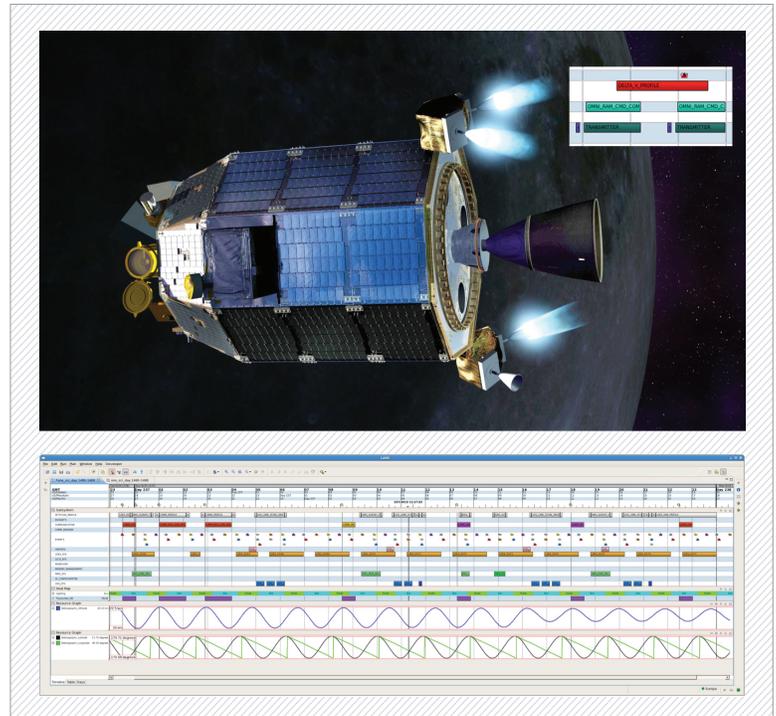# LASS: LADEE Activity Scheduling System

Background

The Lunar Atmosphere and Dust Environment Explorer (LADEE) is NASA's latest mission to the Moon, equipped with a complex suite of instruments to analyze the lunar atmosphere. In order to get accurate science data back, the instruments on board LADEE need to run at precise locations and times over the Moon. Scientists and engineers in mission operations carefully plan this out in advance. However, every day LADEE's position, orbital trajectory, power, or spacecraft condition may change, which can drastically alter what science LADEE can do on a given day, and make an earlier plan obsolete. The LADEE Activity Scheduling System (LASS) solves this problem by providing an interface for scientists and engineers to plan the instrument and engineering activities on LADEE and visualize the impact these activities have on power, data, and spacecraft health. LASS helps scientists and engineers deal with these changes by visualizing and suggesting fixes to the plan and allows them to quickly re-plan the daily activities on the orbiter.

Description

The Human-Computer Interaction Group and the Planning and Scheduling group at NASA Ames Research Center led the design and development of LASS. The software allows scientists to understand how long LADEE's activities will take to perform, where they will occur over the Moon, when LADEE is in communication with the Earth, and what resources the activities will consume. After these activities are planned, engineers use the LASS plan to generate the software code that will then be uplinked to the orbiter. This allows scientists to focus on science goals rather than fine tuning instrument settings. The resource modeling and planning engines provided by LASS allow scientists and engineers to understand resource impacts extremely early in the planning cycle. Specialized features such as orbital event support enable rapid re-planning, which allows the mission to respond to new discoveries while ensuring the orbiter gets the plan by the start of its day. LASS was designed and developed at NASA's Ames Research Center, Moffett Field, California.

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