Software

Supplier Management System

Supplier Management System (SMS) allows for a consistent, agency-wide performance rating system for suppliers used by NASA. This version (2.0) combines separate databases into one central database that allows for the sharing of supplier data. Information extracted from the NBS/Oracle database can be used to generate ratings. Also, supplier ratings can now be generated in the areas of cost, product quality, delivery, and audit data. Supplier data can be charted based on real-time user input. Based on these individual ratings, an overall rating can be generated.

Data that normally would be stored in multiple databases, each requiring its own log-in, is now readily available and easily accessible with only one log-in required. Additionally, the database can accommodate the storage and display of quality-related data that can be analyzed and used in the supplier procurement decision-making process. Moreover, the software allows for a Closed-Loop System (supplier feedback), as well as the capability to communicate with other federal agencies.

While Version 1.0 only had an Approved Supplier list, Version 2.0 includes the Approved Supplier List, Supplier Rating System, and the Supplier Outreach and Process Control Assurance System. The Supplier Rating System is a new database that was developed specifically for this software. The system allows for segregation of data to ensure sensitive data is protected.

This program was written by Eric Ramirez, Sandy Gutheinz, James Brison, Anita Ho, James Allen, Olga Ceritelli, Claudia Tobar, Thuykien Nguyen, and Harrel Crenshaw of Caltech and Roxann Santos of SkillStorm Inc. 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-44084.

Improved CLARAty Functional-Layer/Decision-Layer Interface

Improved interface software for communication between the CLARAty Decision and Functional layers has been developed. [The Coupled Layer Architecture for Robotics Autonomy (CLARAty) was described in "Coupled-Layer Robotics Architecture for Autonomy" (NPO-21218), *NASA Tech Briefs*, Vol. 26, No. 12 (December 2002), page 48. To recapitulate: the CLARAty architecture was developed to improve the modularity of robotic software while tightening coupling between planning/execution and basic control subsystems. Whereas prior robotic software architectures typically contained three layers, the CLARAty contains two layers: a decision layer (DL) and a functional layer (FL).] Types of communication supported by the present software include sending commands from DL modules to FL modules and sending data updates from FL modules to DL modules.

The present software supplants prior interface software that had little error-checking capability, supported data parameters in string form only, supported commanding at only one level of the FL, and supported only limited updates of the state of the robot. The present software offers strong error checking, and supports complex data structures and commanding at multiple levels of the FL, and relative to the prior software, offers a much wider spectrum of state-update capabilities.

This program was written by Tara Estlin, Gregg Rabideau, Daniel Gaines, Mark Johnston, Caroline Chouinard, Issa Nessnas, and I-Hsiang Shu 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-44571.

JAVA Stereo Display Toolkit

This toolkit provides a common interface for displaying graphical user interface (GUI) components in stereo using either specialized stereo display hardware (e.g., liquid crystal shutter or polarized glasses) or anaglyph display (red/blue glasses) on standard workstation displays. An application using this toolkit will work without modification in either environment, allowing stereo software to reach a wider audience without sacrificing high-quality display on dedicated hardware.

The toolkit is written in Java for use with the Swing GUI Toolkit and has cross-platform compatibility. It hooks into the graphics system, allowing any standard Swing component to be displayed in stereo. It uses the OpenGL graphics library to control the stereo hardware and to perform the rendering. It also supports anaglyph and special stereo hardware using the same API (application-program interface), and has the ability to "simulate" color stereo in anaglyph mode by combining the red band of the left image with the green/blue bands of the right image.

This is a low-level toolkit that accomplishes simply the display of components (including the JadeDisplay image display component). It does not include higher-level functions such as disparity adjustment, 3D cursor, or overlays — all of which can be built using this toolkit.

This program was written by Robert Deen and Oleg Pariser of Caltech for NASA's Jet Propulsion Laboratory.

The software used in this innovation is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-43786.

Remote-Sensing Time Series Analysis, a Vegetation Monitoring Tool

The Time Series Product Tool (TSPT) is software, developed in MATLAB®, which creates and displays high signal-to-noise Vegetation Indices imagery and other higher-level products derived from remotely sensed data. This tool enables automated, rapid, large-scale regional surveillance of crops, forests, and other vegetation. TSPT temporally processes high-revisit-rate satellite imagery produced by the Moderate Resolution Imaging Spectroradiometer (MODIS) and by other remote-sensing systems. Although MODIS imagery is acquired daily, cloudiness and other sources of noise can greatly reduce the effective temporal resolution. To improve cloud statistics, the TSPT combines MODIS data from multiple satellites (Aqua and Terra). The TSPT produces MODIS products as single time-frame and multitemporal change images, as time-series plots at a selected