

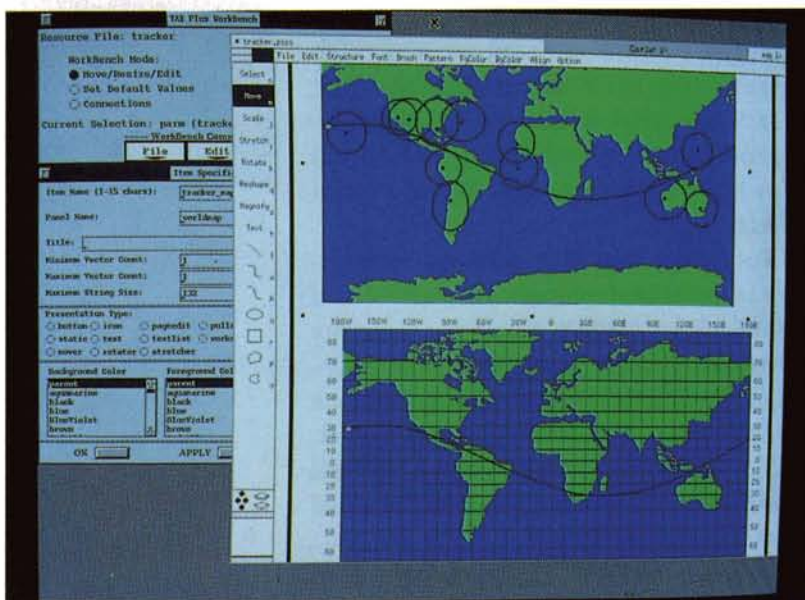
## Software Management System

Computer solutions to analysis or information management problems often require use of multiple computer programs. Sometimes the programs are numerous, complex and interrelated. Thus, both system developer and end user can benefit from help in organizing and managing the programs.

A NASA-developed software management system known as the Transportable Applications Environment (TAE) offers such help. It simplifies the job of a system developer by providing user interface development tools and a stable framework in which a system can be built, thereby reducing the time between concept and first implementation. Developed to better serve the needs of end users, applications programmers and system designers, TAE binds a set of applications into a single, easily-operated whole and supports user operation of programs through a consistent, friendly and flexible user interface.

In today's environment, where an application system's software costs usually far outweigh its hardware costs, TAE can provide significant savings. It lowers the cost of system development and software conversion by providing software and structures for commonly recurring user requirements, such as menu and command interfaces, information displays, parameter processing, error reporting and on-line help.

TAE was originally developed in the early 1980s to support image processing and remote sensing applications at Goddard Space Flight Center. Over the years, it has evolved from a traditional menu and command oriented system to a state-of-the-art user interface development system supporting high resolution graphic workstations (right). The latest version of TAE—called TAE Plus—provides a tool for anyone involved in the building of user interfaces. It is designed for both programmers and non-pro-





grammers and there is no coding necessary to build a prototype. TAE Plus allows the application developer to interactively construct the layout of a graphic workstation screen and manipulate a set of "interaction objects," including user entry and information items as well as data-driven graphical objects. For those who intend to develop their prototypes into operational applications, the WorkBench generates source code and resource files (right). With the new TAE Plus user interface design features working in tandem with the original TAE's standard set of application management services, TAE offers an integrated application development tool for increased programmer productivity. At right below, Goddard's Marti Szczer explains TAE Plus to a group from Georgia Tech.

Each year the "transportable" element of TAE becomes more evident as the number of computers on which TAE operates grows. At midyear 1989, TAE was operating on 15 different computers, running under several operating systems. As TAE utilization and functionality grew, so did the range of applications; they now include scientific analysis systems, user assistance teaching tools, defense systems, prototyping; and realtime command and control systems. TAE's versatility had led to widespread use outside NASA; the user community has grown to more than 300 facilities operated by government agencies, universities and industrial firms. A sampling of users includes The Boeing Company; Computer Sciences Corporation; EOSAT, operator of the U.S. Landsat remote sensing system; Harris Corporation; Philip Morris; RAND Corporation; Lawrence Livermore Laboratory; plus research and development agencies in West Germany and Sweden.

TAE is backed by a Goddard-based TAE Support Office, which assists users who have questions or specific problems. There is also an

active user group that participates in defining new TAE development areas and organized users' conferences to exchange ideas and experiences. TAE is distributed through NASA's Computer Software Management and Information Center (COSMIC) at the University of Georgia.

