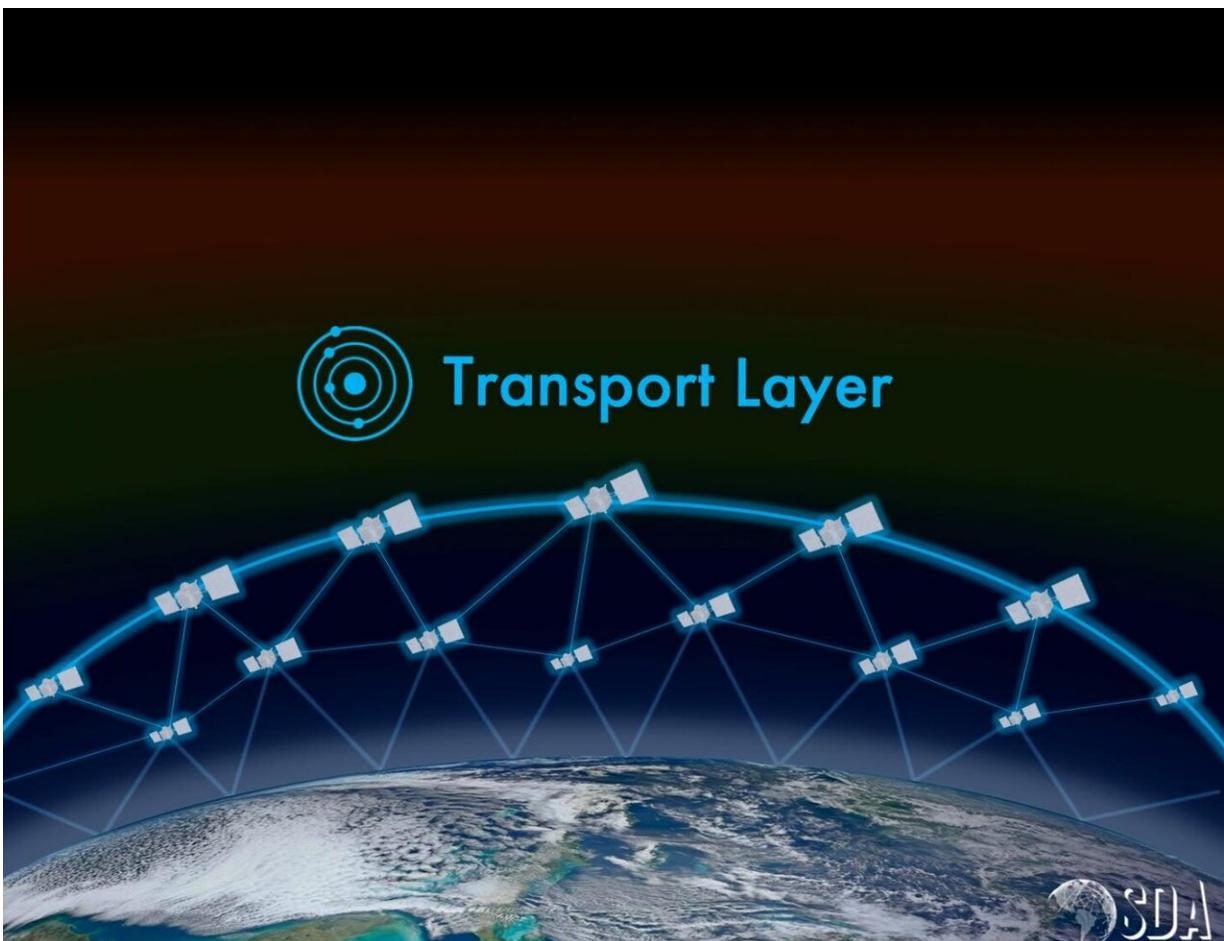


# Mission assurance: NRL Space Research Group to validate SDA satellite interoperability

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The U.S. Naval Research Laboratory is working with the Space Development Agency to build a hardware and software testbed for optical communications to link interoperability between satellites. SDA seeks to build a space-based network equipped with Optical Intersatellite Links technology using these initial

satellites. This network will enable sending and receiving wideband data from one space vehicle to another and between space vehicles and ground stations. Credit: (Graphic illustration provided by Space Development Agency)

A U.S. Naval Research Laboratory research group will use its background in space system development to help ensure future satellites have the capability to work together.

Announced Aug. 31, NRL's work supports the Space Development Agency's two multi-million dollar contract awards for the development of the first generation of the Transport Layer, representing the first major and highly-visible step toward developing the National Defense Space Architecture's inaugural tranche, entitled Tranche Zero.

"The Space Development Agency appreciates the opportunity to collaborate with NRL on this important part of the process to develop the National Defense Space Architecture," said Space Development Agency Director Derek Tournear. "NRL's work will enable us to launch Transport satellites with much higher confidence that the components we've sourced and the integration we've done on the ground will work in [space](#). This will allow us to deliver needed capabilities to the warfighter at greater speed than has been achieved in the past."

SDA is relying on NRL to build out a hardware-in-the-loop, software-in-the-loop (HIL/SIL) testbed that will be the gold standard for validating the interoperability of multiple satellites via Optical Intersatellite Links (OISL). SDA's satellites will be developed by two separate vendors and equipped with OISL technology to enable the sending and receiving of wideband data from one space vehicle to another and between space vehicles and ground stations.

"Our role is to help ensure the interoperability of these transport satellites so they can meet their mission requirements in a timely manner without any issues of compatibility, latency, or otherwise," said NRL program manager Aaron Chilbert. "It's all about moving data fast and making sure it gets to the people that need it."

HIL/SIL simulation is a technique used in the development and testing of complex real-time embedded systems and is an effective test platform to validate all vendors' [satellite](#) buses and optical links are interoperable. NRL is doing this on behalf of the government to demonstrate interoperability before launching satellites to avoid discovering compatibility or integration issues post-launch.

"NRL will test various payloads produced through two different SDA contracts against each other to ensure compatibility before certifying for launch. Interoperability testing between subsets of these satellites is critical to the validation of SDA vendor spacecraft," Chilbert said.

NRL's work helps SDA ensure joint warfighters have new, resilient methods of delivering time-critical information they need in diverse global environments.

"Joint warfighters require space and space systems to meet their needs, with everything from weather, communications at sea, to [situational awareness](#), position, navigation and timing," said Mark Johnson, NRL acting superintendent, Spacecraft Engineering Division. "The next generation of space activities where there are large numbers of network, with smaller satellites, is going to be extremely important to the warfighter, and NRL can certainly help in getting it fielded quickly."

Johnson said NRL and its research team is happy to continue its support to SDA in their mission to rapidly field new space capabilities for the warfighter.

"We develop a lot different technologies which are integral to future architectures," said Johnson. "Providing that technical support from the laboratory to the Space Development Agency will help [SDA] field that technology in an integrated fashion."

Provided by Naval Research Laboratory

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