



Market Research

VITA Market Developments

3Q 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 Informatel 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 third trading quarter of 2022 and the trends that are driving technology development for VITA technology boards and systems.

Semiconductor Supply Chain Challenges

On August 9th, 2022, President Biden signed into law the “Creating Helpful Incentives to Produce Semiconductors” (CHIPS) and Science Act of 2022 to bolster U.S. leadership in semiconductors. The Act supplies \$52.7 billion for American semiconductor research, development, manufacturing, and workforce development. This includes \$39 billion in manufacturing incentives, including \$2 billion for the legacy chips used in automobiles and defense systems, \$13.2 billion in R&D and workforce development, and \$500 million to support international information communications technology security and semiconductor supply chain activities. It also provides a 25 percent investment tax credit for capital expenses for manufacturing of semiconductors and related equipment.¹

Following up the announcement, the U.S. DoD confirmed the important priority of microelectronics. Barbara McQuiston, deputy chief technology officer of science and technology, said during a virtual discussion at Federal Computer Week’s Emerging Technology Workshop.

“The CHIPS Act supplies both investment and incentive funding to build semiconductor manufacturing facilities in the U.S. and to advance research and development activities at both the national and regional levels. In addition, the law includes large investment in a national research and development center, an advanced packaging manufacturing program, and up to three manufacturing institutes in the U.S. for semiconductor-related manufacturing.

The legislation also provides \$2 billion over five years for microelectronics, which envisions a national network of onshore prototyping, lab-to-fab transition in semiconductor technologies, including the Department of Defense-unique applications, and semiconductor workforce training”.²

Legacy Chips

The CHIPS and Science Act has great potential to aid in the ongoing life cycle challenges faced by the defense industry. It is not at all uncommon for electronic systems to have life spans measured in decades, in an industry famous for very short electronics life cycles. For years, suppliers of electronics modules, for instance, single board computers, have struggled with component obsolescence. They have primarily addressed the issue with life-time buys and major redesigns, both costly solutions. Having the ability to produce obsolete components that are key to long life cycle programs could quickly produce a return on the investment or at least significantly reduce life cycle costs. Combined with today’s efforts to shorten life cycles in defense electronics, following the consumer curve more closely, there might be light at the end of the tunnel.

1 <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/>

2 <https://www.defense.gov/News/News-Stories/Article/Article/3123699/chips-act-advances-dods-emphasis-on-microelectronics/>

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.

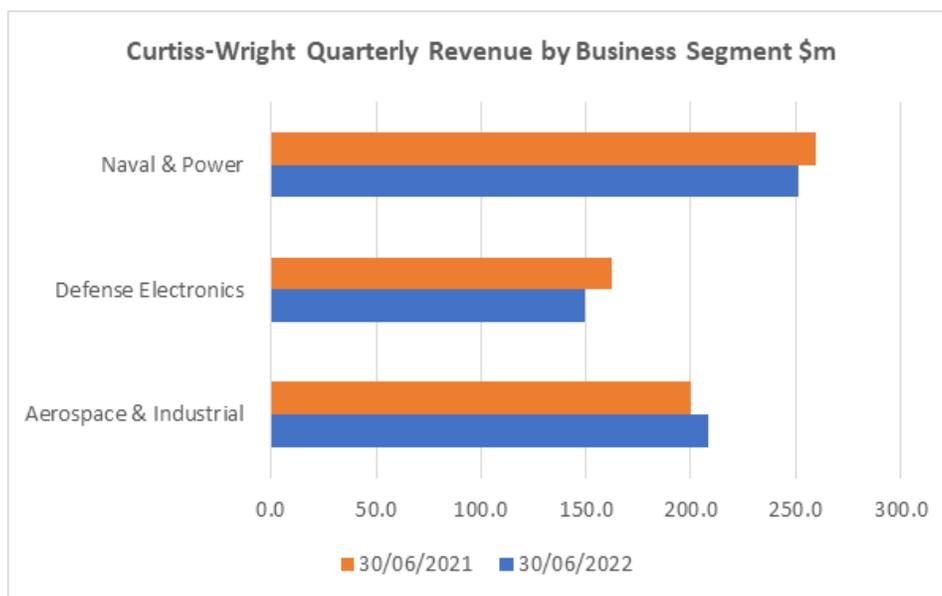
Curtiss-Wright Corporation

Curtiss-Wright Corporation released its second quarter report for fiscal 2022 on August 3, 2022.³ Curtiss-Wright reported results were in-line with expectations and strong order activity, as bookings increased 13% year over year, driven by increased demand in defense and commercial aerospace markets. For the remainder of 2022 the company expects supply chain disruption to continue to impact the timing of revenue within defense markets,

Results by business segment

Sales in the second quarter decreased \$12 million, or 2%, to \$609 million, compared with the prior year period. On a segment basis, sales from the Defense Electronics and Naval & Power segments decreased \$13 million and \$8 million, respectively, with sales from the Aerospace & Industrial segment increasing \$9 million.

New orders in the second quarter increased \$77 million from the comparable prior year period, primarily due to the timing of naval defense orders in the Naval & Power segment, as well as an increase in new orders for commercial aerospace equipment in the Defense Electronics and Aerospace & Industrial segments. These increases were partially offset by the timing of new orders for industrial vehicles in the Aerospace & Industrial segment.



Defense Electronics segment

Sales in the Defense Electronics segment are primarily to the defense markets and, to a lesser extent, the commercial aerospace market. Sales in the second quarter decreased \$13 million, or 8%, to \$150 million from the prior year period. In the commercial aerospace market, sales decreased \$9 million primarily due to lower sales of avionics and flight test equipment on various domestic and international platforms. Sales in the aerospace defense and ground defense markets were negatively impacted by ongoing supply chain headwinds and the delayed

3 https://s28.q4cdn.com/689791248/files/doc_financials/2022/q2/92d00405-afad-4027-a930-48eb80beee16.pdf

signing of the FY22 defense budget. These decreases were partially offset by higher sales on the Virginia-class submarine program in the naval defense market.

Aerospace & Industrial segment

Sales in the Aerospace & Industrial segment are primarily generated from the commercial aerospace and general industrial markets, and to a lesser extent the defense and power & process markets. Sales in the second quarter increased \$9 million, or 4%, to \$209 million from the prior year period, primarily due to higher sales in the commercial aerospace and general industrial markets. Sales in the commercial aerospace market benefited \$5 million from higher demand for actuation and sensors products as well as surface treatment services on various narrow-body and wide-body platforms. Sales in the general industrial market increased \$5 million primarily due to higher demand for industrial vehicle products. These increases were partially offset by sales decreases in the aerospace defense market primarily due to lower sales of actuation and sensors products on various fighter jet programs.

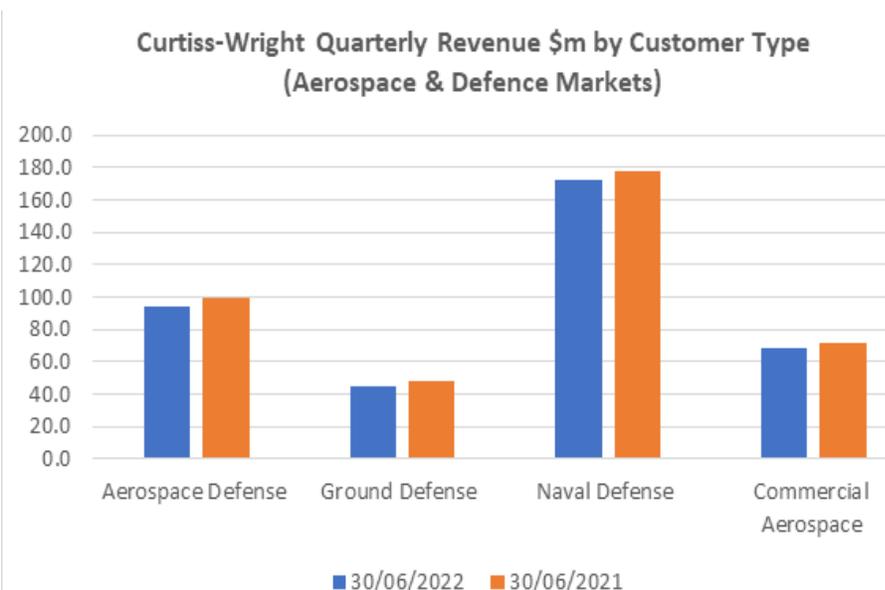
Naval & Power

Sales in the Naval & Power segment are primarily to the naval defense and power & process markets. Sales in the second quarter decreased \$8 million, or 3%, to \$251 million from the prior year period. In the naval defense market, sales decreased \$7 million, as higher demand on the Columbia-class submarine and CVN-81 aircraft carrier programs was more than offset by lower sales on the CVN-80 aircraft carrier and Virginia-class submarine programs. In the power & process market, higher nuclear aftermarket sales as well as higher demand for industrial valve products were essentially offset by the wind-down on the China Direct AP1000 program.

Sales disaggregated by end-user markets (Aerospace & Defense)

The following chart depicts Curtiss-Wright Corporation Aerospace and Defense sector only sales (excludes Commercial) disaggregated by end market.

Sales in the second quarter decreased \$18 million, or 4%, to \$380 million against the comparable prior year period, due to lower sales across all markets. Sales in the aerospace defense market decreased primarily due to lower sales of actuation and sensors products on various fighter jet programs, as well as lower sales of embedded computing equipment on various fighter jet and helicopter platforms. The ground defense market was negatively impacted by ongoing supply chain headwinds and the delayed signing of the FY22 defense budget, which resulted in lower sales of tactical communications equipment. In the naval defense market, higher demand on the Columbia-class submarine and CVN-81 aircraft carrier programs was more than offset by lower sales on the CVN-80 aircraft carrier and Virginia-class submarine programs.



Mercury Systems

Mercury Systems reported fourth quarter and fiscal 2022 results on August 2nd. Fourth quarter highlights include record bookings of \$332 million and record revenues of \$290 million increased 16% over the prior year. Full year fiscal 2022 revenues were \$988.2 million, compared to \$924.0 million for full year fiscal 2021.

In terms of the business outlook, for the first quarter of fiscal 2023, revenues are forecasted to be in the range of \$215.0 million to \$225.0 million. For the full fiscal year 2023, revenues are forecasted to be in the range of \$1.00 billion to \$1.05 billion.

Mark Aslett, Mercury's President, and Chief Executive Officer commented "Entering the new fiscal year with record backlog of \$1.04 billion, we are well-positioned for strong financial performance in fiscal 2023." ⁴

Revenue Analysis

Revenue analysis of fiscal 2022 results (to July 1, 2022) is illustrated in the following charts and tables. (Data is from the annual 10k report, charts have been created for trend analysis.) ⁵

Total revenues increased \$64.2 million, or 7.0%, to \$988.2 million during fiscal 2022, as compared to \$924.0 million during fiscal 2021 including "acquired revenue" which represents net revenue from acquired businesses that have been part of Mercury for completion of four full fiscal quarters or less (and excludes any intercompany transactions).

The increase in total revenue was primarily due to \$114.4 million of incremental acquired revenues partially offset by a \$50.2 million decrease in organic revenues.

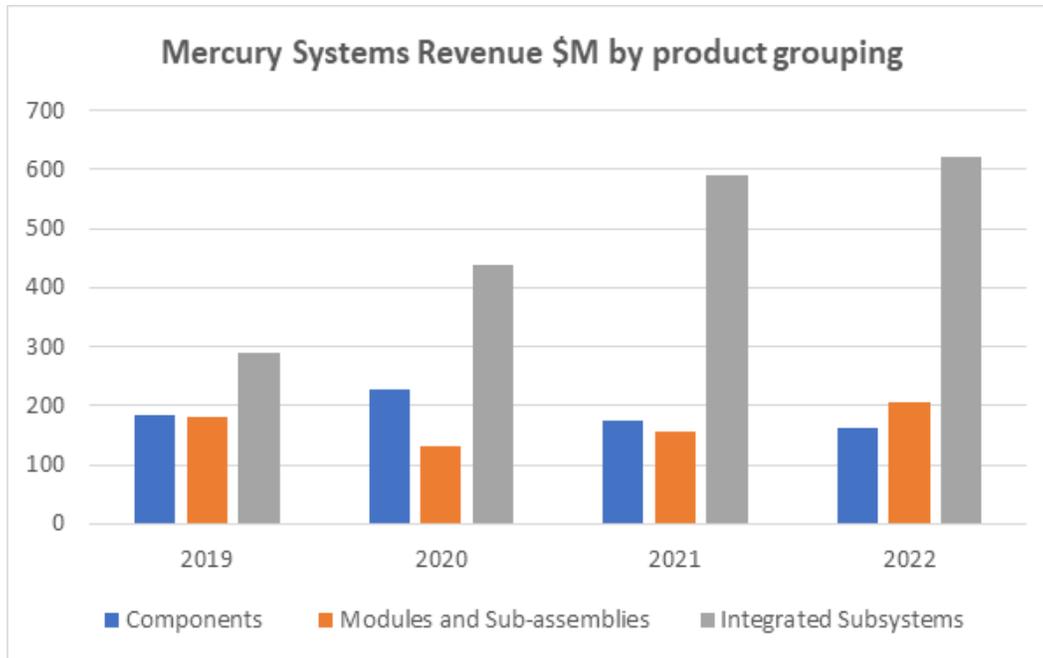
The increase in revenue was also driven by higher demand for modules and sub-assemblies and integrated subsystems which increased \$49.4 million or 31.5%, and \$30.5 million or 5.2%, respectively, and was partially offset by decreases to components of \$15.7 million or 8.9% during fiscal 2022. As the U.S. government mandates more outsourcing and open standards, the shift continues within the defense prime contractor community towards procurement of integrated subsystems that enable quick application-level porting through standards-based methodologies.

Impact of Acquisitions

Mercury Systems has been on the acquisition trail the past several years. Most of the acquisitions were of companies that produced components and subsystems key to a fully integrated system to be provided by Mercury Systems. The change in revenue between organic and inorganic is showing the results of those acquisitions as the products from the acquisitions get integrated into full systems.

4 <https://ir.mrcy.com/news-releases/news-release-details/mercury-systems-reports-fourth-quarter-and-fiscal-2022-results>

5 <https://ir.mrcy.com/static-files/756cc61d-b483-42fa-a853-d37ddb8dc2c>



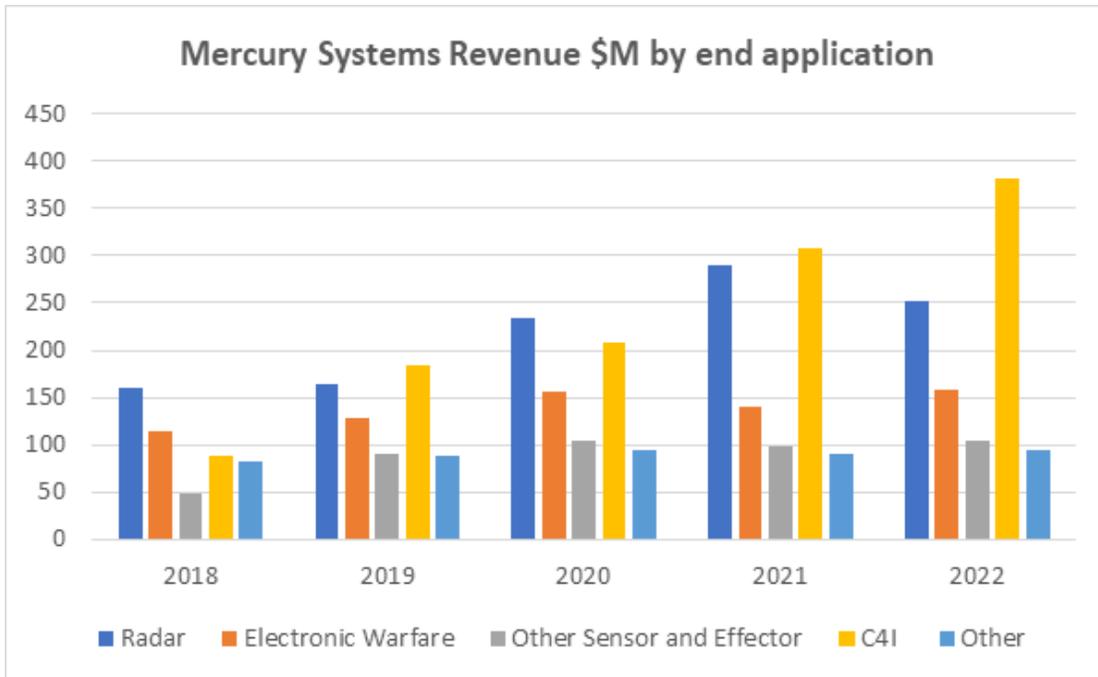
Notes:

1. *Components are the basic building blocks of an electronic system. They generally perform a single function such as switching, storing, or converting electronic signals. Examples include 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 combine multiple components to serve a range of complex functions, including processing, networking, and graphics display. Typically delivered as computer boards or other packaging, modules and sub-assemblies are usually designed using open standards to provide interoperability when integrated in a subsystem. Examples of modules and sub-assemblies include embedded processing boards, switched fabrics and boards for high-speed input/output, digital receivers, graphics, and video, along with multi-chip modules, integrated radio frequency and microwave multi-function assemblies and radio frequency tuners and transceivers.*
3. *Integrated subsystems bring components, modules and/or sub-assemblies into one system, enabled with software. Subsystems are typically, but not always, integrated within an open standards-based chassis and often feature interconnect technologies to enable communication between disparate systems. Spares, replacement modules, and sub-assemblies are provided for use with subsystems sold by us. Our subsystems are deployed in sensor processing, aviation, and mission computing and C4I applications.*

The increase in total revenue was primarily from C4I and EW applications which increased \$73.3 million and \$18.5 million, respectively, and was partially offset by a decrease of \$38.0 million from the radar end application.

The aerospace and defense electronics marketplace consists of two primary subsegments: C4I and sensor and effector mission systems. C4I encompasses platform and mission management, which include avionics and vetronics, C2I, which includes command and control and intelligence, and dedicated communications processing.

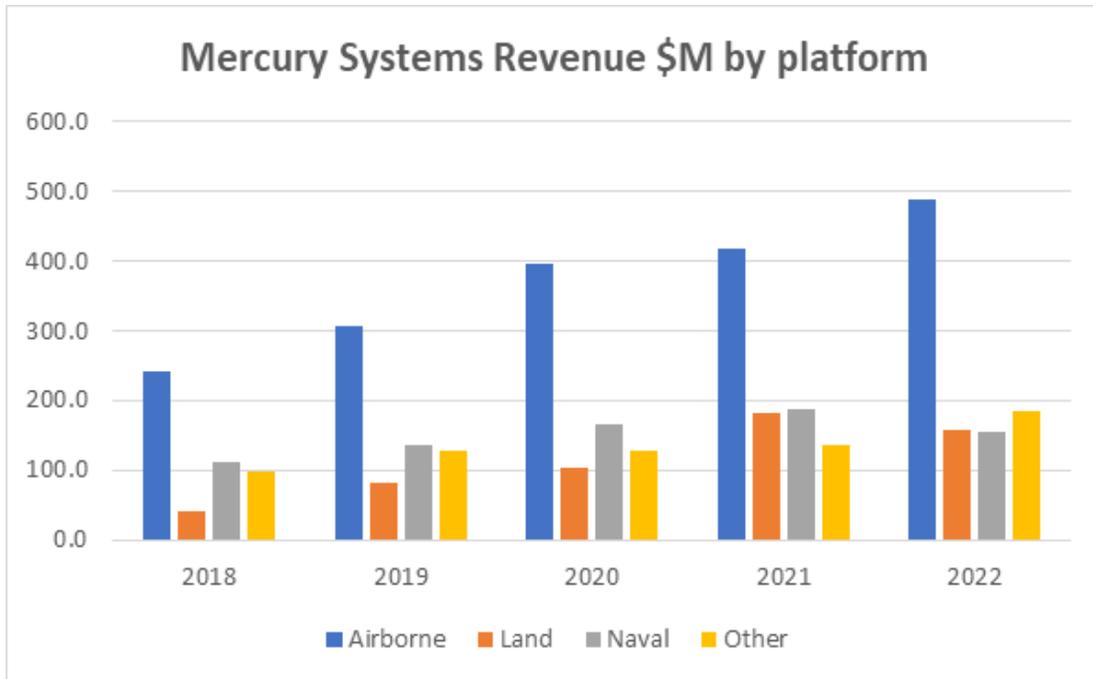
Sensor and effector mission systems are primarily distinct types of sensor modalities such as EW, radar, EO/IR, and acoustics as well as weapons systems such as missiles and munitions.



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.*

The increase in revenues spanned the airborne and other platforms which increased \$71.2 million and \$48.5 million, respectively, and was offset by decreases in the naval and land platforms of \$31.6 million and \$23.8 million, respectively. The largest program increases were related to a classified C2 program, MH60, P8, Aegis and ALR-56C.



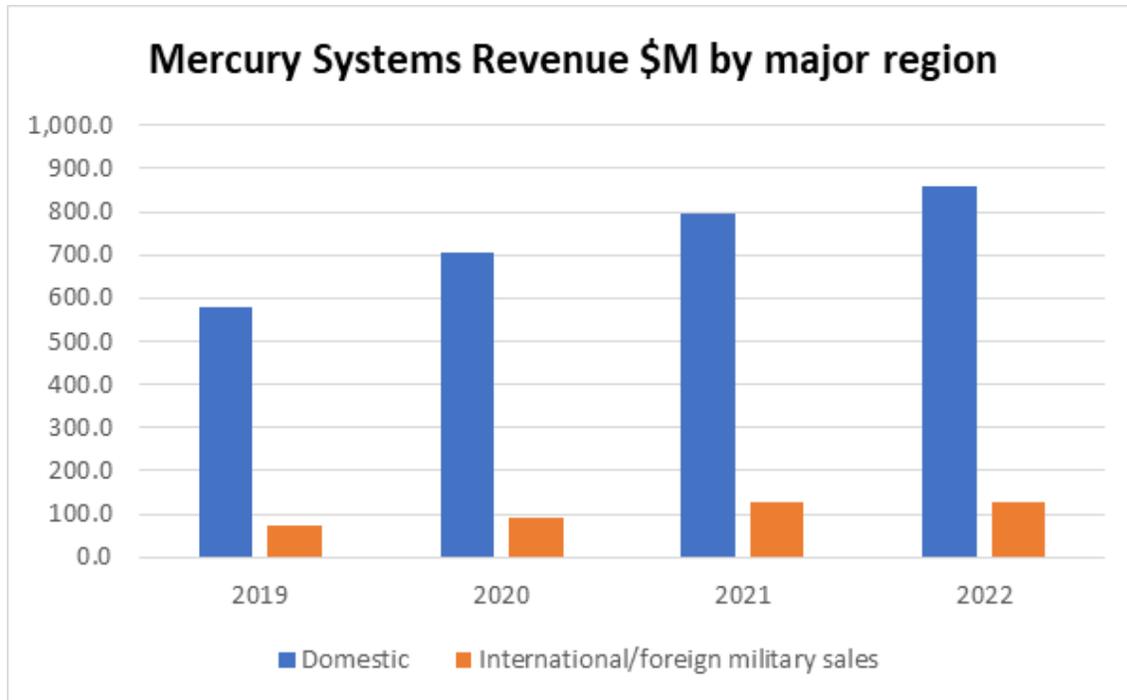
Notes:

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.

Customers making up 10% or more of Mercury Systems' revenues for the periods shown are as follows:

Key Customers (> 10% of revenues)	2018	2019	2020	2021	2022
Raytheon Technologies	19%	20%	16%	19%	14%
U.S. Navy	0%	0%	0%	12%	14%
Lockheed Martin Corporation	19%	17%	16%	15%	10%
Total	38%	37%	32%	46%	38%

While Mercury Systems typically has customers from which it derives 10% or more of its revenue, the sales to each of these customers are spread across multiple programs and platforms. There were no programs comprising 10% or more of Mercury Systems' revenues for the twelve months ended July 1, 2022.



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.

Concurrent Technologies

Concurrent Technologies is a specialist in high-end embedded computer products for critical applications based in the UK. Defense is its largest market sector at 76% revenue. In July, Concurrent announced its interim results for the first six months of 2022 featuring a strong order intake of \$16.9M USD (£14.2M) with significant backlog of \$23.9M USD (£20.3M) compared to \$17.9M (£15.6M) backlog as first half 2021, up 30%. Revenue of \$8.5M USD (£7.4M) (H1 2021: \$10.66M USD (£9.3M)) – reduced solely because of components supply issues that have delayed shipping of products, such that a proportion of expected H1 2022 revenues will be recognised in a later period. While the challenge of securing semiconductor components is constraining the ability of the embedded industry in general to ship completed products, Concurrent claims to be well positioned for material growth as the situation resolves.

Miles Adcock, CEO of Concurrent Technologies, commented: “Short term component availability is resulting in constrained performance in FY2022, with limited visibility of exactly when it will ease. However, order intake is strong, and would otherwise reflect in a solid improvement in revenues. Order intake should strengthen further as strategic initiatives take effect in FY2023 and beyond. Post period end, total order intake has further strengthened to \$23.85M (£20.8M), producing a current backlog of \$27.75M USD (£24.2M) as of 12 September 2022.”⁶

6 <https://www.gocct.com/2022/09/28/concurrent-technologies-upbeat-on-strong-order-intake/>

U.S. Partnerships

Concurrent is developing a 'Build to Print' partner in the U.S., qualifying Nextek, a contract manufacturer, based in Madison, Alabama. The intent is to be able to offer to the market genuinely 'Assembled in the USA' products by the end of 2022.

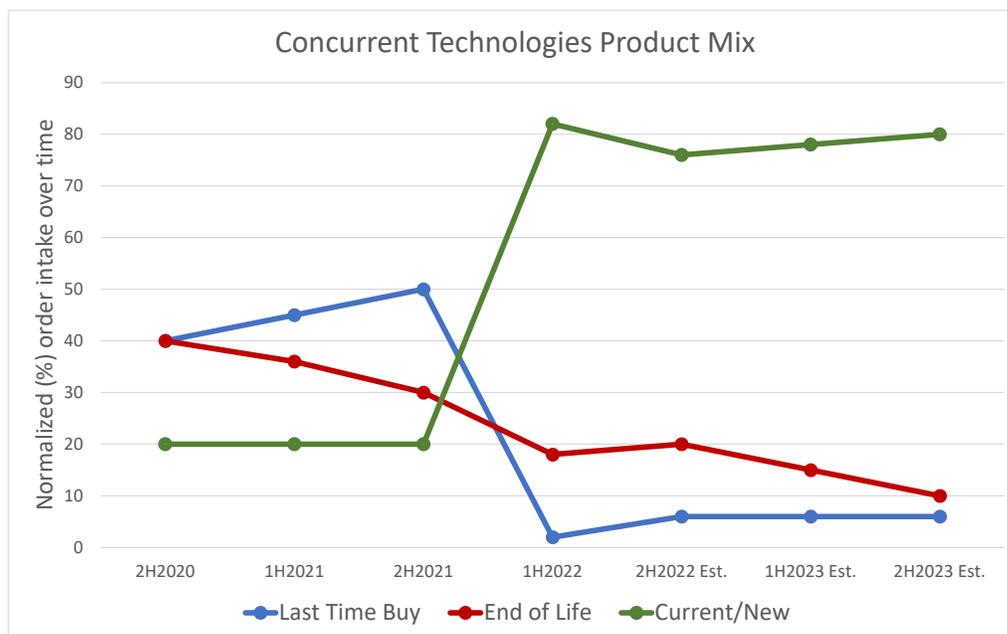
Systems business

In addition to designing and manufacturing single board computers, Concurrent is committed to investing in developing a systems business. Having recruited specialist experts during H1 and engaging in business development dialogue with potential partners and customers, the company is planning to secure initial contracts with new customers in H2 2022. An example is the new Helios rugged vision computer launched October 5th, 2022, based on VPX technology.⁷

Concurrent Technologies transformed product mix and time to market

Concurrent has transformed from primarily relying on end-of-life products in recent years, to four fifths of orders this year being for current and new products. The company has launched three new products in H1 2022 and claims to be on track to launch eight new products during FY2022 (approximately double the previous cadence).

This transformation of product mix influences order intake which is charted below. In 2021, 80% of orders were for end-of-life or last-time-buys. In the first half of 2022, 80% of orders were for new products. New products typically sell for seven years, and early-life products tend to have a higher value and profit margin producing a healthier pipeline and long-term growth potential.⁸



7 <https://www.gocct.com/2022/10/05/concurrent-technologies-launch-helios/>

8 <https://www.gocct.com/2022/09/28/concurrent-technologies-share-positive-interim-results/>

Contract and Design Win Announcements

New contracts and design wins are good indicators of future revenue and growth potential. Not all contracts are announced publicly and for those that are, not all identify details of embedded computing technology utilized in the design. VITA encourages members to be as explicit as they can in their news releases to reinforce customer confidence in the standards through highlighting examples of deployments. Only contract wins that specifically mention VITA standards are reported in this section.

- ❑ Curtiss-Wright's Defense Solutions division has been selected by a leading defense system integrator to provide its embedded Security IP module technology. Under the contract, Curtiss-Wright will supply its XMC-528 mezzanine card to add security protection to an existing system within a DoD end-state application. The XMC form factor (VITA 42/61) mezzanine module speeds the integration of advanced security IP into OpenVPX and legacy VMEbus system solutions. Using industry-standard interfaces, the XMC-528 can cost-effectively implement advanced data protection on both new system modules and existing embedded systems. The lifetime value of the award is estimated at \$20 million.⁹
- ❑ Concurrent Technologies has entered into a supply agreement and has received a \$2.2 million order for initial product shipments from a Fortune 500 global medical technology company based in the USA. Initial shipments of the VME-based products have commenced for qualification purposes. Concurrent developed a product that maintained backwards compatibility with the external interfaces of the prior product; demonstrated the ability to manage and overcome issues that would prevent multi-year production without changes; met all the customer's quality and supply chain requirements and ported the customer's application software to work seamlessly on the new hardware, accelerating the introduction of the customer's next generation machine. Volume shipments are scheduled to start at the end of 2022 with the opportunity for similarly sized purchase orders from the same customer for several years to come.¹⁰
- ❑ Military & Aerospace Electronics reported that Boeing is to provide processors for 6U VPX signal-processing and targeting computer network for the F/A-18E/F Super Hornet jet fighter-bomber and EA-18G Growler electronic warfare (EW) jet under terms of a \$43.8 million order. Boeing is to provide seventy-two each of processor and target I/O for the Distributed Targeting Processor-Network (DTP-N) system from the L3Harris Technologies Inc. Space & Airborne Systems segment.¹¹

Product Announcements

VPX Technology

VPX is a broadly defined technology utilizing the latest in a variety of switch fabric technologies in 3U and 6U format blades. OpenVPX is the architecture framework that defines system level VPX interoperability for multi-vendor, multi-module, integrated system environments.

- ❑ In July, at the Farnborough Air Show, Ametek Abaco Systems introduced the VSR8000, a fully rugged secure router. This provides a COTS line replaceable unit (LRU) version of the

9 <https://www.curtisswrightds.com/media-center/news/curtiss-wright-selected-embedded-security-ip-module-technology-mosa-systems>

10 <https://www.gocct.com/2022/07/13/supply-agreement-with-global-medical-technology-company/>

11 https://www.militaryaerospace.com/computers/article/14278935/targeting-computer-processor-6u-vpx?utm_source=MAE+Embedded&utm_medium=email&utm_campaign=CPS220713006&oid=7941F1600890G7L&rdx.ident%5Bpull%5D=omeda%7C7941F1600890G7L&oly_enc_id=7941F1600890G7L

recently launched 3U VPX VSR347D. Abaco has taken its SBC347D 3U VPX single board computer and integrated it into a fully rugged package that meets a wide range of MIL-STD qualifications.¹²

- ❑ Altech Systems announced in August that it now offers the U-C8500, U-C8501 and U-C8502, three new 3U VPX cybersecurity-enabled single board computers (SBCs) aligned to the Open Group Sensor Open Systems Architecture (SOSA) Technical Standard. The three configurations use the Intel Tiger Lake SoC with integrated GPGPU processing to optimize SWaP-C and provide interconnectivity as well as design flexibility.¹³
- ❑ In August, Mercury Systems announced the new Model 8258 development platform based on a dual AMD-Xilinx Versal® AI Core device incorporating Mercury's previously announced SCFE6931 signal processing module, (Mercury's SCFE6931 is an OpenVPX heterogeneous processing module). The Model 8258 development platform allows users to rapidly deploy Versal AI Core technology, giving soldiers the ability to react quickly and make real-time tactical decisions that are essential for survivability and mission success.¹⁴
- ❑ In September Mercury Systems introduced the Model 5560, its next-generation 3U OpenVPX SOSA aligned co-processing board that is the first to be powered by the AMD Xilinx Versal HBM series with integrated high-bandwidth memory. Model 5560 is directly integrated with the on-chip HBM via the Versal Programmable Network-On-Chip, resulting in up to eight times increase in bandwidth and 63% lower power compared to a system using external memory. With gigabytes of HBM directly accessible by the Versal HBM adaptable engines, the overall amount of data that can be pushed through the system can be significantly increased. Model 5560 is the new flagship in Mercury's portfolio of co-processors that use HBM technology, joining the Model 5585 and 5586 modules.¹⁵
- ❑ Interface Concept is expanding its 3U VPX product line aligned with the SOSA Technical Standard developing SOSA-aligned Ethernet Switches and Single Board Computers based on open architectures.¹⁶

Backplane and Chassis Technology

- ❑ Pixus featured its rugged chassis capabilities in the September U.S. Air Force - FACE and SOSA Technical Interchange Meeting (TIM) and Expo. The 19" rugged rackmount chassis holds up to 16 OpenVPX / SOSA slots along with an optional mezzanine based OpenVPX hardware management board that affixes to the rear of the 100GbE backplane. This approach saves a slot of space in the system. The company also showed its open frame SOSA aligned development chassis. The enclosure features an 8-slot power and ground backplane with 4x VPX slots and 4x VITA 67.3c slots.¹⁷

12 <https://www.abaco.com/news/abaco-announces-new-rugged-cots-secure-router-featuring-juniper-networks@-junos@-vsrx-virtual>

13 <https://aitechsystems.com/sosa-aligned-u-c850x-series-sbcs-for-aitech/>

14 <https://ir.mrcy.com/news-releases/news-release-details/first-market-sensor-processing-development-platform-introduced>

15 <https://ir.mrcy.com/news-releases/news-release-details/mercury-introduces-its-flagship-model-5560-fpga-co-processing>

16 <https://www.interfaceconcept.com/newsroom/details/Whole-range-of-3U-VPX-SOSA-aligned-product-line>

17 <https://pixustechnologies.com/news-pr/specializes-in-the-design-and-manufacture-of-electronic/pixus-announces-new-mil-rugged-rackmount-sosa-aligned-chassis-with-advanced-cooling-5/>

XMC Technology

- ❑ Acromag has expanded its OpenVPX carrier card selection with the addition of two new models that provide a simple and cost-effective solution for interfacing XMC modules to a VPX computer system. The VPX4840 and VPX4850 feature two XMC slots with support for front or rear panel I/O. They are available with VITA 42, VITA 61, or VITA 88 connectors to route power and interface bus signals to the plug-in mezzanine modules.¹⁸

Webinars

- ❑ August 24, 2022: LCR Systems discussed “Deploying Rugged COTS Systems in Battlefield Environments Webinar”. The success of the VPX and SOSA board architectures has led to faster and more streamlined development of electronics for embedded systems in defense applications and has raised time to deployment expectations for new systems. Chassis designers and system integrators like LCR are incorporating advanced design methods to keep pace with the new paradigm. In this webcast, industry experts share methods for ruggedizing COTS systems for extreme military applications and discuss how to manage the obsolescence headaches that come with COTS use.¹⁹

Events and Expos

The U.S. Air Force - FACE and SOSA Technical Interchange Meeting (TIM) and Expo took place at Dayton Convention Center, Dayton, Ohio on Tuesday, September 27, 2022.²⁰

This year’s theme was ‘Going Faster with Open Standards.’ The 2022 meeting featured expert presentations and demos by a cross-section of the defense community and industry. Attendees heard presentations from industry and government, detailing the positive impact of FACE and SOSA adoption for buyers (end users), suppliers, integrators, and business representatives, including both Business and Technical lessons learned. Technology Interchange Meetings allow DoD, Industry, and Academia to collaborate on Research and Engineering technology challenges.

The Future Airborne Capability Environment™ (FACE) Consortium featured demonstrations with over 30 FACE Conformant solutions from over 50 Industry and Government FACE members, covering all segments of the FACE solution stack, running on the world’s most advanced multi-core computer hardware. These solutions proved the value of open standards-based systems that encourage innovation, and increase quality, accelerate airworthiness, and speed deployment of critical, advanced technologies to war fighters.

Summary

Order intake for VITA-standard product suppliers is reported to be very strong, partially driven by the hostilities in Ukraine that are causing NATO-member defense spending to be revised upwards. Revenues reported this quarter have been good but tended to lag the growth in orders as supply chain shortages for semiconductor devices and other components have caused some deliveries of boards, modules, and systems to be rescheduled to Q4 and beyond. 2023 is, not surprisingly, forecast to be a record year for revenue growth.

18 <https://www.acromag.com/blog/new-6u-vpx-carrier-cards-host-dual-xmc-modules/>

19 <https://www.lcrembeddedsystems.com/deploying-cots-systems-webinar/>

20 <https://meet.opengroup.org/event/AirForce-TIM/2022-Sept>

The announcement of the CHIPS and Science Act may be seen as a timely intervention by government to address the issues of supply chain security and robustness. Specific focus on legacy chips for defense systems may also be considered welcome. It is fair to say though that this is a long-term program and is unlikely to have an impact on the ability of suppliers to improve deliveries in the current year.

The trend for VITA standard product suppliers to offer more integrated subsystems than boards and modules is being viewed as the solution to fuel revenue growth. This transformation of product mix implies that the percentage of orders for boards and modules that support aging defense programs is reducing. Against this trend, the Ukraine conflict appears to be consuming supplies of older weapon systems, which may increase demand for legacy embedded products, including those that had previously been subject to end-of-life or last-time-buys, with all the issues of component obsolescence and supply that may be implied.

With the AUSA 2022 event occurring in October, it is expected that many new product releases will be embargoed until the date of the event. New products released at AUSA will be reviewed in the Q4 report.

World Market for VITA Standards-based Board and Systems Report

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](#).

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.

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 U.S. Department of Defense budget having the greatest impact on market growth. U.S. 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 U.S. 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



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