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nScrypt Brings Newton Cyberfacturing Contract Design & Manufacturing Services In-House and Continues "Firsts"

Cyberfacturing

Newton Cyberfacturing is now nScrypt Cyberfacturing and its co-founder, Mike Newton, will ramp up nScrypt's contract design and manufacturing service and continue nScrypt's many "firsts". After Mr. Newton and nScrypt's President and CEO, Dr. Ken Church, founded Newton Cyberfacturing in 2012, both nScrypt and Newton Cyberfacturing maintained parallel cyberfacturing businesses, providing solutions for Application-Specific Electronics Packaging (ASEP) and 3D Printed Circuit Structures (PCS), digitally manufacturing components, subsystems, and platforms for the military and for the medical and commercial electronics industries. nScrypt is now bringing Newton Cyberfacturing in-house and renaming it nScrypt Cyberfacturing.

What is "cyberfacturing"? Scalable Direct Digital Manufacturing (DDM) that leverages and integrates 2.5D and 3D multi-material printing, printed electronics, and traditional manufacturing processes.

What is nScrypt Cyberfacturing? nScrypt's Orlando, Florida-based direct digital contract design and manufacturing service. nScrypt's longstanding contract design and manufacturing business has had many firsts over its and Sciperio's 19+ years of operation. According to Ken Church,

> "nScrypt or its research company, Sciperio, were doing high-precision 3D printing and micro-dispensing as far back as 1999, when we printed conformal antennas for the DARPA's [Defense Advanced Research Projects Agency] Mesoscopic Integrated Conformal Electronics (MICE) program. That same year, we printed a helmet on the head of a living ant (the ant wasn't harmed). We directly 3D printed a 900 MHz transmitter for the MICE program in 2001. I believe we were the first to do these things."

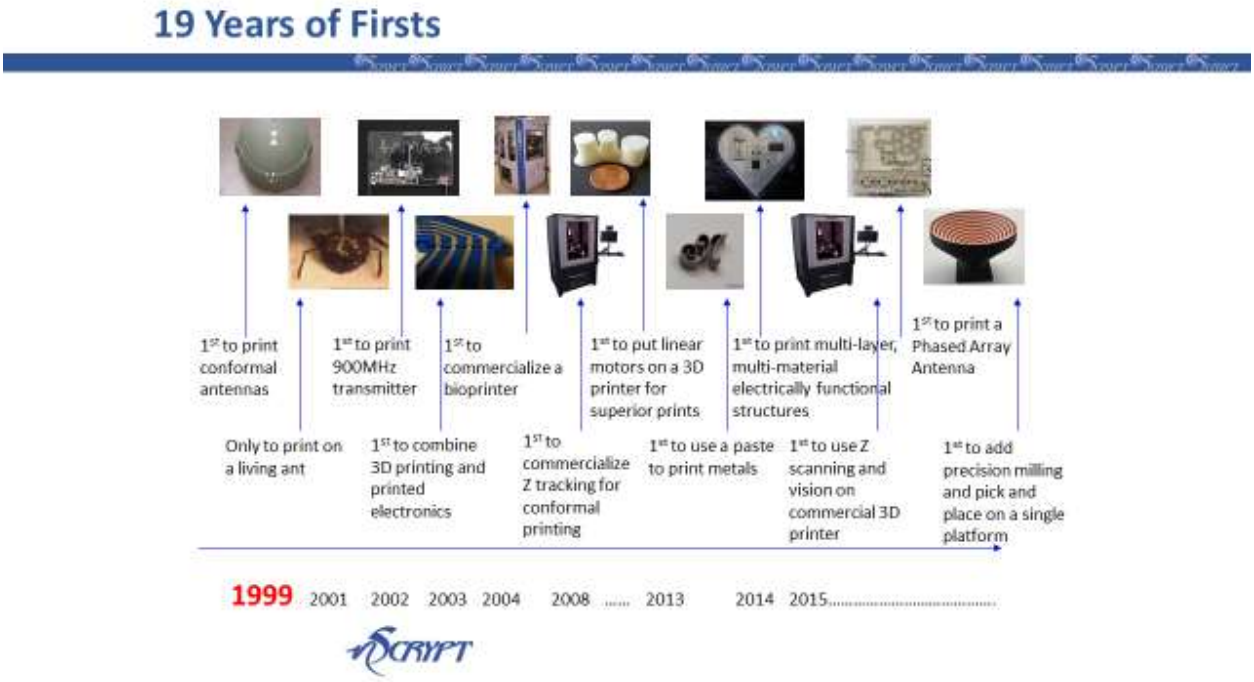
nScrypt's Many "Firsts"

nScrypt has had many firsts. For example, it was the first to:

- combine 3D printing and printed electronics (2002)
- commercialize a bioprinter (2003) (which will fly to the International Space Station in 2019)

- commercialize Z tracking for conformal printing (2008)
- print metal objects from a paste (2011)
- put linear motors on a 3D printer for precision printing (2014)
- print multi-layer, multi-material electrically functional structures, specifically, a plastic valentine-style heart with 3D printed circuitry and picked and placed LEDs (2014)

  As Dr. Church says, "print what you can, place what you can't."
- use Z scanning and vision control on a commercial 3D printer (2015)
- 3D print a phased array antenna, which was flown on a 3D printed quad copter transmitting video to a ground station (2016)
- add precision milling and pick and place to its micro-dispensing and material extrusion capabilities, on a single direct digital manufacturing platform (2016)



According to Dr. Church:

> We provide solutions for our customers. These solutions use our precision machines to print specialized materials and patterns. Many customers have requested a solution and have expressed a desire to order a quantity of printed parts. Our goal is to bring value to our customers by selling the best precision printers and now we will also bring value by providing the best precision in contracting design and manufacturing with nScrypt Cyberfacturing.

U.S. Army Cyber Expeditionary Lab

One of nScrypt Cyberfacturing's first projects will be to outfit the U.S. Army's mobile fabrication facility. The mobile lab, Cyber Expeditionary Lab (CEL), will also serve as a

dual-use facility supporting product scale-up of Army-specific devices and also serve as a scale-up facility for contract manufacturing. The CEL will be outfitted with an nScrypt austere multi-material 3D printer ruggedized for transport and use in extreme conditions.

The nScrypt Advantage

nScrypt's Direct Digital Manufacturing equipment has many advantages that will drive the growth of its cyberfacturing service. Its most important advantage is precision. No micro-dispensing pump can match the precision starts and stops of nScrypt's SmartPump™, which eliminates drooling with pico-liter control and is 1000 times more precise than the closest competitor.

The SmartPump™ also boasts the widest range of materials available for any micro-dispensing system. The SmartPump™ can print more than 10,000 commercially available materials and thousands of non-commercial materials. It can also print a few centipoise (like water) to millions of centipoise (much thicker than peanut butter). This allows nScrypt Cyberfacturing customers to choose the right materials for their applications.

nScrypt's nTip™, which is used on the SmartPump™, boasts the smallest commercially available pen tip diameter, 10 microns, 1/10 the diameter of a human hair, which beats the smallest competitive pen tip by a factor of 10 (the smallest competitive pen tips are 100 microns).

nScrypt's nFD™ material extrusion tool boasts the widest range of thermoplastics and can also print composites and continuous carbon fiber. If a material is not available in a filament format, the nFDh™ is a hopper-based thermoplastic and composite printer -- the only one of its kind on the market. This capability substantially expands the range of material selection for the cyberfacturing customer.

nScrypt's motion platform is 10 to 100 times more precise than its robotics or 3D printing competitors. This advantage provides fine-feature printing and placement, resulting in smoother finished products. Its precision platform also makes 3D printed parts more repeatable. It is also fast, enabling printing speeds of up to 1 meter per second. It can also host the widest range of processes, as compared to any competitive system. On a single platform, nScrypt can precisely micro-dispense, 3D print, polish or precision mill, and pick and place active electronic components, without tool changes. nScrypt is also alone in demonstrating the use of multiple nozzles for fast, parallel printing. Its platforms also provide laser integration and feedback for motion, printing, scanning, heat sensing, and vision.

nScrypt's platform prints both conformally and on changing layers. This is an advantage for the next generation of electronics packaging: more materials printed with smaller features in in any dimension.

nScrypt's BAT bioprinter has all of these advantages, plus nScrypt is working with Florida A&M University to make the only incubator environment for tissue growth within the printer. It is one of the only industrial bioprinters and will fly to the International Space Station in 2019, to print cardiac tissue in zero gravity.

Although nScrypt has used the advantages of its platform to service its contract design and manufacturing customers for almost 20 years, rolling Newton Cyberfacturing into nScrypt Cyberfacturing is expected to ramp up its contract services by orders or magnitude.

nScrypt Brings Mike Newton In-House

Mike Newton, who will run nScrypt Cyberfacturing, has over 30 years of experience in advanced microelectronics and microsystems. He has built and managed a number of fabrication and research labs serving both commercial and government markets and scaled ceramic microelectronic products for both the commercial and military industries. Mike also serves as nScrypt's Director for Electronic Packaging, 3D printed electronics, and functional devices. He currently serves as the Florida Chapter President for the International Microelectronics, Assembly and Packaging Society (IMAPS). He also serves on the roadmapping working group for NEXTFLEX, IPC's D66a Printed Electronics Standards Committee. Mr. Newton is also involved with NASA's In Space Manufacturing (ISM) Working Group.

Mr. Newton previously served as Chief Technologist for Microsystems with the Microelectronic Core Technology Group at Harris Corporation. In this position, he led strategic technology pursuits for the U.S. Department of Defense, the U.S. National Labs, and DARPA. He holds 47 patents in microelectronics, sensors, ceramic structures, MEMS, and antenna technologies.

According to Mr. Newton,

> "nScrypt's new business unit will have three strategic focus areas: direct digital design & product co-development with our cyberfacturing customers; digital multi-material manufacturing of the co-developed designs using nScrypt's digital manufacturing equipment, which combines 3D printing, micro-dispensing, micro-milling, and pick and place; and modular turnkey cyber-based manufacturing systems for use by others, such as the DoD and industry."

About nScrypt

Headquartered in Orlando, Fla., nScrypt manufactures micro-dispensing and 3D printing systems. It is a spin out from Sciperio Inc., a research and development think tank specializing in cross-disciplinary solutions. Sciperio won the R & D 100 award in 2003 for developing the world's first commercially available bio printer, under a contract with the Defense Advanced Research Projects Agency. The company serves the electronics, electronics packaging, solar cell metallization, printed antenna, life science and chemical/pharmaceutical industries. www.nscrypt.com