

GMSEC

GSFC Mission Services Evolution Center



At A Glance

SS is a stand-alone GMSEC compliant tool that automates procedure execution

Benefits

- Can be used w/GMSEC middleware to schedule the activities of other GMSEC components
- Provides automation and autonomy to mission operations to aid with reducing operations costs

Features

- GMSEC compliant, stand alone, database independent application
- Scenario Scheduler editor to easily modify scenarios
- Graphical time line display of scheduling activities which expands and contracts based on the status of the activities
- Can link scenarios
- Accepts XML specifications of series and scenarios
- Automatically executes steps of a pass plan to prepare for spacecraft contacts



Scenario Scheduler

(SS)

Summary

The Scenario Scheduler provides the ability to generate a plan and feed the steps of the plan to an outside system, such as a telemetry and command system, in a controlled manner. Plan steps can execute serially or in parallel or can wait for required resources. A feedback loop allows the system to provide a unique adaptive form of automation that can be tied to other GMSEC automation systems for remote notification or failover action.



MAP Real-time Scenario Scheduling

Mission Benefits

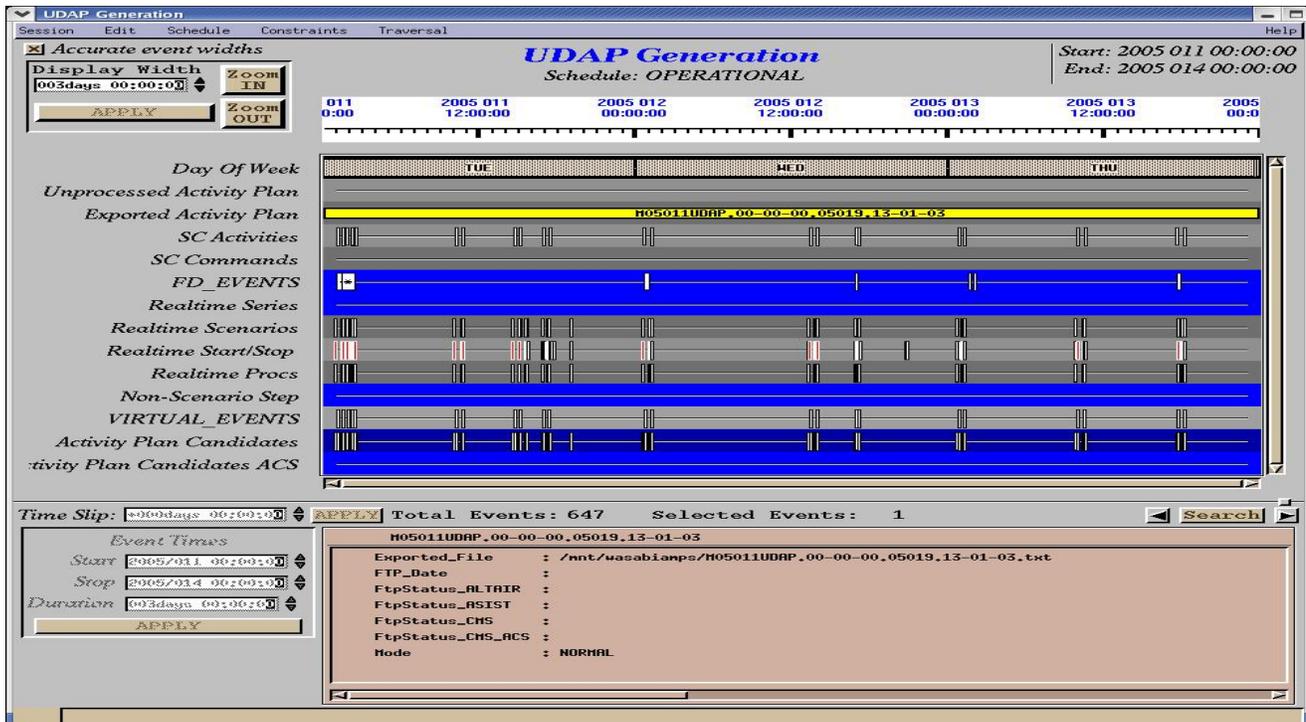
- Automatically schedules mission operation activities for single and multi-spacecraft missions which is a crucial for reducing operations costs.
- Supports plug-and-play database interface layer to integrate other databases with minimal effort
- Supports plug-and-play command interface to interface with other command interfacing mechanisms with minimal effort
- Robust GUI which displays series, scenarios, and their steps and dependencies
- GUI ingests XML specifications and saves a series/scenario to an XML file

NASA GSFC Mission Services Evolution Center, Code 581

<http://gmsec.gsfc.nasa.gov>

email: danford.s.smith@nasa.gov

The MAP real-time Scenario Scheduler snap shot in the front illustrates how the MAP mission used scenario scheduler to run their multi-day spacecraft simulator I&T tests. Participants or interested parties monitored the progress of the plan via remote terminals via intranet. A 30 scenario/24 hour series was defined for MAP I&T testing.



The Universal Daily Activities Plan (UDAP) Generation timeline contains the following components. The long yellow line represents the exported UDAP containing all spacecraft activities and real time events. The fourth and sixth timeline represents spacecraft and flight dynamics activities. The realtime series, scenarios, procedures timelines represent real time commands that will be sent via GMSEC to ASIST. The bottom timelines represent the beginning and end of track events.

SS Capabilities

- Current Users –TRMM reengineering, ST5 and EOS reengineering missions use SS to automate the execution of their pass plans
- Generalized standalone automation tool which can interact with a variety of mission planning systems in support of a variety of NASA missions
- Tool is developed using a generic and modular architecture, allowing its applicability to a wide variety of missions, both earth and space science.
- Accept and generates a wide range of GMSEC commands such as log, event, directive, directive response, heartbeat
- Easily configurable by users
- Improved mechanism for storing needed data using an inexpensive database such as MySQL
- Users can generate a pass plan and feed the steps of the plan to an outside system, such as a T&C system, and obtain feedback

For technical information on this system, contact:
 NASA GSFC Mission Applications Branch, Code 583
 Terri Wood 301-286-7527
 email: Terri.Wood@gsfc.nasa.gov

