

AUTOGEN: The Mars 2001 Odyssey and the "Autogen" Process

Roy Gladden

Jet Propulsion Laboratory/California Institute of Technology
Pasadena, California

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"In many deep space and interplanetary missions, it is widely recognized that the scheduling of commands to operate a spacecraft can follow very regular patterns. In these instances, it is greatly desired to convert the knowledge of how commands are scheduled into algorithms in order to automate the development of command sequences. In doing so, it is possible to dramatically reduce the number of people and work-hours that are required to develop a sequence. The development of the "autogen" process for the Mars 2001 Odyssey spacecraft is one implementation of this concept. It combines robust scheduling algorithms with software that is compatible with pre-existing "uplink" software, and literally reduced the duration of some sequence generation processes from weeks to minutes. This paper outlines the "autogen" tools and processes and describes how they have been implemented for the various phases of the Mars 2001 Odyssey mission."