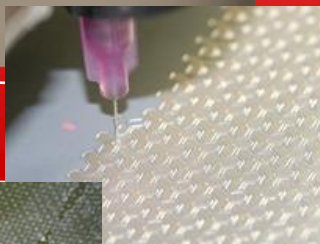
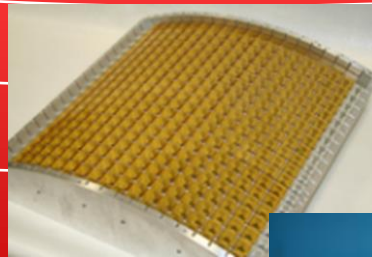


# SI2 Technologies, Inc.

*We Make Things Smart™*



# Vision

SI2 Technologies, Inc. (SI2) was founded in 2003 to design and manufacture conformal and flexible electronic systems for government applications where size, weight and power constraints are an issue. Our vision is simple: Pervasive, multi-functional systems of integrated electrical and structural components -- technologies for the integrated electronic battlefield from undersea to outer space. Simply put: We Make Things Smart™.

## Mission

*“SI2’s mission is to develop and deliver antenna, array, sensor, and absorber products for the defense market that enhance the warfighter’s effectiveness while providing increased protection against current, new, and projected threats.”*

## Value Proposition

- Current military platforms are constrained by cost, size, weight and power constraints (C-SWaP)
- Small companies offer agility and responsiveness that the DoD needs but can’t get out of the larger prime contractors
- SBIR data rights allow SI2 to provide contract R&D for emerging DoD needs and retain key data rights and reference designs to solve new problems quickly
- State of the Art but not widely deployed new technologies incorporated into reference designs allow SI2 to lead the market with novel solutions, rapidly and at low cost
- SI2 has the ability to bring funds as well as skill to problems. Let us help you get matching SBIR dollars for development.
- Ability to place electronics on a variety of unconventional surfaces

# Core Competencies

SI2 has developed Intellectual Property and reference designs to support rapid scaling and customization for application specific needs within DoD. Our Quality Management System is currently certified to ISO 9001:2008

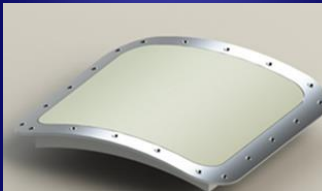
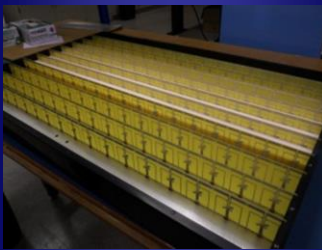
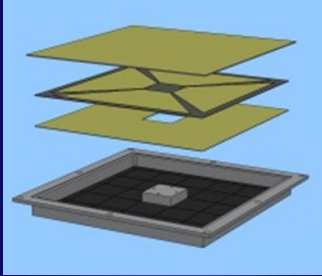
Product areas include:

- Frequency selective surfaces
- Surface patterning with conductive and resistive materials
- Conformal and covert antenna systems and arrays
- Electronic sensor systems
- Metamaterial-based devices
- Integrated electronics, antennas, & structures

SI2's products integrate electronics conformally with the structure and packaging without being constrained by the structure's shape. Hence "We make things smart™" by adding electronic functionality to otherwise "dumb" structures. The result is an electronic system which consumes significantly less, space, weight and power.

Available reference designs include:

- Conformal UHF SATCOM (F-18, UH-60M)
- Conformal UHF FTR Antenna (BQM Target)
- Conformal Multi-band Antenna (UHF – C; SM-3)
- Conformal 400 – 2500 MHz AESA
- Conformal 2.5 – 6.0 GHz AESA
- Conformal 1.0 – 22.0 GHz ESA (Shipboard)
- Miniature spiral 700 – 2500 MHz (GPR)
- Structurally Integrated Antenna 130 – 2170 MHz (UAV)
- Structurally Integrated UHF Antenna (UAV)
- Structurally Integrated 100 – 6000 MHz (UAV)
- RAS (Honeycomb) on multiple substrates



# Services

SI2 Technologies provides rapid, tailored designs or modifications to meet urgent SWaP constrained customer needs. These services include:

- Rapid response engineering and design services.
- Conversion of conventional designs for flexible and conformal manufacture.
- Conformal and flexible antenna, array, electronic and multifunctional system design.
- Conformal manufacture of electronic systems
- Large-area flexible electronics manufacture
- Prototype and production manufacturing using both in-house and external capabilities.

SI2 has access all top engineering design tools. Our development processes are supported by industry standard tools such as:

- CST Microwave Studio with Time Domain Simulation Engine and Frequency Domain Solver for numerical design and simulation of 3-D RF systems.
- HFSS by Ansys. HFSS Desktop, Design Capture, Analysis, and Post-processing for numerical design, modeling and simulation of RF systems.
- FEKO to calculate antenna performance, including isolation and mutual coupling, when mounted on arbitrarily shaped structures.
- WIPL-D. Frequency domain electromagnetic modeling and simulation of composite metallic and dielectric 3-D structures.
- EZNEC 4.0. Model and analysis of antennas with inputs on actual operating environment.
- SolidWorks® for 3D solid modeling, mechanical CAD, design validation, product data management, design communication, and CAD productivity tools.
- MasterCAM® CAD/CAM software for part modeling
- MATLAB™, and Simulink. PSICE for circuit design.



**Conformal Multi-aperture Antenna  
SM-3 Missile**



# Capabilities

From flexible/conformal antennas and integrated electronics to sensor systems, our team of design and engineering experts provides the know-how in design, development and manufacturing to meet - and exceed - our customers' needs.

## System Integrated Design and Manufacturing (SIDM)

SI2's unique SIDM methodology is a state-of-the-art approach to producing electronics integrated with structural members. SIDM combines the following:

- Design of multifunctional system – electronics and structural
- Selection of materials for manufacturing and operational compatibility
- Development of manufacturing processes and process flow

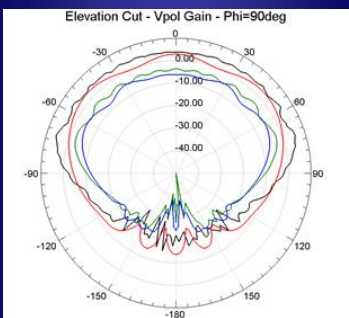
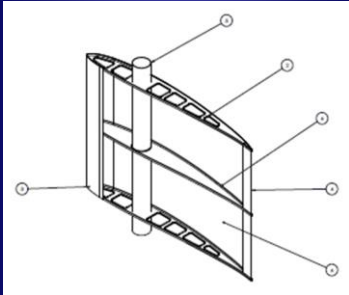
## Conformal and Flexible Electronics Manufacturing

SI2 has developed two processes for manufacturing conformal and flexible electronics; Direct Write (also known as Digital Printing) and Laser Transfer. These processes do not require harsh etchants or special atmospheres. The key attributes of Direct Write and Laser Transfer:

- Relatively low processing temperatures which enables the use of a large number of structural materials, including composites
- Conformal nature of the deposition, which enables the integration of electronics with curved surfaces
- Ability to print active and passive electronics onto curved and flexible substrates for electronics integration
- Design for extreme environments, including SM-3 Missile, F-35 JSF, U.S. Navy surface ship weather decks.

Specific manufacturing processes include:

- Direct Write micropen on curved and flexible substrates
- Direct Write inkjet on large area flexible substrates
- Laser Transfer on curved and flexible substrates (under development)



**Structurally  
Integrated UAV  
Comm/DF Antenna**

# Customers

SI2 works with U.S. Government agencies and their Prime Contractors to develop electronic systems and improved processes to provide solutions for today's war fighter and national initiatives. At SI2, we strive to meet the challenges set forth by our customers by providing "smart" electronic design solutions that can increase the performance of military and government platforms.

Current and former SI2 clients include DoD agencies such as the U.S. Air Force, Navy, Army, Missile Defense Agency, DARPA and NASA as well as Prime Contractors Northrop-Grumman, L-3, QinetiQ NA, Lockheed-Martin, Raytheon, Boeing and Sikorsky.



# Profile

Founded in 2003, SI2 has rapidly developed the capability to deliver high quality products and services to our customers. SI2's mission is to develop, prototype, and manufacture multifunctional structures and devices. Our facilities are located in the town of Billerica, MA, about 25 miles NW of Boston. SI2 maintains security clearances at a level sufficient to meet our customers' needs. Our Quality Management System is currently certified to ISO 9001:2008

## **Technical Expertise**

SI2 has an experienced, senior-level technical staff with diverse backgrounds in Electrical, Mechanical, Materials, and Aerospace engineering, and Physics. These highly educated and innovative professionals have a broad range of talent in RF, low profile antenna system design, electromagnetic theory, EBG metamaterials, multifunctional composite structures, materials and process technology, product development and product integration. SI2's employees have a number of patents and have written many publications. As experts in their field, SI2's engineers have given talks and poster presentations at various companies, universities, workshops and conferences.

## **Management Experience**

SI2's officers and directors have many years of hands-on experience at developing advanced electronic systems and components for high performance applications and transitioning these technologies into the military and broader commercial markets. SI2 has the track record and program management systems necessary for completing programs on-time and budget while delivering quality service and products to the customer.

## **Associations**

SI2 Technologies is a corporate member of several national and regional organizations.

- National Defense Industrial Association
- Small Business Technology Council
- Smaller Business Association of New England
- New England Innovation Alliance

**For More Information, Please Contact Us**

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