

SpaceOps 2006 Conference

19 - 23 Jun 2006 Grand Hotel Parco dei Principi Rome,

Monday Morning / 19 June 2006		
1030 - 1300	Opening Session Welcome and opening addresses Agency overviews from senior agency officials	Sala dei Fernandez

Monday Afternoon / 19 June 2006		
Session 1-MCR-1	COSMO	Sala dei Pallavicini
Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and M. FRANCOIS, Telespazio, Rome, Italy		
1400 AIAA-2006-5501 Multi- Mission Perspective in Space Board Systems: Interoperability, Expandability and Multi- Sensor Capabilities Concepts in the Dual Use COSMO- Skymed System G. De Luca, Agenzia Spaziale Italiana, Rome, Italy	1430 AIAA-2006-5500 COSMO- Skymed: The Earth Observation Italian Constellation for Risk Management and Security F. Caltagirone, Agenzia Spaziale Italiana, Rome, Italy	

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Monday Afternoon / 19 June 2006**Session 2-ME-1****Cassini I****Sala dei Estensi**

Chaired by: D. LAVALLEE, Johns Hopkins University, Applied Physics Laboratory, Laurel, MD, and E. FLAMINI, Agenzia Spaziale Italiana, Rome, Italy

1400 AIAA-2006-5502 The Cassini- Huygens Mission Overview N. Vandermey, Jet Propulsion Laboratory, Pasadena, CA	1430 AIAA-2006-5514 The Cassini- Huygens Sequence Development Process J. Long, Jet Propulsion Laboratory, Pasadena, CA						
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Monday Afternoon / 19 June 2006**Session 3-MM-1****Mission Management I****Sala dei Medici**

Chaired by: J. COSTRELL, NASA Headquarters, Washington, DC, and M. SASSO, Telespazio, Rome, Italy

1400 AIAA-2006-5570 A Discussion on the Making of an EVA: What it Really Takes to Walk in Space E. Bell, United Space Alliance, Houston, TX	1430 AIAA-2006-5700 Mission Management – Guaranteeing Network Communication for Shuttle Return to Flight M. Thomas, Honeywell Technology Solutions Inc., Lanham, MD						
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Monday Afternoon / 19 June 2006**Session 4-OS-1****Mission Operations Concepts I****Sala dei Fernandez**

Chaired by: M. RODRIGUES, Jet Propulsion Laboratory, Pasadena, CA, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil

1400 AIAA-2006-5506 ADM- AEOLUS: An Innovative Operations Concept P. Bargellini, ESA/ESOC, Darmstadt, Germany	1430 AIAA-2006-5747 Event- Driven James Webb Space Telescope Operations V. Balzano, Space Telescope Science Institute, Baltimore, MD						
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Monday Afternoon / 19 June 2006**Session 5-OS-2****Operational Systems/Automation I****Suite 618**

Chaired by: A. DOWEN and D. NICHOLS, Jet Propulsion Laboratory, Pasadena, CA

1400 AIAA-2006-5508 Automating ESA's Ground Station Operations T. Beck, ESA/ESOC, Darmstadt, Germany	1430 AIAA-2006-5509 Space Exploration: the Automation and Robotics Impulse B. Midollini, Galileo Avionica S.p.A., Milano, Italy						
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Monday Afternoon / 19 June 2006**Session 6-SOC-1****Other Experiences I****Sala dei Gonzaga**

Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, Brazil, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France

1400 AIAA-2006-5559 Galileo Operations Robustness A. Morani, Galileo Industries, Rome, Italy	1430 AIAA-2006-5513 Operational Acceptance of Integrated Galileo Operations Facilities Provided as Customer Furnished Items W. Paeffgen, DLR, German Aerospace Research Center, Wessling, Germany						
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Monday Afternoon / 19 June 2006**Session 7-ME-2****Cassini II****Sala dei Estensi**

Chaired by: D. LA VALLE, Johns Hopkins University, Applied Physics Laboratory, Laurel, MD, and E. FLAMINI, Agenzia Spaziale Italiana, Rome, Italy

1530 AIAA-2006-5516 Cassini- Huygens Engineering Operations at Saturn S. Standley, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1600 AIAA-2006-5820 Cassini Distributed Instrument Operations - What We've Learned Since Saturn Orbit Insertion S. Linick, Jet Propulsion Laboratory, Pasadena, CA	1630 AIAA-2006-5503 The Huygens Probe Mission to Titan: Engineering the Operational Success C. Sollazzo, ESA/ESOC, Darmstadt, Germany	1700 AIAA-2006-5515 HASI Engineering Operations at Titan F. Angrilli, Università di Padova, Padova, Italy				
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Monday Afternoon / 19 June 2006**Session 8-ME-3****Operations Experience I****Sala dei Pallavicini**

Chaired by: A. DOWEN, Jet Propulsion Laboratory, Pasadena, CA, and P. LIEBRECHT, NASA Goddard Space Flight Center, Greenbelt, MD

1530 AIAA-2006-5518 Advanced Land Observing Satellite Mission Operation O. Ochiai, Group on Earth Observation Secretariat, Geneva, Switzerland	1600 AIAA-2006-5520 Coping with Nutation in Ulysses' Third Orbit - New Challenges and Operational Solutions D. Presti, SciSys Ltd, Pasadena, CA	1630 AIAA-2006-5521 Instrument Remote Control Application Framework T. Ames, NASA Goddard Space Flight Center, Greenbelt, MD	1700 AIAA-2006-5696 Lessons Learned from Daily Uplink Operations During the Deep Impact Mission J. Stehly, Jet Propulsion Laboratory, Pasadena, CA				
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Monday Afternoon / 19 June 2006**Session 9-MM-2****Mission Management II****Sala dei Medici**

Chaired by: J. COSTRELL, NASA Headquarters, Washington, DC, and M. SASSO, Telespazio, Rome, Italy

1530 AIAA-2006-5876 Effective Mission Management on Expendable Launch Systems J. Buzzatto, Scitor Corporation, El Segundo, CA	1600 AIAA-2006-5523 Method for Controlling Space Transportation System Life Cycle Costs C. McCleskey, NASA Kennedy Space Center, Kennedy Space Center, FL	1630 AIAA-2006-5549 NASA Crew Launch Vehicle Approach - Builds on Lessons from Past and Present Missions D. Dumbacher, NASA Marshall Space Flight Center, Huntsville, AL	1700 AIAA-2006-5522 AIM Operations Development - Lesson's Learned in Cost Versus Risk D. Welch, Honeywell Technology Solutions Inc., Boulder, CO				
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Monday Afternoon / 19 June 2006**Session 10-OS-3****Mission Operations Concepts II****Sala dei Fernandez**

Chaired by: M. RODRIGUES, Jet Propulsion Laboratory, Pasadena, CA, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil

1530 AIAA-2006-5527 Galileo Satellite Operations Preparation and Planning Facilities J. Long, SciSys Ltd, Bristol, Great Britain	1600 AIAA-2006-5528 Extravehicular Activity (EVA) Operations as a System Design Driver G. Miller, United Space Alliance, Houston, TX	1630 AIAA-2006-5529 Generic Software for Spacecraft Testing and Operations Based on a Spacecraft Model T. Yamada, Japan Aerospace Exploration Agency, Sagamihara, Japan	1700 AIAA-2006-5859 Innovative Concepts to Reduce Costs of Mission Control and Simulators for Lisa Pathfinder F. Delhaise, ESA/ESOC, Darmstadt, Germany				
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Monday Afternoon / 19 June 2006							
Session 11-OS-4			Operational Systems/Automation II			Suite 618	
Chaired by: D. NICHOLS and D. LINICK, Jet Propulsion Laboratory, Pasadena, CA							
1530 AIAA-2006-5531 Event- Driven Component- Based Ground Processing System for MSL N. Deghani, Jet Propulsion Laboratory, Pasadena, CA	1600 AIAA-2006-5532 Automation of ESOC Mission Operations G. Calzolari, ESA/ESOC, Darmstadt, Germany	1630 AIAA-2006-5533 Progressive Autonomy for Optimized Mission Design and Operations C. Kurt, United Space Alliance, Houston, TX					

Monday Afternoon / 19 June 2006							
Session 12-SOC-2			Other Experiences II			Sala dei Gonzaga	
Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, Brazil, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France							
1530 AIAA-2006-5536 A Perspective on DSN System Performance Analysis T. Pham, Jet Propulsion Laboratory, Pasadena, CA	1600 AIAA-2006-5512 Cost- Effective Navigational Services - Raytheon's Lessons Learned from Navigation of NASA/JPL's Spacecraft Fleet E. Paredes, Raytheon Information Solutions, Pasadena, CA	1630 AIAA-2006-5922 Cryosat Mission Preparation: A Cost Savings and Quality Improvement Case Study S. Cater, ADGA, Ottawa, Canada					

Tuesday Afternoon / 20 June 2006							
Session 13-ME-4			Ground Systems Architecture			Suite 618	
Chaired by: P. MALDARI, European Space Agency, Darmstadt, Germany, and E. SMITH, NASA Johnson Space Center, Houston, TX							
0830 AIAA-2006-5837 NASA Ground Station Support of the Solar Dynamics Observatory (SDO) Mission M. Midon, NASA Goddard Space Flight Center, Greenbelt, MD	0900 AIAA-2006-5589 AGILE Ground Segment and Operations: A Low Cost Approach to a Scientific Space Mission F. D'Amico, Telespazio S.p.A., Rome, Italy	0930 AIAA-2006-5689 From Prime to Extended Mission: Evolution of the MER Tactical Uplink Process A. Mishkin, Jet Propulsion Laboratory, Pasadena, CA	1000 AIAA-2006-5592 GDSS: A Service Oriented Architecture for Mission Operations R. Thompson, SciSys Ltd, Chippenham, Great Britain				

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Tuesday Afternoon / 20 June 2006							
Session 14-ME-5				Operations Experience II		Sala dei Pallavicini	
Chaired by: A. DOWEN, Jet Propulsion Laboratory, Pasadena, CA, and P. LIEBRECHT, NASA Goddard Space Flight Center, Greenbelt, MD							
0830 AIAA-2006-5543 Migration of the XMM-Newton Mission Control System to SCOS- 2000 D. Ponz, ESA, Madrid, Spain	0900 AIAA-2006-5544 Mission Control Technologies: A New Way of Designing and Evolving Mission Systems J. Trimble, NASA Ames Research Center, Mountain View, CA	0930 AIAA-2006-5545 MEX Science Data - From the Instrument to the PI R. Porta, VEGA GmbH, Darmstadt, Germany	1000 AIAA-2006-5846 Interoperable Solution for Test Execution in Various I&T Environments M. Bareh, Jet Propulsion Laboratory, Pasadena, CA				

Tuesday Afternoon / 20 June 2006							
Session 15-MM-3				Mission Management III		Sala dei Medici	
Chaired by: J. COSTRELL, NASA Headquarters, Washington, DC, and M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD							
0830 AIAA-2006-5524 The preparations for OICETS TT&C operation and results of Initial phase S. Usuki, Japan Aerospace Exploration Agency, Tsukuba, Japan	0900 AIAA-2006-5525 Mission Constraint Management: Maximizing Mission Objectives of the Chandra X- Ray Observatory D. Shropshire, Northrop Grumman Space Technology, Cambridge, MA	0930 AIAA-2006-5699 Long Term Preservation of Mars Express Z. Mounzer, VEGA, Darmstadt, Germany	1000 AIAA-2006-5505 What Scale Measures Success - How to Quantitatively Determine Space Flight Operations Success Z. Ney, United Space Alliance, Friendswood, TX				

Tuesday Afternoon / 20 June 2006							
Session 16-OS-5				Advanced Technologies for Data Analysis		Sala dei Estensi	
Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and D. KORSMEYER, NASA Ames Research Center, Moffett Field, CA							
0830 AIAA-2006-5553 An Interactive Telemetry Data Analysis Tool for XMM- Newton J. Fauste, VITROCISSET, Las Rozas, Spain	0900 AIAA-2006-5816 The Combined Maintenance of Several Satellite Control Systems of Mission Families C. Schurig, ESA/ESOC, Darmstadt, Germany	0930 AIAA-2006-5628 SatviZ: A Generic 3D Imaging Platform for Space Operations, Analysis and Training B. Gendron Canion, SESS GbR, Wessling, Germany	1000 AIAA-2006-5717 Data Mining at the Service of Space Operations J. Martinez-Heras, Black Hat, Cordoba, Spain				

Tuesday Afternoon / 20 June 2006							
Session 17-OS-6				Mission Operations Concepts III		Sala dei Fernandez	
Chaired by: M. RODRIGUES, Jet Propulsion Laboratory, Pasadena, CA, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil							
0830 AIAA-2006-5554 Method for Evaluating Various Aerial Platforms for Mars Applications N. Dhanji, Canadian Space Agency, Montreal, Canada	0900 AIAA-2006-5555 Verifying Future Swarm- Based Missions C. Rouff, Science Applications International Corporation, McLean, VA	0930 AIAA-2006-5556 Sequence System Building Blocks: Using a Component Architecture for Sequencing Software B. Streiffert, Jet Propulsion Laboratory, Pasadena, CA	1000 AIAA-2006-5901 Automated Sequence Processor II T. Himes, Jet Propulsion Laboratory, Pasadena, CA				

Tuesday Afternoon / 20 June 2006							
Session 18-SOC-3				Other Experiences III		Sala dei Gonzaga	
Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, Brazil, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France							
0830 AIAA-2006-5824 End of Life Operations for Geostationary Satellites B. Raffier, Centre National d'Etudes Spatiales, Toulouse, France	0900 AIAA-2006-5511 Development and Execution of End of Mission Plans; Case Study of the UARS and ERBS End of Mission Operations J. Hughes, NASA Goddard Space Flight Center, Greenbelt, MD	0930 AIAA-2006-5535 Improving Payload Operations for Science Missions P. Chaizy, Rutherford Appleton Laboratory , Chilton, Great Britain	1000 AIAA-2006-5862 Earth Explorer Family Mission Control System: A New Child is Born (Aeolus!) V. Reggestad, ESA/ESOC, Darmstadt, Germany				

Tuesday Morning / 20 June 2006							
Session 19-ME-6				GDS Architecture		Suite 618	
Chaired by: P. MALDARI, European Space Agency, Darmstadt, Germany, and P. LIEBRECHT, NASA Goddard Space Flight Center, Greenbelt, MD							
1100 AIAA-2006-5691 EGOS Architecture and the Impact on Existing ESOC Ground Data Systems Y. Doat, ESA/ESOC, Darmstadt, Germany	1130 AIAA-2006-5606 REGATES – A New Generation of Automated M&C System J. Anesi, Capgemini, Toulouse, France	1200 AIAA-2006-5540 Ground Systems Test and Validation Infrastructure – from Concept to Implementation M. Goetzelmann, VEGA, Darmstadt, Germany	1230 AIAA-2006-5560 Telemetry Metrics: Monitoring Data Quality in the Spacecraft Ground Data System R. O'Brien, Jet Propulsion Laboratory, Pasadena, CA				

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Tuesday Morning / 20 June 2006**Session 20-ME-7****Operations Experience III****Sala dei Pallavicini**

Chaired by: A. DOWEN, Jet Propulsion Laboratory, Pasadena, CA, and M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD

1100 AIAA-2006-5564 Managing the On- Board Data Storage, Acknowledgement and Retransmission System for Spitzer M. Sarrel, Jet Propulsion Laboratory, Pasadena, CA	1130 AIAA-2006-5565 Case Studies in Prediction and Prevention of Failures S. Bucher, Northrop Grumman Space Technology, Cambridge, MA	1200 AIAA-2006-5566 Envisat In Flight Experience: FDIR and Lifetime Optimisation D. Milligan, ESA/ESOC, Darmstadt, Germany	1230 AIAA-2006-5567 Multi- Mission Instrument Operations Experience and Future Directions L. Hall, Jet Propulsion Laboratory, Pasadena, CA				
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Tuesday Morning / 20 June 2006**Session 21-MM-4****Mission Management IV****Sala dei Medici**

Chaired by: J. COSTRELL, NASA Headquarters, Washington, DC, and K. KELLY, National Oceanic and Atmospheric Administration, Suitland, MD

1100 AIAA-2006-5568 Earth Observation Family of Missions : A Cost Effective Approach to Operations Preparation P. Emanuelli, ESA, Darmstadt, Germany	1130 AIAA-2006-5547 EMS: A Management and Scheduling System for the ESA Tracking Network M. Niezette, VEGA GmbH, Darmstadt, Germany	1200 AIAA-2006-5546 A New Energy Management Strategy for IPACS of Spacecrafts W. Zhang, Beijing University of Aeronautics and Astronautics, Beijing, China (prc)	1230 AIAA-2006-5571 The Impact of Automating ESA Missions on the Operations Preparation Phase A. Birtwhistle, ESA/ESOC, Darmstadt, Germany				
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Tuesday Morning / 20 June 2006**Session 22-OS-7****Advanced Technologies for GS Design/Dev I****Sala dei Estensi**

Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and E. SMITH, NASA Johnson Space Center, Houston, TX

1100 AIAA-2006-5743 A Successful Component Architecture for Interoperable and Evolvable Ground Data Systems D. Smith, NASA Goddard Space Flight Center, Greenbelt, MD	1130 AIAA-2006-5573 A Ground Control System for CBERS 3 and 4 Satellites P. Cardoso, National Institute for Space Research, Sao Jose Dos Campos, Brazil	1200 AIAA-2006-5550 A Generic Modelling Framework for Software Developments at ESOC N. Lindman, ESA, Darmstadt, Germany	1230 AIAA-2006-5704 Automating the Regression Testing of a Mission Control System E. Gómez, ESA, Darmstadt, Germany				
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Tuesday Morning / 20 June 2006**Session 23-OS-8****Mission Operations Concepts IV****Sala dei Fernandez**

Chaired by: M. RODRIGUES, Jet Propulsion Laboratory, Pasadena, CA, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil

1100 AIAA-2006-5579 Propellantless Formation Flight Operations in Low Earth Orbit Using EMFF S. Schweighart, Massachusetts Institute of Technology, Cambridge, MA	1130 AIAA-2006-5557 Use of Solar Sails with Controllable Solar Radiation Pressure for Libration Point Orbits D. Novikov, Space Research Institute, Moscow, Russia	1200 AIAA-2006-5883 Maximizing Commercial Space Transportation with a Public- Private Partnership T. Taylor, Lunar Transportation Systems, Inc., Las Cruces, NM				
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Tuesday Morning / 20 June 2006**Session 24-OS-9****Standards–Broad Strategies****Sala dei Gonzaga**

Chaired by: C. HAMPTON, National Oceanic and Atmospheric Administration, Suitland, MD, and B. CHU, Computer Sciences Corporation, Huntsville, AL

1100 AIAA-2006-5729 ESA Ground Operation System – Low Level Components and Framework F. Affaitati, ESA/ESOC, Darmstadt, Germany	1130 AIAA-2006-5779 ESA Experience in Interoperability: The Role Within the Virtual Observatory P. Osuna, ESA/ESAC, Madrid, Spain	1200 AIAA-2006-5594 CCSDS Cislunar Communications Architecture K. Scott, MITRE Corporation, McLean, VA	1230 AIAA-2006-5723 Moving Towards a Common Ground and Flight Data Systems Architecture for NASA's Exploration Missions S. Rader, NASA Johnson Space Center, Houston, TX			
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Tuesday Afternoon / 20 June 2006**1400 - 1500****Plenary Session I: Earth****Sala dei Fernandez**

Global Earth Observation System of Systems (GEOSS): Toward Comprehensive, Coordinated, and Sustained Earth Observation

Helen Wood, National Oceanic and Atmospheric Administration: GEOSS—Overview and Benefits for Disaster Reduction

Volker Liebig, European Space Agency: GMES and Europe's Contribution to GEOSS

Rodolfo Guzzi, Agenzia Spaziale Italiana: Earth Observations for Disaster Management—The Italian Vision (invited)

Moderator/s: K. Kelly

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Tuesday Afternoon / 20 June 2006**Session 26-ME-8****Ground Systems Testing & Validation****Suite 618**

Chaired by: P. MALDARI, European Space Agency, Darmstadt, Germany, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France

1530 AIAA-2006-5561 Integration and Validation of the ATV Control Center V. Valette, Centre National d'Etudes Spatiales, Toulouse, France	1600 AIAA-2006-5692 ATV Ground Segment End- to- End Test Campaign S. Challis, VEGA GmbH, ESA/ESTEC, Noordwijk, The Netherlands	1630 AIAA-2006-5562 Benefits from Early System Validation Tests on ATV Program P. Flagel, Centre National d'Etudes Spatiales, Toulouse, France	1700 AIAA-2006-5539 ESA DSA2 Pointing Calibration System R. Osterried, SED Systems, Saskatoon, Canada				
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Tuesday Afternoon / 20 June 2006**Session 27-ME-9****Operations Experience IV****Sala dei Pallavicini**

Chaired by: A. DOWEN and D. LINICK, Jet Propulsion Laboratory, Pasadena, CA

1530 AIAA-2006-5693 Evolving the Ulysses Mission Control System – A Long Term Support Case Study K. Chan, SciSys Ltd, Pasadena, CA	1600 AIAA-2006-5694 Initial In- Orbit Verification of OICETS Optical Terminal's Functions Y. Takayama, Japan Aerospace Exploration Agency, Tsukuba, Japan	1630 AIAA-2006-5838 Proven Innovations and New Initiatives in Ground System Development J. Gunn, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1700 AIAA-2006-5886 Long- Term Preservation, Retrieval and Sharing of Mission Know- How and Test Data with HyperTest® S. Schwartze, Werum Software & Systems AG, Lueneburg, Germany				
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Tuesday Afternoon / 20 June 2006**Session 28-MM-5****Mission Management V****Sala dei Medici**

Chaired by: J. COSTRELL, NASA Headquarters, Washington, DC, and K. KELLY, National Oceanic and Atmospheric Administration, Suitland, MD

1530 AIAA-2006-5849 International, Interagency, and Intercenter Collaboration in Support of the Repair of Two NASA Ground Network Polar- Region 11- meter Antennas J. Jackson, NASA Goddard Space Flight Center, Greenbelt, MD	1600 AIAA-2006-5698 Swedish Space Corporation's Planned Activities Within the Operations of the CX-OLEV Mission M. Moscardino, LSE Space Engineering and Operations AG, Wessling, Germany	1630 AIAA-2006-5881 Ground Segment Monitoring and Controlling Using IMS (Integrated Manager Subsystem) O. Peinado, DLR, German Aerospace Research Center, Wessling, Germany	1700 AIAA-2006-5569 Active Propellant Management B. Yendler, Lockheed Martin Corporation, Sunnyvale, CA				
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Tuesday Afternoon / 20 June 2006**Session 29-OS-11****Advanced Technologies for GS Design/Dev II****Sala dei Estensi**

Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and T. SORENSEN, University of Kansas, Lawrence, KS

1530 AIAA-2006-5701 A Roadmap for Agile Development B. Streiffert, Jet Propulsion Laboratory, Pasadena, CA	1600 AIAA-2006-5702 Adoption of Commercial Products and Standards for Control Centre of VEGA Launcher M. Bordin, VITROCISSET, Rome, Italy	1630 AIAA-2006-5634 PrestoPlot: An Emergent Standard Telemetry Tracing Tool G. Picart, Centre National d'Etudes Spatiales, Toulouse, France	1700 AIAA-2006-5769 The SHAEP of POES: Forecasting NOAA Weather Satellite Operational Performance J. Devine, National Oceanic & Atmospheric Administration, Suitland, MD				
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Tuesday Afternoon / 20 June 2006**Session 30-OS-12****Standards--Architecture & Security****Sala dei Gonzaga**

Chaired by: P. LIEBRECHT and M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD

1530 AIAA-2006-5581 Toward a Framework for Modeling Space Systems Architectures P. Shames, Jet Propulsion Laboratory, Pasadena, CA	1600 AIAA-2006-5777 Applying Registry Services to Spaceflight Technologies to Aid in the Assignment of Assigned Numbers to Disparate Systems and Their Technologies to Further Enable Interoperability R. Bradford, NASA Marshall Space Flight Center, Marshall Space Flight Center, AL	1630 AIAA-2006-5804 Approach to the Integration of Data Security in the CCSDS Packet TM/TC Standards D. Fischer, ESA, Darmstadt, Germany	1700 AIAA-2006-5580 Numerical Verification of the Historicity of the ESA Telecommand Authentication Approach F. Chiaraluca, Università Politecnica delle Marche, Ancona, Italy				
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Wednesday Afternoon / 21 June 2006**Session 31-ME-10****Mission Experience/Automation****Suite 618**

Chaired by: C. HAMPTON, National Oceanic and Atmospheric Administration, Suitland, MD, and D. NICHOLS, Jet Propulsion Laboratory, Pasadena, CA

0830 AIAA-2006-5709 Enhancing Science and Automating Operations Using Onboard Autonomy R. Sherwood, NASA Jet Propulsion Laboratory, Pasadena.	0900 AIAA-2006-5710 Smart- 1 Ground Operations Automation W. Heinen, ESA/ESOC, Darmstadt, Germany	0930 AIAA-2006-5712 Learning from the Experience of Spacecraft Operations Automation S. Reid, SciSys Ltd, Bristol, Great Britain	1000 AIAA-2006-5685 The Benefits of Visualization in the Space Flight Mission Life Cycle E. De Jong, Jet Propulsion Laboratory, California Institute of				
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CA

Technology,
Pasadena, CA

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Wednesday Afternoon / 21 June 2006							
Session 32-ME-11				Operations Experience V		Sala dei Pallavicini	
Chaired by: A. DOWEN and D. LINICK, Jet Propulsion Laboratory, Pasadena, CA							
0830 AIAA-2006-5713 The Road to Launch and Operations of the Spitzer Space Telescope R. Wilson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	0900 AIAA-2006-5714 Venus Express In- Flight Experience A. Accomazzo, ESA/ESOC, Darmstadt, Germany	0930 AIAA-2006-5715 Payload Operations in Quiet Cruise: An Interplanetary Mission's Dilemma P. Ferri, ESA, Darmstadt, Germany	1000 AIAA-2006-5983 Spitzer Space Telescope Sequencing Operations Software, Strategies, and Lessons Learned D. Bliss, Jet Propulsion Laboratory, Pasadena, CA				

Wednesday Afternoon / 21 June 2006							
Session 33-OS-13				Advanced Technologies for GS Design/Dev III		Sala dei Estensi	
Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and P. MALDARI, European Space Agency, Darmstadt, Germany							
0830 AIAA-2006-5720 Data Model Management for Space Information Management Systems J. Hughes, Jet Propulsion Laboratory, Pasadena, CA	0900 AIAA-2006-5633 Simple Attitude Visualisation Tool for Satellite Operations F. Chatel, DLR, German Aerospace Research Center, Wessling, Germany	0930 AIAA-2006-5742 Fuzzy Logic Expert System for Tier-Scalable Planetary Reconnaissance R. Furfaro, University of Arizona, Tucson, AZ					

Wednesday Afternoon / 21 June 2006							
Session 34-OS-14				Mission Operations Concepts V		Sala dei Fernandez	
Chaired by: M. RODRIGUES, Jet Propulsion Laboratory, Pasadena, CA, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil							
0830 AIAA-2006-5721 Procedural Displays: A Technology for Enhanced Operations Efficiency F. Plassmeier, EADS SPACE Transportation, Bremen, Germany	0900 AIAA-2006-5722 The Mission Planning System for AGILE Mission G. Del Bello, Telespazio S.p.A., Ortucchio, Italy	0930 AIAA-2006-5724 Third Generation Spacecraft Management and Control System and Future Conception K. Yamamoto, SORUN Corporation, Minato-ku, Japan	1000 AIAA-2006-5920 Mars Aerobraking Spacecraft State Estimation by Processing Inertial Measurement Unit Data M. Jah, Jet Propulsion Laboratory, Pasadena, CA				

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Wednesday Afternoon / 21 June 2006**Session 35-OS-15****Planning Tools I****Sala dei Medici**

Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and M. WICKLER, Deutsches Zentrum fur Luft und Raumfahrt, Wessling, Germany

0830 AIAA-2006-5725 AI Based Tools for Continuous Support to Mission Planning A. Cesta, Istituto di Scienze e Tecnologie della Cognizione, Rome, Italy	0900 AIAA-2006-5726 Advances in Distributed Operations and Mission Activity Planning for Mars Surface Exploration J. Fox, Jet Propulsion Laboratory, Pasadena, CA	0930 AIAA-2006-5598 The Present and Future of AMMOS Mission Planning and Sequencing A. Ko, Jet Propulsion Laboratory, Pasadena, CA	1000 AIAA-2006-5611 A Planning and Scheduling Tool to Automate and Support Mission Planning S. Fratini, Istituto di Scienze e Tecnologie della Cognizione, Rome, Italy				
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Wednesday Afternoon / 21 June 2006**Session 36-OS-16****Standards-SLE****Sala dei Gonzaga**

Chaired by: J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France, and N. PECCIA, European Space Agency, Darmstadt, Germany

0830 AIAA-2006-5669 A Reusable Provider Framework for Development of SLE Interfaces M. Goetzmann, VEGA, Darmstadt, Germany	0900 AIAA-2006-5668 CORTEX SLE Provider System - From Prototype to Product to Successful Operations C. Laroque, VEGA, Darmstadt, Germany	0930 AIAA-2006-5732 Network Interface System (NIS); ESAs Next Generation CCSDS SLE Interface System C. Haddow, ESA/ESOC, Darmstadt, Germany	1000 AIAA-2006-5667 CCSDS SLE Service Management: Real-World Use Cases E. Barkley, Jet Propulsion Laboratory, Pasadena, CA				
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Wednesday Morning / 21 June 2006**Session 37-ME-12****Logistics****Suite 618**

Chaired by: P. FERRI, European Space Agency, Darmstadt, Germany, and M. WICKLER, Deutsches Zentrum fur Luft und Raumfahrt, Wessling, Germany

1100 AIAA-2006-5733 Logistics Information Systems for Human Space Exploration S. Shull, Massachusetts Institute of Technology, Cambridge, MA	1130 AIAA-2006-5734 Exploration Systems Architecture Study: Concept for More Affordable and Sustainable Ground Operations C. McCleskey, NASA Kennedy Space Center, Kennedy Space Center, FL	1200 AIAA-2006-5735 Modeling Interplanetary Logistics: A Mathematical Model for Mission Planning C. Taylor, Massachusetts Institute of Technology, Cambridge, MA	1230 AIAA-2006-5736 Integrated Logistics Support and Operations: Concepts and Methodologies in Space Based Programs, the Cosmo- Skymed Experience G. De Luca, Agenzia Spaziale Italiana, Rome, Italy				
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Wednesday Morning / 21 June 2006**Session 38-ME-13****Operations Experience VI****Sala dei Pallavicini**

Chaired by: D. NICHOLS and D. LINICK, Jet Propulsion Laboratory, Pasadena, CA

1100 AIAA-2006-5737 Special Flight Dynamics Operations for GEO Satellites M. Sansegundo, HISPASAT, Madrid, Spain	1130 AIAA-2006-5738 The Orbit Characteristics of the Two DSP Satellites R. Zhang, Xi'an Satellite Control Center China, Xi'an, China (prc)	1200 AIAA-2006-5739 NIPCs: The Operational Sandbox of Science Commanding R. Gladden, Jet Propulsion Laboratory, Pasadena, CA	1230 AIAA-2006-5740 Strategies for Enhancing Power Generation in Satellites with Large Local Time Angles M. Pitchaimani, Indian Space Research Organization Telemetry, Tracking and Command Network, Bangalore, India				
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Wednesday Morning / 21 June 2006**Session 39-OS-17****Advanced Technologies for GS Design/Dev IV****Sala dei Estensi**

Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and P. MALDARI, European Space Agency, Darmstadt, Germany

1100 AIAA-2006-5572 A Space Mission Operations DBMS (SMOD) D. Roland, Computer Sciences Corporation, Moffett Field, CA	1130 AIAA-2006-5558 Evaluation of AES-Based Authentication and Encryption Schemes for Telecommand and Telemetry in Satellite Applications S. Spinsante, Università Politecnica delle Marche, Ancona, Italy	1200 AIAA-2006-5575 An Intelligent System for Generation of Automatic Flight Operation Plans for the Satellite Control Activities at INPE L. Cardoso, National Institute for Space Research, Sao Jose Dos Campos, Brazil	1230 AIAA-2006-5718 A Reference Architecture for Space Information Management C. Mattmann, Jet Propulsion Laboratory, Pasadena, CA				
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Wednesday Morning / 21 June 2006**Session 40-OS-18****Mission Operations Concepts VI****Sala dei Fernandez**

Chaired by: M. RODRIGUES, Jet Propulsion Laboratory, Pasadena, CA, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil

1100 AIAA-2006-5746 Extending NASA's Exploration Systems Architecture Towards Long- Term Crewed Moon and Mars Operations W. Hofstetter, Massachusetts Institute of Technology.	1130 AIAA-2006-5507 Rosetta Comet Phase Planning Concept V. Dhiri, Vega Group PLC, Noordwijk, The Netherlands						
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Wednesday Morning / 21 June 2006							
Session 41-OS-19				Planning Tools II		Sala dei Medici	
Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and C. HAMPTON, National Oceanic and Atmospheric Administration, Suitland, MD							
1100 AIAA-2006-5749 Herschel/Planck Data Flow – Design Challenges and Operational Solutions M. Schmidt, ESA/ESOC, Darmstadt, Germany	1130 AIAA-2006-5773 Safety in a Web- Based Satellite Flight Plan Supporting System M. Mattiello-Francisco, National Institute for Space Research, São José Dos Campos, Brazil	1200 AIAA-2006-5752 Ground Segment Asset Control with Software Frameworks C. Stoecker, VCS AG, Bochum, Germany	1230 AIAA-2006-5800 Mission Planning Experience Gained for the Mars Express Mission E. Rabenau, NOVA Space Associates Ltd, Bath, Great Britain				

Wednesday Morning / 21 June 2006							
Session 42-OS-20				Standards–Spacecraft Services & Space Links		Sala dei Gonzaga	
Chaired by: M. KEARNEY, NASA Marshall Space Flight Center, Huntsville, AL, and N. PECCIA, European Space Agency, Darmstadt, Germany							
1100 AIAA-2006-5678 Benefits of the Standardization Efforts for On- Board Data Interfaces and Services O. Notebaert, EADS Astrium, Toulouse, France	1130 AIAA-2006-5707 CCSDS SOIS Time-Critical Onboard Application Services S. Fowell, SciSys Ltd, Bristol, Great Britain	1200 AIAA-2006-5778 CCSDS Time Critical Onboard Network Services S. Parkes, University of Dundee, Dundee, Great Britain	1230 AIAA-2006-5706 Combined Advanced Coding and Modulation for Future CCSDS High-Rate Missions G. Calzolari, ESA, Darmstadt, Germany				

Wednesday Afternoon / 21 June 2006	
1400 - 1500 <p style="text-align: center;">Plenary Session II: Moon</p> <p style="text-align: center;">Robert Barber, NASA Ames Research Center: Robotic Lunar Exploration Hisahiro Konishi, Japan Aerospace Exploration Agency: SELENE Satellite and Its Operations Larissa Arnold: NASA Johnson Space Center: Surface Mission Operations</p> <p>Moderator/s: J. Nakahara</p>	Sala dei Fernandez

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Wednesday Afternoon / 21 June 2006							
Session 43-ME-14				Earth Observation Systems		Sala dei Fernandez	
Chaired by: M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD, and C. HAMPTON, National Oceanic and Atmospheric Administration, Suitland, MD							
1530 AIAA-2006-5757 GOMOS In- Orbit Operations and Failure Recoveries A. Barbieri, ESA/ESOC, Darmstadt, Germany	1600 AIAA-2006-5759 CALIPSO and CloudSat Coordinated Ascent Phase to the EOS Afternoon Constellation C. Salcedo, Centre National d'Etudes Spatiales, Toulouse, France	1630 AIAA-2006-5760 Responsibilities, Role and Integration of Mission Operations Within the Complex Ground- Segment of the German TerraSAR-X Radar Mission P. Muhlbauer, DLR, German Aerospace Research Center, Wessling, Germany	1700 AIAA-2006-5919 PARASOL and CALIPSO : Experience Feedback on Operations of Micro and Small Satellites F. Serene, Centre National d'Etudes Spatiales, Toulouse, France				

Wednesday Afternoon / 21 June 2006							
Session 44-ME-15				Multi-Mission Operations		Suite 618	
Chaired by: D. LINICK, Jet Propulsion Laboratory, Pasadena, CA, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France							
1530 AIAA-2006-5761 Fleet- Wise Automatic Spacecraft Operations at Eutelsat E. Benzi, Eutelsat SA, Paris, France	1600 AIAA-2006-5764 The Method of State Space Description for Flight Process of Manned Spacecraft J. Sun, Beijing Aerospace Control Center, Beijing, China (prc)	1630 AIAA-2006-5869 Deep Impact Sequence Planning Using Multi-Mission Adaptable Planning Tools with Integrated Spacecraft Models S. Wissler, Jet Propulsion Laboratory, Pasadena, CA					

Wednesday Afternoon / 21 June 2006							
Session 45-ME-16				Operations Experience VII		Sala dei Pallavicini	
Chaired by: A. DOWEN and D. NICHOLS, Jet Propulsion Laboratory, Pasadena, CA							
1530 AIAA-2006-5765 Space Radiation Health Operations: From LEO to Beyond S. Johnson, NASA Johnson Space Center, Houston , TX	1600 AIAA-2006-5766 Quantifying EVA Task Efficiency C. Looper, United Space Alliance, Houston, TX	1630 AIAA-2006-5767 SMART- 1 Electric Propulsion: An Operational Perspective D. Milligan, ESA/ESOC, Darmstadt, Germany	1700 AIAA-2006-5768 Implementing Distributed Operations: A Comparison of Two Deep Space Missions A. Mishkin, Jet Propulsion Laboratory, Pasadena, CA				

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Wednesday Afternoon / 21 June 2006**Session 46-OS-21****Advanced Technologies for Mission Design****Sala dei Estensi**

Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and P. MALDARI, European Space Agency, Darmstadt, Germany

1530 AIAA-2006-5771 The Herschel Planck Mission Data Systems: New Approaches and The "Smooth Transition" Concept G. Di Girolamo, ESA/ESOC, Darmstadt, Germany	1600 AIAA-2006-5613 Advantages of Using SSM in the Frame of a Mission Preparation Environment S. Mattia, Dataspazio S.p.A., Rome, Italy	1630 AIAA-2006-5552 A New Approach for Aerobraking at Mars: Return to Earth M. Castelli, University of Rome "La Sapienza", Rome, Italy	1700 AIAA-2006-5795 Zero to Integration in Eight Months, the Dawn Ground System Engineering Challenge L. Dubon, Jet Propulsion Laboratory, Pasadena, CA				
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Wednesday Afternoon / 21 June 2006**Session 47-OS-22****Planning Tools III****Sala dei Medici**

Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and M. WICKLER, Deutsches Zentrum fur Luft und Raumfahrt, Wessling, Germany

1530 AIAA-2006-5776 Venus Express Mission Planning System - A Further Reuse of EKLOPS I. Shaw, VEGA, Darmstadt, Germany	1600 AIAA-2006-5644 Efficient Planning Systems Development with EKLOPS M. Niezette, VEGA IT GmbH, Darmstadt, Germany	1630 AIAA-2006-5775 Rosetta Payload Modeling for Science Operations: Resource Management and Conflict Detection R. Solaz, ESA/ESTEC, Noordwijk, The Netherlands	1700 AIAA-2006-5774 Scheduling James Webb Space Telescope Observations at L2 K. Long, Space Telescope Science Insitute, Baltimore, MD				
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Wednesday Afternoon / 21 June 2006**Session 48-OS-23****Standards–Spacecraft Monitoring and Control, XTCE****Sala dei Gonzaga**

Chaired by: M. KEARNEY, NASA Marshall Space Flight Center, Huntsville, AL, and N. PECCIA, European Space Agency, Darmstadt, Germany

1530 AIAA-2006-5756 CCSDS Standardisation in Spacecraft Monitoring and Control M. Merri, ESA, Darmstadt, Germany	1600 AIAA-2006-5730 Demonstration of Plug-In Applications with Prototype CCSDS Mission Operations Services R. Thompson, SciSys Ltd, Chippenham, Great Britain	1630 AIAA-2006-5582 The XTCE Standardization Approach of Telemetry and Telecommand Databases: The ESA Example J. Muller, ESA, Darmstadt, Germany	1700 AIAA-2006-5801 Exchanging Databases with Dissimilar Systems Using CCSDS XTCE C. Fatig, NASA Goddard Space Flight Center, Greenbelt, MD				
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Thursday Afternoon / 22 June 2006							
Session 49-MCR-2				Cooperation Public I		Suite 618	
Chaired by: M. WICKLER, DLR, German Aerospace Research Center, Wessling, Germany, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France							
0830 AIAA-2006-5784 Critical Management Needs in International Space Collaboration M. Trujillo San Martin, NASA Ames Research Center, Moffet Field , CA	0900 AIAA-2006-5781 Application of Commercial Technology to Management of an Operational Military Satellite System A. Hide, LogicaCMG , Leatherhead, Great Britain	0930 AIAA-2006-5874 Cooperation Between ESA- ESOC and the University of Catania for testing and validation of the 2nd ESA Deep Space Station Communications System S. Casale, University of Catania, Catania, Italy					

Thursday Afternoon / 22 June 2006							
Session 51-ME-18				Operations Experience VIII		Sala dei Pallavicini	
Chaired by: M. LAVITOLA, Alcatel Alenia Spazio, Torino, Italy, and D. LINICK, Jet Propulsion Laboratory, Pasadena, CA							
0830 AIAA-2006-5789 MIPAS In- Orbit Operations and Failure Recoveries J. Frerick, ESA/ESTEC, Noordwijk, The Netherlands	0900 AIAA-2006-5790 The Concept and Preparation of MSC (Multi- Spectral Camera) System Calibration Operation S. Yong, Korea Aerospace Research Institute, Taejeon, South Korea	0930 AIAA-2006-5791 Flying Mars Express - A Day in the Cockpit Z. Mounzer, ESA, Darmstadt, Germany	1000 AIAA-2006-5792 The Operational Concept of MSC (Multi- Spectral Camera) A. Guberman, Electro-Optics Industries Ltd., Rehovot, Israel				

Thursday Afternoon / 22 June 2006							
Session 52-OS-24				Advanced Technologies for Operations		Sala dei Estensi	
Chaired by: P. HOGAN, Canadian Space Agency, Saint-Hubert, Canada, and P. MALDARI, European Space Agency, Darmstadt, Germany							
0830 AIAA-2006-5793 Simultaneous Testing of On- Orbit Payloads H. Kneve, Telesat Canada, Ottawa, Canada	0900 AIAA-2006-5794 Wilkinson Microwave Anisotropy Probe Ground System Initial Design and Operational Evolution J. Cavaluzzi, NASA Goddard Space Flight Center, Greenbelt , MD	0930 AIAA-2006-5744 High Accuracy Clock Synchronization Experiment and Results from Preliminary Experiment S. Nakamura, Japan Aerospace Exploration Agency, Tsukuba, Japan	1000 AIAA-2006-5741 Modelling of Automation Service E. Poupart, Centre National d'Etudes Spatiales, Toulouse, France				

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Thursday Afternoon / 22 June 2006**Session 53-OS-25****Planning Tools IV****Sala dei Medici**

Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and C. HAMPTON, National Oceanic and Atmospheric Administration, Suitland, MD

0830 AIAA-2006-5797 SOPS: The Science Operations Planning System for the ESA Lunar Mission SMART-1 M. Sarkarati, ESA/ESTEC, Noordwijk, The Netherlands	0900 AIAA-2006-5798 Collection Planning for the OrbView- 3 High Resolution Imagery Satellite A. Herz, Orbit Logic Incorporated, Greenbelt, MD	0930 AIAA-2006-5799 Web- Based Planning, Scheduling and Assessment in Mission Operations Centers C. Chura, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	1000 AIAA-2006-5526 In- Space Crew- Collaborative Task Scheduling J. Jaap, NASA Marshall Space Flight Center, Huntsville, AL				
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Thursday Afternoon / 22 June 2006**Session 54-OS-26****Standards-Protocols I****Sala dei Gonzaga**

Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil, and G. WRIGHT, NASA Marshall Space Flight Center, Huntsville, AL

0830 AIAA-2006-5753 Steps Towards the Standardization of a More Efficient Uplink Protocol and Code G. Kazz, Jet Propulsion Laboratory, Pasadena, CA	0900 AIAA-2006-5731 Enabling Autonomous Spacecraft Operation - Use of Onboard File Systems Along with CFDP M. Ciccone, ESA/ESTEC, Noordwijk, The Netherlands	0930 AIAA-2006-5968 CFDP Performance Over Weather- Dependent Ka- Band Channel S. U, Jet Propulsion Laboratory, Pasadena, CA	1000 AIAA-2006-5969 Asynchronous Message Service for Deep Space Mission Operations S. Burleigh, Jet Propulsion Laboratory, Pasadena, CA				
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Thursday Afternoon / 22 June 2006**Session 60-OS-29****Space Communications I****Sala dei Fernandez**

Chaired by: L. PASQUALI, Telepazio, Rome, Italy, and M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD

0830 AIAA-2006-5826 Considerations for Isochronous Data Services over the Proximity- 1 Space Link J. Gao, Jet Propulsion Laboratory, Pasadena, CA	0900 AIAA-2006-5950 Extending LEOP Operations to X- Band: The Lisa Pathfinder Example P. Maldari, ESA/ESOC, Darmstadt, Germany	0930 AIAA-2006-5825 Deep- Space Network Array - Update J. Statman, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 AIAA-2006-5828 The NASA Space Communications Data Networking Architecture D. Israel, NASA/GSFC, Greenbelt, MD				
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Thursday Morning / 22 June 2006**Session 55-MCR-3****Cooperation Public II****Suite 618**

Chaired by: M. WICKLER, DLR, German Aerospace Research Center, Wessling, Germany, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France

1100 AIAA-2006-5805 Harmonising Ground Segment CSOS in Europe: As Difficult as a Tyrannosaurus- Rex Turning Vegetarian N. Peccia, ESA, Darmstadt, Germany	1130 AIAA-2006-5806 The Commercialization of NASA's Ground-Based Tracking Services T. Probert, Honeywell Technology Solutions Inc., Lanham, MD	1200 AIAA-2006-5807 Columbus Operations – Joint Undertaking Between DLR and Industry D. Sabath, DLR, German Aerospace Research Center, Wessling, Germany	1230 AIAA-2006-5808 GALILEO LEOP – Institutional Experiences and Facilities Integrated in a Private/Public Project Team C. Audouy, Centre National d'Etudes Spatiales, Toulouse, France				
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Thursday Morning / 22 June 2006**Session 56-ME-19****Constellations and Formation Flying****Sala dei Pallavicini**

Chaired by: C. HAMPTON, National Oceanic and Atmospheric Administration, Washington, DC, and R. SAINT-JEAN, Canadian Space Agency, Saint-Hubert, Canada

1100 AIAA-2006-5810 Lessons Learnt from Micro- Satellites On-Board Operations J. Lloret, Centre National d'Etudes Spatiales , Toulouse, France	1130 AIAA-2006-5809 Constellation Operations – Lessons Learned for Future Exploration A. Kelly, NASA Goddard Space Flight Center, Greenbelt, MD						
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Thursday Morning / 22 June 2006**Session 57-ME-20****Flight Software****Sala dei Estensi**

Chaired by: P. MALDARI, European Space Agency, Darmstadt, Germany, and D. WELCH, University of Colorado, Boulder, CO

1100 AIAA-2006-5815 Six Years of On- Board SW Maintenance for XMM- Newton Instruments: Long Life Mission Challenges and Constraints G. Buenadicha, VEGA - ESA/ESAC, Madrid, Spain	1130 AIAA-2006-5813 On- Board Software Maintenance at the Control Centre J. Morales-Santiago, ESA/ESOC, Darmstadt, Germany	1200 AIAA-2006-5851 Development and Verification of an Autonomous On-Board Mission Planning System - An Example from the BIRD Satellite R. Axmann, DLR, German Aerospace Research Center, Wessling, Germany	1230 AIAA-2006-5615 Automated Production of Flight Software for Space Exploration W. Smithgall, United Space Alliance, Houston, TX				
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Thursday Morning / 22 June 2006**Session 59-OS-28****Planning Tools V****Sala dei Medici**

Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and F. NEWLAND, Terma A/S, Toulouse, France

1100 AIAA-2006-5822 Tailoring the TerraSAR-X Mission Planning System to PPP Needs A. Braun, DLR, German Aerospace Research Center, Oberpfaffenhofen, Germany	1130 AIAA-2006-5640 A COTS- Based Attitude Dependent Contact Scheduling System J. DeGumbia, Omitron, Inc., Beltsville, MD	1200 AIAA-2006-5821 Dual Use Mission Management: The COSMO- SkyMed Resource Sharing and Mission Planning Optimization for Maximizing Performance Capabilities G. Rum, Agenzia Spaziale Italiana, Rome, Italy				
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Thursday Morning / 22 June 2006**Session 66-OS-31****Space Communications II****Sala dei Fernandez**

Chaired by: A. DOWEN, Jet Propulsion Laboratory, Pasadena, CA, and L. PASQUALI, Telepazio, Rome, Italy

1100 AIAA-2006-5951 Information Technology Solutions for Delta-DOR Large Volume Data Transfers M. Bertelsmeier , ESA/ESOC, Darmstadt, Germany	1130 AIAA-2006-5850 Changes in the Deep Space Network to Support the Mars Reconnaissance Orbiter J. Berner, Jet Propulsion Laboratory, Pasadena, CA	1200 AIAA-2006-5605 Technology Developments Integrating a Space Network Communications Testbed W. Kwong, Jet Propulsion Laboratory, Pasadena, CA	1230 AIAA-2006-5827 Long Erasure Correcting Codes: The New Frontier for Zero Loss in Space Applications? E. Paolini, University of Bologna, Bologna, Italy			
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Thursday Morning / 22 June 2006**Session 71-OS-33****Standards-Protocols II****Sala dei Gonzaga**

Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil, and G. WRIGHT, NASA Marshall Space Flight Center, Huntsville, AL

1100 AIAA-2006-5754 Spacecraft Data and Relay Management Using Delay Tolerant Networking C. Krupiarz, Johns Hopkins University, Applied Physics Laboratory, Laurel, MD	1130 AIAA-2006-5970 Autonomous Congestion Control for an Interplanetary Internet S. Burleigh, Jet Propulsion Laboratory, Pasadena, CA	1200 AIAA-2006-5708 A Model for a Spacecraft Operations Language G. Chaudhri, The Aerospace Corporation, El Segundo , CA	1230 AIAA-2006-5984 Space Exploration Communication Scenarios: Characteristics, Challenges and Scenarios for Developing Intelligent Internet Protocols B. Malakooti, Case Western Reserve			
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Thursday Afternoon / 22 June 2006**1400 - 1500****Plenary Session III: Mars and Beyond****Sala dei Fernandez**

Chaired by: W. FRANK, European Space Agency, Darmstadt, Germany

Jean-Marc Comtois, Canadian Space Agency: ISS Medical Operations: A Model for Mars?

Bruno Gardini, European Space Agency: Aurora (invited)

Simonetta di Pippo, Agenzia Spaziale Italiana: ASI on the Long Track to the Moon, Mars and Beyond

Thursday Afternoon / 22 June 2006**Session 62-MCR-4****Cooperation Public III****Suite 618**

Chaired by: M. WICKLER, Deutsches Zentrum für Luft und Raumfahrt, Wessling, Germany, and M. SASSO, Telespazio, Rome, Italy

1530 AIAA-2006-5932 Promoting Space Commerce Through Public- Private Risk Sharing P. Eckert, The Boeing Company, Arlington, VA	1600 AIAA-2006-5934 Challenging Implementation and Operations Traditions M. Gatti, Jet Propulsion Laboratory, Pasadena, CA	1630 AIAA-2006-5935 Exploration Systems Architecture Study: Overview of Architecture and Mission Operations Approach D. Stanley, National Institute of Aerospace, Hampton, VA	1700 AIAA-2006-5875 The Imperative Need For Network Ground Station Support Agreements F. Pasquevich, Comisión Nacional de Actividades Espaciales, Falda Del Carmen, Argentina					
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Thursday Afternoon / 22 June 2006**Session 50-ME-17****Communications Experiences****Sala dei Gonzaga**

Chaired by: J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France, and M. CALABRESE, Agenzia Spaziale Italiana, Rome, Italy

1530 AIAA-2006-5785 Evolution of NASA'S Near- Earth Tracking and Data Relay Satellite System (TDRSS) R. Flaherty, NASA Goddard Space Flight Center, Greenbelt, MD	1600 AIAA-2006-5786 Mars Reconnaissance Orbiter Ka- Band (32 GHz) Demonstration: Cruise Phase Operations S. Shambayati, Jet Propulsion Laboratory, Pasadena, CA	1630 AIAA-2006-5787 Lunar, L1 and L2 – A Communications guide based on JWST the experience C. Fatig, NASA Goddard Space Flight Center, Greenbelt, MD	1700 AIAA-2006-5788 ESA Station Tracking Network (ESTRACK) Augmented by the Second Deep Space Antenna at Cebreros, Spain R. Plemel, Calian Ltd., Saskatoon, Canada					
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Thursday Afternoon / 22 June 2006							
Session 63-ME-22				Searching the Universe		Sala dei Estensi	
Chaired by: M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD, and B. BANIK, Canadian Space Agency, Saint-Hubert, Canada							
1530 AIAA-2006-5936 15 Years of Hubble Space Telescope Science Operations R. Doxsey, Space Telescope Science Institute, Baltimore, MD	1600 AIAA-2006-5937 Evolution of the Hubble Space Telescope Safing Systems J. Pepe, NASA Goddard Space Flight Center, Greenbelt, MD	1630 AIAA-2006-5938 An Operations Overview of the Hubble Space Telescope Servicing Mission 4 K. Walyus, NASA Goddard Space Flight Center, Greenbelt, MD	1700 AIAA-2006-5593 Development of JWST's Ground Systems Using an Open Adaptable Architecture C. Fatig, NASA Goddard Space Flight Center, Greenbelt, MD				

Thursday Afternoon / 22 June 2006							
Session 68-ME-25				Mars-General		Sala dei Pallavicini	
Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, Brazil, and D. NICHOLS, Jet Propulsion Laboratory, Pasadena, CA							
1530 AIAA-2006-5942 Intermediate Martian Atmospheric Study and Demonstrator D. Chipman, Brigham Young University, Provo, UT	1600 AIAA-2006-5980 Phoenix Mars Scout UHF Relay- Only Operations C. Lewicki, Jet Propulsion Laboratory, Pasadena, CA	1630 AIAA-2006-5956 The Mars Reconnaissance Orbiter Mission Operations: Architecture, Approach and Status B. Jai, Jet Propulsion Laboratory, Pasadena, CA	1700 AIAA-2006-5858 Component- Based Tool for Mission Operations Software Deployment T. Lindsey, QSS Group Inc., Moffett Field, CA				

Thursday Afternoon / 22 June 2006							
Session 65-OS-30				Flight Operations Execution I		Sala dei Medici	
Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and P. FERRI, European Space Agency, Darmstadt, Germany							
1530 AIAA-2006-5946 Working Hours Operations for Geostationary Telecom Satellite B. Alamo, Alcatel Alenia Space, Cannes, France	1600 AIAA-2006-5887 Rosetta Planning Concept for Pre- Comet Scenarios Illustrated with Deep Impact Observations K. Wirth, ESA/ESTEC, Noordwijk, The Netherlands	1630 AIAA-2006-5944 Interferometric Missions: Applications Within ASI Space Programs A. Coletta, Agenzia Spaziale Italiana, Rome, Italy	1700 AIAA-2006-5967 Odin During Year Six, Implementing Additional Autonomy In- Orbit S. Lundin, Swedish Space Corporation, Stockholm, Sweden				

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Friday Afternoon / 23 June 2006**Session 64-ME-23****Mars-Express****Sala dei Pallavicini**

Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, Brazil, and M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD

0830 AIAA-2006-5958 From Mission Concept to Mars Orbit: Exploiting Operations Concept Flexibilities on Mars Express J. Schulster, Scisys Space GmbH, Darmstadt, Germany	0900 AIAA-2006-5959 Deployment of the MARSIS Radar Antennas On- Board Mars Express M. Denis, ESA/ESOC, Darmstadt, Germany	0930 AIAA-2006-5857 Mars Express Power Subsystem In- Flight Experience R. Ferretti, VEGA Group, Darmstadt, Germany	1000 AIAA-2006-5861 Planetary Orbit Insertion - A First Success for Europe with ESAs Marsexpress J. Fischer, VEGA Group, Darmstadt, Germany				
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Friday Afternoon / 23 June 2006**Session 67-ME-24****ISS I****Sala dei Fernandez**

Chaired by: K. LORD and L. CARPENTIER, Canadian Space Agency, Saint-Hubert, Canada

0830 AIAA-2006-5952 Crew Maintenance Lessons Learned from ISS and Considerations for Future Manned Missions C. Bertels, SESS GbR, Wessling, Germany	0900 AIAA-2006-5853 Crew- Centric Mission Objective and Detail Flight Planning C. Leslie, United Space Alliance, Houston, TX	0930 AIAA-2006-5955 Lessons Learned from the Robotics Operations on STS- 114 (Return to Flight) S. Aziz, Canadian Space Agency, Houston, TX	1000 AIAA-2006-5954 Staffing the ISS Control Center: Lessons Learned from Long-Duration Human Space Flight C. Olsen, Mississippi State University, Mississippi State, MS				
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Friday Afternoon / 23 June 2006**Session 76-ME-30****Moon I****Sala dei Estensi**

Chaired by: T. SORENSEN, University of Kansas, Lawrence, KS, and C. OLSEN, Mississippi State University, Mississippi State, MS

0830 AIAA-2006-5961 Preparations for Autonomous Missions to the Moon F. Hughes, Tietronix Software, Houston, TX	0900 AIAA-2006-5963 Operating Lunar Exploration Missions Safely and Reliably J. Fragola, Valador, Inc., Rockville Centre, NY	0930 AIAA-2006-5893 Smart- 1 Science Operations: Experiences and Recommendations from ESA's First Lunar Mission D. Frew, ESA/ESTEC, Noordwijk, The Netherlands					
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Friday Afternoon / 23 June 2006**Session 58-OS-27****Space-to-Ground Communication and Tracking****Sala dei Gonzaga**

Chaired by: M. CALABRESE, Agenzia Spaziale Italiana, Rome, Italy, and J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France

0830 AIAA-2006-5985 Concept for an Integrated Near Earth Network (INEN) for Space Communications B. Watson, NASA Headquarters, Washington, DC	0900 AIAA-2006-5819 NASA Ground Network Support of the Lunar Reconnaissance Orbiter Mission S. Currier, NASA Wallops Flight Facility, Wallops Island, VA	0930 AIAA-2006-5817 Overview of JAXA Space Debris Surveillance Operations C. Hirose, Japan Aerospace Exploration Agency, Tsukuba, Japan	1000 AIAA-2006-5705 Delta- DOR and Regenerative Systems: The New CCSDS Frontier in Spacecraft Ranging E. Vassallo, ESA, Darmstadt, Germany				
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Friday Afternoon / 23 June 2006**Session 70-OS-32****Flight Operations Execution II****Sala dei Medici**

Chaired by: G. RUM, Agenzia Spaziale Italiana, Rome, Italy, and P. FERRI, European Space Agency, Darmstadt, Germany

0830 AIAA-2006-5965 The Flight Dynamics System for AGILE Mission G. Valentini, Telespazio S.p.A., Rome, Italy	0900 AIAA-2006-5966 Wireless Communications and Interfaces on Board Spacecraft P. Plancke, ESA, Noordwijk, The Netherlands	0930 AIAA-2006-5904 RADARSAT- 1 Mission Operations: The Second Decade R. Saint-Jean, Canadian Space Agency, Saint-Hubert, Canada	1000 AIAA-2006-5945 Space Environment Information System for Mission Control Purposes: Benefits for INTEGRAL Operations M. Pantoquilha, European Space Agency, Darmstadt, Germany				
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Friday Afternoon / 23 June 2006**Session 72-OS-34****Training and Simulation I****Suite 618**

Chaired by: Y. TAROMARU, Japan Aerospace Exploration Agency, Tokyo, Japan, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, United States

0830 AIAA-2006-5972 Preparing Mission Operators for Mars Exploration S. Parkes, University of Dundee, Dundee, Great Britain	0900 AIAA-2006-5973 The GALILEO Simulator: A Major Step in Software Technology from Single Spacecraft to Constellation Simulators M. Terra Homen, ESA/ESOC, Darmstadt, Germany	0930 AIAA-2006-5974 SimGen: A Future Standard for Simulators E. Rolet, SESS GbR, Wessling, Germany	1000 AIAA-2006-5975 iTIS Deep Space - Applying Generic Simulations to the Rosetta Mission E. Trollope, DLR, German Aerospace Research Center, Cologne, Germany				
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Friday Morning / 23 June 2006**Session 69-ME-26****Moon II****Sala dei Estensi**

Chaired by: T. SORENSEN, University of Kansas, Lawrence, KS, and C. OLSEN, Mississippi State University, Mississippi State, MS

1100 AIAA-2006-5962 ESA's SMART- 1 Science Planning Concept and its Evolution Throughout the Mission M. Almeida, ESA, Noordwijk, The Netherlands	1130 AIAA-2006-5960 SMART- 1 Lunar Mission: Operations Close to Moon Impact J. De Bruin, ESA, Darmstadt, Germany						
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Friday Morning / 23 June 2006**Session 73-ME-27****Autonomous Mission****Sala dei Medici**

Chaired by: D. NICHOLS and D. LINICK, Jet Propulsion Laboratory, Pasadena, CA

1100 AIAA-2006-5976 Dynamic Allocation of Resources to Improve Scientific Return with Onboard Automated Planning F. Kucinskis, Instituto Nacional de Pesquisas Espaciais, São José Dos Campos, Brazil	1130 AIAA-2006-5977 MMOPS: Assessing the Impact of On- Board Autonomy for Deep Space Robotic Missions M. Woods, SciSys Ltd, Bristol, Great Britain						
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Friday Morning / 23 June 2006**Session 74-ME-28****ISS II****Sala dei Fernandez**

Chaired by: K. LORD and L. CARPENTIER, Canadian Space Agency, Saint-Hubert, Canada

1100 AIAA-2006-5978 Furthering Exploration – International Space Station Experience G. Kitmacher, NASA Headquarters, Washington, DC	1130 AIAA-2006-5953 Essential Commonality for Effective Future Extravehicular Activity Operations D. Coan, Barrios Technology, Pasadena, TX						
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Friday Morning / 23 June 2006**Session 75-ME-29****Mars-MER****Sala dei Pallavicini**

Chaired by: E. BERGAMINI, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, Brazil, and M. BUTLER, NASA Goddard Space Flight Center, Greenbelt, MD

<p>1100 AIAA-2006-5981 Application of State Analysis and Goal-Based Operations to a MER Mission Scenario</p> <p>J. Morris, Jet Propulsion Laboratory, Pasadena, CA</p>	<p>1130 AIAA-2006-5957 Anomaly Recovery and the Mars Exploration Rovers</p> <p>J. Matijevic, Jet Propulsion Laboratory, Pasadena, CA</p>						
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Friday Morning / 23 June 2006**Session 77-OS-35****Ground Networking and Distribution****Sala dei Gonzaga**

Chaired by: J. SOULA, Centre National d'Etudes Spatiales, Toulouse, France, and M. CALABRESE, Agenzia Spaziale Italiana, Rome, Italy

<p>1100 AIAA-2006-5597 TMTCS: A Milestone in Establishing Ground Station Interoperability</p> <p>F. Andraud, CS Communications & Systems, Toulouse, France</p>	<p>1100 AIAA-2006-5971 A Space Operations Network Alternative: Using Globally Connected Research and Education Networks for Space-Based Science Operations</p> <p>R. Bradford, NASA Marshall Space Flight Center, Marshall Space Flight Center, AL</p>						
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Friday Morning / 23 June 2006**Session 78-OS-36****Training and Simulation II****Suite 618**

Chaired by: Y. TAROMARU, Japan Aerospace Exploration Agency, Tokyo, Japan, and M. FERREIRA, Instituto Nacional de Pesquisas Espaciais, Sao Jose dos Campos, Brazil

<p>1100 AIAA-2006-5987 Ascending Phase of Dropped Transonic Flight Test for the Unmanned Space Vehicle</p> <p>V. Ferrara, University of Rome "La Sapienza", Rome, Italy</p>	<p>1130 AIAA-2006-5911 Spacecraft Simulator Development: Lessons Learned from the Cryosat Earth Explorer Mission</p> <p>V. Reggestad, ESA/ESOC, Darmstadt, Germany</p>						
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1200 - 1300

Closing Session

Sala dei Fernandez