These algorithms may be used as in-memory data structures and may also be adopted for use with persistent data structures. Hash-tables are used in thousands of instances of flight code, and this approach could improve the efficiency of those applications, allowing them to run in smaller memory footprints and to autonomously evolve with time if and when their data demands a more efficient representation.

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

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

Schema for Spacecraft-Command Dictionary

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An Extensible Markup Language (XML) schema was developed as a means of defining and describing a structure for capturing spacecraft command-definition and tracking information in a single location in a form readable by both engineers and software used to generate software for flight and ground systems. A structure defined within this schema is then used as the basis for creating an XML file that contains command definitions. The schema is divided into three sections:

• Header information, including information about the project and XML file to be derived from the schema;
• Project-specific definitions of types, roles, and allowable values of data; and
• The information necessary for defining the command structure, including the information necessary for generating all pertinent software.

Among the advantages afforded by XML for such applications are the following:
• There exist commercial off-the-shelf (COTS) software tools and standard scripting-language modules for parsing XML schemata. These tools and modules facilitate the ingestion of XML files for use.
• By use of COTS software tools, the structures of, and some properties of the data in, XML files can be validated against their parent XML schemata to detect errors early.

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