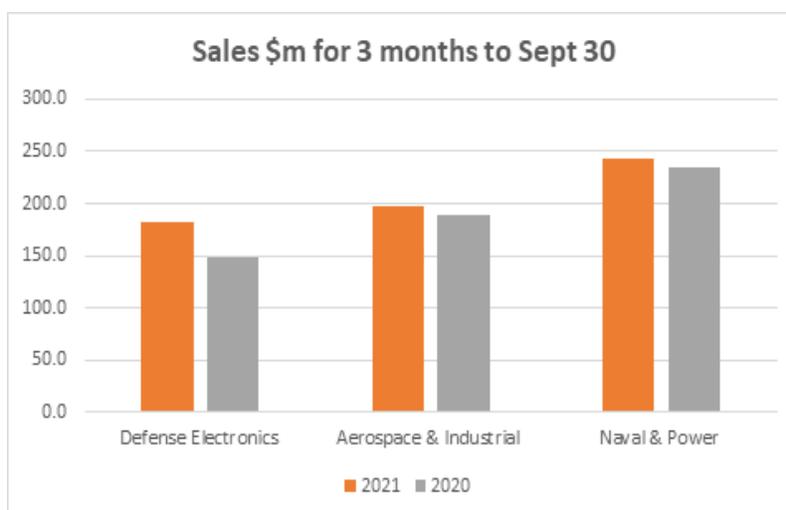
VITA has commissioned this market research to gather information on data related to the most popular of VITA standards. This report reviews highlights and developments during the fourth trading quarter of 2021 and the trends that are driving technology development for VITA technology boards and systems.

## Financial Results

Results published by Curtiss-Wright Defense Systems and Mercury Systems in the last quarter provide an insight into the general health of the VITA market.

**Curtiss Wright Corporation** published its third quarterly SEC return on November 4th 2021.

Prior to the first quarter of 2021, Curtiss-Wright reported its results of operations through three reportable segments: Commercial/Industrial, Defense, and Power. On January 1, 2021, Curtiss-Wright implemented an organizational change to simplify its reportable segments and align its product sales with its end market structure. As a result, Curtiss-Wright now reports its results of operations through the following reportable segments: Aerospace & Industrial, Defense Electronics, and Naval & Power.



Sales during the nine months ended September 30, 2021 increased \$116 million, or 7%, to \$1,839 million, compared with the prior year period. On a segment basis, sales from the Defense Electronics and Naval & Power segments increased \$98 million and \$35 million, respectively, with sales from the Aerospace & Industrial segment decreasing \$17 million.

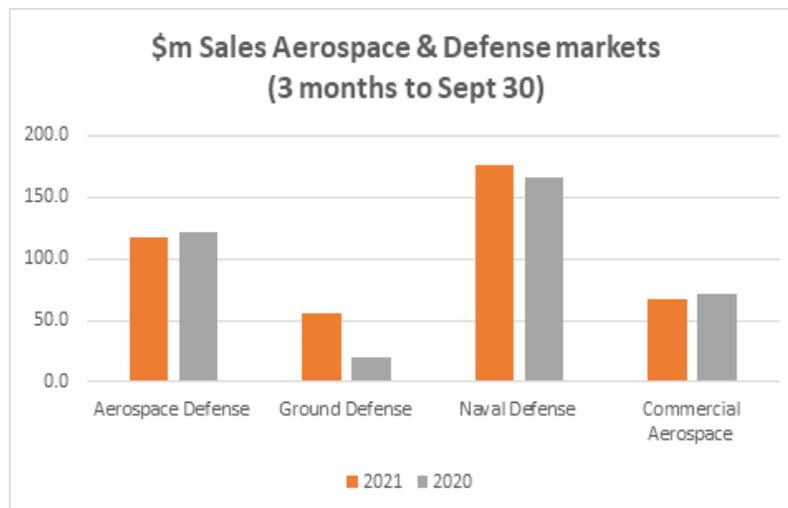
Sales in the Defense Electronics segment are primarily to the defense markets and, to a lesser extent, the commercial aerospace market. The majority of VITA products are assumed to be reported in the Defense Electronics segment.

Sales in the Defense Electronics segment in the third quarter increased \$33 million, or 22%, to \$182 million from the prior year period, primarily due to the incremental impact of the PacStar acquisition in the ground defense market, which contributed sales of \$37 million. This increase was partially offset by lower sales on fighter jets in the aerospace defense market.

<b>Components of Defense Electronics Sale</b> (Year over year change, Sept 2020 to Sept 2021))	<b>Change</b>
Organic	-3%
Acquisitions	25%
Restructuring	0%
Foreign currency	0%

New Defense Electronics orders in the third quarter increased \$26 million, from the prior year, primarily due to the incremental impact of the PacStar acquisition. These increases were partially offset by the timing of naval defense and aerospace defense orders.

The following chart depicts Curtiss-Wright Corporation Aerospace and Defense sector sales disaggregated by end market.



Sales in the third quarter increased \$36 million, or 10%, to \$415 million against the comparable prior year period, primarily due to higher sales in the ground defense and naval defense markets. The ground defense market benefited from the impact of the PacStar acquisition, which contributed incremental sales of \$38 million. Sales in the naval defense market increased primarily due to higher production on the CVN-81 aircraft carrier and Virginia-class submarine programs. These increases were partially offset by lower sales on fighter jets in the aerospace defense market.

**Mercury Systems** claim growth is driven by secure processing, trusted microelectronics and open mission systems.

Total revenues increased \$19.4 million, or 9.4%, to \$225.0 million during the first quarter ended October 1, 2021, as compared to \$205.6 million during the first quarter ended October 2, 2020. The increase in total revenue was primarily due to an additional \$41.3 million of acquired revenues from the POC and Pentek businesses, partially offset by \$21.9 million less organic revenues.

These increases were driven by modules and sub-assemblies which increased \$41.6 million or 238% which was partially offset by decreases in components and integrated subsystems of \$15.2 million and \$7.0 million, respectively. The increase in total revenue was primarily from

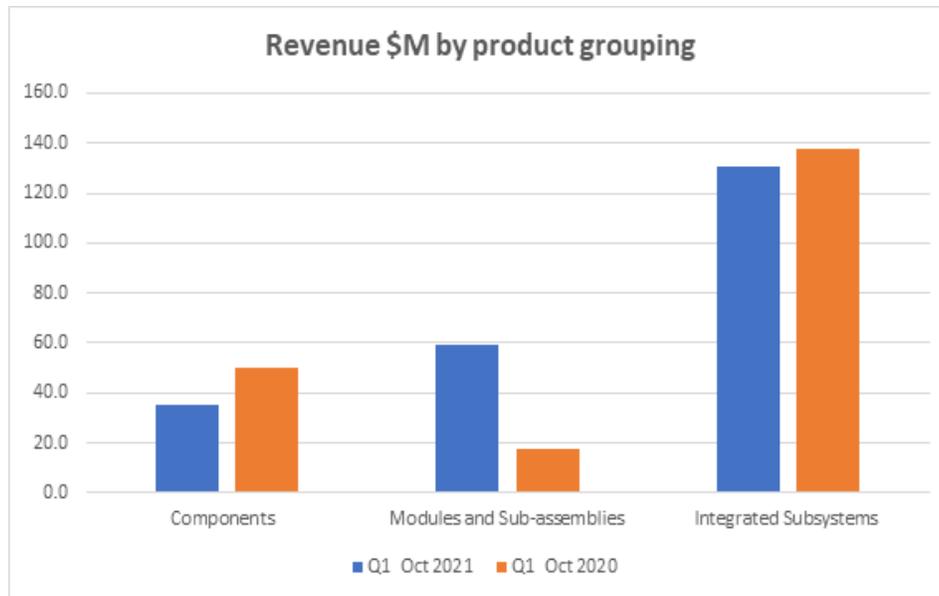
the C4I and other sensor and effector end applications which increased \$29.6 million and \$8.3 million, respectively and were partially offset by a \$13.5 million decrease to radar application. The increase was primarily across the airborne platform which grew \$29.3 million during the first quarter ended October 1, 2021.

The largest program increases were related to the MH-60 program, a classified C2 program and a classified radar program. There were no programs comprising 10% or more of revenues for the first quarters ended October 1, 2021 or October 2, 2020.

Revenue analysis of Q1 (to 1 Oct 21) results are illustrated in the charts and tables below.

Key Customers, (> 10% of revenues)	Q1 Oct 2021	Q1 Oct 2020
U.S. Navy	17%	-
Raytheon Technologies	14%	23%
Lockheed Martin Corporation	13%	19%
<b>Total</b>	<b>44%</b>	<b>42%</b>

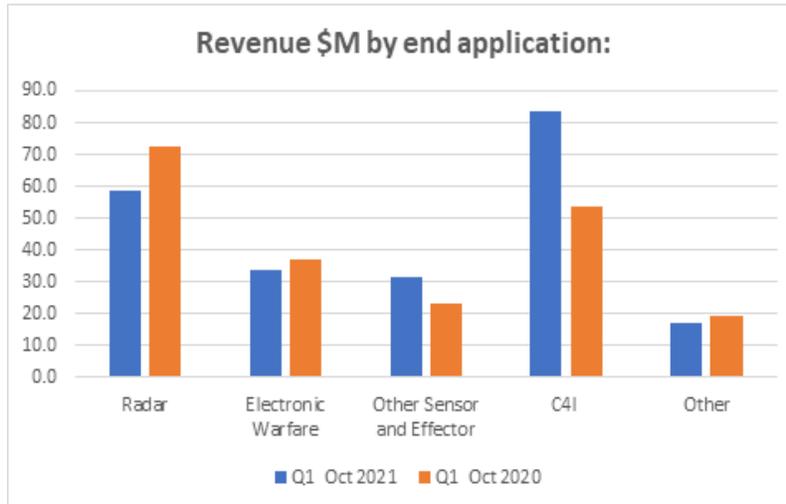
Mercury Systems breaks revenue into three product categories: Components, Modules and sub-assemblies, and Integrated subsystems.



**Notes:**

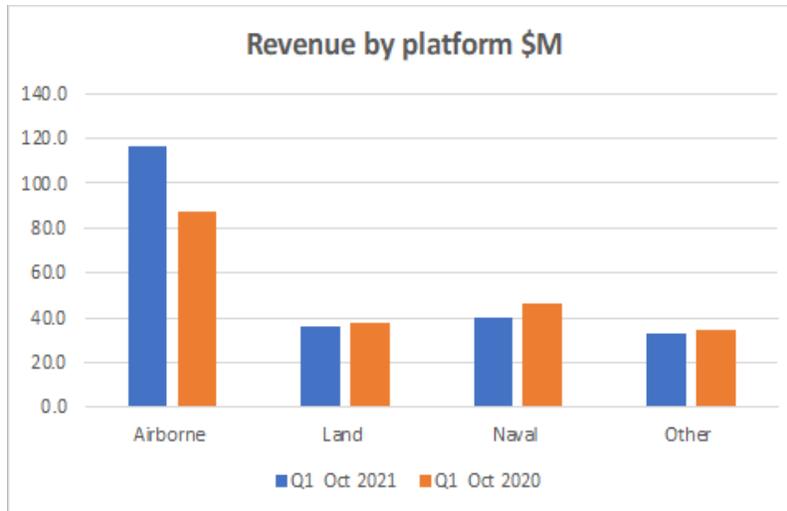
1. *Components include technology elements typically performing a single, discrete technological function, which when physically combined with other components may be used to create a module or sub-assembly. Examples include but are not limited to power amplifiers and limiters, switches, oscillators, filters, equalizers, digital and analog converters, chips, MMICs (monolithic microwave integrated circuits), and memory and storage devices.*
2. *Modules and Sub-assemblies include combinations of multiple functional technology elements and/or components that work together to perform multiple functions but are typically resident on or within a single board or housing. Modules and sub-assemblies may in turn be combined to form an integrated subsystem. Examples of modules and sub-assemblies include but are not limited to embedded processing modules, embedded processing boards, switch fabric boards, high speed input/output boards, digital receiver boards, graphics and video processing and Ethernet and IO (input- output) boards, multi-chip modules, integrated radio frequency and microwave multi-function assemblies, tuners and transceivers.*

3. *Integrated Subsystems include multiple modules and/or sub-assemblies combined with a backplane or similar functional element and software to enable a solution. These are typically but not always integrated within a chassis and with cooling, power and other elements to address various requirements and are also often combined with additional technologies for interaction with other parts of a complete system or platform. Integrated subsystems also include spare and replacement modules and sub-assemblies sold as part of the same program for use in or with integrated subsystems sold by the Company.*



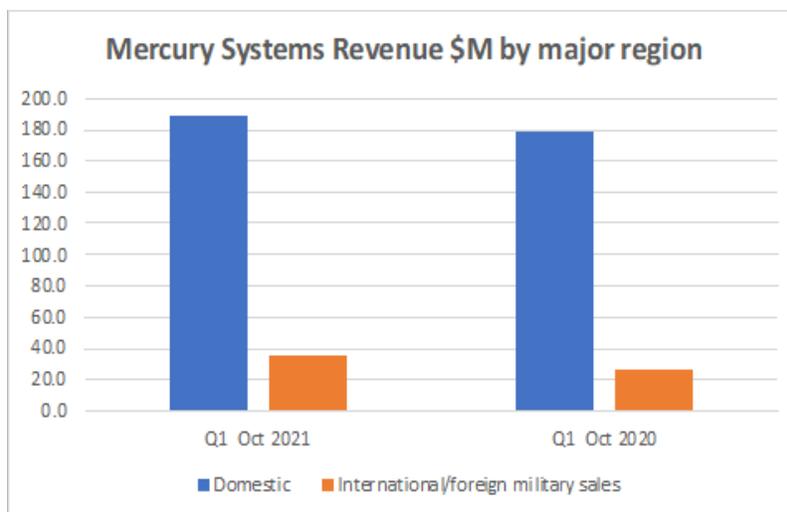
Notes:

1. *Radar includes end-use applications where radio frequency signals are utilized to detect, track, and identify objects.*
2. *Electronic Warfare includes end-use applications comprising the offensive and defensive use of the electromagnetic spectrum.*
3. *Other Sensor and Effector products include all Sensor and Effector end markets other than Radar and Electronic Warfare.*
4. *C4I includes rugged secure rackmount servers that are designed to drive the most powerful military processing applications.*
5. *Other products include all component and other sales where the end use is not specified.*



**Notes:**

1. Airborne platform includes products that relate to personnel, equipment, or pieces of equipment designed for airborne applications.
2. Land platform includes products that relate to fixed or mobile equipment, or pieces of equipment for personnel, weapon systems, vehicles and support elements operating on land.
3. Naval platform includes products that relate to personnel, equipment, or pieces of equipment designed for naval operations.
4. Other represents all platforms other than Airborne, Land or Naval.



**Notes:**

1. Domestic revenues consist of sales where the end user is within the U.S., as well as sales to prime defense contractor customers where the ultimate end user location is not defined.
2. International/Foreign Military Sales consist of sales to U.S. prime defense contractor customers where the end user is outside the U.S., foreign military sales through the U.S. government, and direct sales to non-U.S. based customers intended for end use outside of the U.S.

## SOSA Technical Standard 1.0 Released

In October 2021, representing a milestone event for the embedded aerospace and defense industry, the Open Groups Sensor Open Systems Architecture™ (SOSA) Consortium released SOSA Technical Standard 1.0. The standard, developed through the collaboration and participation of government and industry, defines open system reference architectures applicable to military and commercial sensor systems. <sup>1</sup>

In establishing guidelines for C5ISR systems, the new standard fosters flexibility in the selection and acquisition of sensors and subsystems that provide sensor data collection, processing, exploitation, communication, and related functions over the full life cycle of the deployed system.

The SOSA Technical Standard will help drive interoperability and reduce the costs associated with rapidly fielding today's most advanced radar processing, communications, electronic warfare (EW), electro-optical/infra-red (EO/IR) and signal intelligence (SIGINT) applications, as well as multi-INT sensor systems.

Based on modular design and widely supported, consensus-based, non-proprietary standards, the SOSA Technical Standard defines key interfaces to meet the following goals:

- Reduce development cycle time and cost
- Reduce systems integration cost and risk
- Increase commonality and reuse
- Reduce sustainment and modernization cost
- Support capability evolution and mitigate obsolescence
- Enable technology transition
- Facilitate interoperability
- Isolate the effects of change

As a great example of collaboration around the SOSA standard by VITA members, Mercury Systems recently demonstrated a ready-to-run SOSA aligned sensor processing platform incorporating products from multiple vendors. This pre-configured multi-vendor system enables engineers to immediately start application design, saving valuable time and money. The Model 8256 development platform consists of an Elma Electronic 3U VPX chassis, Crossfield Technology IPMI software and ChassisBerry chassis manager, an Interface Concept backplane switch module (ComEth4590a), a Concurrent Technology TR H4C single-board computer (SBC), and one Mercury Quartz® Model 5550, an eight-channel A/D and D/A converter 3U OpenVPX board based on the Xilinx® Zynq® UltraScale+ RFSoc, all aligned with the SOSA Technical Standard. <sup>2</sup>

## New collaborations and partnerships

Some vendors are choosing to formalise and publicise collaborative partnerships that they have formed to bring added-value products to market. Often these relate to application software, for example system security. Some examples from Q4 2021 follow:

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1 <https://www.opengroup.org/sosa-technical-standard-v1>

2 <https://ir.mrcy.com/news-releases/news-release-details/mercury-systems-successfully-demonstrates-ready-run-sosa-aligned>

- ❑ Curtiss-Wright's Defense Solutions division announced that it is collaborating with NI (formerly National Instruments) to bring advanced high-performance Software Defined Radio technology to deployed applications aligned with The Open Group Sensor Open Systems Architecture™ (SOSA) and U.S. Army's C5ISR/EW Modular Open Suite of Standards (CMOSS) technical standards. Curtiss-Wright's new VPX3-E320 Ruggedized Universal Software-Defined Radio module, developed under agreement with NI, is the first fully rugged OpenVPX variant of the popular Ettus Research USRP E320 SDR solution, enabling applications developed in the lab to be seamlessly transitioned to mission hardware. The conduction cooled 3U OpenVPX module speeds and eases the integration of critical SDR capabilities, such as deployed SIGINT, tactical communications, and reconfigurable jamming, into platforms deployed in harsh environments. <sup>3</sup>
- ❑ Curtiss-Wright Defense Solutions and Annapolis Micro Systems announced their cooperation to bring best-in-Class SOSA™ technical standard aligned solutions to the embedded market. The new agreement will speed customer access to the combined range of SBC, DSP, FPGA and switch modules. Under the agreement, both companies will be able to reference sell their SOSA-aligned 3U and 6U OpenVPX modules and chassis to support designers of demanding compute-intensive applications such as EW, radar, and signals intelligence. <sup>4</sup>
- ❑ Curtiss-Wright's Defense Solutions division announced a partnership with Raytheon Intelligence & Space to bring commercial-off-the-shelf, defense-grade system security to rugged OpenVPX-based systems. Under a new agreement, Curtiss-Wright will embed Raytheon Intelligence & Space's patented Night Cover product suite into select OpenVPX modules and systems. Until now, most security IP solutions on the market have required costly and time-consuming customization of the target military hardware on which they are to be deployed. This partnership enables Curtiss-Wright and Raytheon Intelligence & Space to eliminate the need for expensive custom hardware and make it possible to add or upgrade security IP on legacy systems with compatible resident processors. <sup>5</sup>
- ❑ Curtiss-Wright announced that it has selected Eurolink Systems as the channel partner to represent and distribute its products in Italy. A distributor of embedded electronics products and systems for the Italian aerospace and defense industry since 1994, Eurolink will provide Curtiss-Wright customers in Italy with its systems engineering expertise for Curtiss-Wright COTS boards. Eurolink will support the full range of Curtiss-Wright Defense Solutions sales support activities in Italy, from new system design to life cycle management, with its system integration and support center, and pre- and post-sales support resources. <sup>6</sup>
- ❑ North Atlantic Industries partnered with wolfSSL to support NAI's 3U OpenVPX Certifiable 68PPC2 T2080 Single Board Computer with Embedded Security Solutions. By teaming with wolfSSL NAI can offer embedded security in its growing portfolio of rugged COTS SBC's. <sup>7</sup>

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3 <https://www.curtisswrightds.com/news/press-release/curtiss-wright-collaborates-with-ni-to-migrate-industry-leading-software-defined-radio-technology-cmoss-sosa-technical-standard-aligned-systems.html>

4 <https://www.curtisswrightds.com/news/press-release/cw-and-annapolis-micro-systems-cooperate-to-bring-sosa-technical-standard-aligned-solutions-to-embedded-market.html>

5 <https://www.curtisswrightds.com/news/press-release/cw-and-raytheon-intelligence-space-collaborate-to-bring-plug-in-solution-for-adding-security-ip.html>

6 <https://www.curtisswrightds.com/news/press-release/cw-selects-eurolink-systems-for-distribution-and-sales-support-in-italy.html>

7 <https://www.naii.com/pressrelease/117>

## Contract and Design Win Announcements

Not all defense contracts are announced publicly and for those that are, not all identify details of embedded computing technology on board. Only contract wins that specifically mention VITA standards are reported.

- ❑ Abaco Systems announced an award of \$1.2 M supporting an overland natural gas pipeline extending over 100 miles through several countries in western Asia. This win includes Abaco's FMC172 wideband low-latency FPGA Mezzanine Card (FMC), which is used as a high-sampling rate analog to digital converter (ADC), to provide leak detection, preventing environmental and economic damage resulting from tampering, theft or catastrophic failure.

## Product Announcements

### *VPX Technology*

The sensor community served by the SOSA™ Technical Standard relies heavily on VPX modules. As the SOSA initiative continues to move forward, a number of new products have been launched by the VITA community, largely featuring VPX:

- ❑ Abaco Systems announced the release of both the NPN244 which is VITA 65 aligned and the NPN244S which is aligned to the SOSA™ technical standard. Both graphics output boards are rugged 6U VPX high-performance computers (HPC). The release in both forms demonstrates Abaco's leadership in adapting the latest GPU technologies for the rugged defense, aerospace, and industrial market sectors.<sup>8</sup>
- ❑ Abaco Systems announced the production release of five products designed to align to the Sensor Open Systems Architecture (SOSA™) technical standard in 3U and 6U VPX boards and board sets. The VP431 3U VPX ADC, SWE440S 3U Ethernet switch, SBC6511 6U VPX SBC, VP831 3U VPX FMC carrier board, and IPN254 6U VPX multiprocessor board align to the SOSA standard and support DOD goals for technology insertion, cost reduction, and faster time to deployment.<sup>9</sup>
- ❑ Curtiss-Wright Defense Solutions division has launched a "Supply Chain Proofed" safety certifiable rugged graphics module for airborne platforms. In support of the modular open system approach (MOSA), the V3-717 adds hardware-accelerated graphics with video encode/decode hardware acceleration to Curtiss-Wright safety certifiable processor cards, such as the rugged V3-1708 and V3-152 3U OpenVPX modules based on the well-known and proven AMD Radeon™ E8860 embedded Graphics Processing Unit (GPU). The Radeon E8860 has established a long record of success in safety critical applications, with deployment in numerous avionics programs for many years and inventories are claimed to be strong, helping to eliminate supply chain uncertainty.<sup>10</sup>

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8 <https://www.abaco.com/news/abaco-systems-announces-newest-rugged-hpc-graphic-output-boards>

9 <https://www.abaco.com/news/abaco-announces-production-release-five-products-aligned-sosa™-standard>

10 <https://www.curtisswrightds.com/news/press-release/supply-chain-proofed-safety-certifiable-rugged-graphics-module-airborne-platforms.html>

- ❑ EIZO Rugged Solutions introduced the Condor GR5S-RTX5000 – a rugged OpenVPX 3U form factor graphics & GPGPU card that hosts the discrete NVIDIA® Quadro RTX™ 5000 GPU (TU104). This card configuration is SOSA-aligned. Powered by NVIDIA Turing™ architecture, the Condor GR5S-RTX5000 delivers GPGPU processing with AI capabilities for rapid detection and response to threats. The new board is designed for latency-sensitive applications supporting ISR, Degraded Visual Environments (DVE), Digital Signal Processing (DSP), Electronic Warfare (EW), Signals Intelligence (SIGINT), and Data Science projects. <sup>11</sup>
- ❑ EIZO also introduced the Condor GR5-A2000 which it claims is the first OpenVPX 3U form factor graphics and GPGPU card to be brought to aerospace and other rugged markets hosting the NVIDIA RTX™ A2000 embedded GPU and supporting four Single-Link DVI-D outputs. This single-slot solution provides embedded systems with up to 2x the throughput for matrix operations than previous generations for intensive workloads such as multi-sensor processing, neural network training, and Digital Signal Processing (DSP). <sup>12</sup>
- ❑ Mercury Systems announced a high-speed 3U VPX synchronizer module for phase-coherent signal acquisition. The Model 5503 SOSA-aligned high-speed 3U VPX synchronizer module is an optimized commercial-off-the-shelf (COTS) solution. It simplifies complex synchronization tasks for beamforming and phased-array applications used in radar, electronic warfare, and communications, maximizing reception and transmission of signals. The Model 5503 allows engineers to focus on the application itself, saving valuable development time and cost. Its SOSA-aligned architecture facilitates interoperability, re-use, and rapid technology insertion, all consistent with the SOSA Consortium’s approach and vision. <sup>13</sup>

### ***Systems, Backplane and Chassis Technology***

- ❑ Curtiss-Wright’s Defense Solutions division, introduced two new natural convection-cooled system solutions designed in compliance with the U.S. Army CCDC C5ISR Center’s CMOSS standard and aligned with the SOSA Technical Standard 1.0 at the AUSA 2021 Annual Meeting and Exposition.
- ❑ Curtiss-Wright announced the new CMOSS/SOSA Starter Kit (CSSK). Designed for use on ground combat vehicle (GCV) platforms, the CSSK speeds the development and demonstration of CMOSS/SOSA solutions by providing a pre-integrated 4-slot SWaP-optimized 3U VPX system that combines a VICTORY network module, A-PNT module, single board computer and 3U VPX power supply unit.
- ❑ Curtiss-Wright announced its new 8-Slot CMOSS/SOSA aligned Enclosure that provides a highly configurable rugged platform for Ground Mobile and GCV environments. The powered chassis features 8 3U OpenVPX slots, all of which are aligned with the SOSA Technical Standard 1.0. It features one External I/O slot, one I/O Intensive Compute Slot, four Generic Payload slots, one Data Plane/Control Plane Switch Slot, and one Radial Clock Slot that supports Assured-PNT functionality.

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11 <https://www.eizorugged.com/press-releases/eizo-releases-sosa-aligned-openvpx-3u-graphics-gpgpu-card-for-compute-processing-and-ai-applications-in-the-defense-market/>

12 <https://www.eizorugged.com/press-releases/eizo-releases-first-openvpx-3u-graphics-output-card-designed-for-embedded-gpgpu-processing-and-ai-applications-based-on-nvidia-ampere-architecture/>

13 <https://ir.mrcy.com/news-releases/news-release-details/mercury-systems-announces-high-speed-3u-vpx-synchronizer-module>

- ❑ Curtiss-Wright's new CMOSS chassis are designed to meet the U.S. Army PEO Ground Combat Systems (GCS) Standardized A-Kit / Vehicle Envelope (SAVE), a new standard that defines internal mounting and physical interfaces for connecting CMOSS systems and radios to platforms. These fan-free chassis are used in Ground Combat Vehicle, and Tactical Wheeled Vehicle Platforms, as well as high performance ground or rotary wing processing applications. <sup>14</sup>
- ❑ Elma Electronic Inc. expanded its series of development platforms to include the 3U VPX mid-range CompacFrame that features up to eight slots. This larger platform is designed to accelerate the testing and development of plug-in cards (PICs) based on The Open Group Sensor Open Systems Architecture™ (SOSA), Edition 1.0, or any OpenVPX backplane. <sup>15</sup>
- ❑ Elma Electronic added a third model to its expanding CompacFrame series of next-generation development platforms. The new Type 39A CompacFrame accepts up to five 1-slot VPX power and ground backplanes for plug-in cards on 1", 1.2" or 1.5" pitch designed for use with VITA 48.8 air flow-through (AFT) cooling. The platform facilitates new card and system design implementations and testing for a range of rugged environments, including electronic warfare (EW), C5ISR, target tracking and display, navigation systems and threat detection as well as in sensor payloads and image and data processing applications. <sup>16</sup>
- ❑ Mercury Systems announced a SOSA aligned development platform to simplify complex subsystem design. The Model 8257A Development Platform features a single-slot 3U VPX backplane and integrated power supply, enabling engineers to accelerate development of their sensor processing applications in an easy-to-use SOSA aligned desktop environment, saving time and money. The development platform accepts 3U VPX conduction cooled boards and uses integral fans for air cooling, enabling development on a fully rugged and conduction cooled board. <sup>17</sup>
- ❑ Pixus Technologies has a new 4U 19" rackmount chassis with a horizontal loading configuration. The chassis has a side-to-side airflow approach and supports 3U, 6U, or a mix of 3U and 6U OpenVPX boards. The 4U tall chassis platform supports up to 6x SOSA-aligned or OpenVPX 6U boards along with 6x boards in the 3U form factor. Alternatively, the form factor can be divided into three segments that can host up to 18x boards in the 3U OpenVPX size. The chassis can accept either a fixed modular PSU or a pluggable version that is compliant to the VITA 62 Modular Power Supply Standard. Rear Transition Module (RTM) slots are available in certain configurations depending on the enclosure configuration. Backplanes are available in various sizes and configurations for multiple OpenVPX/SOSA profiles and speeds up to 100GbE. Versions with VITA 66 optical or VITA 67 RF interfaces are also standard. Pixus offers 1U-4U tall horizontal orientation 19" rackmount systems in side-to-side or front-to-rear cooling configurations. The enclosures can be modified to MIL rugged formats. <sup>18</sup>

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14 <https://www.curtisswrightds.com/news/press-release/new-starter-kit-system-8-slot-openvpx-chassis-speed-development-cmoss-sosa-technical-standard-aligned-solutions.html>

15 <https://www.elma.com/en/news-and-events/news-releases/2021/10/elma-expands-compacframe-family-with-midrange-sizes-aligned-to-sosa>

16 <https://www.elma.com/en/news-and-events/news-releases/2021/12/elma-first-to-market-cooling-platform-embraces-vita-48-8-air-flow-through>

17 <https://ir.mrcy.com/news-releases/news-release-details/mercury-systems-announces-sosa-aligned-development-platform>

18 <https://pixustechnologies.com/assets/Press-Releases/Pixus-PR-4U-Horizontal-OpenVPX-side-to-side.pdf>

- ❑ VadaTech, announced the VTX985, a dual slot 3U VPX chassis conduction cooled for two 3U VPX modules. The chassis can accept a front and a Rear Transition Module (RTM). The Chassis CPU will monitor and maintain the VPX module wedge temperature, set by the user which allows testing of the conduction cooled modules without going through the thermal chamber. <sup>19</sup>

## **XMC Technology**

- ❑ Abaco Systems announced the PMC523 16-port serial controller and the SPR518 PCI Express® XMC carrier card. Both provide upgrade paths to protect customers from obsolescence. The SPR518 and the PMC523 each deliver a necessary and beneficial technology refresh. <sup>20</sup>
- ❑ Curtiss-Wright's Defense Solutions division, claims to have introduced the industry's first plug-in module to bring commercial-off-the-shelf, defense-grade system security to rugged OpenVPX-based systems. The XMC-528 Xilinx® Ultrascale+® MPSoC XMC Mezzanine Card is the first member of Curtiss-Wright's new family of enhanced TrustedCOTS (eTCOTS™) solutions. This XMC (VITA 42/61) module speeds the integration of advanced security IP, such as Raytheon's Night Cover™ product suite and Idaho Scientific's Immunity cryptographic products, into OpenVPX and legacy VMEbus system solutions. Until now, most security IP solutions on the market have required costly and time-consuming customization of the target military hardware on which the security is to be deployed. The XMC-528 enables system designers to add security to any Curtiss-Wright or third-party module supporting an XMC site. This includes OpenVPX or VME modules as well as modules designed to align with SOSA and CMOS technical standards. <sup>21</sup>
- ❑ VadaTech announced the FMC254 FPGA Mezzanine Card (FMC+) per VITA 57.4 specification. The unit has four TI ADC12SJ1600, each providing 12-bit resolution at 1.6 GSPS. This ADC is ideal for light detection and ranging (LiDAR) systems. <sup>22</sup>

## **Mergers, Acquisitions, and Partnerships**

- ❑ In late November 2021, Mercury Systems, Inc., acquired Atlanta Micro, Inc. based in Norcross, Ga. Atlanta Micro is a designer and manufacturer of high-performance RF modules and components, including advanced monolithic microwave integrated circuits (MMICs) which are critical for high-speed data acquisition applications including electronic warfare. Atlanta Micro is expected to contribute approximately \$16 million in revenue for the twelve months ending December 31, 2022. <sup>23</sup>

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19 [https://www.vadatech.com/media/pdf\\_PR\\_-\\_VadaTech\\_Announces\\_a\\_Two\\_Slot\\_3U\\_VPX\\_Rackmount\\_Chassis.pdf](https://www.vadatech.com/media/pdf_PR_-_VadaTech_Announces_a_Two_Slot_3U_VPX_Rackmount_Chassis.pdf)

20 <https://www.abaco.com/news/abaco-systems-announce-new-16-port-serial-controller-and-xmc-carrier-card-protect-obsolescence>

21 <https://www.curtisswrightds.com/news/press-release/new-cost-effective-xmc-module-adding-security-ip-cots-modular-open-systems.html>

22 [https://www.vadatech.com/media/pdf\\_PR\\_-\\_VadaTech\\_Announces\\_a\\_FMC+\\_with\\_Quad\\_ADC\\_12-bit\\_@\\_1.6\\_GSPS.pdf](https://www.vadatech.com/media/pdf_PR_-_VadaTech_Announces_a_FMC+_with_Quad_ADC_12-bit_@_1.6_GSPS.pdf)

23 <https://ir.mrcy.com/news-releases/news-release-details/mercury-systems-acquires-atlanta-micro>

## Summary

The SOSA Technical Standard 1.0 release was perhaps the highlight of this quarter. Now that this has been published, vendors of embedded computing solutions initially expect to see an increased need for development systems aligned with the Standard. Several new development systems were launched this quarter not only by the specialists in this field but also by the board and system market leaders.

With the new SOSA 1.0 standard published, development and compliance testing will ensure that embedded computing manufacturers meet the guidelines of the SOSA standard. The first SOSA-compliant embedded computing components are expected to launch in the coming months.

M&A executives actively seeking opportunities and eager to better understand the dynamics of this industry sector may find some help in our recently published market report, [2021 Edition of World Market for VITA Standards-based Board and Systems Report](#).

## Market Research

VITA released the 2021 Edition of World Market for VITA Standards-based Board and Systems Report. The research and analysis were conducted over the past summer through data collection and discussions with companies supplying merchant products based on key VITA standards. The report was prepared by Brian Arbuckle, Principal Market Analyst at Embedded Market Research on behalf of VITA. The full report is available for purchase from the VITA website at [www.vita.com/Market\\_Research](http://www.vita.com/Market_Research).

### *Executive Summary of Report*

Annual sales of VITA-standard based products (VME, VPX and PMC/XMC) to the merchant market are estimated to have increased on average 6.3% from 2019 to 2020. Boards are the highest in revenue while systems sales are the fastest growing aspect. 6U VPX systems are the fastest growing form-factor from 2019 to 2020.

The majority of VME and VPX boards and systems are sold to defense prime contractors that in turn, sell to governments. The largest customer for defense electronics is the United States with the US Department of Defense budget having the greatest impact on market growth. US Defense spending in total remains relatively steady but the budget allocation emphasizes compute-heavy technologies and has supported the increase in demand for VME and VPX boards and systems.

Market trends reported by VITA suppliers include the Open Systems DoD mandate; sensor proliferation using artificial intelligence (AI); and an increased emphasis on security by offering trusted computing solutions. The OpenVPX standard being championed by VITA aligns well with the US Department of Defense demand for improved implementation of open standards and interoperability. VITA members are also harnessing the latest AI chip technology and developing accelerator boards for intensive data-processing applications. VITA market leading companies also offer a rigorous approach to supply chain security.

Business challenges in the reporting period include the supply chain interruption caused by COVID-19 and in particular the global semiconductor shortage. Continuing challenges include product obsolescence particularly regarding VMEbus, already in its 40th year of production. The use of COTS servers and virtualization of applications rather than using dedicated hardware is an ongoing challenge in some markets.

VITA member companies continue to grow both organically and by acquisition and there has been some M&A activity during the period which has placed a significant value on the expertise and capabilities of these VITA-standard suppliers.

The report contents are as follows:

- Executive summary
- Recent mergers and acquisitions
- Report introduction and method
- Market Analysis by VITA standard (VME, VPX, PMC/XMC)
- Trends affecting business
- Risks to business operations
- Overall Q2 summary



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