

# NAVY SBIR TRANSITION PROGRAM

# SPOTLIGHT

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## Metis Design's WISP Technology Named Finalist in DoD Maintenance Innovation Challenge

By Eric Radulski

Metis Design Corporation (MDC) was recently selected as a finalist for the DoD Maintenance Innovation Challenge for its Witness Integrity Sensor Platform (WISP) technology. The DoD Maintenance Innovation Challenge seeks to identify and recognize innovations that optimize the performance of weapon systems and equipment by reducing maintenance burdens, minimizing total ownership costs, and improving weapon system availability.

According to Seth Kessler, Ph.D., president, CEO, and owner of MDC, the feedback received during the event was invaluable. "They had one session where the room was jam-packed—every seat was filled—and there were people standing in the back. After the panel portion was done, for at least 30 minutes, there was a line of people waiting to ask me questions. So that was exciting, standing on the edge of the stage with a line of maintenance personnel, just one after another,



Photo courtesy of MDC

WISP enables condition-based maintenance, which improves asset availability and reduces sustainment costs.

asking different questions about how the technology could be applied to their specific application. It felt really validating that we were developing something useful and going down the right path."

This is a testament to the company's innovation in enabling condition-based maintenance (CBM) to reduce sustainment costs while improving

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asset availability. As Kessler explained: “WISP is a sustainment technology that enables condition-based maintenance. Rather than relying on scheduled maintenance, which impacts asset availability, condition-based maintenance integrates sensors strategically on vehicles to inspect continuously, then maintenance is performed on an as-needed basis using that sensor data. WISP uses a lightweight, ultra-low-power distributed infrastructure

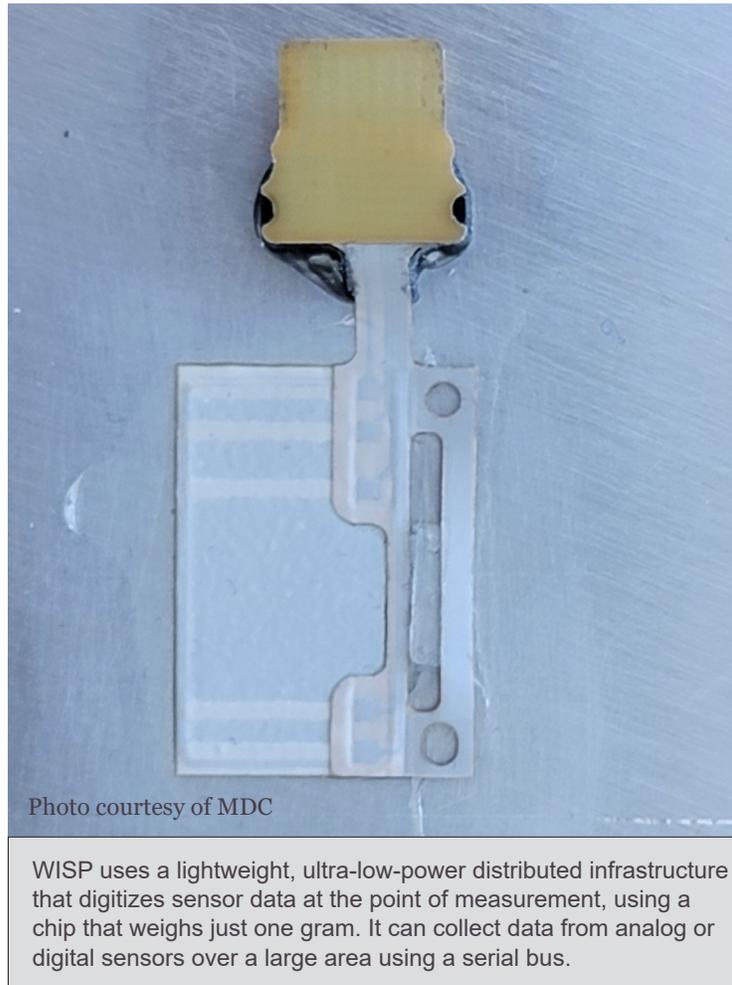
that digitizes sensor data at the point of measurement, using a chip that weighs just one gram. It can collect data from analog or digital sensors over a large area using a serial bus. WISP is compatible with off-the-shelf sensors for temperature, humidity, strain, and vibration, as well as nanoengineered sensors we have

developed for measuring fatigue crack growth, corrosivity, and erosivity that require no power to accumulate data, only to download it. MDC and our

commercialization partner Analog Devices Inc. [ADI] collaborated on WISP, initially developing parts of it through AFRL and AFWERX SBIRs along with the Massachusetts Institute of Technology [MIT] Department of Aeronautics and Astronautics, before applying it to ships through a Navy SBIR.

WISP hardware and sensors are manufactured and sold exclusively through ADI.”

WISP system components have passed DoD airworthiness and cybersecurity requirements and are currently being field-tested for both Naval applications at sea and flight trials on a fighter



jet. “I would like to acknowledge my program manager from the Navy, Dr. Benjamin Grisso, who has been invaluable in this process in terms of providing guidance and opportunities for installing and validating our sensors on a variety of different ship platforms,” explained Kessler.

Kessler has participated in the Navy SBIR Transition Program (Navy STP) many times. “As a veteran of the program, I have participated around 12 times and found great value in the marketing areas and exhibit materials that were developed. However, the most valuable benefit now is the exposure it provides to the greater Navy community. Through Navy STP, I recently attended Sea-Air-Space and had the opportunity to meet various government POCs and people from different industries attending the event. This exposure is incredibly valuable in building connections and expanding my network beyond just the specific SBIR’s intended application.”

The SBIR program has been a cornerstone of Kessler’s work. Especially valuable have been Navy SBIRs that always tie technologies to specific applications, which is beneficial

for transition since there is already a customer to communicate with from the start. “SBIR is providing us with an invaluable pipeline. Once people from the Navy and other branches see what we can do, what our technology can do, they know what they can expect and come to us for work outside of SBIR,” Kessler said.

Based in Boston, MDC is a technical consulting firm specializing in structural health monitoring and multifunctional materials, using non-invasive detection techniques to monitor the health of structures and reduce inspection costs and improve asset availability. MDC has a broad range of experience and has achieved significant advancements in structural health monitoring architecture, infrastructure, sensors, modeling, and algorithms, resulting in a portfolio of patented and patent-pending technologies.

For more information, visit the company’s website:

<http://www.metisdesign.com/>

