Los Angeles Air Force Base
Media Release

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Date: Nov. 8, 2021
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Space Systems Command's Unified Data Library participates in Army's Project Convergence

LOS ANGELES AIR FORCE BASE, Calif. – Space Systems Command's Cross Mission Ground and Communication Enterprise Data Branch (ECXA) recently demonstrated operational use of the Unified Data Library (UDL) during the U.S. Army's Project Convergence (PC21) in October, supporting the Sensor-To-Shooter kill chain and the Joint All Domain Command and Control (JADC2) fight.

In today's contested environment, we need to move rapidly and securely to ensure our advantage over our adversaries. JADC2 is the Defense Department's effort to enable faster and more effective responses to adversarial threats by leveraging capabilities across military branches to connect sensors, data platforms and weapon systems, including space systems.

In the age of modern warfare, nearly all military engagements rely on space-based capabilities delivered by SSC to execute and operate. PC21 demonstrated how these systems and capabilities successfully work together through JADC2 to support the joint fight.

During the PC21 experiment, ECXA's UDL supported multiple scenarios in which air-and-missile defense engagements were conducted in response to simulated enemy missile attacks. They accomplished this by completing the Sensor-To-Shooter kill chain, rapidly

connecting sensors to ingest and share data through the UDL to Army weapon systems for a live-fire execution, all at the speed of relevance.

Under the Advanced Battle Management System (ABMS) submission to the JADC2 construct by the U.S. Air Force and U.S. Space Force, the UDL is integral and serves as the cyber secure data layer for space operations. The UDL acts as the authoritative source for space domain awareness data, ingests and provides data from multiple external sensors to enable JADC2.

"During one scenario, two F-35A Lightning IIs provided target identification of a relocatable adversary missile launch system. The F-35A sensor data was passed via Link-16 to a ground Command and Control (C2) node, which then uploaded sensor data into a system capable of passing it to the UDL via JavaScript Object Notation (JSON) format," said Maj. Daniel Kimmich, materiel leader of SSC's Cross Mission Data Branch. "In this case, the UDL acted as the data layer between Army systems, providing multi-domain awareness, as well as integrating data to support precision long-range fires."

After the UDL ingested the data, the U.S. Army's Rainmaker, which is a high-speed, low latency tactical data bus that moves data from sensor system to shooter system, connected directly to the UDL to pull the information. Rainmaker then sent the data to Firestorm, which leverages AI technology to provide fire broker capability for the Army. Firestorm, using a machine learning algorithm, uses sensor data to recommend the best weapon system to engage specific targets, then builds a 3D "shotbox" specifically for route and weapon system clearing.

Mr. Joshua Hahnlen, senior project engineer at Aerospace Corporation, assisted the UDL team for project convergence. He explained by using machine-to-machine connections, the

shotbox generated by Firestorm was passed back to Rainmaker and published into the UDL for other systems to ingest.

“The Army passed the target to the Advanced Field Artillery Tactical Data System, the Fire Support C2 system used by the Army and the Marine Corps, and sent it to the Multiple Launch Rocket System,” said Hahnlen. “The MLRS was able to conduct a fire mission against the adversary relocatable missile system to successfully complete end-to-end execution of the scenario.”

To prepare for this joint experiment, the UDL team and the PC21 team conducted four months of communications tests to and from the UDL to ensure connection for both classified and unclassified data.

“This month, our UDL team worked hand-in-hand with the Army’s PC21 team," said Kimmich. "We were excited to showcase the operational nature of the UDL as the central data layer, supporting Army systems to enhance lethality with a focus on operational leave behind capability for joint command and control.”

This is all part of the path towards delivering unified space capabilities for our warfighters and enabling the joint fight within the JADC2 operational construct. SSC’s participation in joint scenarios, experiments and exercises to include PC21 ensures the U.S. can execute the capabilities needed to support warfighters, keep our nation safe and stay a step ahead of our adversaries.

About U.S. Army’s Project Convergence (PC21)

PC21 looks for ways to incorporate artificial intelligence (AI), machine learning, autonomy, robotics, and common data standards and architectures to more quickly make decisions across multiple domains of operations. While other supporting exercises and

experiments have been conducted throughout this year, PC21's main series of live-fire events reportedly will take place through Nov. 10 at a number of installations located in the United States. PC21 plans to involve approximately 7,000 personnel and900 data collectors that will include experiments involving about 107 different technologies.

The Unified Data Library, USSF's content-management solution, consumes, processes and distributes millions of unique data products daily originating from dozens of commercial, academic and government organizations worldwide to a diverse user base spanning 25 countries and over 3,500 individual users.

Space Systems Command, headquartered at Los Angeles Air Force Base in El Segundo, California, is a U.S. Space Force field command responsible for developing and acquiring lethal and resilient space capabilities for warfighters by rapidly identifying, prototyping, fielding and sustaining innovative, space-based solutions to meet the demands of the National Defense Strategy. SSC's functions include developmental testing, production, launch, on-orbit checkout, and maintenance of USSF space systems, as well as and oversight of USSF science and technology activities.

Project Convergence 21 video link: https://www.dvidshub.net/video/818053/project-convergence-21

Interested media representatives may submit questions regarding this topic by sending an e-mail to sccpa.media@spaceforce.mil.

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