

WHO

**SYSCOM:** MCSC

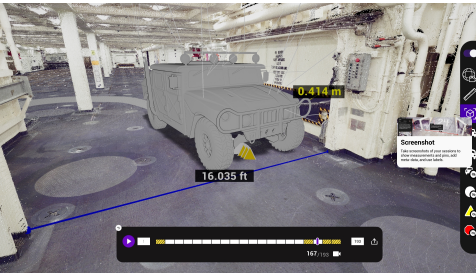
**Sponsoring Program:** Marine Corps Systems Command

**Transition Target:** Naval Sea System Command

**TPOC:** [sbir.admin@usmc.mil](mailto:sbir.admin@usmc.mil)

**Other Transition Opportunities:** Organizations with transportability analysis needs to include MCSC Program Manager Combat Support Systems (PM CSS), Marine Corps Ground Vehicle Acquisition Program Management Offices, NAVSEA (PEO Ships), Industrial Warehousing, Military Sealift Command, TRANSCOM, Navy Amphibious and Prepositioning Ships Program Management Offices, Shipping Industry, and the Space Optimization Industry. The goal is to provide a valid 3D virtual means of transportability analysis to vehicle or ship programs contemplating a design or design modification.

**Notes:** The above image from the current development version of SDAT illustrates an encroachment along an analyzed path between a Humvee and a bulkhead in a vehicle storage area aboard LPD-17. Design Mill anticipates connecting with commercial companies that need a capability similar to SDAT to support vehicle or facility design and modifications. Design Mill also plans to enhance SDAT further with a hardware offering that has continuous scanning capability that capture a ship, facility or warehouse in real-time to automatically generate inputs for SDAT and ultimately track facility modifications and/or stored assets.



Design Mill Image of SDAT Analysis Capability

WHAT

**Operational Need and Improvement:** Marine Corps Ground Vehicle Acquisition PMOs and Navy Amphibious and Prepositioning Ships PMOs do not have a precise way of determining shipboard vehicle transportability constraints early enough in the design process. Current methods of assessing transportability involve vehicle prototyping, and taking internal measurements of ships in various locations to include angles at the tops and bases of ramps to ensure clearance and identifying obstacles to include pipes, wire bundles, lighting, and other types of fixtures.

**Specifications Required:** The Shipboard Dimensional Analysis Tool (SDAT) is a 3D virtual capability that allows an engineer or analyst to pull up the desired 3D ship data (typically a ship point cloud derived from a LIDAR scan), select or upload 3D vehicle data (typically a vehicle CAD model), specify desired vehicle-to-ship clearance distance, select a path through the ship, conduct 3D physical interference analysis, and generate reports and products to support vehicle design decisions. The tool's user interface must be intuitive. It must allow for a fine level of detail, calculating for collisions at increments of one inch (objective) or every foot (threshold) along a elected path.

**Technology Developed:** The Shipboard Dimensional Analysis Tool (SDAT) integrates hardware, software and cloud solutions enabling virtual transportability assessments for vehicle designs. It integrates 3D ship and vehicle data with game engine and machine learning technology and uses novel methods of rendering surfaces and computer processing to enable path selection, collision computation and analysis in 3D virtual environments. Each element of SDAT has been successfully demonstrated and integration is underway.

**Warfighter Value:** SDAT's 3D virtual and augmented reality capability will reduce cost and schedule requirements associated with the design of vehicles suitable for deployment aboard amphibious and Maritime Preposition Ships by removing the requirement for prototyping for transportability analysis.

WHEN

**Contract Number:** M67854-23-C-6505

**Ending on:** Jul 30, 2025

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Laser Scanning of 3 Navy Ships	Low	Deliverables converted in Cloud Instance	6	1st QTR FY25
Ingestion of Sample Assets for Transportability	Low	Run Path analysis and generate report	6	4th QTR FY24
Instructional Training Module	Medium	Demonstration of avatar (green screen) in environment	7	4th QTR FY24
Enhanced Digital Twin	Medium	Higher Fidelity scans, 360's, and high resolution imagery	7	1st QTR FY25
Enhanced Analysis Tools	High	Vehicle Nesting, Zones, and customer objects	7	1st QTR FY25
SDAT Prototype Complete (Full Demonstration)	Medium	Successful Demonstration of all project objective to sponsor and key stakeholders	8	2nd QTR FY25
Commercial Software	Medium	Product for Sale	9	4th QTR FY25

HOW

**Projected Business Model:** Design Mill plans to build the SDAT business model around software licensing as a standalone product and to other software vendors that would need to incorporate dimensional analysis in their offering as a software plug-in. Our software will be cloud based with tiered pricing based on number of users, amount of data, number of assets, and storage size. We anticipate a set-up fee per customer that includes hardware and software installation, testing, and shipment of hardware. We anticipate customization of the software based on end user use cases (ships versus warehouses); on-going maintenance will keep SDAT infrastructure current with modern cloud offerings

**Company Objectives:** Design Mill is a strategic systems integrator delivering pioneering solutions for the Department of Defense and industry-leading organizations. A three-time recipient of the Intel Software Innovator of the Year award, Design Mill continually works to transform the integration of cutting-edge interactive hardware and software through innovative design, development, and processes. We have a long history of commercializing software products, SDAT is one of those technologies we are bringing to market. We are interested in talking with Prime Contractors (Shipbuilding and others), any logistic related programs, as well as Program offices that would like to analyze their capabilities throughout a mission

**Potential Commercial Applications:** Design Mill Inc is planning to commercialize SDAT where laser scanning and 3D models are used for analysis. The end use cases we anticipate solving first are industrial warehousing and ship loading but can be expanded to numerous applications where space planning/utilization is a critical process. Industries we are targeting include logistics, aviation logistics, rail, factory planning, and port operations. Follow-on applications will come with hardware development and installation that enhance SDAT's capability with continuous laser scanning. We also are planning a technology roadmap that integrate software enhancements for artificial intelligence, improved AI navigation and feedback from actual loading sequences to deliver additional capabilities and revenue streams.

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