EGSE – Test Control
Statement of Work

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DOCUMENT CHANGE RECORD

Issue / Rev.	Date	Change Notice Number	Modified Pages or Paragraphs	Remarks / Nature of Change
Draft 1	10.1.2001	N/A	all	First draft
Draft 2	14.5.2001	N/A	Section 1 Section 3.1	Avoid "object of contract" New delivery date for subunit testing

Table of Content

1 Scope

The object of this work package called Test Procedure Environment (TPE) is the development of a software framework, which allows to execute test procedures. These test procedures can be used to conduct either test runs or to implement simulated spacecraft autonomy functions.

The software framework includes tools to implement, edit, verify and debug test procedures.

The TPE does not support manual commanding as this is implemented in SCOS 2000. The same is true for the telecommand history log. The final validation of instrument or test equipment commands will be done by SCOS 2000. The TPE is also not the tool to support OBSM.
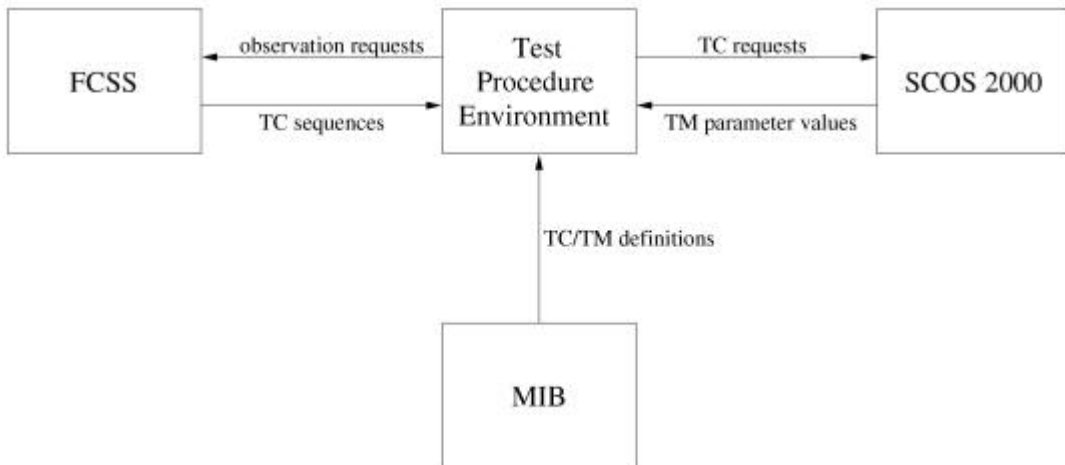
Following interfaces will be implemented:
- FCSS: Test procedures can request to schedule (engineering) observations from the FCSS. The FCSS will return a timed TC sequence, which will be uplinked by the TPE.
- SCOS 2000: Test procedures can request TCs to be uplinked from SCOS 2000. Test procedures can also evaluate the actual value of TM parameters.
- MIB: Test procedures can be verified about their use of TC and TM parameters against a SCOS 2000 MIB.

2 Specification

2.1 Test procedure handling

Requ.-ID	Delivery	Description
TPE-TP-01	SUB	It shall be possible to request any instrument specific command and to provide all its required parameters as defined in the MIB.

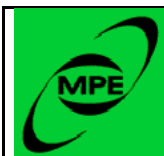| TPE-TP-02	SUB	It shall be possible to request any command for external test equipment and environment control and to provide all its required parameters as defined in the MIB.
TPE-TP-03	ILT	It shall be possible to use the actual value of a TM parameter within a test procedure.
TPE-TP-04	ILT	It shall be possible to synchronize the whole EGSE set-up with a reference time via a special TM packet.
TPE-TP-05	ILT	Test procedures may generate event packets.
TPE-TP-06	ILT	It shall be possible to request to schedule any observation from FCSS.
TPE-TP-07	ILT	A requested observation will return a command sequence, which shall be uplinked automatically.
TPE-TP-08	ILT	It shall be possible within a few seconds to update the time stamps of the received command sequence with the actual time (considering the delta times as well).
TPE-TP-09	SUB/ILT	It shall be possible to time-tag commands or observation requests with absolute times.
TPE-TP-10	SUB	It shall be possible to generate and edit test procedures from within Test Control.
TPE-TP-11	SUB	It shall be possible to store a TBD number (~10<n<~100) of test procedures within the TPE.
TPE-TP-12	SUB	It shall be possible to select and execute test procedures from TPE and provide all user input eventually needed by these procedures.
TPE-TP-13	SUB	It shall be possible to abort, stop and resume any running test procedure by manual interaction.
TPE-TP-14	SUB	In case of errors the execution of the running test procedure shall be suspended.
TPE-TP-15	ILT	It shall be possible to execute several test procedures in the background to allow implementation of autonomy procedures.
TPE-TP-16	ILT	Background procedures may stop or abort ongoing test procedures.
TPE-TP-17	ILT	Background procedures may generate warning messages to the operator.
TPE-TP-18	SUB	A log of the test procedure execution shall be produced.
TPE-TP-19	ILT	Each background test procedure shall have its own log.
TPE-TP-21	SUB	The actual commands generated by the test procedure are logged, incl. the time at which they were sent.
TPE-TP-22	SUB	It shall be possible to log comments entered by the operator.
TPE-TP-23	SUB	It shall be possible to track an ongoing test procedure via a display indicating the position within the procedure and showing at least the recent past and near future steps of the procedure. Back and forward scrolling shall be possible.
TPE-TP-24	SUB	At any moment the message window for the feedback from autonomy functions and test procedures shall be displayed.

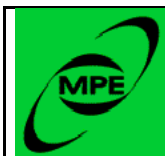| TPE-TP-25	SUB	On user request it shall be possible to display the logging information originating from test procedures.
TPE-TP-26	SUB	There shall be a separate window from where test procedures, autonomy procedures or command timelines/schedules can be selected, started, aborted, stopped and resumed.
TPE-TP-27	ILT	Both, the spacecraft reference time (= simulated test time $\neq$ local time) at 1 sec resolution and the actual local time are displayed to the Test Control user.
TPE-TP-28	SUB	There shall be a separate window in which editing of autonomy and test procedures and logs are possible. Export and import activities from/to Test Control shall be carried out here as well.
TPE-TP-29	SUB	There shall be a separate window in which export and import activities from/to Test Control are carried out.

2.2 SCOS 2000 interface

Requ.-ID	Delivery	Description
TPE-SC-01	SUB	It shall be possible to issue command requests to the SCOS 2000 command dispatcher within test procedures.
TPE-SC-02	ILT	It shall be possible to read actual TM parameter values from SCOS 2000.
TPE-SC-03	ILT	It shall be possible to issue an event packet.

2.3 FCSS interface

Requ.-ID	Delivery	Description
TPE-CS-01	ILT	It shall be possible to request to schedule an observation.
TPE-CS-02	ILT	It shall be possible to retrieve the resulting command sequence.
TPE-CS-03	ILT	It shall be possible to report back the actual start time of the observation.
TPE-CS-04	ILT	Test procedure logs shall be exported to the FCSS.
TPE-CS-05	ILT	It shall be possible to import/export test procedures and associated files (e.g. calibration files) from/to FCSS.

2.4 MIB interface

Requ.-ID	Delivery	Description
TPE-MB-01	ILT	All instrument related commands can be imported from the MIB.
TPE-MB-02	ILT	Test equipment and environment control commands can be imported from the MIB.
TPE-MB-03	ILT	It shall be easy to specify commands defined in the MIB during test procedure editing.
TPE-MB-04	ILT	It shall be easy to specify TM parameters defined in the

		MIB during test procedure editing.
TPE-MB-05	ILT(V2)	Syntax and parameter range of instrument commands shall be checked as early as possible.

3 Deliveries

3.1 Schedule

There will be three major deliveries as indicated in the requirement tables:

1. Subunit testing

    This will include basic test procedure handling including commanding the instrument and the test equipment.

2. ILT

    In addition this release will provide the interface with the FCSS and the implementation of autonomy functions.

3. ILT(V2)

    This release will support checking of the test procedures before execution.

The current release dates are:

    Subunit testing: May 31, 2001
    ILT: October 1, 2001
    ILT(V2):   October 1, 2002

3.2 Deliverable Items

Deliverable items are:

- Statement of work (includes software specification)
- Test Control
- Test Control Interface
- Design document
- User manual (includes installation)
- Test plan and test report

4 Needed inputs

5 Management

5.1 Reports

For the first delivery (subunit testing) there will be bi-weekly reports. In the next phase (ILT delivery) reporting will be done on monthly basis. For the last phase the reporting still has to be defined.

5.2   Meetings

There will be no special Test Control meetings. Any open issues are either discussed via email or during the regular EGSE working group meetings.