Clean Space Industrial Days & AeroThermoDynamics Design for Demise Workshop

Tuesday 24 October 2017 - Thursday 26 October 2017

ESTEC

Programme

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Tuesday 24 October 2017

Plenary: Welcome and Openings - Erasmus building (09:00-11:00)

time	title	presenter
09:00	Opening Speech	
09:20	Market for ADR	ACCOGLI, Alberto (Leoni Coporate Advisors)
09:40	Critical raw materials and their role in the European aerospace and energy sectors	TZIMAS, Evangelos (European Commision - DG Joint Research Centre)
10:00	Space Debris Mitigation implementation in Earth Observation Missions	
10:20	Clean Space overview and updates	INNOCENTI, Luisa (ESA)

Coffee break - Erasmus building (11:00-11:30)

CleanSat: Technology priorities for Integrators - Auditorium (11:30-13:00)

time	title	presenter
11:30	Large System Integrator SDM technology priorities	BILLOT, carole (thales alenia space france) PROFFE, Gerrit (OHB System AG) BRIOT, Daniel (ADS)
12:10	Technology priorities for small satellites	
12:30	Ariane 6 approach and solutions regarding space debris mitigation	DIAS, Nathalie (Ariane Group)

EcoDesign: Environmental Impact of Space missions - Erasmus building (11:30-13:00)

time	title	presenter
11:30	EcoDesign at ESA	AUSTIN, Julian (ESA)
11:50	LCA of launchers environmental impact of a space mission	CHANOINE, Augustin (Deloitte)
12:10	LCA of satellites environmental impact of a space mission	CHANOINE, Augustin

e.Deorbit: System - High Bay (11:30-13:00)

time	title	presenter
11:30	e.Deorbit & SSV	BIESBROEK, Robin (ESA)
11:50	Results of the Airbus DS led e.Deorbit Phase B1 ESA study	ESTABLE, Stéphane (Airbus)
12:10	Space Transportation Bus: An opporunity for new possibilities of Space Exploitation or Space Tug	BILLOT, carole (thales alenia space france)
12:30	Space Utility Vehicle	FREZET, Michel

Lunch break - Erasmus building (13:00-14:00)

CleanSat: Propulsion Passivation Systems - Auditorium (14:00-15:30)

time	title	presenter
14:00	System impacts of propulsion passivation	GERNOTH, A. (ESA)
14:20	SMA Valve for fluidic passivation	KRAUS, Stephan (ariane group)
14:40	Life time extension for passivation	JOANNY, Pierre (Dassault Aviation)
15:00	Passivation device for Spacecraft Propulsion System	DILHAN, DENIS (CNES)

EcoDesign: Ecodesigning a space mission - Multimedia Library (14:00-15:30)

time	title	presenter
14:00	EcoDesign: Towards Life Cycle Sustainability of Space Systems	WILSON, Andrew (University of Strathclyde)
14:20	Space OPERA: integrating environmental performance into concurrent design	CHANOINE, Augustin
14:40	Lessons learned from the Sentinel 3 LCA and Applications to a GreenSat	THIRY, Nicolas (Thales Alenia Space)
15:00	Ecodesign applied to ESA’s PROBA-Vegetation satellite	VERCALSTEREN, An (Vito NV)

e.Deorbit: System and GNC - High Bay (14:00-15:30)

time	title	presenter
14:00	Space Debris Attitude Motion Measurements and Modelling, ENVISAT Case	SILHA, Jiri (University of Bern)
14:20	Space Tug	SCHEPER, Marc (OHB)
14:40	Utilising the Space Drone spacecraft for ADR	LINN BARNETT, Danna (Effective Space Solution)
15:00	Final Pre-Flight Update for the Remove Debris ADR Mission	FORSHAW, Jason

Coffee break - Erasmus building (15:30-16:00)

CleanSat: Power Passivation systems - Auditorium (16:00-18:00)

time	title	presenter
16:00	State of the art overview	BAUSIER, François (ESA)
16:20	Battery safety assessment and testing	SAMANIEGO LOPEZ, Bruno (Airbus Defence and Space)
16:40	Solar Array Passivation based on the galvanic isolation	LEMPEREUR, Vincent (TAS)
17:00	Assessment of risk of debris generation due to battery faillure in cubesats: the cuba project	
17:20	Question & Answers	

EcoDesign: Atmospheric impact - Multimedia Library (16:00-18:00)

time	title	presenter
16:00	Impacts of space vehicles' launch and re-entry on the ozone layer and climate	BEKKI, slimane (imperial college/CNRS)
16:20	Atmospheric impact of spacecraft demise	GRASSI, Lilith

16:40	Experimental Modelling of Alumina Particulate in Solid Booster	SAILE, Dominik (DLR)
17:00	Assessing the deep sea impact of falling launcher stages with functional ecology	
17:20	Questions & Answers	

e.Deorbit: System and GNC - High Bay (16:00-18:00)

time	title	presenter
16:00	ESA GNC Technologies and Test Beds for ADR and Space Tug Applications	ORTEGA, Guillermo (ESA)
16:20	On-ground testing of vision-based navigation for non-cooperative rendezvous targets using cameras in the visible and thermal infrared range	SANCHEZ GESTIDO, Manuel (ESA)
16:40	Investigation of Detumbling Techniques	GANDIA, Fernando (GMV)
17:00	COMRADE	COLMENAREJO, Pablo (GMV)
17:20	HIPNOS: High Performance Avionics Solution for Advanced and Complex GNC Systems for ADR	LENTARIS, George (National Technical University of Athens, Greece)

Plenary: SPACE TUG ECONOMICS ROUND TABLE - Erasmus building (18:00-19:00)

time	title	presenter
18:00	SPACE TUG ECONOMICS ROUND TABLE	

Dinner - ESTEC Restaurant (19:00-21:00)

Wednesday 25 October 2017

Plenary: The legal aspects of space debris - Erasmus building (09:00-09:30)

CleanSat: Design for Demise - characterization and simulation - Auditorium (09:30-11:30)

time	title	presenter
09:30	Characterisation of the behaviour of typical spacecraft materials exposed to re-entry environment conditions	BONVOISIN, Benoit (ESA)
09:50	Material testing activities	OMALY, Pierre (CNES)
10:10	Demisable materials database	MERRIFIELD, James (Fluid Gravity Engineering)
10:30	The Horizon 2020 ReDSHIFT Project: 3D printing of demisable spacecraft	ROSSI, Alessandro (IFAC-CNR)
10:50	Reentry tools: DRAMA upgrade and reentry tumbling state with IOTA	KANZLER, Ronny (HTG)
11:10	Demise Observation Capsule: Progress update	DUSSY, Stephane (Science & Technology)

EcoDesign: LCA SPACE PROPELLANTS ROUND TABLE - Erasmus building (09:30-11:30)

time	title	presenter
09:30	This session will begin by presenting an ESA study which performed the Life Cycle Assessment of space propellants. The methodology and results will be presented followed by open discussion afterwards regarding implications for green propellants, major considerations for reducing environmental impact, and scale up from lab to industrial scale.	

e.Deorbit: GNC and Capture - High Bay (09:30-11:30)

time	title	presenter
09:30	Technology building blocks and ongoing activities regarding spectral sensing for relative navigation	ESPOSITO, Marco (cosine Research BV)
09:50	The RVS3000 and the RVS 3000-3D LIDAR Sensors: Recent Technological Advances and Future Applications	KOLB, Florian (Jena Optronik)
10:10	ORCO: End-to-end On Ground System Validation of combined technologies for Debris Removal	COLMENAREJO, Pablo (GMV)
10:30	VIMANCO: Vision Manipulation of non-cooperative objects	PAPANTONIOU, Vassilios (HTR)
10:50	Using Infrared-base relative navigation for Active Debris Removal	YILMAZ, Özgün (University Cranfield, UK / ESA)
11:10	Navigation on a chip	KOLB, Florian (Jena Optronik)

Coffee break - Erasmus building (11:30-11:50)

CleanSat: System level Design for Demise - Erasmus building (11:50-13:10)

time	title	presenter
11:50	Multidisciplinary assessment of D4D techniques	KANZLER, Ronny (HTG)

12:10	D4OP – Demisability for Optical Payloads	BIANCHI, Simone (TAS)
12:30	Demisability of Optical Payloads	BECK, James (Belstead Research Ltd)
12:50	Identification of re-entry critical launch vehicle components	LEMMENS, Stijn (European Space Agency)

EcoDesign: SINGLE SCORE ROUNDTABLE - Erasmus building (11:50-13:10)

time	title	presenter
11:50	Within Life Cycle Assessment, certain environmental indicators may be of more interest than others. This session aims to make a prioritisation to define the most important environmental indicators and to discuss weighting factors between them in order to arrive at a 'single score for space' agreed upon by space sector actors.	

e.Deorbit: Capture - Erasmus building (11:50-13:10)

time	title	presenter
11:50	ESA Robotics for ADR and Space Tug Applications	VISENTIN, Gianfranco (ESA)
12:10	Development of a gripper and the associated MGSE equipment	JAWORSKI, Jaroslaw (PIAP Space)
12:30	PREDATOR : ENVISAT capturing strategy using a STEWART platform based gripper	PAPANTONIOU, Vassilios (Hellenic Technology of Robotics SA)
12:50	Questions & Answers	

Lunch break - Erasmus building (13:10-14:00)

CleanSat: Platform equipment Design for Demise - Auditorium (14:00-15:30)

time	title	presenter
14:00	Design for demise breadboarding	PROFFE, Gerrit (OHB System AG)
14:20	Demisable joint	GRASSI, Lilith (TAS)
14:40	Demisable joints CleanSat study	KRAUS, Stephan (ariane group)
15:00	Questions & Answers	

EcoDesign: REACH - Erasmus building (14:00-15:30)

time	title	presenter
14:00	Can citric acid be used as an environmentally friendly alternative to nitric acid passivation for steel? An experimental and Life Cycle Assessment (LCA) study	IZAGIRRE, Usoa (TECNALIA)
14:20	Alternative pretreatments to aluminium	PEREIRA, Ana G. (ISQ)
14:40	REACH replacement	JOANNY, Pierre (Dassault Aviation)
15:00	REACH into LCA	CHANOINE, Augustin (Deloitte)
15:10	Natural fiber composites for space applications	RION, Julien (Bcomp SA)

e.Deorbit: Capture - High Bay (14:00-15:30)

time	title	presenter
14:00	Pre-Development of a Clamping Mechanism	ORTEGA, Guillermo (ESA)
14:20	Design and Performance Analysis of the DLR robot manipulator arm for the e.Deorbit mission	LAMPARIELLO, Roberto (DLR)
14:40	Validation Methodology of the Rendezvous and Grasping Maneuver on the Planar Air-Bearing Microgravity Simulator	SEWERYN, Karol (Space Research Centre PAS (CBK PAN))
15:00	ASSIST	MEDINA ANDRÉS, Alberto (GMV)

Coffee break - Erasmus building (15:30-16:00)

CleanSat: Platform equipment Design for Demise - Auditorium (16:00-18:00)

time	title	presenter
16:00	Containment tether	PROFFE, Gerrit (OHB System AG)
16:20	Demisability Assessment of Reaction Wheels	SMET, Geert (ESA)
16:40	Demisable materials compatibility for Tanks	
17:00	Demisable propellant tank design	BELLAROSA, Renato (Airbus)
17:20	Questions & Answers	

EcoDesign: Debris into LCA - Multimedia Library (16:00-18:00)

time	title	presenter
16:00	UN Space Sustainability Index	DEL RIO VERA, Jorge (UNOOSA)
16:20	Spacecraft design indicator fo space debris	COLOMBO, Camilla (Politecnico di Milano)
16:40	Towards the consideration of space debris within the Life Cycle Assessment Framework	MAURY, Thibaut (Ariane Group / Univ. Bordeaux)
17:00	Congestion-tipping Model for Earth Orbits	VAN PELT, Michel (ESA)
17:20	Economic value of space debris	ESTEVE, Romain

e.Deorbit: Flexible - Erasmus building (16:00-18:00)

time	title	presenter
16:00	Tethered-tugs dynamics and control verification and models validation by 0g experiments on parabolic flights	LAVAGNA, Michelle (Politecnico di Milano)
16:20	Design and Dynamic Testing of Tether System as Active Capture Technology for e.Deorbit and Net/Harpoon Based Missions	MARCONI, Lorenzo (Arescosmo S.p.A.)
16:40	ISS SPHERES Tether Dynamics Experiments / Evaluation of Tethered Active Debris Removal Issues	BECKER, Marcel (German)
17:00	Full Scale Demonstration of Debris Capturing with Deployable Nets	GOLEBIOWSKI, Wojtciech (SKA Polska)

17:20	PATENDER: A Net-Based Experiment and Possible Solution to the Space Debris Problem	CERCOS, Lorenzo (GMV)

Plenary: Sustainability of Space round table - Erasmus building (18:00-19:00)

time	title	presenter
18:00	The session aims to discuss how we can define and quantify the sustainability of space, both from an Earth and orbital perspective.	

Football tournament - Erasmus building (19:00-20:30)

Thursday 26 October 2017

ATD3 - Multimedia Library (09:00-11:00)

CleanSat: Semi-controlled re-entry round table - Erasmus building (09:00-11:00)

time	title	presenter
09:00	Semi-controlled reentry can reduce the impact of controlled reentry at system level, but domains of feasibility and uncertainties must be quantified as well as the respective legal implications.	

e.Deorbit: ESA Robotics / Lab Tours - Erasmus building (09:00-11:00)

Coffee break - Erasmus building (11:00-11:30)

ATD3: ATD3 - Multimedia Library (11:30-13:00)

CleanSat: Deorbit equipment - Erasmus building (11:30-13:00)

time	title	presenter
11:30	Environmental impact of passive deorbit devices	COLOMBO, Camilla (Politecnico di Milano)
11:50	ADEO Passive De-Orbit Subsystem Activity leading to a Dragsail Demonstrator: Conclusion and Next Steps	SINN, Thomas (HPS GmbH)
12:10	Electrostatic tether plasma brake module for deorbiting	JANHUNEN, Pekka (Finnish Meteorological Institute)
12:30	Customer-driven deorbit kit based on bare electrodynamic tether technology	URGOITI, Eduardo (SENER)

e.Deorbit: e.Inspector - Erasmus building (11:30-13:00)

time	title	presenter
11:30	e.Inspector - a cubesat inspection mission	MORALES SERRANO, Sara (ESA)
11:50	Inspection trajectories and GNC design	GIL, Jesus (ESA/ESTEC) REINTHAL, Eric (University of Würzburg)
12:10	High thrust chemical propulsion for small satellites	KNOP, Tobias (Hyperion Technologies)
12:30	Efficient De-Orbiting of Micro and Nano Satellites Using the IFM Nano-Thruster	REISSNER, Alexander (FOTEC)

Lunch break - Erasmus building (13:00-14:00)

ATD3: ATD3 - Erasmus building (14:00-15:00)

CleanSat: Deorbit equipment - Erasmus building (14:00-15:00)

time	title	presenter

14:00	Controlled deorbit overview	SOARES, Tiago (TEC-SYE)
14:20	Electronic pressurant regulator	
14:40	SITAEL AT 1k arcjet	GREGUCCI, Stefan (Sitael)

EcoDesign: Greensat brainstorming - CDF (14:00-15:00)

e.Deorbit: Mega Constellations - Erasmus building (14:00-15:00)

time	title	presenter
14:00	Mega Constellations EOL operations	SYMONDS, Kate (ESA)
14:20	Active Debris Removal: A possible solution for megaconstellations	BILLOT, carole (thales alenia space france)
14:40	Design for Removal: A cost efficient opportunity to prepare future satellites to an an ADR mission	BILLOT, carole (thales alenia space france)

Coffee break - Erasmus building (15:00-15:30)

ATD3: ATD3 - Erasmus building (15:30-16:30)

CleanSat: Autonomous Deorbit systems - Erasmus building (15:30-16:30)

time	title	presenter
15:30	Deorbit Motors for Active Deorbiting	GOTZIG, Ulrich (Ariane Group)
15:50	Conceptual design of Solid Rocket Motor for deorbitation and advances in the development of an Aluminium-free solid propellant	OKNI■SKI, Adam (Institute of Aviation)
16:10	D-SAT Mission: an In-Orbit Demonstration of Satellite Controlled Re-entry	FANFANI, Alessio (D-Orbit)

EcoDesign: Greensat brainstorming - Erasmus building (15:30-16:30)

e.Deorbit: Reliability round table - Erasmus building (15:30-16:30)

time	title	presenter
15:30	The requirement on reliability is evolving from a conditional success probability of the End of Life operations to an absolute value. The consequences at system and subsystem level will be discussed as well as the approach to determine the reliability at end of life and evaluate mission extensions.	

Plenary: Wrap-up - Erasmus building (16:30-17:30)