

## Σ Mars Reconnaissance Orbiter Wrapper Script

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The MRO OLVM wrapper script software allows Mars Reconnaissance Orbiter (MRO) sequence and spacecraft engineers to rapidly simulate a spacecraft command product through a tool that simulates the onboard sequence management software (OLVM). This script parses sequence files to determine the appropriate time boundaries for the sequence, and constructs the script file to be executed by OLVM to span the entirety of the designated sequence. It then constructs script files to be executed by OLVM, constructs the appropriate file directories, populates these directories with needed input files, initi-

ates OLVM to simulate the actual command product that will be sent to the spacecraft, and captures the results of the simulation run to an external file for later review. Additionally, the tool allows a user to manually construct the script, if desired, and then execute the script with a simple command line.

*This work was done by Roy Gladden, Forest Fisher, and Teerapat Khanapornpan 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-45242.*



Mars Reconnaissance Orbiter on the launch pad.

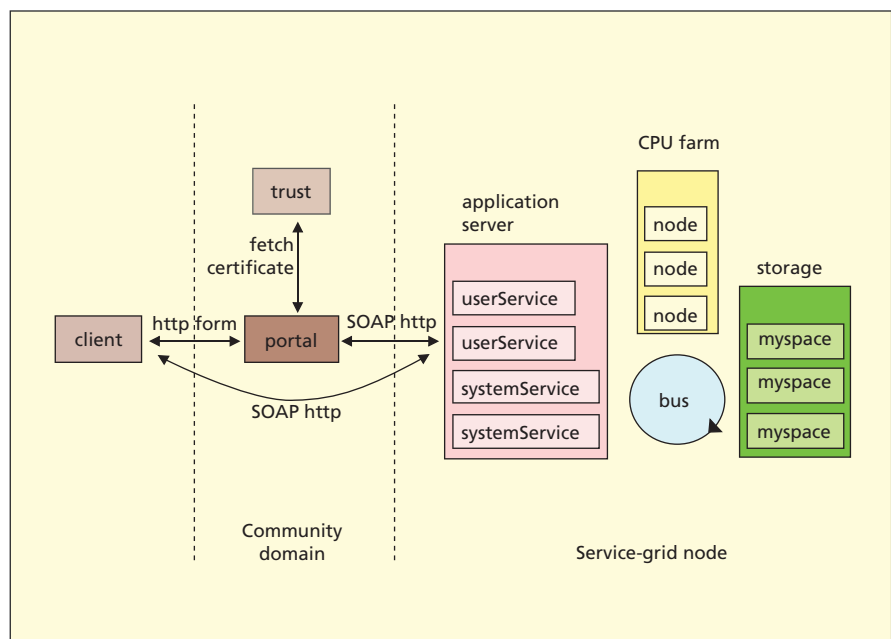
## Σ Service-Oriented Architecture for NVO and TeraGrid Computing

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The National Virtual Observatory (NVO) Extensible Secure Scalable Service Infrastructure (NESSSI) is a Web service architecture and software framework (see figure) that enables Web-based astronomical data publishing and processing on grid computers such as the National Science Foundation's TeraGrid. Characteristics of this architecture include the following:

- Services are created, managed, and upgraded by their developers, who are trusted users of computing platforms on which the services are deployed.
- Service jobs can be initiated by means of Java or Python client programs run on a command line or with Web portals.
- Access is granted within a graduated security scheme in which the size of a job that can be initiated depends on the level of authentication of the user.

A "small" service request may be submitted anonymously. A "medium" request may be submitted with a "weak" certificate issued by the NVO or another certificate authority not associated with an official grid computing organization like TeraGrid or the Department of Energy (DOE). A "large" request must be accompanied by a "strong" certificate is-



In this **Model**, the application server is Web-service container that accepts HTTP connections that may be SOAP messages and may have a certificate attached.

sued by the TeraGrid or DOE certificate authority. User certificates are managed by the Clarens Grid-Enabled Web Services Framework (<http://clarens.sourceforge.net/>).

*This work was done by Joseph Jacob, Craig Miller, Roy Williams, Conrad Steenberg, and*

*Matthew Graham of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).*

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