SwRI®
SOUTHWEST RESEARCH INSTITUTE®

Network-based Flight Test Instrumentation

Southwest Research Institute® (SwRI®) has more than 15 years experience in the research, design, and development of high-throughput, low-latency, network-based instrumentation systems. SwRI has designed and developed network-based systems for a variety of air, ground, and space applications using open standards.

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SwRI has developed solutions for aircraft-wide distributed flight test data acquisition systems.

Flight Test Data Acquisition Systems

SwRI has developed network-based solutions for flight test data acquisition systems used to certify commercial aircraft. These systems include features such as:

- Ethernet – 10/100/1000 copper and fiber
- Internet Protocol (IP) multicast
- High throughput (gigabit Ethernet speeds)
- Low latency
- IEEE 1588 Precision Time Protocol (PTP) sub-microsecond network-wide time synchronization
- Telemetry systems
- Real-time data processing
- Consolidated system management using Simple Network Management Protocol (SNMP)
- Combination of commercial off-the-shelf (COTS) and custom hardware

From Design Concept to Delivery

SwRI has developed innovative network solutions and taken the concept from design to delivery. Features include:

- Adapting solutions to legacy systems
- Designing systems that use both COTS and custom hardware
- Designing flight-ruggedized hardware
- Developing embedded software compliant with DO-178B


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SwRI engineers use a wide range of testing resources with real and simulated devices.

System Integration of Multi-vendor Systems

SwRI engineers have integrated equipment from multiple vendors, and assisted vendors in developing and applying network technologies to existing instrumentation devices. In addition, SwRI maintains a large set of testing resources including an expansive network test bed for integrating these devices into systems. These resources can generate over 50 Gbps of network load for testing systems before deployment.

Integrated Network Enhanced Telemetry (iNET)

SwRI is the lead systems integrator for the iNET program. SwRI has led development of the iNET standards, developed reference applications, integrated and tested initial systems, and supported flight tests. SwRI also provides consulting and development support to companies looking to leverage iNET standards and technologies.

Government Network Infrastructure

SwRI is experienced with government network infrastructure devices, such as encryptors, routers, and telemetry transmitters/receivers, and with integrating these devices in high-throughput, low-latency networks.

Standards Development and Implementation

SwRI has led, or contributed heavily to the development of, several network standards and created shareable frameworks of software so vendors can build their own specific equipment to comply with these standards. Features include:

- Improved interoperability between equipment from multiple vendors
- Faster system development
- Reduced system development costs

SwRI also has extensive experience in developing components and standards that can work with challenging security requirements and constraints.

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SwRI is leading and applying standards to integrate air, ground, and sea systems.

iNET

VICTORY

TENA

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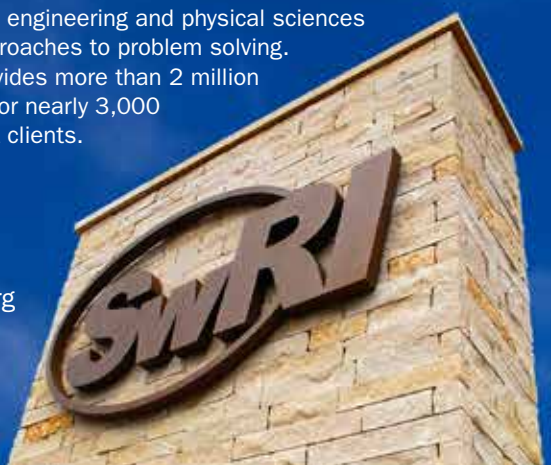
Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides more than 2 million square feet of laboratories, test facilities, workshops, and offices for nearly 3,000 employees who perform contract work for industry and government clients.



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Designed by SwRI MPS & Automation and Data Systems Division Printed by MPS 07/02/2024 JCN 272,382 ft