Electronic Systems

LabVIEW Serial Driver Software for an Electronic Load

A LabVIEW-language computer program enables monitoring and control of a Transistor Devices, Inc., Dynaload WCL232 (or equivalent) electronic load via an RS-232 serial communication link between the electronic load and a remote personal computer. (The electronic load can operate at constant voltage, current, power consumption, or resistance.) The program generates a graphical user interface (GUI) at the computer that looks and acts like the front panel of the electronic load. Once the electronic load has been placed in remote-control mode, this program first queries the electronic load for the present values of all its operational and limit settings, and then drops into a cycle in which it reports the instantaneous voltage, current, and power values in displays that resemble those on the electronic load while monitoring the GUI images of pushbuttons for control actions by the user. By means of the pushbutton images and associated prompts, the user can perform such operations as changing limit values, the operating mode, or the set point. The benefit of this software is that it relieves the user of the need to learn one method for operating the electronic load locally and another method for operating it remotely via a personal computer.

This program was written by Vincent Scullin of **Glenn Research Center** *and Christopher Garcia of QSS Group, Inc. Further information is contained in a TSP [see page 1].*

Inquiries concerning rights for the commercial use of this invention should be addressed to NASA Glenn Research Center, Commercial Technology Office, Attn: Steve Fedor, Mail Stop 4–8, 21000 Brookpark Road, Cleveland, Ohio 44135. Refer to LEW-17292.

Fabrication Technology

Software Computes Tape-Casting Parameters

Tcast2 is a FORTRAN computer program that accelerates the setup of a process in which a slurry containing metal particles and a polymeric binder is cast, to a thickness regulated by a doctor blade, onto fibers wound on a rotating drum to make a "green" precursor of a metal-matrix/fiber composite tape. Before Tcast2, setup parameters were determined by trial and error in time-consuming multiple iterations of the process. In Tcast2, the fiber architecture in the final composite is expressed in terms of the lateral distance between fibers and the thickness-wise distance between fibers in adjacent plies. The lateral distance is controlled via the manner of winding. The interply spacing is controlled via the characteristics of the slurry and the doctor-blade height. When a new combination of fibers and slurry is first cast and dried to a green tape, the shrinkage from the wet to the green condition and a few other key parameters of the green tape are measured. These parameters are provided as input to Tcast2, which uses them to compute the doctor-blade height and fiber spacings needed to obtain the desired fiber architecture and fiber volume fraction in the final composite.

This program was written by Henry C. de Groh III of **Glenn Research Center**. *Further information is contained in a TSP [see page 1].*

Inquiries concerning rights for the commercial use of this invention should be addressed to NASA Glenn Research Center, Commercial Technology Office, Attn: Steve Fedor, Mail Stop 4–8, 21000 Brookpark Road, Cleveland, Ohio 44135. Refer to LEW-17323.

Mathematics and Information Sciences

Software for Tracking Costs of Mars Projects

The Mars Cost Tracking Model is a computer program that administers a system set up for tracking the costs of future NASA projects that pertain to Mars. Previously, no such tracking system existed, and documentation was written in a variety of formats and scattered in various places. It was difficult to justify costs or even track the history of costs of a spacecraft mission to Mars. The present software enables users to maintain all cost-model definitions, documentation, and justifications of cost estimates in one computer system that is accessible via the Internet. The software provides sign-off safeguards to ensure the reliability of information entered into the system. This system may eventually be used to track the costs of projects other than only those that pertain to Mars.

This program was written by Alvin Wong and Keith Warfield 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 Don Hart of the California Institute of Technology at (818) 393-3425. Refer to NPO-30365.

Software for Replicating Data Between X.500 and LDAP Directories

X500/LDAP Directory Replication Utility is a computer program for replicating information between X.500 and LDAP directories. [X.500 is an international standard for on-line directory services. LDAP (Lightweight Directory Access Protocol) is a simple directory access protocol.] The utility can be used to replicate an object of any type from X.500 to LDAP or from LDAP to X.500. The program uses the LDAP version 2 protocol, which is capable of working with both X.500 and LDAP directories. The program can provide any or all of the following services: (1) replicate only modified objects; (2) force replication of all objects; (3) replicate individual objects, one level of objects, or a subtree of objects; (4) filter sets of objects to select ones to be replicated; (5) remove and/or modify object classes from objects that are replicated; and (6) select and/or limit attributes that are replicated. The program includes a separate program that is used to remove objects that are no longer required to be replicated.

This program was written by Thomas Wolfe 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 Don Hart of the California Institute of Technology at (818) 393-3425. Refer to NPO-30430.

The Technical Work Plan Tracking Tool

The Technical Work Plan Tracking Tool is a web-based application that enables interactive communication and approval of contract requirements that pertain to the administration of the Science, Engineering, Analysis, and Test (SEAT) contract at

Johnson Space Center. The implementation of the application has (1) shortened the Technical Work Plan approval process, (2) facilitated writing and documenting requirements in a performance-based environment with associated surveillance plans, (3) simplified the contractor's estimate of the cost for the required work, and (4) allowed for the contractor to document how they plan to accomplish the work. The application is accessible to over 300 designated NASA and contractor employees via two Web sites. For each employee, the application regulates access according to the employee's authority to enter, view, and/or print out diverse information, including reports, work plans, purchase orders, and financial data. Advanced features of this application include on-line approval capability, automatic e-mail notifications requesting review by subsequent approvers, and security inside and outside the firewall.

This program was designed by Cinda Chullen, Adele Leighton, Richard A. Weller, and Jared Woodfill of **Johnson Space Center***, and William E. Parkman, Glenn L. Ellis, and Marilyn M. Wilson of Lockheed Martin Corp., and developed by Nina S. Johnson and William E. Moody of Lockheed Martin Corp. Further information is contained in a TSP [see page 1].*
MSC-23361