

SRI International Microcircuit Emulation Center Emulation Zone



Volume I, Issue I

Welcome to our first edition of the Emulation Zone Newsletter. The Emulation Zone will provide a summary of important Microcircuit Emulation Center announcements pertaining to the GEM (Generalized Emulation of Microcircuits) and AME (Advanced Microcircuit Emulation) programs. We will keep you informed of latest part introductions, emulation advancements, and share real life success stories.

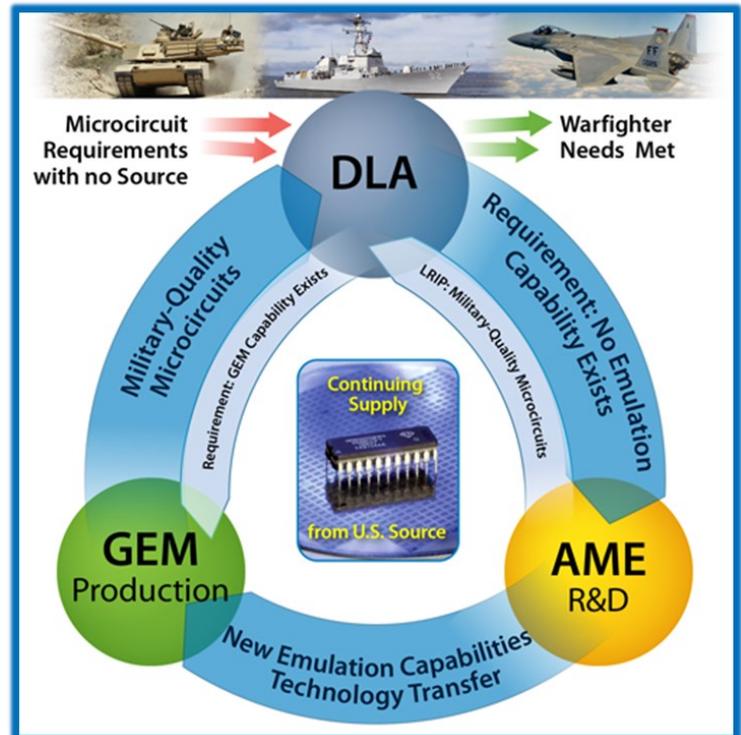
Through our government-industry partnership with the Defense Logistics Agency (DLA), SRI's Microcircuit Emulation Center is dedicated to delivering form, fit, function, and interface (F3I) replacements for legacy Department of Defense systems. The Emulation program offers a flexible technology for any phase of a weapon system life cycle. Thus providing a permanent solution to obsolescence at the component or board level, while reducing total ownership cost and maintaining readiness levels.

MICROCIRCUIT EMULATION MEETING THE WARFIGHTERS NEED

Working with the Emulation team at SRI and DLA only requires that the customer make a request by part number. A part number may be a customer part number (SCD), a National Stock Number (NSN), or the original manufacturers part number. Requisitions may be sent to the DLA Land and Maritime office in Columbus Ohio, or directly to the SRI Emulation team in Princeton, NJ. Depending on the device type and requirements, the request will either be routed to the GEM or AME program.

The Emulation program utilizes an onsite MIL-PRF-38535 QML certified, trusted wafer foundry, design, reverse engineering, and testing facilities, to provide a variety of F3I military-quality microcircuits replacement parts. The GEM program supports customer production and sustainment requirements. GEM devices can be used interchangeably with original microcircuits without changes to system documentation or test programs. The AME program develops new emulation capabilities to ensure the GEM program can continue to meet weapon systems wide-ranging requirements.

The Emulation program was initiated in 1987 when the Defense Logistics Agency (DLA) partnered with SRI's talented team of engineers, technicians, and support staff to develop GEM technology. Since then, approximately 360-plus DLA orders have been processed through the GEM program, supporting over 375 weapons systems. More than 120,000 parts have been delivered in more than 400 unique microcircuit designs with no reported failures.



TRADESHOWS & EVENTS



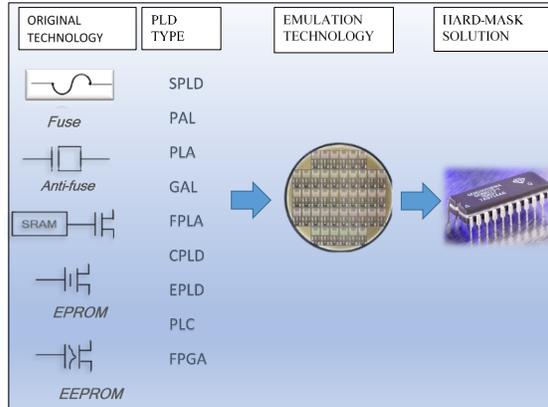
GOMAC 2016: We will be attending the Government Microcircuit Applications and Critical Technology Conference, March 14th-17th, in Orlando, FL. Visit our booth #403.

We will also exhibit at:

**Fleet Maintenance and Modernization Symposium, September 13-14, Hampton, VA
DMSMS, November 28- December 1, Denver, CO**

SOLVING PROGRAMMABLE LOGIC DEVICE OBSOLESCENCE

The Emulation programs at SRI have been addressing solutions for Programmable Logic Devices (PLDs) for many years. Early PLDs used simple configurable technologies that eventually developed into more complex and larger devices of which the most popular today are FPGAs. The emulation programs have capabilities to replace each one of these programmable types with current available technology, and is developing additional processes to extend deeper into FPGA replacements. The Emulation programs provide hard-mask replacements to PLDs and works with customers to guarantee performance in their systems. The GEM & AME programs have provided PLD solutions to the F-15, C-17, Patriot missile systems and others.



GEM RAD HARD DEVICES

GEM program, in conjunction with US Army White Sands Test center, completed radiation testing on an Emulated MILSTAR ASIC, NSN 5962-01-357-1988/ASIC Device Number 258-0048-020.

In addition to emulating this timer/counter microcircuit, SRI provided test vectors in ASCII format for WSTC to perform Total Dose (30K Rads). Results were approved by the MILSTAR Program Office and 84 parts were delivered to DLA.



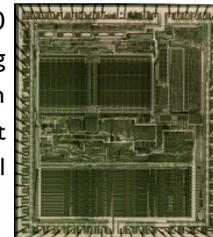
GEM TECHNOLOGY AVERTS PATRIOT PRODUCTION STOPPAGE

When Raytheon identified a need to replace five different FPLAs, used in multiple applications, we accepted the challenge. Raytheon provided source code, simulation, test bench, and drawing information, along with sample parts to assist in our reverse engineering efforts. SRI Engineers were able to target one of our many stock GEM arrays and selected a 1.5 μm, 384 gate array. Next, our design team translated Boolean functions into a Verilog netlist and generated test vectors from equations. Parts manufactured in our trusted foundry were tested against the provided sample devices. SRI delivered devices for system insertion testing and they successfully passed all tests. Once Raytheon validated these prototypes in their system, SRI delivered QML certified parts. The Emulation program successfully provided a solution that prevented a production line shutdown.

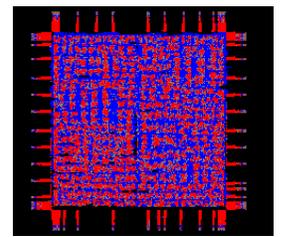


AME 3RD PARTY IP IMPLEMENTATION

AME has proven viability of using commercial IP for emulation of a Motorola MC68000 CISC microprocessor. We have replicated the 16 bit microprocessor function using sea-of-gates logic GEM432 (68000), 0.8 μm, 200K gate array. Design specification SMD 5962-82021, Type 02 (8 MHz) was targeted. The Motorola 68000 16/32 bit CISC microprocessor architecture, introduced over 35 years ago, of which several versions are still in production today.



Original MC68000



Emulated 68000 Die

CONTACT US



Visit the Emulation program at www.gemes.com, or contact us at geminfo@sri.com. A complete GEM [parts list](#) is available at our website. Remember, GEM devices are NEVER discontinued!

