Embeddable Programmable Instrumentation Circuits (EPIC)

TechConnect World Innovation Conference & Expo

NATIONAL INNOVATION SUMMIT & SHOWCASE

NATIONAL SBIR/STTR CONFERENCE

TECHNOLOGY SUMMARY

A 1-ounce, 2" diameter microcontroller with 1GHz processor, DSP, and 2M gate FPGA. Plugin modules include trillion bit FLASH, 32 channel digitizer, analog drivers, wireless communication, GPS, and 28VDC converter. The RTOS is deterministic. User software is supported. Packaging interfaces to military wiring connectors or battery operated CCA.

Primary Application Area: Manufacturing, Instrumentation

Technology Development Status: Ready to Market

FIGURES OF MERIT

Value Proposition: The combination of 32Bit processor, Digital Signal Processor (DSP) and Field Programmable Gate Array (FPGA) is powerful, unique, and patented. The Real Time Operating System (RTOS) supports threaded parallel processing, which is known to be more efficient. This is further enhanced by the DSP and FPGA co-processors. The EPIC 1GHz ARM processor is much faster than most avionics and vehicle electronics in service today and the terabyte FLASH is orders of magnitude greater. The 1-ounce module can be packaged in a 3-ounce 38999 or Arinc 429 connector backshell with combined weight of 4-ounces, which is far lighter than today's avionics. The EPIC does not require wiring cables as it connects to (or replaces) existing wiring connectors. The 3-watt power dissipation is far less than conventional avionics, which typically exceed 10-watts and requires cooling. The combination of 32 bit processor, DSP, and FPGA in a coin-size circuit is unique (and patented.) The open modular architecture can be stacked with three processor circuits. Multiple EPICs communicate by wire or wireless to form a powerful on-board cloud supercomputer.

SHOWCASE SUMMARY

Organization Type: Small to Medium Enterprise

Showcase Booth #: 15M

Website: http://www.mgtsciences.com

TechConnect National Innovation Awardee

GOVT/EXTERNAL FUNDING SOURCES

Vetted Programs/Awards: The EPIC is operational on Navy EA-6B. The EPIC was selected as transformational by the Army SBIR Commercialization Program. The EPIC has been demonstrated performing networked communication and status monitoring on tactical vehicles at the Oshkosh Vehicle Test Range. The EPIC has been selected for transition to fleet aircraft.

SBIR/STTR Awards: The second generation EPIC has been selected for award of technology transition contracts by the USAF for use in implementing situation awareness for tactical platforms. $749,996, USAF, 11/27/2013-6/13/2016.

External Funding to Date: The first generation EPIC has been awarded contracts by two military prime contractors.

ePluribus EdgeWare – Real Time Network Centric Cognitive Information

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TECHNOLOGY SUMMARY

User programmable wearable/embedded instrument with advanced learning capability, provides data acquisition, processing, reasoning, and communication. EdgeWare provides probabilistic reasoning for precision logistics, telemedicine, CBM, automation, prognostic management, quality assurance, and sustainment for tactical/commercial applications. Local / global IoT is supported with web browser interface and IP address.

Primary Application Area: Electronics, Sensors, Communications

Technology Development Status: Ready to Market

FIGURES OF MERIT

Value Proposition: For industry, EdgeWare provides extremely low cost interface to sensors used to monitor manufacturing equipment and goods in shipment with remotely programmable intelligent reasoning at a fraction of the cost of conventional technologies. First responders, such as law enforcement and forest fire fighting crews, would use EdgeWare to have real time situation awareness.

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GOVT/EXTERNAL FUNDING SOURCES

Vetted Programs/Awards: EdgeWare received multiple 5 of 5 (top) ratings for ability to provide forces with real time reasoning and secure communications at the December 2015 SOCOM technology demonstration. Edgeware has received funding from Army Tactical Advanced Trauma Research Center for potential use in enabling battlefield telemedicine.

SBIR/STTR Awards: Phase II SBIR contract awarded $942,906 from Army. Period of Performance was 01/24/2013 – 7/24/2015.

External Funding to Date: Phase III funds from Army for use in Tactical Telemedicine.