

Mission Simulation Facility

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Goal: Enable developers of autonomous control systems to test their system's performance against a set of integrated, standardized simulations of NASA mission scenarios.

Objectives:

- Develop a system capable of presenting a high-fidelity simulation of various mission scenarios to an autonomous control system.
- Initial mission scenario target is a Mars rover. Future targets include descent/landing, atmospheric, and liquid environments.

Key Innovation:

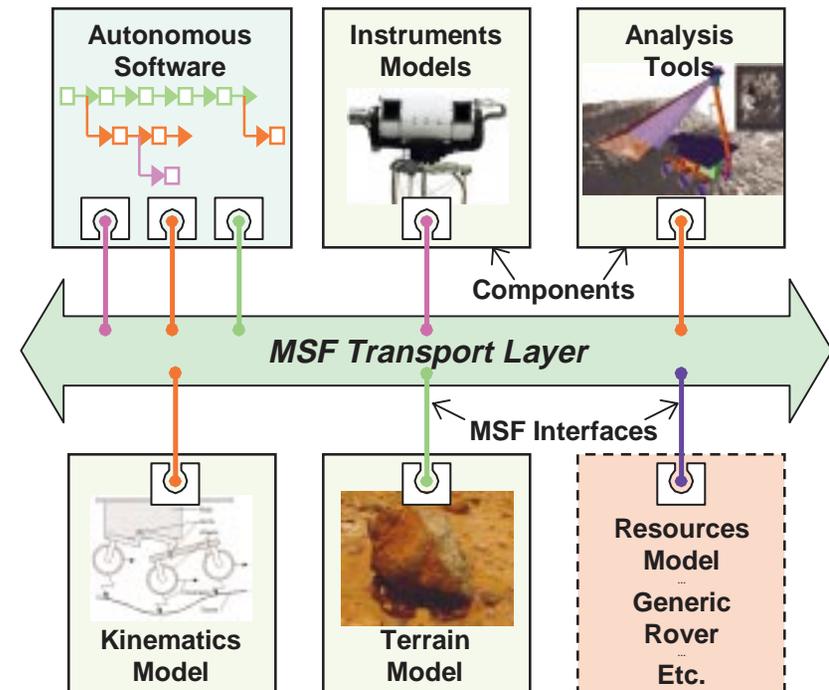
- Simulation-based testing allows autonomous control systems to be tested against real-world complexity without requiring hardware in the loop.

NASA Relevance:

- Enable the development and testing of intelligent autonomous rovers and spacecraft to perform future NASA missions.

Accomplishments to date:

- An integration framework has been designed and prototyped.
- Initial integration of the framework involving 3 components has been demonstrated.
- Initial mission scenario derived from MER to exercise architectural framework and support Conditional Executive robot controller.
- A collaboration with JPL to develop components and extended capabilities has been initiated.



Schedule:

- FY01: Initial integration of framework with 3 components.
- FY02: Data, sensor, and robotic model integration for minimal planetary rover scenario. Alpha release of simulation SW.
- FY03: Enhancement of sensors, models, and architecture. Beta release of simulation SW.
- FY04: Participation in simulated autonomous science exploration mission (IS Level-1 Milestone)

