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nScript Used to 3D Manufacture Space Force Cubesats

Orlando, FL: nScript's sister engineering company, Sciperio, is using the nScript Factory in a Tool (FiT) to 3D manufacture small satellites for the U.S. Space Force. The project is under an [SBIR Phase II](#) for the advanced manufacture and assembly of [6U Cubesats](#). CubeSats are a class of research spacecraft called nanosatellites built to standard dimensions (Units or "U") of 10 cm x 10 cm x 10 cm.

nScript's strategy is to achieve short design-to-deployment time by building each launch-capable cubesat on one of its Factory in a Tool 3D manufacturing platforms. nScript's FiT improves satellite functionality by embedding electrical, thermal, and other functionality into the structure. 3D manufacturing the cubesat also reduces cost because each satellite is fully manufactured on a single nScript system from a digital file with minimal human involvement.

The FiT builds multilayer electronics through multi-material deposition and integrated milling, drilling, and pick and place. For example, after one layer of the cubesat's structure is extruded, the system mills that layer to accept an electronic trace and pick-and-placed electronic components that cannot be printed. The extruder then deposits another layer of structure to embed those electronics. That process is repeated until the cubesat is completed, with all of the electronics and other functionality (such as [detumbling coils](#), solar panels, solar sensors, strain gauges, magnetometers, accelerometers, and temperature sensors) embedded into the walls or the surface of the structure itself. Connections to the functionality embedded in the cubesat will happen in the satellite base. The FiT will build the power distribution module as a multiplayer printed electronic structure.

Ken Church, CEO of both nScript and Sciperio, said:

nScript's FiT provides the ability to rapidly fabricate a small satellite to respond to an immediate need. For example, the Space Force will be able to react rapidly to meet new threats by compressing the time from design to orbit. Sciperio also improves functionality by 3D manufacturing each cubesat as a printed electronic structure. This means that the satellite is not a box with electronics inside. Instead, the functionality is embedded into the structure of the cubesat as it is

being digitally manufactured by our system. The design is modular so that functionalities can be interchangeable. Because the system does all of this conformally, the cubesat can be virtually any shape.



About nScript

Orlando, Florida-based [nScript](http://www.nScript.com) designs and manufactures award-winning, next-generation, high-precision microdispensing, 3D Manufacturing, and biomanufacturing equipment and solutions for industrial applications, with unmatched accuracy and flexibility. Serving the printed electronics, electronics packaging, solar cell metallization, communications, printed antenna, life science, chemical/pharmaceutical, defense, space, 3D printing, and bioprinting industries, our equipment and solutions are widely used by the military, academic and research institutes, government agencies and national labs, and private companies. The nScript BAT Series Bioprinter, which won the 2003 R&D 100 award, launched to the International Space Station in July 2019.

www.nScript.com.

About Sciperio Inc.

Sciperio challenges the boundaries of traditional scientific disciplines, innovating at the interfaces between mechanical, electrical, chemical, optical, and biological sciences. This transdisciplinary engineering approach enables Sciperio to jump quickly from innovation to product realization. Through two decades of pioneering work for our manufacturing arm, nScript, in areas including bioprinting, 3D manufacturing (aka Direct Digital Manufacturing), and printed RF electronics, we seek to promote technology for the betterment of humankind. www.sciperio.com.