Software

Software for Viewing Landsat Mosaic Images

A Windows-based computer program has been written to enable novice users (especially educators and students) to view images of large areas of the Earth (e.g., the continental United States) generated from image data acquired in the Landsat observations performed circa the year 1990. The large-area images are constructed as mosaics from the original Landsat images, which were acquired in several wavelength bands and each of which spans an area (in effect, one tile of a mosaic) of ≈5° in latitude by ≈6° in longitude. Whereas the original Landsat data are registered on a universal transverse Mercator (UTM) grid, the program converts the UTM coordinates of a mouse pointer in the image to latitude and longitude, which are continuously updated and displayed as the pointer is moved. The mosaic image currently on display can be exported as a Windows bitmap file. Other images (e.g., of state boundaries or interstate highways) can be overlaid on Landsat mosaics. The program interacts with the user via standard toolbar, keyboard, and mouse user interfaces. The program is supplied on a compact disk along with tutorial and educational information.

This program was written by Zack Watts, Catharine L. Farve, and Craig Harvey of PixSell, Inc., for **Stennis Space Center**.

In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to

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Building 2105
Stennis Space Center, MS 39529

Refer to SSC-00148, volume and number of this NASA Tech Briefs *issue, and the page number.*

Updated Integrated Mission Program

Integrated Mission Program (IMP) is a computer program for simulating spacecraft missions around the Earth, Moon, Mars, and/or other large bodies. IMP solves the differential equations of motion by use of a Runge-Kutta numerical-integration algorithm. Users control missions through selection from a large menu of events and maneuvers. Mission profiles, time lines, propellant requirements, feasibility analyses, and perturbation analyses can be computed quickly and accurately. A prior version of IMP, written in FORTRAN 77, was reported in "Program Simulates Spacecraft Missions" (MFS-28606), *NASA Tech Briefs*, Vol. 17, No. 4 (April 1993), page 60. The present version, written in double-precision Lahey™ FORTRAN 90, incorporates a number of improvements over the prior version. Some of the improvements modernize the code to take advantage of today's greater central-processing-unit speeds. Other improvements render the code more modular; provide additional input, output, and debugging capabilities; and add to the variety of maneuvers, events, and means of propulsion that can be simulated. The IMP user manuals (of which there are now ten, each addressing a different aspect of the code and its use) have been updated accordingly.

This program was written by Vincent A. Dauro, Sr., of Alpha Technology, Inc., for **Marshall Space Flight Center**. *Further information is contained in a TSP (see page 1).*
MFS-31695

Software for Sharing and Management of Information

DIAMS is a set of computer programs that implements a system of collaborative agents that serve multiple, geographically distributed users communicating via the Internet. DIAMS provides a user interface as a Java applet that runs on each user's computer and that works within the context of the user's Internet-browser software. DIAMS helps all its users to manage, gain access to, share, and exchange information in databases that they maintain on their computers. One of the DIAMS agents is a personal agent that helps its owner find information most relevant to current needs. It provides software tools and utilities for users to manage their information repositories with dynamic organization and virtual views. Capabilities for generating flexible hierarchical displays are integrated with capabilities for indexed-query searching to support effective access to information. Automatic indexing methods are employed to support users' queries and communication between agents. The catalog of a repository is kept in object-oriented storage to facilitate sharing of information. Collaboration between users is aided by matchmaker agents and by automated exchange of information. The matchmaker agents are designed to establish connections between users who have similar interests and expertise.

This program was written by James R. Chen of **Ames Research Center** *and Shawn R. Wolfe and Stephen D. Wragg of Caelum Research. Further information is contained in a TSP (see page 1).*
ARC-14654

Update on Integrated Optical Design Analyzer

Updated information on the Integrated Optical Design Analyzer (IODA) computer program has become available. IODA was described in "Software for Multidisciplinary Concurrent Optical Design" (MFS-31452), *NASA Tech Briefs*, Vol. 25, No. 10 (October 2001), page 8a. To recapitulate: IODA facilitates multidisciplinary concurrent engineering of highly precise optical instruments. The architecture of IODA was developed by reviewing design processes and software in an effort to automate design procedures. IODA significantly reduces design iteration cycle time and eliminates many potential sources of error. IODA integrates the modeling efforts of a team of experts in different disciplines (e.g., optics, structural analysis, and heat transfer) working at different locations and provides seamless fusion of data among thermal, structural, and optical models used to design an instrument. IODA is compatible with data files generated by the NASTRAN™ structural-analysis program and the Code V® optical-analysis program, and can be used to couple analyses performed by these two programs. IODA supports multiple-load-case analysis for quickly accomplishing trade studies. IODA can also model the transient response of an instrument under the influence of dynamic loads and disturbances.

This program was written by James D. Moore, Jr., and Ed Troy of SRS Technologies for **Marshall Space Flight Center**. *Further information is contained in a TSP (see page 1).*
MFS-31809