SIGNAL & INFORMATION SCIENCES LABORATORY

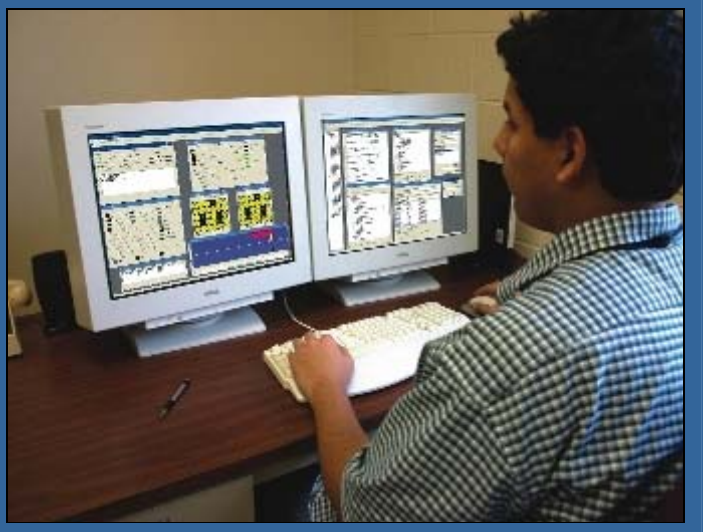
Applied Research Laboratories, The University of Texas at Austin

INFORMATION SYSTEMS ANALYSIS

Information systems engineers, analysts, and developers working within the Information Sciences Division (ISD) apply their technical expertise to diverse information-centric efforts, maintaining strong skill sets in system requirements elicitation, analysis, and management; software requirements and design methodologies and notations; data base design, implementation, and administration; client-server and web-based systems and tools (including development languages and environments); and network and operating systems configuration and administration.

ISD's information systems personnel have implemented technologies required for:

- Data warehousing
- Data mining
- Web-based information retrieval and dissemination
- Technology migration re-engineering
- Live training simulation
- Embedded real-time simulation



Analyst reviewing user interface for ISD-developed simulation system for testing aircraft countermeasure mission data files

F/A-18 firing countermeasure flares during a system test (DoD public domain photo by Lt. Peter Scheu, USN)

Products delivered by the ISD Information Systems Analysis team include the AN/ALE-47 CMDS Software Test Environment (STE). The STE software can simulate various combinations of naval aircraft and threats in real time in order to test aircraft mission data files (MDFs) in the computer lab and correct any errors in the threat response files before deployment. Each MDF contains complex decision/response data that is critical to the performance of the threat-response software, which is in turn mission critical. The MDF must be free of errors. The challenge has been to devise a cost-efficient way to test the MDFs, removing the risk and expense of in-flight testing while ensuring that the mission data has been entered as intended.

Each simulation incorporates genuine ALE-47 hardware components—e.g., the cockpit display unit, dispenser hardware, and/or BOL countermeasures dispenser(s)—and the simulation of other aircraft hardware components through the electrical interface of the Programmer, which automatically selects and executes dispense programs to counter threats, or coordinates the execution of dispense programs manually commanded by the pilot. During simulation, operators are able to capture threat response data for playback and timing analysis.

The Information Systems Analysis team has also developed innovative information retrieval techniques, analyzed and improved software development process alternatives and methodologies, investigated information system usability, and evaluated emerging technologies for specific application domains.

For further information regarding the Information Systems Analysis program,
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