

## Meeting the Needs of Users and Industry

If Responsive Space is to survive and prosper it has to meet the needs of two diverse groups – the user community (military, civilian, and educational) that needs to get things into space rapidly and affordably and the industrial community that needs to be able to make a profit fulfilling those needs. This leads to central issues that we hope to address at RS7. What is affordable? \$25 million? \$100 million? How do we create affordable access to space, both for primary and secondary payloads? How does industry make money in Responsive Space? How do we manufacture truly low cost satellites and what are the business opportunities that these satellites can fulfill?

*Come Join the Continuing Conversation —  
It Will Be Fascinating and Spirited*

## Receptions

A reception will be held Monday evening from 5:00 pm to 6:30 pm in the conference hotel. Come and meet the other participants and bring your spouse. A reception will also be held on Tuesday, from 5:20 pm to 8:00 pm. After the reception, if you want to have dinner with old or new colleagues, there are plenty of restaurants nearby. There is an additional reception before the conference banquet on Wednesday.

## ORS Spacecraft Build

To demonstrate the responsiveness possible with a planned and coordinated effort, the Operationally Responsive Space Office will build a spacecraft at their facility in Albuquerque with the help of the Conference participants — beginning the opening day of the conference and finishing before the conference is over. ORS will encourage full audience participation and solicit inputs and advice from Conference attendees throughout the exercise, as well as provide regular progress reports and transparent insight via webcam and blog. It will be fascinating to watch the progress and see whether they can do it!

## NASA/JPL Town Hall Meeting

NASA's Town Hall Meeting will follow RS7 with a reception and dinner followed by a panel discussion.

## The Space Show

The Space Show, a live radio broadcast with host Dr. David Livingston, will once again be broadcast as a part of the Responsive Space Conference. "Dr. Space" will discuss the status and prospects of Responsive Space with RS7 participants on Tuesday evening from 7:00 to 8:30. Come join us.

## RS7 Corporate Sponsors

Analytical Graphics Inc.  
ATK  
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L-3 Communications  
Microcosm, Inc.  
Microcosm Astronautics Books

Northrop Grumman  
Orbital Sciences  
Raytheon  
Sierra Nevada Space Systems  
Space Dynamics Laboratory  
SpaceX

## "Responsive Proceedings"

Tired of waiting a year for the proceedings? A CD-ROM with all of the papers will be given out on the last day of the conference. This was a big hit at past Responsive Space conferences.

## Information & Registration

You can register on-line via the website or download a registration form to FAX or mail. Want to talk to a real human being about the conference? Call **Julie Jackson** at:

**310-219-2700 or FAX 310-219-2710.**

Or send us an E-mail at: [responsivespace@smad.com](mailto:responsivespace@smad.com)

For more information, visit the conference website at:

<http://www.respondivespace.com>

## Partial List of Speakers

**Dr. Owen Brown**

*DARPA F6 Program Manager*

**LTG Kevin Campbell**

*Commander, Army Space and Missile Defense Command*

**Brig Gen Michael C. Dudzik**

*Mobilization Assistant to the Commander, 14th Air Force,  
Air Forces Strategic-Space, Air Force Space Command*

**Josh Hartman**

*Special Assistant to the Under Secretary of Defense for  
Acquisition, Technology, and Logistics*

**Maurice Martin**

*Lead of the Responsive Systems Group for the Space Vehicles  
Directorate, AFRL*

**Brig Gen James "Kevin" McLaughlin**

*Vice Commander, U.S. Air Force Warfare Center*

**Joe Rouge**

*Director, National Security Space Office*

**Dr. Peter Wegner**

*Director, Operationally Responsive Space Office (ORSO)*

**Colonel Richard White**

*Director, SMC/XR*

**Dr. S. Pete Worden**

*NASA Ames Center Director*

## Points of Contact

**General Chair:**

Dr. James R. Wertz  
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(310) 219-2700

**Sponsorship POC:**

Dr. Robert Conger  
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# Final PROGRAM

**April 27–30, 2009  
LAX Westin Hotel**



**Come Join  
The Continuing  
Conversation**

*Sponsored by the  
AIAA LA and Orange County Sections, and the  
Space Systems and Space Transportation  
Technical Committees*

[www.respondivespace.com](http://www.respondivespace.com)

Rev. 4/25/2009

**MONDAY, APRIL 27, 2009**

4:00 pm–7:00 pm **REGISTRATION OPENS**  
 4:00 pm–7:00 pm **EXHIBITS OPEN**  
 5:00 pm–7:00 pm **RECEPTION**, Sponsored by *Orbital Sciences*

**TUESDAY, APRIL 28, 2009**

7:00 am–5:00 pm **REGISTRATION**  
 7:00 am–8:00 am **CONTINENTAL BREAKFAST**, Sponsored by *Raytheon*  
 7:45 am–6:00 pm **EXHIBITS OPEN**  
 8:00 am–8:45 am **WELCOME AND INTRODUCTIONS**  
**Dr. James Wertz**, *Microcosm, Inc.*  
 8:45 am–9:30 am **KEYNOTE ADDRESS**  
 Speaker: **BGen James “Kevin” McLaughlin**, *Vice Commander, U.S. Air Force Warfare Center*  
 9:30 am–10:00 am BREAK, AIAA LA and Orange County Sections  
 10:00 am–10:35 am Speaker: **Brig Gen Michael C. Dudzik**, *Mobilization Assistant to the Commander, 14th Air Force, Air Forces Strategic-Space, Air Force Space Command*  
 10:35 am–11:10 am Speaker: **Dr. Owen Brown**, DARPA F6 Program Manager  
 11:10 am–11:45 am Speaker: **Dr. Peter Wegner**, *Director, Operationally Responsive Space Office (ORSO)* and **Charles Finley**, *Head of ORS Spacecraft Build Program*  
 11:45 am–1:20 pm LUNCH, Sponsored by *Sierra Nevada Space Systems*  
 Speaker: **Col. Richard White**, Director, SMC/XR  
 1:20 pm–3:05 pm **SESSION I – LAUNCH/LAUNCH VEHICLE PROPULSION**  
 Chair: **Gerald Stenovec**; Co-Chair: **Robert Conger**  
 1:25 pm 1001: Just Add Sun: The Story of the 40th Flight of Pegasus — **Adam Lewis**, *Orbital Sciences Corp.*  
 1:45 pm 1002: Small Unit Space Transport and Insertion (SUSTAIN): How to Do It and Use It as a Driver for Low-Cost Responsive Orbital Launch — **John M. Jurist**, *Univ. of North Dakota*  
 2:05 pm 1003: SpaceX Falcon I: The First Privately-Developed Liquid Fuel Rocket to Achieve Earth Orbit — **Brian Bjelde**, *SpaceX*  
 2:25 pm 1004: Rapid Ascent Trajectory Planning and Closed-Loop Guidance for Responsive Launch — **Frank R. Chavez**, *Air Force Research Lab*  
 2:45 pm 1005: ALDEBARAN, A Launch Vehicle System Demonstrator — **Christophe Talbot**, *CNES-Centre National d’Etudes Spatiales*  
 Alt. 1006: Adapter Ring for Small Satellites on Responsive Launch Vehicles — **Joseph R. Maly**, *CSA Engineering*  
 Alt. 1007: Sea-Launched TacSats for Responsive Space (STaRS) — **Lt. Col. Robert Carneal**, *US Air Force SMC/XRDP*  
 3:05 pm–3:35 pm BREAK, AIAA LA and Orange County Sections  
 3:35 pm–5:20 pm **SESSION II – SYSTEMS ENGINEERING/CONOPS**  
 Chair: **Richard Van Allen**  
 3:40 pm 2001: Rapidly Deployable Space Capabilities-Based Assessment – Approach and Status — **Lt. Col. Ryan Pendleton**, *AFSPC*  
 4:00 pm 2002: Developing Autonomy Systems in ORS Timescales — **George Cancro**, *JHUAPL*  
 4:20 pm 2003: SatCarrier CONOPS: A Concept of Operations for Satellite Carriers — **RayMing Chang**, *US Air Force SMC/CDE*  
 4:40 pm 2004: Implementation Challenges and Strategies for Responsive Space Architectures (STUDENT AWARD) — **Zoe Szajnarfer**, *MIT*  
 5:00 pm 3010: Nanosatellite Tracking Ships: Responsive, Seven-Month Nanosatellite Construction for a Rapid On-Orbit Automatic Identification System Experiment — **Freddy Pranajaya**, *Space Flight Laboratory*

Alt. 2006:  $\mu$ SWAP INFOSEC Technology for ORS Secure Communications Links — **Ken Clauss**, *General Dynamics C4 Systems*  
 5:20 pm–8:00 pm **RECEPTION**, Sponsored by *L-3 Communications*  
 7:00 pm–8:30 pm **THE SPACE SHOW — Live Radio Broadcast**

**WEDNESDAY, APRIL 29, 2009**

7:00 am–5:00 pm **REGISTRATION**  
 7:00 am–8:00 am **CONTINENTAL BREAKFAST**  
 7:45 am–6:00 pm **EXHIBITS OPEN**  
 8:00 am–8:05 am **CALL TO ORDER/ANNOUNCEMENTS**  
 8:05 am–8:15 am **SPACECRAFT BUILD UPDATE**  
 8:15 am–9:55 am **WARFIGHTER PANEL**  
 Moderator: *USSTRATCOM*  
 9:55 am–10:25 am Speaker: **Josh Hartman**, *Special Assistant to the Under Secretary of Defense for Acquisition, Technology, and Logistics*  
 10:25 am–10:55 am BREAK, AIAA LA and Orange County Sections  
 10:55 am–11:25 am Speaker: **Maurice Martin**, *Lead of the Responsive Systems Group for the Space Vehicles Directorate, AFRL*  
 11:25 am–12:10 am **SESSION IIIA – TECHNOLOGY**  
 Chair: **Jeffrey Puschell**  
 11:30 am 3001: Leveraging the First ORS Mission into ORBCOMM and the Implications for Future ORS Missions — **Todd Mosher**, *Sierra Nevada Corp.*  
 11:50 am 3002: ISET Compliant Modular Multi-Mission Space Vehicle Design Feasibility for Rapid Response — **Steven Schenk**, *Comtech AeroAstro, Inc.*  
 12:10 pm–1:45 pm LUNCH, Sponsored by *Raytheon*  
 Speaker: **LTG Kevin Campbell**, *Commander, Army Space and Missile Defense Command*  
 1:45 pm–3:30 pm **SESSION IIIB – TECHNOLOGY**  
 Chair: **Jeffrey Puschell**  
 1:50 pm 3003: Autonomous Instrument Checkout and Calibration Built in Test — **Brian A. Bauer**, *JHUAPL*  
 2:10 pm 3004: A New Paradigm for Responsive Space Missions — **Bill Jackson**, *Sierra Nevada Corp.*  
 2:30 pm 3005: Synergy through Diversity: The Benefits of Applying the Lessons from Microspace to Achieving the Goals of Responsive Space — **Steven Schenk**, *Comtech AeroAstro, Inc.*  
 2:50 pm 3006: PCPMU: A Modular, Multi-Use Payload Electronics Architecture for Affordable, Responsive Missions — **Sasa Trajkovic**, *MDA Corp.*  
 3:10 pm 3007: Redefining the Word “Responsive” In ORS — **Stuart Eves**, *SSTL*  
 Alt. 3009: Thermal Subsystem Design Methodology for Responsive Space Missions — **1st. Lt. Eric Lyall**, *AFRL*  
 3:30 pm–4:00 pm BREAK, Sponsored by *Analytical Graphics Inc.*  
 4:00 pm–5:25 pm **SESSION IV – STANDARDS**  
 Chair: **Greg Orndorff**; Co-Chair: **Shahzad Khaligh**  
 4:05 pm 4001: GIST: Our Strategy for Globalizing and Internationalizing ORS Standards and Technology — **Robert D. Pugh**, *Think Strategically LLC*  
 4:25 pm 4002: A Roadmap for Responsive Software Systems — **Brian Bauer**, *JHUAPL*  
 4:45 pm 4003: CubeFlow A Modular Open Systems Architecture for CubeSats — **Christopher McNutt**, *AFRL*  
 5:05 pm 4004: A Novel Spacecraft Standard for a Modular Nonsatellite Bus in an Operationally Responsive Space Environment (STUDENT AWARD) — **David Voss**, *Boston University*

Alt. 4005: Prototyping of ORS Phase III and SPA Software Standards Using Common Hardware — **Louis Marketos**, *Design\_Net Engineering*  
 5:25 pm–6:30 pm **RECEPTION**, Sponsored by *Raytheon*  
 6:30 pm–8:30 pm **CONFERENCE BANQUET**, Sponsored by *Boeing*  
 Speaker: **Joe Rouge**, *Director, National Security Space Office*

**THURSDAY, APRIL 30, 2009**

7:00 am–8:00 am **CONTINENTAL BREAKFAST**  
 7:45 am–3:30 pm **EXHIBITS OPEN**  
 8:00 am–8:05 am **CALL TO ORDER/ANNOUNCEMENTS**  
 8:05 am–8:15 am **SPACECRAFT BUILD UPDATE**  
 8:15 am–8:30 am **INTRO TO ORS PANELS**  
 Speaker: **Dr. Peter Wegner**, *Director, ORSO*  
 8:30 am–9:30 am **SMALL SATELLITES BUSINESS PANEL**  
 9:30 am–10:30 am **INTERNATIONAL PANEL**  
 10:30 am–11:00 am BREAK, AIAA LA and Orange County Sections  
 11:00 am–12:00 pm **BUILDING THE ORS-O ENTERPRISE**  
 12:00 pm–12:15 pm **ORS PANEL WRAP-UP**  
**Dr. Peter Wegner**, *Director, ORSO*  
 12:15 pm–1:50 pm LUNCH, Sponsored by *ATK*  
 Speaker: **Pete Worden**, *NASA Ames Center Director*  
 1:50 pm–2:55 pm **SESSION V – PLUG AND PLAY**  
 Chair: **Stanley Kennedy**  
 1:55 pm 5001: PnP Attitude Control Systems for Responsive Space Missions — **Norman Fitz-Coy**, *University of Florida*  
 2:15 pm 5002: Building SPA PnP Satellites — **Don Fronterhouse**, *PnP Innovations, Inc.*  
 2:35 pm 6005: Nanosatellite Tracking of Ships-Review of the First Year of Operations — **Franz Newland**, *COM Dev Ltd.*  
 Alt. 5004: Autonomous PnP Flight Software — **Kenneth Center**, *PnP Innovations, Inc.*  
 2:55 pm–3:25 pm BREAK, AIAA LA and Orange County Sections  
 3:25 pm–4:50 pm **SESSION VI – OPERATIONS**  
 Chair: **Amy Lo**  
 3:30 pm 6001: Virtual Mission Operations Center and ORS Ground Systems Enterprise — **Eric Miller**, *General Dynamics*  
 3:50 pm 6002: In A Tactical Minute: Lessons Learned From the First-Ever-In-Theater Command and Data Dissemination — **Capt. Lisa Baghal**, *Air Force Institute of Technology*  
 4:10 pm 6003: The 7-Day Solution: How ORS Will Answer The Rapid Call-Up Challenge — **Apu Bhopale**, *DoD Operationally Responsive Space Office*  
 4:30 pm 6004: ORS In The Cloud — **Craig Eddy**, *Star Technologies Corp.*  
 4:50 pm–5:00 pm **SPACECRAFT BUILD UPDATE**  
 5:00 pm–5:30 pm **WRAP-UP AND DISCUSSION**  
**Dr. James Wertz**, *Microcosm, Inc.*  
 5:30 pm–6:30 pm **NASA NO-HOST BAR AND NETWORKING SESSION**  
 6:30 pm–9:00 pm **NASA TOWN HALL MEETING AND DINNER**  
 INTERNET, Sponsored by *Northrop Grumman Corp.*