Software

Software Framework for Peer Data-Management Services

Object Oriented Data Technology (OODT) is a software framework for creating a Web-based system for exchange of scientific data that are stored in diverse formats on computers at different sites under the management of scientific peers. OODT software consists of a set of cooperating, distributed peer components that provide distributed peer-to-peer (P2P) services that enable one peer to search and retrieve data managed by another peer. In effect, computers running OODT software at different locations become parts of an integrated data-management system.

OODT now incorporates a client/server communication substrate, but in other respects, its design resembles that of a P2P network, and it is planned to make a transition to a P2P communication substrate in the near future. OODT uses standard Transmission Control Protocol/ Internet Protocol (TCP/IP) connections. The architecture of OODT is that of a plug-in system. The OODT framework includes a set of classes and interfaces that can be customized and then registered with an application programmer's interface. The classes and interfaces tell the programmer at each site exactly what is needed for customization.

This program was written by John Hughes, Sean Hardman, Daniel Crichton, and Jason Hyon of Caltech and Sean Kelly and Thuy Tran of Northrop Grumman for NASA's Jet Propulsion Laboratory.

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-40370.

Autogen Version 2.0

Version 2.0 of the autogen software has been released. "Autogen" (automated sequence generation) signifies both a process and software used to implement the process of automated generation of sequences of commands in a standard format for uplink to spacecraft. Autogen requires fewer workers than are needed for older manual sequence-generation processes and reduces sequence-generation times from weeks to minutes. The autogen software comprises the autogen script plus the Activity Plan Generator (APGEN) program. APGEN can be used for planning missions and command sequences. APGEN generates a graphical user interface that facilitates scheduling of activities on a time line and affords a capability to automatically expand, decompose, and schedule activities. The earlier version of the autogen software was developed for the Mars 2001 *Odyssey* spacecraft. Version 2.0 offers enhanced capabilities to serve, simultaneously, multiple spacecraft (including the Mars Global Surveyor, the Mars Exploration Rovers, and the future Mars Reconnaissance Orbiter) that may be at different phases of their missions (including cruise, aerobraking, mapping, and relay operations).

This work was done by Roy Gladden of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-41501.

Tracking-Data-Conversion Tool

A computer program denoted Tracking Data Delivery Software Orbit Data File (TDDSODF) converts deep-space-radio-communication spacecraft-tracking data from a currently used file format known in the art as "TRK-2-34" to a legacy format denoted "TRK-2-18." TDDSODF reads standard formatted data units (SFDUs) of several TRK-2-34 types and processes them into an orbit data file (ODF) containing data of one or more of several different TRK-2-18 types. TDDSODF offers the user the following options:

- To set processing parameters (including default values for use when TRK-2-34 values are not available) through configuration files or from a command line,
- To specify a compression interval used in the generation of carrier-frequency observables from TRK-2-34 downlink-carrier-phase and Doppler-count SFDUs,
- To fix the formulation of observables to a time-tag that is an integer multiple of a user-specified interval,
- To verify whether the configuration files contain valid keywords or out-of-range keyword values, and
- To specify both required and optional command-line parameters in a single file.

This program was written by Dana Flora-Adams, Jeanne Makihara, Zabel Benenyan, Jeff Berner, and Andrew Kwok of Caltech for NASA's Jet Propulsion Laboratory.

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-41741.

NASA Enterprise Visual Analysis

NASA Enterprise Visual Analysis (NEVA) is a computer program undergoing development as a successor to Launch Services Analysis Tool (LSAT), formerly known as Payload Carrier Analysis Tool (PCAT). NEVA facilitates analyses of proposed configurations of payloads and packing fixtures (e.g. pallets) in a space-shuttle payload bay for transport to the International Space Station. NEVA reduces the need to use physical models, mock-ups, and full-scale ground support equipment in performing such analyses. Using NEVA, one can take account of such diverse considerations as those of weight distribution, geometry, collision avoidance, power requirements, thermal loads, and mechanical loads.

NEVA accepts mass-property data from computational models of payloads, carriers, and interfaces, and uses these data to perform weight and center-of-gravity analyses. NEVA accepts results from structural-, thermal-, and fluid-analysis programs and translates them for incorporation into visual displays along with the results of the weight-distribution analyses. After contemplated further development, NEVA will also be able to accept, translate, and display results of communication- and electromagnetic-compatibility-analysis programs. Thus, NEVA is expected to continue to evolve into an increasingly capable tool for supporting technical and management decisions regarding ever more complex payload configurations.

This program (copyright © The Boeing Company 2005, all rights reserved) was written by Maria Lopez-Tellado of Kennedy Space Center and Brenda DiSanto, Robert Humeniuk, Richard Bard Jr., Mia Little, Robert Edwards, Tien-Chi Ma, Kenneth