would see through his windshield as he maneuvers or lands his aircraft. Link has applied microprocessors to this activity, too. Basically, there are two tasks to perform. One is to acquire orientation information from the aircraft simulator and look up in a large database what the corresponding view is—city, countryside, airport, water, etc. The second task is to translate and rotate the database information to bring it into line with the plane's apparent motion and to clip the view to fit the cockpit windows. Three microprocessors are assigned to database control and one each to translation, rotation, and clipping.

From the trainee's point of view, as he approaches a landing field, he sees runway lights, approach and threshold lights, taxiway lights, red obstruction lights, flashing beacons, airport building lights, strobes, street and other lighting outside the airport, and the lights of airborne traffic and moving vehicles on the ground. All these lights are kept in correct relationship to each other. As the airplane approaches the end of the runway, they gradually grow brighter. The simulator can display cloud effects and the reduction of runway visibility due to fog.

Link calls this visual system Image II. It is a dusk/nightsimulator meeting the FAA's Phase 2 requirements. Link is expanding it to meet the Phase 3 specification—full daylight color.

The new microprocessor-based technology offers greater simplicity and appreciable savings in life-cycle costs, according to Link. Moreover, it improves the quality of the scene, compared to earlier systems.

TRW completes VHSIC chip

The first fully functional very-high-speed integrated circuit has been fabricated and tested at TRW's Microelectronics Center in Redondo Beach, California, according to the company.

The matrix switch chip, the first of eight different VHSIC chips that TRW will make for the US Navy's Electronic Systems Command, has been verified at probe level. Featuring one-micrometer geometry, the 200 × 200-mil chip performs crossbar switching. It is designed to operate at 25 MHz and contains 13,500 devices in a 132-pin package. In operation, the 3D bipolar chip dissipates 2.5 watts of power and features 8 × 8 × 4-bit switching capability. Analogous to a telephone crossbar switch, it can interconnect any one of eight input lines to any unused output line every 40 nanoseconds.

All of TRW's eight VHSIC chips will be placed in a brassboard to demonstrate electronic warfare applications. The company expects all the chips to be available for evaluation testing before the end of the year.

As a VHSIC team leader, TRW is producing an entire family of high-performance, high-reliability, bipolar circuits for advanced signal processing. Team member Motorola is developing a CMOS chip, and team member Sperry-Univac is developing a computer-aided design system. Both Motorola and Sperry-Univac are TRW subcontractors.

The VHSIC program is a triservice effort administered by the Office of the Undersecretary of Defense for Research and Engineering. TRW's VHSIC program is sponsored by the US Navy's Electronic Systems Command.

Newspaper focuses on computer applications for the handicapped

Closing the Gap is a bimonthly newspaper which reports on the use of computers to aid the handicapped. It covers current research, commercially available hardware and software, conferences and workshops, and association news. Special emphasis is placed on the use of computers in special education classes. The newspaper is $15 per year. For a subscription or information, contact Closing the Gap, PO Box 68, Henderson, MN 56044; (612) 665-6573.

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