

Southwest Research Institute® (SwRI®) provides software engineering solutions for avionics and support systems, including development and maintenance of:

- ❑ Real-time embedded systems
- ❑ Avionics equipment
- ❑ Automatic test equipment
- ❑ Test program sets
- ❑ PC-based systems
- ❑ Support equipment applications

Development Tools

- ❑ IBM® Rational® ClearCase®
- ❑ IBM® Rational® ClearQuest®
- ❑ IBM® Rational® RequisitePro®
- ❑ IBM® Rational® Software Modeler®
- ❑ Telelogic Rhapsody® Developer Multi-Language
- ❑ Telelogic Rhapsody® Gateway
- ❑ CORBA ORB (OIS ORBexpress® RT)
- ❑ SCA Core Framework (CRC SCARL++)
- ❑ Green Hills INTEGRITY® RTOS
- ❑ Green Hills MULTI® IDE
- ❑ SEA JOVIAL Compiler
- ❑ Ada Compiler
- ❑ Borland® C Compiler
- ❑ LabVIEW™
- ❑ Lab Windows / CVI™
- ❑ Vx Works
- ❑ Microsoft Visual Studio
- ❑ Matlab

Software Engineering and Architecture

- ❑ Embedded application development
- ❑ Windows model-based design / GUI application development
- ❑ PC-based software (desktop and embedded)
- ❑ Standard and custom multi-tasking real-time operating systems (RTOS)
- ❑ Windows / Integrity / VxWorks / Linux and Unix operating systems
- ❑ Rapid prototyping
- ❑ Software re-engineering
- ❑ Software rehosting
- ❑ Legacy system support and migration

SwRI designed, developed, tested and conducted activities necessary to provide Hill AFB with the Depot Level Tester for the Integrated Flight and Fire Control Computer (IFFCC) Line Replaceable Unit (LRU).

Standards and Capabilities

- ❑ ISO 9001:2000
- ❑ MIL-STD-498
- ❑ Embedded systems
- ❑ Embedded avionics
- ❑ Graphical user interfaces
- ❑ Modeling and simulation
- ❑ Technology upgrades

Languages and Processes

- ❑ C / C++ / C#
- ❑ Visual Basic
- ❑ Ada
- ❑ JOVIAL
- ❑ Assembly
- ❑ UML
- ❑ OOA / OOD
- ❑ HP and HT Basic
- ❑ Atlas
- ❑ Test Basic

SwRI designed a real-time simulator which inserts real aircraft data to emulate and replay actual aircraft situations used for scoring weapons delivery for selected weapons.

The Improved Electronic Processor Unit (IEPU) software is responsible for acquiring signals, detecting engine, aircraft and structural events, and storing related data for later analysis by ground personnel. SwRI engineers develop software for the IEPU Operational Flight Plan (OFF).

SwRI designed an Operational Test System for flightline diagnostics.



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Project Planning and Control

Develop and document planning information for software engineering process

**High-Level Design**

Develop software architecture, high-level design and related activities that initiate design process

**Detail Design**

Design software to lower level of detail and continue implementation of activities begun during high-level design phase

**Core and Unit/String Test**

Implement software design and perform thorough unit and string testing of code

**Test Support**

Address all tasks associated with support of testing performed by non-software development personnel

Additional Capabilities

Southwest Research Institute (SwRI) has extensive experience in evaluating, developing, deploying and verifying embedded systems. The staff maintains a system focus and excels in forming small, interdisciplinary teams to solve difficult real-time and embedded systems problems for clients. SwRI provides services ranging from turnkey system development to system engineering and system integration services, to short-term consulting agreements.

Our clients choose the Institute because SwRI offers:

- Demonstrated software and technology expertise
- Track record of delivering innovative solutions
- More than 25 years of software development experience
- System architecture platform approach
- Proven software development process
- Design for low cost
- 100% focus on client success

Southwest Research Institute has earned its reputation for innovation and design success by consistently exceeding client expectations and delivering products, support and services that are geared toward success.

SOFTWARE ENGINEERING FOR AVIONICS AND SUPPORT SYSTEMS

**We welcome your inquiries.
For additional information,
please contact:**

Christopher Camargo

Director, Avionics and Support
Systems Department
Aerospace Electronics,

Systems Engineering, and Training
(210) 522-2095 • Fax (210) 522-2572
Email: christopher.camargo@swri.org

Southwest Research Institute
6220 Culebra Road (78238-5166)
P.O. Drawer 28510 (78228-0510)
San Antonio, Texas

www.swri.org
www.avionics.swri.org



Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides more than 2 million square feet of laboratories, test facilities, workshops and offices for more than 3,100 employees who perform contract work for industry and government clients.



*Benefiting government, industry
and the public through innovative
science and technology*

An Equal Opportunity Employer M/F/D/V
Committed to Diversity in the Workplace