COMMENTARY

CIMdata®

Scalable Digital Manufacturing Forum

Enabling U.S. National Security Objectives Through an End-to-End Digital Sustainment Platform

Key Takeaways

The U.S. Defense Industrial Base (DIB) has been shrinking for decades and is now projected by September 2025 to have decreased by 58%.

Small and Medium Manufacturers (SMMs) make up the majority of the DIB and those left are struggling to maintain profitable operations and meet continually increasing regulations.

The DIB must support a globally deployed war fighter, this represents the largest and most complex sustainment problem, managing weapon systems, vehicles, aircraft, ships, and all materials fielded by the DoD with life spans approaching 100 years.

RGBSI A&D's Digital Sustainment Platform® is a fully integrated, cloud-based DoDI 5000.97 Digital Engineering compliant platform designed, developed, and delivered in partnership with the U.S. DoD to provide scalable digital engineering and model-based manufacturing capabilities globally to enable U.S. National Security objectives to modernize and secure the defense industrial base.

CIMdata attended The Scalable Digital Manufacturing Forum sponsored by the U.S. Defense Logistics Agency (DLA) and the U.S. Office of the Assistant Secretary of Defense (OASD) held at the Connecticut Center for Advanced Technologies (CCAT) on February 25, 2025, in East Hartford, CT.[1] The event was presented by RGBSI Aerospace & Defense (RGBSI A&D) in collaborative partnership with CCAT.

The forum was held to showcase how RGBSI A&D with its Digital Sustainment Platform is positioned at the forefront of scalable digital manufacturing capabilities—engineering, manufacturing, product quality, and supply chain—needed to secure U.S. National Security objectives at home and abroad. This forum provided the roughly 80 attendees, from the DLA, DoD, major A&D OEMs, regional small and medium manufacturers, regional political leaders, and various solution providers and consultants, insight into the art and science of digital manufacturing from model-based requirements generation through product development using the RGBSI A&D Digital Sustainment Platform (DSP) suite of integrated capabilities.

CCAT is a dynamic applied technology and training organization, empowering global industrial companies and the manufacturing supply chain to drive innovation, improve efficiency, and adopt cutting-edge technologies.

[1] Research for this commentary was partially supported by RGBSI A&D

RGBSI A&D is an SBA-certified Woman Owned Small Business with specialized experience and expertise in advanced and additive manufacturing, artificial intelligence, digital engineering, digital factory (I5.0), digital twin/digital thread, model-based engineering, model-based enterprise, model-based manufacturing, and value-added engineering supporting the entire product development lifecycle from concept, requirements traceability to sustainment engineering, supply chain, and quality.

CIMdata greatly appreciated the invitation to attend and see in-person the RGBSI A&D DSP solution demonstrate through a series of purpose-built use cases to support U.S. National Security sustainment including state-of-the-art 3D printing and machining that can be deployed at the forward edge of field operations.

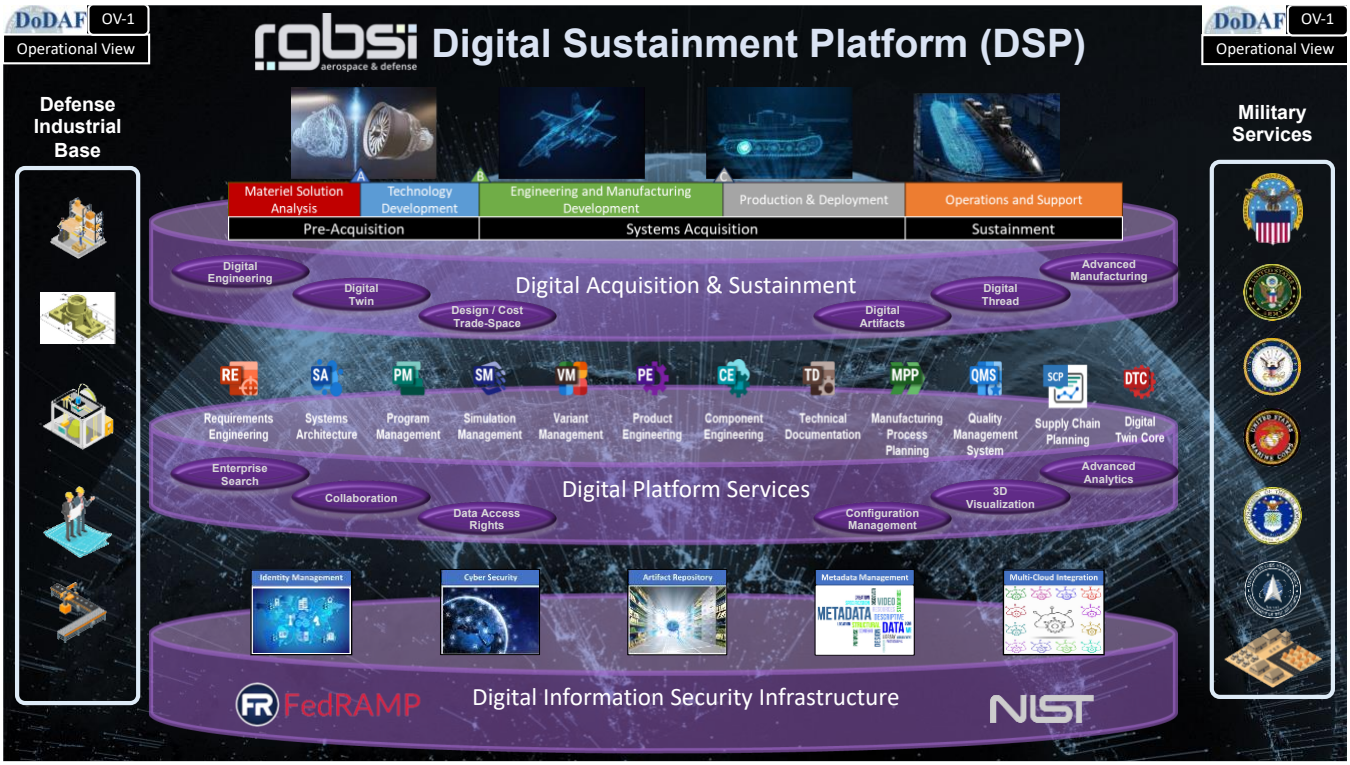
Mr. Paul Hartman, Ph.D., RGBSI A&D, president, kicked off the forum by introducing the sponsors Mr. David Koch, Director, Research and Development, Defense Logistics Agency and Mr. John Shultz, Chief of Operations, Office of the Assistant Secretary of Defense for Industrial Base Policy. Unfortunately, Mr. Shultz was not able to attend. Mr. Shultz did share his viewpoint in the forum guide, "The RGBSI A&D Digital Sustainment Platform provides secure technology-enabled digital engineering and manufacturing capabilities core to revitalizing the U.S. Defense Industrial Base."

Followed by Dr. Jacquelynn Garofano, Ph.D., CTO of CCAT, who partnered with RGBSI A&D to provide their education and advanced manufacturing center facilities for the forum and include the use of their 3D printers and machining tools. "CCAT was thrilled to partner with RGBSI A&D to host the Scalable Digital Manufacturing Forum at our Advanced Technology Center," shares Dr. Garofano. "Our mission at CCAT is to accelerate the growth, modernization, and stabilization of the defense industrial base by derisking and democratizing technology adoption, especially for small and medium manufacturers (SMMs), critical suppliers in the digital fabric of our nation's security. Our strategic partnership with RGBSI A&D allowed us to showcase live their Digital Sustainment Platform solution of ready to deploy use cases enabling scalable digital manufacturing available to our regional ecosystem participants, SMMs, OEMs and defense department sponsors."

Mr. David Koch provided a short description of the challenges the DLA faces to modernize and maintain the defense industrial base. He communicated that the DLA needs to modernize the way they think and operate to support both legacy and new technical data and engineering capabilities. They wish to improve the way they move engineering and manufacturing information back-and-forth between military services, manufacturing contractors, and overseas sustainment operations, all to support the war fighter. He expressed his excitement of what the forum would demonstrate and how important such capabilities are to be able to globally and rapidly deploy to improve support for the war fighter in the U.S. and abroad. Mr. Koch shared, "The Digital Sustainment Platform has been collaboratively developed in partnership by RGBSI A&D with OSD, DLA, Military Services, and Industry Partners to provide secure digital engineering and model-based manufacturing applications and services at home and abroad." Dr. Paul Hartman further elaborated on the challenges of maintaining the U.S. defense industrial base expected to shrink further to 58% by end of September 2025. Our diminishing manufacturing base, made up of largely SMMs has critical impact on our ability to meet our increasing supply chain and manufacturing needs. He commented that doing business with the government has become less profitable and more arduous with increased regulations, incomplete technical data packages, and collaboration challenges. RGBSI A&D has a proven track record solving difficult engineering and manufacturing challenges. They have for many years contracted with the DoD to address digital and intelligence research on future technologies such as Chinese drone swarm technology and what the future of digital engineering and manufacturing environment will be. This research and prototype work has led to the development of the RGBSI A&D DSP.

The RGBSI A&D DSP was designed, developed, and delivered in partnership with the Office of the Assistant Secretary of Defense for Sustainment, the Defense Logistics Agency, and Military Services through the Small Business Innovative Research (SBIR) program.

The RGBSI A&D DSP, as shown in the figure, is a fully integrated cloud-based DoDI 5000.97 Digital Engineering compliant platform providing standards-based approaches (e.g., MilStd 3100B Technical Data Packages) to achieve U.S. industrial base digital manufacturing objectives. The RGBSI A&D DSP includes scalable, secure enablement of deployable manufacturing capabilities to operate at the forward edge of any contested or uncontested operating environment. It is currently being deployed by RGBSI A&D for the OSD (A&S) Advanced Manufacturing Edge Pathfinder program and others.



RGBSI A&D Digital Sustainment Platform (DSP)
(Courtesy of RGBSI)

RGBSI A&D presented an Advanced Manufacturing journey starting with the secure sharing of Technical Data Packages (TDPs) for an oxygen tank assembly from Warner Robins Air Logistics Center and an Aircraft OEM, with DSP ensuring compliance with security and IP protection standards throughout. All data discussed for demonstration were intended to showcase how DSP has been configured for CMMC compliance to meet or exceed the robust protocols for managing DoD technical data and meeting IP licensing rights of OEMs. The platform integrates data from various sources, including 2D drawings, Mil-specs, and industry standards, and streamlines the process of transforming traditional 2D data into 3D CAD models through "Engineering as a Service."

DSP's end-to-end digital engineering management and digital thread/twin capabilities address many of the needs expressed by DLA including the use of DSP Connectors enabling CAD data management, 3D printing applications, AR virtual inspection, and data integration tools supporting efficient collaboration and real-time decision-making across the defense industrial base.

The demonstration included purpose-built use cases using DSP-enabled connected and disconnected/remote environments to enable Advanced Manufacturing at the Edge for Forward Deployed Operations. Starting with securing and sharing technical data at Warner Robins Air Logistics Center and with OEM engineers, DSP-enabled processes also supported securing and sharing IP-

controlled OEM technical data for licensing and procurement, building a procurement-ready technical data package with all required documentation, and reviewing the Engineering Support Request (ESR). The DSP also supports licensing OEM proprietary data via a license agreement, confirming the 2D technical data package, and based on a remote sustainment request via ESR and relevant technical data owner approval, the technical data was remastered into 3D CAD models with appropriate production instructions for advanced manufacturing. Remastering CAD engineering and manufacturing planning work was previously performed by RGBSI A&D engineering as a service using DSP. These purpose-built solutions demonstrated by DSP address significant challenges of the global defense sustainment environment greatly reducing time, cost and readiness.

The advanced manufacturing machines at CCAT used during the demonstration included 3D printers and a CNC machining tool. Manufacturing work instructions and machine-specific CNC and DSP additive manufacturing reviews were performed including 3D-printing G-code creation. Using a Starlink network and DSP running entirely on a rugged PC laptop, TDPs and production instructions were accessed, and 3D printing was launched on two 3D printers installed on the back of an Army Humvee with remote video monitoring. The completed productions were reviewed via visual inspection with video capture using a tablet, recording results and validating parts for approval and deployment all connected to the local DSP. In conclusion, an Augmented Reality demo using a third-party viewing application on a tablet was used to validate critical dimensions and features of the 3D printed parts. This series of demonstrations highlighted clear examples of how DSP can support modernizing defense sustainment while improving readiness and capabilities at the forward edge where connectivity challenges and external factors must be addressed to deliver onsite rapid production solutions.

Concluding Remarks

RGBSI A&D demonstrated their Digital Sustainment Platform with a focus on how it facilitates a seamless, secure, and efficient process for managing and sharing technical data across DoD sustainment, OEMs, and the defense industrial base. CIMdata believes they were successful at this forum and were able to demonstrate DSP's capabilities in various connected, disconnected, and remote environments without missing a beat.

RGBSI A&D showcased well how their DSP solution suite integrates various 3rd-party applications and a proven digital thread platform to deliver an end-to-end digital sustainment platform solution that addresses many of the challenges expressed by DLA, military services, OEMs, sustainment operators, depots, and small and medium manufactures.

It was particularly impressive to watch as DSP, operated entirely on a rugged PC laptop with a completely remote environment from CCAT using a Starlink connection, could 3D print components, simulating operations at the edge of the battlefield for forward deployed military services, under a camouflage tarp on the back of an Army Humvee and yet still could adjust the slicing program to account for external manufacturing factors to produce the right part as required. Once the 3D printing was completed and the part validated, the 3D print data was removed from the printer and the local DSP instance to provide IP protection.

Another key aspect communicated by RGBSI A&D with their DSP solution is the access to real-time engineering services showing how they can take legacy 2D technical data (drawings) and create 3D models with OEM IP approval to deliver advanced manufacturing assets and instructions requested by remote sustainment personnel.

About CIMdata

CIMdata, a global strategic management consulting firm, provides services designed to maximize an enterprise's ability to design, deliver, and support innovative products and services. For more than forty years, CIMdata has provided industrial organizations, providers of digital technologies and services, and investment firms with world-class insight, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) topics and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and international conferences. To learn more, visit www.CIMdata.com or email info@CIMdata.com.