

# NASA SBIR/STTR Technologies

## 3D Print and Play Payload (P3) Systems

nScript, Inc.

Orlando, FL



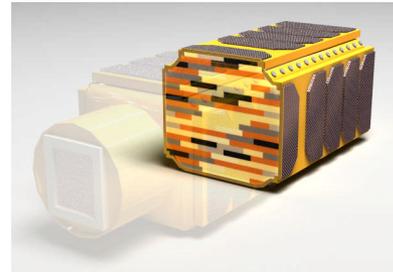
### Identification and Significance of Innovation

**Proposal No.: S4.02-8566**

The objective is a cyber based digitally and graphically defined manufacturing process for 3D monolithic printing of a functional CubeSat. Integrate multiple recently-developed manufacturing processes and materials to enable a technology that will 3D print a fully functional, CAD Developed CubeSat in a matter hours. Consequently, the current, traditional process of designing, fabricating and testing CubeSats will be replaced by CAD design and simulation followed by hitting a button labeled "Print".

Beginning TRL 4, Phase One TRL 4, Phase Two TRL 6

### 3D Monolithic CubeSat



Build this...

With this

*A manufacturing Technology that **enables the DoD to build anywhere, build anytime and build anything***

### Technical Objectives and Work Plan

Initial processes and materials will be defined based on CubeSat SPA-U architecture and 3D test coupons designed and fabricated for functional and environmental testing. A functioning NMF (1U facet) test module will be designed and 3D fabricated as an initial demonstrator.

- Direct Print Development – 3D printing conductive interconnect, passive elements and antenna structures
- Silicon Die Integration – Develop in situ placement techniques with the 3D printer and printing appropriate insulative materials and conductive interconnect
- Device Demonstration – AT90USB die, interconnect, packaged CC2500, printed 3D interconnect and printed antenna to support the 2.4GHz transmitted signal embedded in a 3D Cubesat substrate/facet.

### NASA and Non-NASA Applications

#### NASA Applications

- 1) CubeSat
- 2) TDRSS and other larger platforms
- 3) Sensor Networks/Constellations
- 4) Dropsondes

#### Non NASA Applications – Possible Dual Use

- 1) NRO CubeSat Applications
- 2) DoD UAV's and Sensor Platforms
- 3) Weather Sondes
- 4) Medical
- 5) Manufacturing

#### Firm Contacts

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**NON-PROPRIETARY DATA**