

DSN Forecast and Scheduling (TIGRAS)

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Agenda

- Motivation/problem definition
- Approach
- Capabilities
- Current developments
- Conclusion

Acknowledgement

- Sponsors: RAPSO, SPS
- Current users: RAPSO, DSN Schedulers
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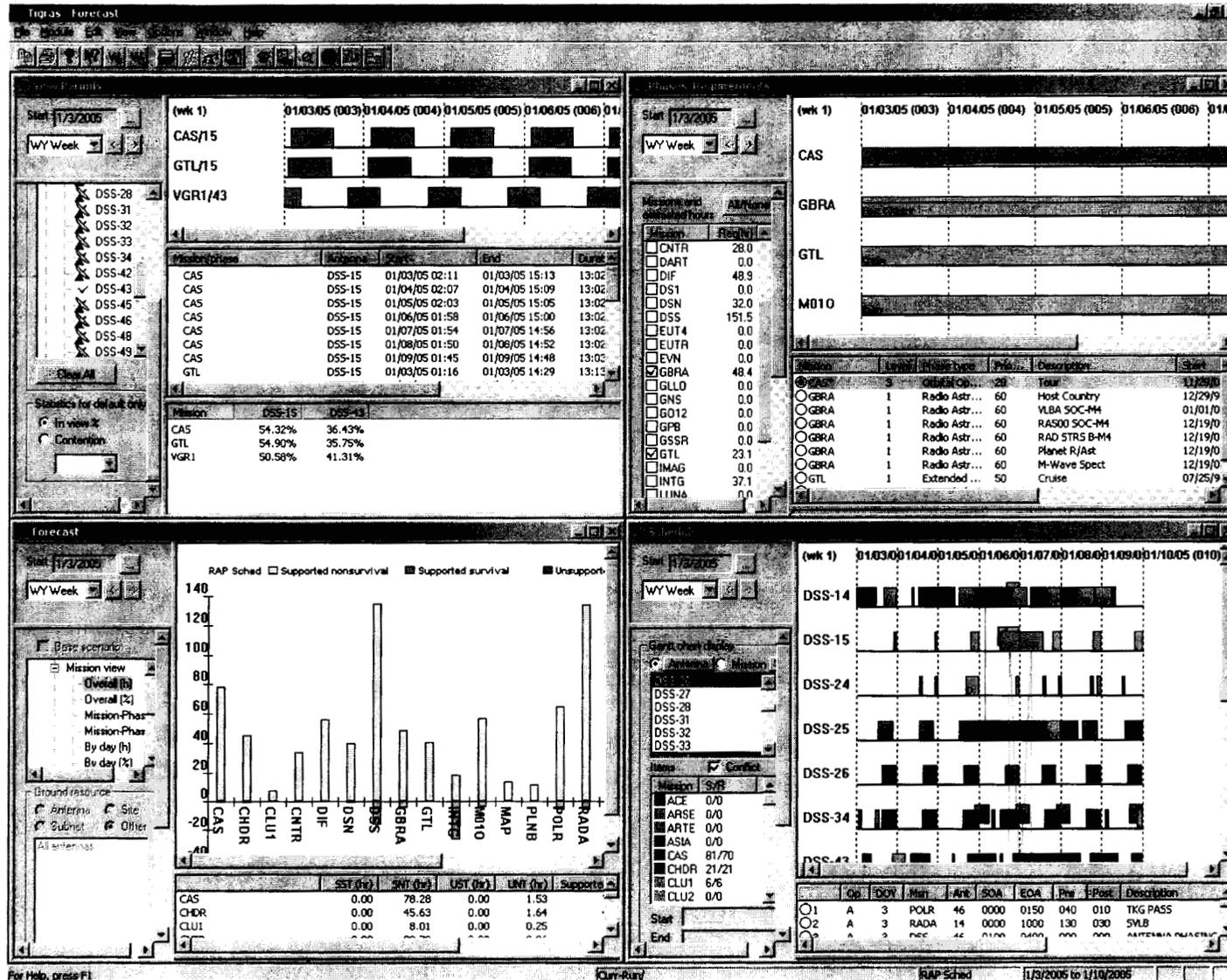
Motivation / Problem Definition

- Increasing number and complexity of missions to be supported by NASA Deep Space Network (DSN)
- Need a tool to:
 - Manage requirements and constraints
 - Analyze overall DSN load and individual project supportability
 - Study mission-to-mission competition
 - Perform schedule generation, updating, and publication

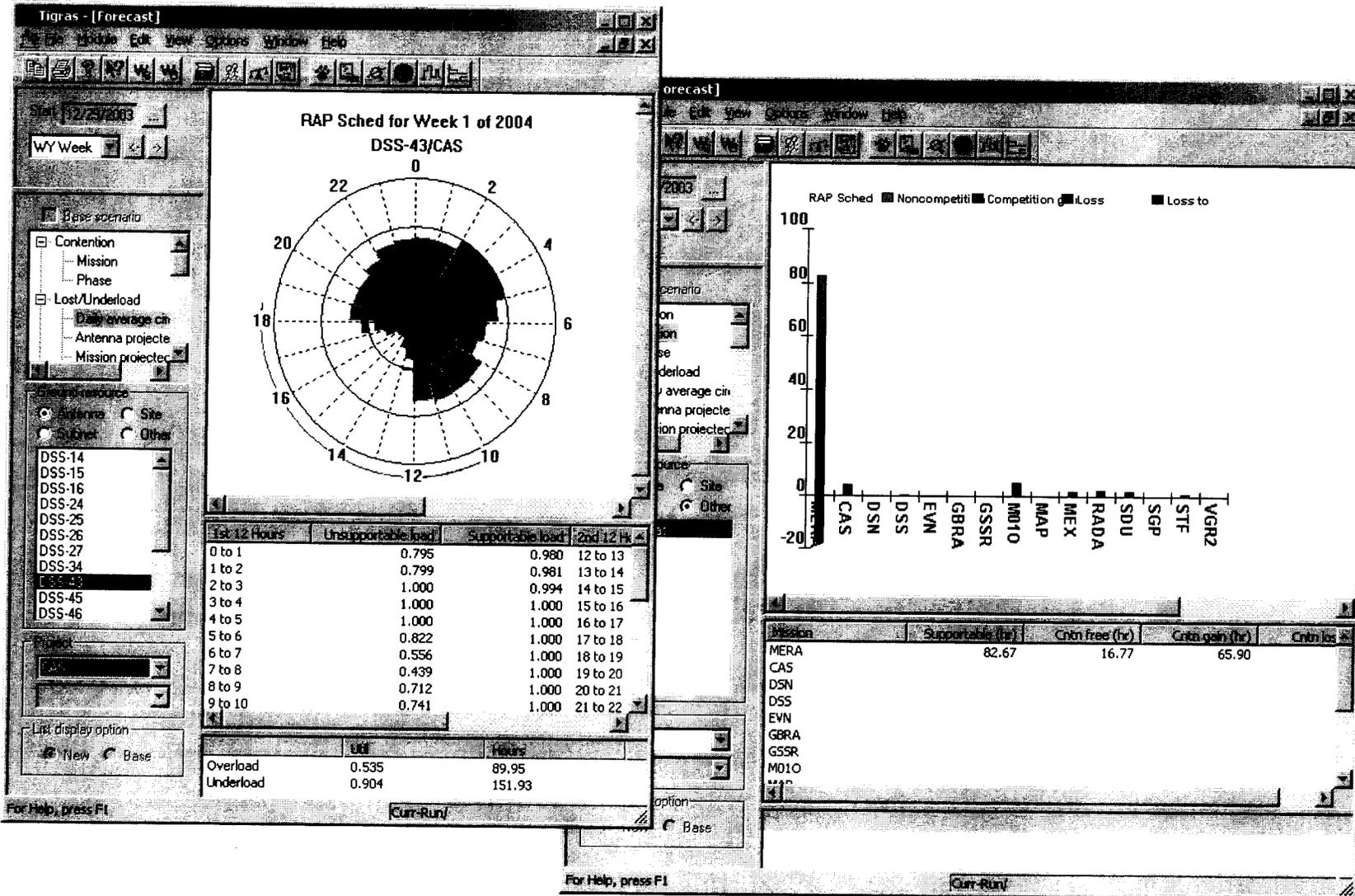
Approach

- Integrated Analysis Environment (IAE)
 - Data viewing: projects requirements, viewperiod, antennas, forecast, schedule
 - Rich graphical environment: graphics+text
 - Links to various data sources: files, relational database, Web services
- Antenna load forecast algorithm
- Schedule generation algorithm for initial schedule generation

Integrated Analysis Environment (IAE)

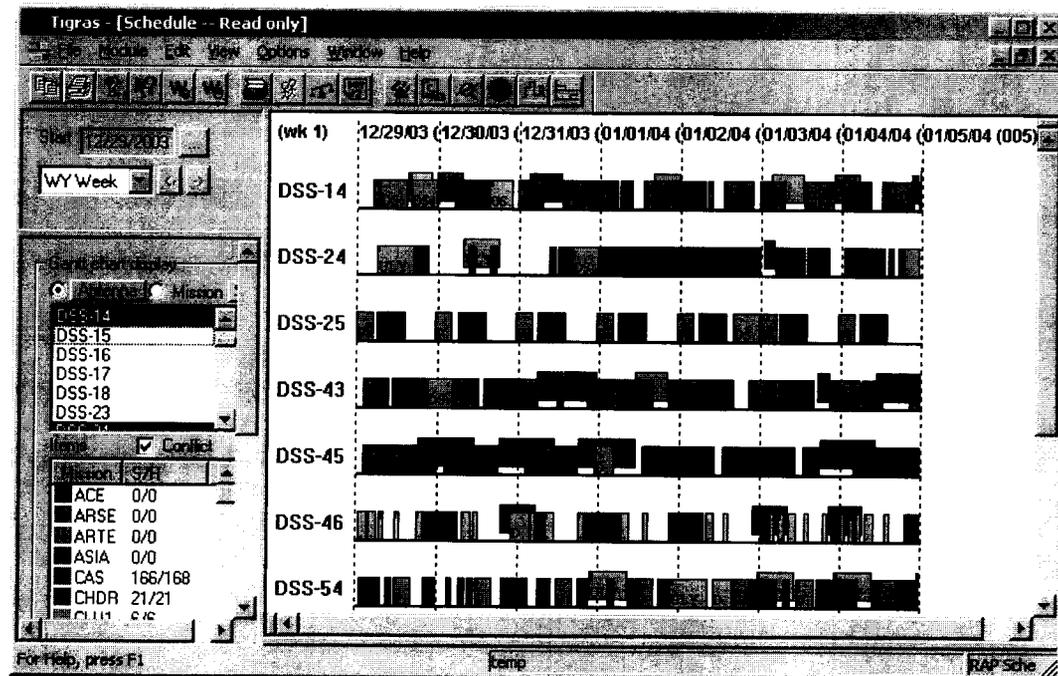


Antenna Load Forecast



Schedule generation

- Project/spacecraft ground resource coverage requirements
- Viewperiod and related constraints
- Conflict-aware schedule generation and optimization



Current Developments

- Multiple Spacecraft Per Antenna (MSPA)
- Conflict checking enhancements
- New project resource requirement types
- Schedule change request
- Linkage to various sources: SPS UIP/SDM, DRAGON Web services.

Conclusion

- IAE provides a graphical decision support environment and allow various users from different organizations to perform their analysis tasks all in one environment.
- Forecast and scheduling algorithms provides powerful computation/analysis power to analysis tasks.