

Curriculum Vitae of Jan Osburg

Contact Information

E-mail: jan.osburg@gmx.net (home); jan.osburg@asdl.gatech.edu (office)
Web site: <http://www.janosburg.net>

Education

Doctoral Degree in Aerospace Engineering

University of Stuttgart, Stuttgart, Germany, 2002

Topic: "An Interdisciplinary Approach to the Conceptual Design of Inhabited Space Systems"

"Diplom-Ingenieur Luft- und Raumfahrttechnik"

University of Stuttgart, Stuttgart, Germany, 1997

(German equivalent of a Masters degree in aerospace engineering)

Majors: Space Systems and Utilization, Flight Mechanics and Control

Master of Science in Aerospace Engineering

Georgia Institute of Technology, Atlanta, GA, USA, 1996

Focus on the multidisciplinary, robust conceptual design of supersonic aircraft

Skills

Strategic thinking • project management • planning, organizing, streamlining and implementing • communicating and negotiating • teaching, tutoring and mentoring • leading and motivating • multicultural social skills • broad general knowledge base • systems engineering • software development • hands-on technical experience and skills • expert in Word, Excel, PowerPoint, Project, Corel, Matlab, ModelCenter, LabVIEW • Windows NT and XP administration

Languages

German: native speaker

French: highly proficient

Academic Experience

September 2003 to present: Research Engineer

Aerospace Systems Design Laboratory, Georgia Institute of Technology, Atlanta, GA, USA

- Creating and managing an interactive design facility for collaborative interdisciplinary design and instruction (including equipment selection, floor plan design, user training and operations)
- Researching robust systems design methodologies
- Managing the implementation of advanced design methodology and tools for a sponsor in the area of nuclear space propulsion
- Supporting NASA's Advanced System Concepts and Technologies team in determining technology investment portfolios for the Vision for Space Exploration
- Led a team designing a morphing hypersonic vehicle for the Air Force
- Managing the integration of established aerodynamic simulation codes into one automated tool
- Coordinating graduate systems design competition teams
- Supported a Congressionally-mandated study by the National Institute of Aerospace that created an investment strategy for NASA's aeronautics program
- Guided a collaborative effort to enhance the early phase of spacecraft conceptual design by incorporating tools for the rapid-turnaround analysis of reentry aerothermodynamics and risk
- Managed research aimed at developing a framework for the physics-based conceptual design of unconventional aerospace vehicles
- Managed the development of probabilistic modeling and simulation software for airbreathing Access-to-Space vehicles

June 1997 – May 2002: Research Engineer and Lecturer

Space Systems Institute, University of Stuttgart, Stuttgart, Germany

- Lectured on space station design, life support systems, and human factors (including responsibility for curriculum/lesson planning and examinations)
- Taught interdisciplinary systems design methodology to graduate students of engineering and architecture, through team-centered, interactive, international hands-on "Space Station Design Workshops" (SSDW); these workshops have been offered not only at the University of Stuttgart, but also at other locations such as the International Space University in Strasbourg, France. Workshop activities ranged from system and subsystem design and simulation to team building exercises under competitive, time-constrained conditions. The 2002 SSDW took place at the European Space Agency's Space Research and Technology Center (ESTEC), on invitation by ESA's Directorate of Manned Spaceflight and Microgravity. There were thirty participants selected from 180 applicants taking part in the program; they were all graduate students from a number of different European countries and Canada. The website <http://www.irs.uni-stuttgart.de/SSDW> contains more information regarding the SSDW.

- Developed the interdisciplinary conceptual design methodology being used at the SSDWs, which implements a customer-oriented design approach and emphasizes thorough analysis of objectives, requirements and constraints
- Created interactive, user-friendly simulation software for life support systems design and analysis that is being used at the SSDW
- Researched the topic of human integration in the conceptual design of space systems
- Advised graduate aerospace engineering students and architecture students on their Masters theses
- Interfaced with media representatives on issues of spaceflight-related research and current events
- Coordinated the Integrated Aerospace Studies Program between the Department of Aerospace Engineering, University of Stuttgart, Germany and the elite National Aerospace Schools in Toulouse, France
- Organized lectures given by top-level management personnel of DaimlerChrysler Aerospace AG (now Astrium)

October 1995 – September 1996: Graduate Research Assistant

Aerospace Systems Design Laboratory, Georgia Institute of Technology, Atlanta, GA, USA

- Developed life-cycle cost estimation tool for US military helicopters
- Gained first-hand experience with robust, stochastic multidisciplinary design optimization methodology by working as part of a team performing the conceptual design of a high-speed civil transport airplane
- Programmed and used design simulation and analysis software in a concurrent design environment

May 1993 – December 1994: Graduate Teaching Assistant

Institute of Mechanics, University of Stuttgart, Stuttgart, Germany

- Advised undergraduate students in advanced mechanics studies and evaluated their performance

Other Professional Experience

June 2002 to present: Aerospace Engineering Researcher

- Consulting on technology selection methods
- Researching systems engineering and architecture, human integration, and space mission operations
- Leading field investigations of spaceflight human factors and design efficiency
- Presenting complex subject matter to professional and general audiences; interacting with news media

April 1995 – July 1995: Research and Development Intern

Teldix GmbH, Heidelberg, Germany

- Developed and successfully field-tested Ada software for German Army land vehicle navigation project based on Rockwell-Collins military precision GPS receiver AN/PSN-11 (PLGR)
- Programmed Kalman Filter-based algorithm for navigation measurement data integration in Ada

November 1992 – February 1993: Engineering Intern

Deutsche Aerospace Airbus GmbH, Hamburg, Germany

- Participated in design and production planning of Airbus aircraft A 310, A 320 and A 330/340
- Gained hands-on experience in manufacturing of composite structures
- Assisted in qualification tests for cabin management and in-flight entertainment systems

June 1989 – August 1990: Communications Equipment Maintenance Specialist

1st Company/890th Battalion CENTAG (German Army), Philippsburg, Germany

- Maintained and repaired high-frequency radio equipment in joint German Army/NATO communications unit

Publications

Refereed

“A Collaborative Design Environment to Support Multidisciplinary Conceptual Systems Design”

- With Dimitri N. Mavris
- Proceedings of the SAE World Aerospace Congress, Dallas, TX, USA, October 2005, SAE-2005-01-3435
- Received “2005 SAE Excellence in Oral Presentation” award
- Published in “Journal of Aerospace”, Society of Automotive Engineers Transactions 2005

“An Interdisciplinary Approach to the Conceptual Design of Inhabited Space Systems”

- Doctoral Dissertation, May 2002
- Department of Aerospace Engineering, University of Stuttgart, Stuttgart, Germany
- Available via <http://elib.uni-stuttgart.de/opus/volltexte/2002/1084> (PDF file) and ISBN 3-8311-4791-4 (printed)
- Received “Best Dissertation” award from national academic society organization
- Summary presented at the AIAA/IAF/COSPAR World Space Congress 2002, Houston, Texas, October 2002; selected for publication in “AIAA Progress in Astronautics” series

“MELISSA – A Modular Environment for Life-Support Systems Simulation and Analysis”

- With Reinhold Bertrand and Ernst Messerschmid
- Published in “Journal of Aerospace”, Society of Automotive Engineers Transactions 1998, SAE-981754

Contributions to Books and Monographs

“Crew 37 – The First Single-University Rotation at MDRS”

- Published in “Mars Analog Research”, edited by Jon Clarke, American Astronautical Society Science and Technology Series Volume 111, Univelt, San Diego, CA, USA, AAS 06-252

“Space Station Design Workshop 2002 - Interdisciplinary Student Education”

- With Ernst Messerschmid, Kian Yazdi and Johannes Uhl
- ESA publication SP-1267, European Space Agency, February 2003

“Avantgardistische Lebensräume am Rande der Unendlichkeit”

- Essay on similarities between terrestrial and space architecture
- Published in “Industrie- und Gewerbebauten aus Stahl” (Industrial and Commercial Buildings Made of Steel), edited by Johannes Uhl, WEKA Publishers, Germany, 1998, ISBN 3-8277-1698-5

“MELISSA – eine LabVIEW-basierte Umgebung zur Simulation von Lebenserhaltungssystemen”

- Report on using National Instruments’ LabVIEW software environment for life support system simulation
- With Reinhold Bertrand and Ernst Messerschmid
- Published in “Virtuelle Instrumente in der Praxis” (Practical Applications of Virtual Instruments), edited by Rahman Jamal and Heinz Jaschinski, Hüthig Publishers, Berlin, Germany, 1997, ISBN 3-7785-2667-7
- Received “Best Contribution Award” at National Instruments Germany 1997 User Conference

Refereed Proceedings

“Probabilistic Conceptual Design Analysis of Multi-Stage Launch Vehicles”

- With Frederic Villeneuve and Dimitri N. Mavris
- Proceedings of the AIAA/ISSMO Multidisciplinary Analysis and Optimization (MA&O) conference, Albany, NY, USA, August 2004, AIAA-2004-4305

“Crew Experience at the ‘Flashline Mars Arctic Research Station’ during the 2003 Field Season”

- Proceedings of the 34th International Conference on Environmental Systems, Colorado Springs, CO, USA, July 2004, SAE-04ICES-31

“Mars Analog Station Cognitive Testing (MASCOT): Results of First Field Season”

- With Walter Sipes
- Proceedings of the 34th International Conference on Environmental Systems, Colorado Springs, CO, USA, July 2004, SAE-04ICES-30

"A Mission Statement for Space Architecture"

- With Constance Adams and Brent Sherwood
- Proceedings of the 33rd International Conference on Environmental Systems, Vancouver, Canada, July 2003, SAE-2003-01-2431

"Crew Experience at the Mars Desert Research Station"

- Proceedings of the 33rd International Conference on Environmental Systems, Vancouver, Canada, July 2003, SAE-2003-01-2390

"The MEOW Experiment: Measuring Cognitive Performance of Planetary Analog Base Crewmembers"

- With Walter Sipes and Edna Fiedler
- Proceedings of the 33rd International Conference on Environmental Systems, Vancouver, Canada, July 2003, SAE-2003-01-2539

"An Interdisciplinary Engineering/Architectural Approach to the Conceptual Design of Space Stations"

- With Johannes Uhl and Ernst Messerschmid
- Proceedings of the 30th International Conference on Environmental Systems, Toulouse, France, July 2000, SAE-2000-01-2330

"Integrated Simulation of Synergistic Space Station Subsystems during the Conceptual Design Phase"

- With Ernst Messerschmid
- Proceedings of the 30th International Conference on Environmental Systems, Toulouse, France, July 2000, SAE-2000-01-2398

Other Publications

"Evolving Conceptual Propulsion Design Using Preliminary Multidisciplinary Design Analysis and Optimization"

- With Russell Joyner, Andrea Lentati, Bjorn Cole and Richard Otero
- Proceedings of the 42nd Joint Propulsion Conference, Sacramento, CA, USA, July 2006, AIAA-2006-4614

"Developing Mars Base Requirements Using Terrestrial Analog Facilities"

- Poster contribution to the 2006 Conference on Habitation Research and Technology Development, Orlando, FL, USA, February 2006, Abstract ID: HLS112

"Simulating Mars on Earth: Crew 37 at the Mars Desert Research Station"

- Proceedings of the 8th International Mars Society Convention, Boulder, CO, USA, August 2005

“French-German Integrated Studies at the Department of Aerospace Engineering of the University of Stuttgart, Germany”

- With Ernst Messerschmid and Manfred Zippel
- Proceedings of the 52nd Congress of the International Astronautical Federation (IAF), Toulouse, France, October 2001, IAF/ISSAT/ISU-01-P.0.03 3

“Vergleichende Untersuchungen zum synergistischen Betrieb von Subsystemen auf der Internationalen Raumstation”

- Paper on the comparative analysis of synergistic subsystem operations on the International Space Station
- With Christoph Fehrenbacher and Arndt Hinüber
- Proceedings of the Annual Convention of the DGLR (German Aerospace Professional Association), Berlin, Germany, October 1998, DGLR-JT98-258

“Astronauten-Kost: Ernährung im All”

- Keynote paper on astronaut food and nutrition
- With Ernst Messerschmid
- Proceedings of the 17th National Convention of Gastroenterologists, Ludwigsburg, Germany, September 1998

Major Presentations and Speeches

“Crew 37 – First Single-University Crew at the Mars Desert Research Station”

- Georgia Institute of Technology, Atlanta, GA, June 2005
- Marietta High School, Marietta, GA, May 2005

“Mars on Earth: The 2003 Expedition to the Flashline Mars Arctic Research Station”

- Georgia Institute of Technology, Atlanta, GA, October and November 2003
- Coca-Cola Space Science Center, Columbus, GA, September 2003
- Harris County Rotary Club, Pine Mountain, GA, August 2003

“Capturing the Imagination: The Impact of Human Space Exploration on 21st Century Science Education”

- “Make Space” event at the World Space Congress, Houston, TX, October 2002
- Keynote address at the “Making Connections II” conference of NASA’s NOVA program; Coca-Cola Space Science Center, Columbus, GA, September 2002

“An Interdisciplinary Approach to the Conceptual Design of Complex Inhabited Systems”

- Lecture on invitation at the Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, Cambridge, MA, May 2002

“Mission: Mars – Crew Experience on board the Mars Desert Research Station”

- Coca-Cola Space Science Center, Columbus, GA, June and November 2002
- Keynote address at annual reunion of “Laetitia” Academic Society, Karlsruhe, Germany, May 2002
- Stuttgart Chapter of the German Aerospace Professional Association (DGLR), Stuttgart, Germany, May 2002

“Interdisciplinary Conceptual Design of Space Stations”

- Lecture on invitation at “Space Mission Analysis and Design” course for management of Astrium space company, Bremen, Germany, June 2001
- Lecture on invitation at Embry-Riddle Aeronautical University, Prescott, AZ, October 2000

“Introduction to Space Stations”

- Lecture on invitation at continuing education workshop for management of Astrium space company, Bremen, Germany, June 2001
- Lecture on invitation at Embry-Riddle Aeronautical University, Prescott, AZ, October 2000
- Planetarium Stuttgart, Stuttgart, Germany, January 1998 and March 1999

“The MELISSA Life-Support Systems Simulation Tool”

- Lecture on invitation at the Cognitive Science Laboratory of Catholic University of America, Washington, DC, October 2000
- Space Systems Institute, University of Stuttgart, Stuttgart, Germany, June 1997

“Astronaut Selection”

- Space Systems Institute, University of Stuttgart, Stuttgart, Germany, February 2000
- Planetarium Stuttgart, Stuttgart, Germany, March 1999

“Astronaut Food”

- Space Systems Institute, University of Stuttgart, Stuttgart, Germany, February 2000
- Planetarium Stuttgart, Stuttgart, Germany, March 1999

“Missions to Mars – Past, Present and Future”

- Carver Science Magnet High School, Columbus, GA, January 1998
- “Makaria” Academic Society, Stuttgart, Germany, January 1998

Advised Masters Theses

Student Name (<i>Department</i>)	Title of Thesis	Year
Daniel Bindel (<i>Aerospace Engineering</i>)	Development of a Modeling Tool for the Conceptual Design of Space Station Configurations	2001
Anna Demuth (<i>Industrial Design</i>)	Development of a Space Hygiene Facility	2001
36 Students of <i>Architecture</i>	Early Bird – Visions for a Space Hotel	2001
Mohammad Irani (<i>Aerospace Engineering</i>)	Utilization of Virtual Reality Tools for the Conceptual Design of Space Station Configurations	2001
Andreas Schmid (<i>Aerospace Engineering</i>)	Conceptual Design of a Space Hotel	2000
Peter Brodbeck (<i>Aerospace Engineering</i>)	Development of a Computer Tool for Graphical Modeling of Space Stations During the Conceptual Design Phase	2000
Jochen Wilms (<i>Aerospace Engineering</i>)	Development of a Synergistic Propulsion Scheme for the International Space Station	2000
Markus Hirche (<i>Industrial Design</i>)	Space Station Crew Quarters Module Design	2000
Erik Labadie (<i>Aerospace Engineering</i>)	Analysis and Simulation of a System for Oxygen Recovery in Life Support Systems	1999
Martin Heyne (<i>Aerospace Engineering</i>)	Integration of a Bioregenerative Life Support System into the First Manned Expedition to Mars	1999
Christiane Holmig (<i>Aerospace Engineering</i>) and Andreas Schindler (<i>Architecture</i>)	Interdisciplinary Conceptual Design of Modular Interior Spaces of a Space Station	1999
Aleksandra Konopek (<i>Industrial Design</i>)	Pneo - An Inflatable Module for Living in Space	1999
Lutz Klinkner (<i>Aerospace Engineering</i>)	Analysis of Two Secondary Systems for a Mobile Lunar Robot: Vehicle Localization Using Attitude Sensors and Anti-Collision Systems	1998
Christoph Fehrenbacher (<i>Aerospace Engineering</i>)	Comparative Analysis of Synergistic Subsystem Operations on the International Space Station	1998
Holger Burkhardt (<i>Aerospace Engineering</i>)	Dynamic Simulation of Satellite Attitude Control Systems	1998
Michaela Gerum (<i>Architecture</i>) and Matthias Jolk (<i>Aerospace Engineering</i>)	Interdisciplinary Conceptual Design of a Space Station with Special Emphasis on the Needs of the Crew	1998
Mark Prinz (<i>Aerospace Engineering</i>)	Modeling and Simulation of the Attitude and Orbit Control System of Space Stations using Graphical Programming Methods	1997

Teaching and Training Activities

Introduction to GPS Navigation (hands-on field training)
Radio Use and Radio Procedures (hands-on field training)
Space Station Design Workshop (graduate hands-on workshop, including lectures)
Life Support Systems (graduate lectures)
Human Factors (graduate lecture)
Subsystem Simulation and Synergisms (graduate lecture)
Interstellar Ramjet Propulsion (graduate lecture)
Introduction to Space Stations (undergraduate lecture)

Awards

“2005 SAE Excellence in Oral Presentation” award at SAE World Aerospace Congress, Dallas, TX, USA, October 2005, for presentation on “A Collaborative Design Environment to Support Multidisciplinary Conceptual Systems Design” (SAE-2005-01-3435)

Named “Most Valuable Crewmember” during four-week research mission at Mars-analog simulation facility in the High Arctic, July 2003

“Carl-Sonnenschein-Preis 2002” (best dissertation award) from national academic society organization „Kartellverband“, for doctoral dissertation on “An Interdisciplinary Approach to the Conceptual Design of Inhabited Space Systems”, July 2002

Listed in “Who’s Who in Science and Engineering” (6th Edition, 2002-2003)

“Best Contribution” award at the “Virtual Instruments in Practice” conference organized by National Instruments Germany, for paper on unconventional application of their LabVIEW software for life support system simulation in an educational context, October 1997

Professional Memberships

Senior Member, American Institute of Aeronautics and Astronautics (AIAA)

Member, German Aerospace Professional Association (DGLR)

Member, The Mars Society

Select Other Activities

Post-Doctoral Fellow, Sam Nunn Security Program, Center for International Strategy, Technology and Policy

August 2006 – July 2007, Georgia Institute of Technology, Atlanta, GA, USA

Crew Commander at Mars Society Desert Research Station (Mars Habitat Analog)

March 2005 and 2006, The Mars Society; southern desert, UT, USA

Faculty Advisor to Mars Society Student Chapter at the Georgia Institute of Technology
2004 to present, Mars Society @ Georgia Tech, Atlanta, GA, USA

Crew Member at Flashline Mars Arctic Research Station (Mars Habitat Analog)
Tasks: Human Factors Investigator, Communications Engineer, Safety/Security Officer
July 2003, The Mars Society; Devon Island, Canada

President of Mars Society Georgia Chapter
2003 to present, Mars Society Georgia Chapter, Dahlonega, GA, USA

Crew Member at Mars Society Desert Research Station (Mars Habitat Analog)
Tasks: Executive Officer, Station Engineer, Health and Safety Officer
April 2002, The Mars Society; southern desert, UT, USA

Project Initiator and Manager for Manufacturing and Exhibition of a Large ISS Scale Model
1998 – 2002, Department of Aerospace Engineering, Stuttgart, Germany

Promotion of Human Spaceflight
1997 to present, at various schools, exhibitions, newspapers, TV and radio stations

Newsletter Editor and Production Manager
1997 – 2002, "Rhenio-Nicaria" Academic Society, Stuttgart, Germany

Olympic Village Protocol Officer
1996, Atlanta Committee for the Olympic Games, Atlanta, GA, USA

Member of Solar-Powered Glider Design Competition Team
1993 – 1995, Department of Aerospace Engineering, Stuttgart, Germany

President and Vice-President of Student Organization
1992 – 1994, "Rhenio-Nicaria" Academic Society, Stuttgart, Germany

Last revised in September 2006