TRUST - TDRSS Resource User Support Tool
Space Network Control Conference, December 1990

TRUST
TDRSS Resource User Support Tool

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TRUST DEVELOPMENT CYCLE

Software tools:
SME  TIGS  OASIS  TIGS/SPS  SURP ASS  SURP ASS V3  OASIS V3

Projects:
UARS/SOLSTICE  TOPEX  LDBP  EOS/SOLSTICE

1980s  1990s

TDRSS
TRUST DEVELOPMENT

Flight Projects
- Solar Mesosphere Explorer (SME): Realtime Control and Monitoring; Science Planning and Scheduling; TDRSS Scheduling and Ground Control
- Solar/Stellar Irradiance Comparison Experiment (SOLSTICE): Science and Mission Planning; Instrument Monitoring, Command and Control
- Ocean Topography Experiment (TOPEX - JPL): LASP Involvement Includes TDRSS Scheduling
- Long Duration Balloon Project (LDBP - GSFC/WFF): LASP Involvement includes TDRSS Scheduling and Ground Control

Study Projects
- Telescience Implications on Ground Systems, Scheduling Architectures Concepts and Networks (TIGS SCAN Testbed - GSFC): LASP Involvement Includes Planning and Scheduling; Instrument Operations

The TRUST System
Scheduling Window

<table>
<thead>
<tr>
<th>Time</th>
<th>TDW</th>
<th>TDE</th>
<th>TDS</th>
<th>DSN</th>
<th>DSN</th>
<th>DSN</th>
<th>CNES</th>
<th>GSTDN</th>
<th>NOAA</th>
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 Orbit events

 S/C events

 FWD LINK
 RTN LINK
 PBK
 TRACKING
 INTERFERENCE
 ORBIT EVENTS

ODM/GCMR Window

<table>
<thead>
<tr>
<th>Status</th>
<th>Signal</th>
<th>Freq</th>
<th>Doppler Comp</th>
<th>Power Mode</th>
<th>Channel ID</th>
<th>Whatever else</th>
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<tbody>
<tr>
<td>GCM Request 98.03, Link_Mode=Return</td>
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<td>Configure TDRS with Play_Mode (RT/ PBK)</td>
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<td>Phase_Mode (CD/ACO)</td>
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<tr>
<td>Forward Link Reacq =</td>
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<tr>
<td>Return Link Reacq =</td>
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<tr>
<td>Link Reconfiguration</td>
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<tr>
<td>Forward Link Sweep</td>
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<td>Inhibit Doppler Compensation</td>
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<td>All Others &quot;Off&quot;</td>
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SUMMARY

• Generic TDRSS Scheduling with use of the Expert System
• Automatic Re-scheduling, for conflict resolution, with Expert System
• ODM/QDM Processing and Constraint Checking
• Trend analysis of TDRSS link, as an aid to TDRSS Operations
• Capable of formatting schedule messages, to allow scheduling of multiple networks (TDRSS, DSN, etc.)
• Receives and processes Spacecraft PSAT & Orbital Information
• Capable of handling several communications protocols (NASCOM, SPAN/DECNET, TCP/IP, etc.)
• Supplies planner/scheduler/operator a view of possible activities, in the Scientific/Mission Context (X Window Based)
• Menu driven GCMR, Schedule Requests & Processing, if desired
• Multi Spacecraft Capability
• Written Entirely In Ada