

plication programs for depicting NASA orbital missions on personal computers running the Windows XP, Mac OSX, and Linux operating systems.

GoView enables seamless rendering of Cartesian coordinate spaces with programmable graphics hardware, whereas prior programs for depicting spacecraft trajectories variously require non-Cartesian coordinates and/or are not compatible with programmable hardware. GoView incorporates an algorithm for

nonlinear interpolation between arbitrary reference frames, whereas the prior programs are restricted to special classes of inertial and non-inertial reference frames. Finally, whereas the prior programs present complex user interfaces requiring hours of training, the GoView interface provides guidance, enabling use without any training.

This work was done by Paul R. Upchurch of Caltech for NASA's Jet Propulsion Laboratory. 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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Refer to NPO-45274, volume and number of this NASA Tech Briefs issue, and the page number.

Alert Notification System Router

Goddard Space Flight Center, Greenbelt, Maryland

The Alert Notification System Router (ANSR) software provides satellite operators with notifications of key events through pagers, cell phones, and e-mail. Written in Java, this application is specifically designed to meet the mission-critical standards for mission operations while operating on a variety of hardware environments.

ANSR is a software component that runs inside the Mission Operations Center (MOC). It connects to the mission's message bus using the GMSEC [God-

dard Space Flight Center (GSFC) Mission Services Evolution Center (GMSEC)] standard. Other components, such as automation and monitoring components, can use ANSR to send directives to notify users or groups. The ANSR system, in addition to notifying users, can check for message acknowledgements from a user and escalate the notification to another user if there is no acknowledgement.

When a firewall prevents ANSR from accessing the Internet directly, proxies

can be run on the other side of the wall. These proxies can be configured to access the Internet, notify users, and poll for their responses. Multiple ANSRs can be run in parallel, providing a seamless failover capability in the event that one ANSR system becomes incapacitated.

This work was done by Joseph Gurganus of Goddard Space Flight Center and Everett Cary, Robert Antonucci, and Peter Hitchener of Emergent Space Technologies, Inc. Further information is contained in a TSP (see page 1). GSC-15592-1

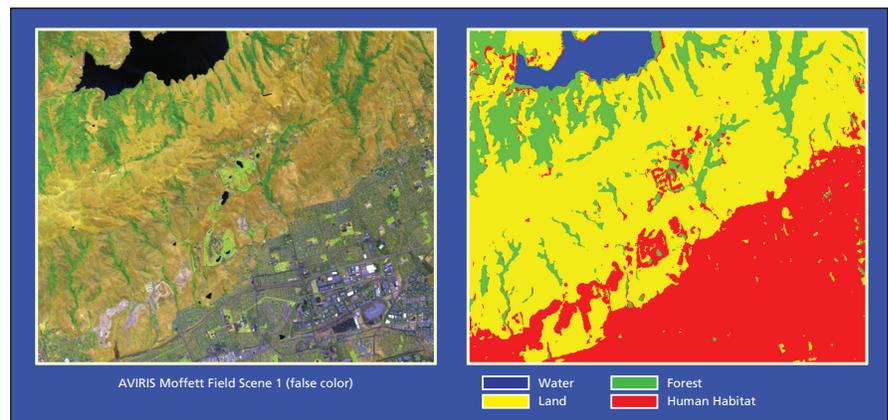
Lossless Compression of Classification-Map Data

This algorithm performs better than do general-purpose image-data compression algorithms.

NASA's Jet Propulsion Laboratory, Pasadena, California

A lossless image-data-compression algorithm intended specifically for application to classification-map data is based on prediction, context modeling, and entropy coding. The algorithm was formulated, in consideration of the differences between classification maps and ordinary images of natural scenes, so as to be capable of compressing classification-map data more effectively than do general-purpose image-data-compression algorithms.

Classification maps are typically generated from remote-sensing images acquired by instruments aboard aircraft (see figure) and spacecraft. A classification map is a synthetic image that summarizes information derived from one or more original remote-sensing image(s) of a scene. The value assigned to each pixel in such a map is the index of a class that represents some type of content deduced from the original image data — for exam-



This **False-Color Image and Classification Map** were derived from image data acquired by an airborne visible/infrared imaging spectrometer (AVIRIS) over Moffett Field, California. The classification map is typical of images meant to be processed by use of the present algorithm.

ple, a type of vegetation, a mineral, or a body of water — at the corresponding location in the scene. When classification maps are generated onboard the aircraft

or spacecraft, it is desirable to compress the classification-map data in order to reduce the volume of data that must be transmitted to a ground station.