

TERRAIN ANALYST WORK STATION

(ABSTRACT)

LASLO GRECZY  
ELIZABETH PORTER  
RICHARD MARTH  
US ARMY ENGINEER TOPOGRAPHIC LABORATORIES  
FORT BELVOIR, VIRGINIA 22060-5546  
Phone: (202) 355-2877

## TERRAIN ANALYST WORK STATION (TAWS)

In today's modern Army, with its emphasis on mobility and rapid response, battlefield commanders need timely and accurate terrain and environmental information to assist them in making crucial tactical decisions. Current manual terrain analysis procedures are too cumbersome and inflexible to satisfy future requirements for rapid generation, update and dissemination of terrain information and terrain products. The Army is turning to digital terrain data bases and automated terrain analysis systems to address this problem.

Researchers at the U.S. Army Engineer Topographic Laboratories have initiated an effort to develop a prototype Terrain Analyst Work Station (TAWS) which will be used to demonstrate computer-assisted terrain data extraction, analysis and manipulation techniques in the field. The TAWS development effort capitalizes on recent advances in micro-computer technology, analytical photogrammetry, computer-assisted photo interpretation and geo-based information processing systems to provide an integrated terrain data extraction, analysis and display capability. The TAWS prototype incorporates off-the-shelf hardware and existing terrain analysis software to provide a multi-purpose work station which can be used for a variety of terrain information generation tasks.

The basic TAWS hardware consists of a state-of-the-art 32-bit micro-computer and peripherals, hard and soft copy data input devices and hard and soft copy output and display devices. The data input devices consist of alphanumeric terminals, a light table digitization and mensuration system, a graphics digitizing table and an analytical stereoplotter with dual-channel graphics super-position and profiling firmware. The output and display devices consist of a high quality color graphics plotter, a line printer, and color graphics display devices.

The operating system being used on TAWS is UNIX\*. Applications software is being written in Fortran 77, Pascal and C, and will include geographic information system software, digital terrain elevation data manipulation software, and environmental effects software.

The primary function of TAWS will be to perform data extraction digitization and mensuration. However, the work station will also incorporate data manipulation, analysis and product generation capabilities. The system will provide Army terrain analysts with the tools needed to: (1) Create topologically valid digital terrain data bases; (2) Edit, update, revise and intensify existing data bases; (3) Merge data from various sources; (4) Manipulate, analyze and display digital terrain data; and (5) Generate and disseminate quick-reaction tactical decision aids and special purpose terrain products.

The TAWS prototype will be operational in the laboratory by mid-1985. After initial laboratory tests, the TAWS will be taken into the field for a series of demonstrations. The results of the laboratory tests and field demonstrations will be used to help define requirements and validate fielding concepts for data extraction, update, revision and analysis capabilities needed in a fieldable Digital Topographic Support System. The TAWS will also be used to support development and demonstration of new techniques and software under the Corps of Engineers AirLand Battlefield Environment program.

\*UNIX is a trademark of Bell Laboratories.