

The background of the slide is a close-up, slightly blurred image of the American flag, showing the stars and stripes in a diagonal orientation.

***Welcome***  
*to the First*  
***Responsive Space***  
***Conference***

Sponsored by

**AIAA LA Section and  
Space Systems Technical Committee**

**Redondo Beach, CA    April 1–3, 2003**

Email: [ResponsiveSpace@smad.com](mailto:ResponsiveSpace@smad.com)

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**If you need anything during the conference, find one of us and we'll find it for you !**



We would like to thank the following people for making this conference happen:

The **Responsive Space Conference Organizing Committee** for doing the day-to-day planning and setting up the conference

**Regina Jenkins** for handling an infinite number (more-or-less) of administrative details

**Marge Risinger** of Rosenberg and Risinger for planning coordination

**Joy Sakaguchi** and **Jeanine Newcomb** for all of the conference artwork

**Donna Klungle** and **Joy** for creating all of the publications and documents and doing the CD-ROM Proceedings volume between now and Thursday noon

The volunteers who are helping with all aspects of the conference over the next 3 days: **Jennifer Christopher**, **Dee Kilmer**, **Jose Mancera**, **Gary Moir** and **Alice Wertz**

And, of course, the **AIAA LA Section** and **AIAA Space Systems Technical Committee**, who have made this conference possible along with the corporate sponsors on the next page.



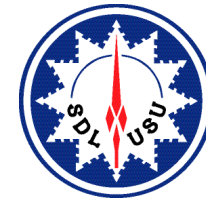
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- Parking
  - Self parking garage is just south of the Hotel and has an entrance to the lobby from the garage
  - Sticker from Regina lets non hotel guests park all day for \$6 — however, there are no “in and out” privileges with this price
- Notes for Presenters
  - You should already have turned in everything for the Proceedings CD-ROM
    - **If you haven't, leave now and turn the material in at the registration desk**
  - Electronic projection is preferred
    - Viewgraph projector is available as a back-up
  - You will NOT be allowed to connect your computer to the projection equipment
  - All material to be projected electronically must be turned in now at the registration desk
    - We want to test it and be sure everything works
  - **Please meet with your session chairman at 8:00 am on the day of your presentation in the main meeting room (Peninsula Pacific) for any final instructions**
- Tour of Microcosm
  - A tour of both the Scorpius launch vehicle and the AIAA Wright Flyer project is tentatively scheduled for 9:00 am on Friday morning
  - If you're interested, please sign up at the Microcosm booth



- Proceedings
  - Complete conference proceedings will be available to all participants on a CD-ROM at no additional cost
    - Abstracts
    - Papers
    - Viewgraphs
    - Conference information
    - Attendee list
    - Information from Sponsors
  - CD-ROM will be available at the wrap-up session, Thursday, April 3
    - Will include all material handed in as of today
    - Use the ticket in your registration pack to pick up your CD on Thursday
- Win a \$100 gift certificate for AIAA books
  - We want to find out how well the conference works for you and how to make it better
  - On Thursday we'll have a drawing for a gift certificate worth \$100 toward any AIAA book purchase
    - To enter, just fill out a questionnaire, available Thursday, on how well the conference has done what was needed
    - We'll have the drawing at the Wrap-Up session



■ **MONDAY, MARCH 31, 2003**

1:00 pm – 5:00 pm                   REGISTRATION, CORAL FOYER  
4:00 pm – 6:00 pm                   EXHIBITS OPEN, CORAL FOYER  
5:00 pm – 7:00 pm                   NO HOST BAR AND RECEPTION, SEASCAPE BALLROOM

■ **TUESDAY, April 1, 2003**

7:00 am – 5:00 pm                   REGISTRATION, CORAL FOYER  
7:00 am – 8:30 am                   CONTINENTAL BREAKFAST AND NETWORKING SESSION, CORAL FOYER  
8:00 am – 6:00 pm                   EXHIBITS OPEN, CORAL FOYER  
8:30 am – 9:15 am                   WELCOME AND INTRODUCTIONS—James R. Wertz, General Chairman, Peninsula/Pacific Ballroom  
  
9:15 am – 10:00 am                   OPENING SPEAKER—ROBERT SACKHEIM, ASSISTANT DIRECTOR AND CHIEF ENGINEER, MSFC  
  
10:00 am                                 BREAK, PENINSULA/PACIFIC BALLROOM  
  
10:30 am – 12:10 pm                   NEEDS AND REQUIREMENTS (Co-Chairs—Steven Cook, Col. Pamela Stewart, AFSPC), Peninsula/Pacific Ballroom  
10:30 am                                 A) DoD Access to Space for Small Satellites: Current Options & Direction                   Maj. Mark Mocio, DoD Space Test Program  
10:50 am                                 B) Operationally Responsive Spacelift for the U.S. Air Force                   Maj. Paul Kolodziejski, AFSPC  
11:10 am                                 C) The Strategy of Responsive Space: Assured Access to Space Revisited                   Lawrence A. Cooper, Kepler Research  
11:30 am                                 D) Heritage Schmeritage                   Chris McCormick, Broad Reach Engineering  
11:50 am                                 E) Building a Cadre of Space Professionals: Hands-On Space Experience at the USAF Academy                   Lt. Col. Jerry. J. Sellers, USAF Academy  
  
12:10 pm                                 LUNCH. Speaker: LTG (RET) EUGENE L. TATTINI—DEPUTY DIRECTOR, JET PROPULSION LABORATORY, SEASCAPE BALLROOM  
  
1:40 pm – 3:20 pm                   ORBITS AND MISSION DESIGN (Chair—Pat Patterson, SDL), Peninsula/Pacific Ballroom  
1:40 pm                                 A) A Docking Solution for On-Orbit Satellite Servicing—Part of the Responsive Space Equation                   Pete Tchoryk, Michigan Aerospace Corporation  
2:00 pm                                 B) Improving Space-Asset Responsiveness using the SHERPA                   2nd Lt. Randall Carlson, AFRL/VS  
2:20 pm                                 C) Developments in Commercial Near-Space Systems                   Jerry Knoblach, Space Data Corporation  
2:40 pm                                 D) Operational Concepts and Payoffs for Responsive Space Systems                   Mike Borky, Tamarac Technologies



<b>3:20 pm</b>	<b>BREAK, CORAL FOYER</b>	
<b>3:50 pm – 5:30 pm</b>	<b>SPACE SYSTEMS-I (Chair—John Bystroff, Boeing), Peninsula/Pacific Ballroom</b>	
<b>3:50 pm</b>	<b>A) Microsatellite Deployment on Demand</b>	<b>Michael Hurley, NRL</b>
<b>4:10 pm</b>	<b>B) Advanced Lightweight Electronically Steered Antennas for Responsive Space Payloads</b>	<b>Wyman L. Williams, EMS</b>
<b>4:30 pm</b>	<b>C) “Launch-On-Demand” A Revolutionary Paradigm for Space Utilization</b>	<b>Jeff Summers, MicroSat Systems, Inc</b>
<b>4:50 pm</b>	<b>D) Survivability and Resource Management of Ground System Assets</b>	<b>Fred Wynkoop, L-3 Communications Systems—West</b>
<b>5:30 pm – 7:00 pm</b>	<b>RECEPTION, CORAL FOYER</b>	

**■ WEDNESDAY, April 2, 2003**

<b>7:00 am – 1:00 pm</b>	<b>REGISTRATION, CORAL FOYER</b>	
<b>7:00 am – 8:30 am</b>	<b>CONTINENTAL BREAKFAST AND NETWORKING SESSION, CORAL FOYER</b>	
<b>8:00 am – 6:00 pm</b>	<b>EXHIBITS OPEN, CORAL FOYER</b>	
<b>8:30 am – 10:10 am</b>	<b>SPACE SYSTEMS-II (Chair—Terry Jagers, SMC/XR), Peninsula/Pacific Ballroom</b>	
<b>8:30 am</b>	<b>A) Modular Micro-Satellite Bus</b>	<b>John Hodak, Starhunter Corporation</b>
<b>8:50 am</b>	<b>B) The Trailblazer Class of Low Cost Space Vehicle</b>	<b>Dennis Laurie, Transorbital, Inc.</b>
<b>9:10 am</b>	<b>C) Implementing Standard Microsatellites for Responsive Space</b>	<b>Jeff Janicik, Space Dev</b>
<b>9:30 am</b>	<b>D) University Collaborations: Jumpstarting Industry Responsiveness to Space</b>	<b>Ray M. Haynes, Northrop Grumman Space Technology</b>
<b>9:50 am</b>	<b>E) Affordable, Responsive Space Asset Delivery by Electro Dynamic Delivery Express (EDDE)</b>	<b>Joseph Carroll, Tether Applications, Inc.</b>
<b>10:10 am</b>	<b>BREAK—CORAL BALLROOM</b>	
<b>10:40 am – 12:00 pm</b>	<b>BREAKING THE BARRIERS (Chair—Lawrence Cooper, Kepler Research), Peninsula/Pacific Ballroom</b>	
<b>10:40 am</b>	<b>A) Technology for Responsive Space Capability</b>	<b>Bob Pugh, AFRL/VS</b>
<b>11:00 am</b>	<b>B) Lessons Learned from Past Reusable Launch System Designs</b>	<b>Greg Peralta, Lockheed Martin Technical Operations</b>
<b>11:20 am</b>	<b>C) Responsive Launch with the Scorpius® Family of Low-Cost, Expendable Launch Vehicles</b>	<b>James R. Wertz, Microcosm, Inc.</b>
<b>11:40 am</b>	<b>D) NAI Study Outbrief</b>	<b>Babu Singaraju, AFRL/VS</b>





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12:00 pm	<b>LUNCH. Speaker: MGEN (RET) ROBERT S. DICKMAN, SAF/US–MILITARY SPACE</b> <b>Plus Presentation of AIAA Space Systems Award, SEASCAPE BALLROOM</b>
1:30 pm – 3:10 pm	<b>TECHNOLOGY FOR IMPROVED RESPONSIVENESS (Chair—Todd Mosher, USU), Peninsula/Pacific Ballroom</b>
1:30 pm	<b>A) Fast Responsive Experiment Flight Opportunities</b> using SSPC <b>Gerald Murphy, Design-Net Engineering</b>
1:50 pm	<b>B) On-Demand Wavelength Tuning of Detector</b> Responsivity for Multi-Mission Scenarios <b>Dave Cardimona, AFRL/VS</b>
2:10 pm	<b>C) Pistonless Dual Chamber Rocket Fuel Pump</b> <b>Steve Harrington, Flometrics</b>
2:30 pm	<b>D) A Low-Cost Flight Computer using GPS</b> <b>Michael Castle, SiRF Technology, Inc.</b>
2:50 pm	<b>E) Near Space Maneuvering Vehicle</b> <b>Lt. Col. Thomas Shields, Schriever AFB</b>
3:10 pm	<b>BREAK, CORAL FOYER</b>
3:40 pm – 5:20 pm	<b>BUSINESS ISSUES (Chair—Russ Joyner, Pratt-Whitney), Peninsula/Pacific Ballroom</b>
3:40 pm	<b>A) Achieving Responsive Access to Space—Market, Money,</b> Mechanics and Management Lessons from X-33 <b>Carl J. Meade, Lockheed Martin Aeronautics,</b> Palmdale
4:00 pm	<b>B) Rapid Financing: The Ultimate Oxymoron</b> <b>Mark R. Oderman, CSP Associates Inc.</b>
4:20 pm	<b>C) Decision Support Tools to Enable Affordability For</b> Reponsive Space <b>Sam Boykin, Frontier Technology Inc.</b>
4:40 pm	<b>D) Benefits of Commercial Spaceports</b> <b>Maj. Gen. Jay T. Edwards (Ret., USAF), Oklahoma</b> Space Industry Development Authority
5:00 pm	<b>E) Responsive Space Systems and Consumer Markets: The</b> Celestis Case <b>Charlie Chafer, Celestis</b>
5:20 pm	<b>BREAK, CORAL FOYER</b>
6:30 pm – 7:00 pm	<b>RECEPTION, CORAL FOYER</b>
7:00 pm – 9:00 pm	<b>CONFERENCE BANQUET. Speaker: BGEN SIMON P. (PETE) WORDEN—DIRECTOR, OFFICE OF TRANSFORMATION,</b> <b>AF SPACE AND MISSILE COMMAND, SEASCAPE BALLROOM</b>
<b>■ THURSDAY, April 3, 2003</b>	
7:00 am – 8:00 am	<b>CONTINENTAL BREAKFAST AND NETWORKING SESSION, CORAL BALLROOM</b>



8:00 am – 9:00 am	<b>PANEL—THE NEED FOR RESPONSIVE SPACE, Peninsula/Pacific Ballroom</b> BG STEPHEN FERRELL, OSD-ATL PETER G. WILHELM, DIRECTOR, NAVAL CENTER FOR SPACE TECHNOLOGY GARY MARTIN, NASA SPACE ARCHITECT PAUL PISCOPO, DDR&E
9:00 am – 4:30 pm	<b>EXHIBITS OPEN, CORAL FOYER</b>
9:00 am – 10:40 am	<b>LAUNCH VEHICLES &amp; OPERATIONS-I (Chair—Tony Williams, Booz Allen Hamilton)</b>
9:00 am	<b>A) Responsive Space: Near-Term Options for the Military</b> Matt Bille, Booz Allen Hamilton
9:20 am	<b>B) I-Cone for Rapid Response and Low Cost Access to Space</b> Mike Cully, Swales Aerospace
9:40 am	<b>C) DNEPR Program: Prospects and Advantages for Responsive Space</b> Reese Nielsen, ATK Thiokol Propulsion
10:00 am	<b>D) Rapid Access Small Cargo Affordable Launch (RASCAL)</b> Preston Carter, Program Mgr., DARPA
10:20 am	<b>E) Low-Cost, Flexible Spacelift for Research and Development Satellites using Peacekeeper ICBM Derived Space Launch Vehicle</b> Tim D. Luddeke, Product Development Division, Rocket Systems Launch Program
10:40 am	<b>BREAK, CORAL FOYER</b>
11:00 am – 12:40 pm	<b>LAUNCH VEHICLES &amp; OPERATIONS-II (Chair—Larry Davidoff, Boeing)</b>
11:00 am	<b>A) Air Force Space Operations Vehicle: Operability Driven</b> Keith Mclver, The Boeing Company
11:20 am	<b>B) Responsive Space Launch the F-15 Microsatellite Launch</b> Lt. Julia Rothman, AFRL/VS, Space
11:40 am	<b>C) Atlas V Evolved Expendable Launch Vehicle: Spiral Development of Responsive Space</b> Timothy Gillespie, Lockheed Martin Spacecraft Astronautics
12:00 pm	<b>D) Demonstrating Low Cost Access to Space for Small Satellites</b> Maj. Timothy Sumrall, Space and Missile Systems, Kirtland AFB
12:20 pm	<b>E) The Scorpius® Expendable Launch Vehicle Family and Status of the Sprite Small Launch Vehicle</b> Shyama Chakroborty, Microcosm, Inc.
12:40 pm	<b>LUNCH. Speaker: DR. ANTONIO L. ELIAS—VP/GM ADVANCED PROGRAMS, ORBITAL SCIENCES CORP., SEASCAPE BALLROOM</b>
2:20 pm – 3:30 pm	<b>WRAP-UP PANEL WITH SUMMARIES BY SESSION CHAIRS, PENINSULA/PACIFIC BALLROOM</b>
2:20 pm	<b>CD-ROM OF ALL PAPERS AVAILABLE TO PARTICIPANTS</b>
3:30 pm – 6:30 pm	<b>TOWN MEETING REGISTRATION (Separate Registration Fee Required)</b>
4:30 pm – 6:30 pm	<b>TOWN MEETING NETWORKING SESSION</b>
6:30 pm – 9:00 pm	<b>NASA TOWN MEETING DINNER AND PANEL</b>



- Responsiveness has become critical to many modern systems
  - War in Iraq
  - Shorter time frame for most information-based technologies
    - “Instant answers” to many issues available on the Internet or web
- Space assets are a major contributor in many areas
  - Military, commercial, science, engineering, education, exploration
- **But, however important space assets may be in today’s world, they aren’t responsive**
  - Apollo went from a dream to landing people on the Moon (including developing the largest rocket ever built) in 8 years
  - Today, major unmanned programs take well more than a decade, and even small satellite missions can take 5 to 7 years
- Many would regard Iridium as a technical success, but a business failure
  - Why? — Largely because it took too long to build and deploy and was made irrelevant by the rapid growth of ground-based systems
  - The lack of multiple LEO communications constellations is, in part, a direct result of the lack of responsiveness in our industry

**The fundamental questions for this conference are:**

**How do we make space responsive?**

**If we’re successful, how do we take advantage of this new capability?**



## What Missions Need To Be Responsive?

- Military missions — rapid and continuous battlefield intelligence that’s “responsive and flexible” (the quote is from Gen. Tommy Franks assessment of the new strategy for the Iraq war — March 22, 2003)
  - Without responsiveness, space will be less relevant to future military users
- Commercial missions — ground-based, rather than space-based sparing, 0-g manufacturing based on needs defined today
  - For space to remain relevant, the next major set of commercial systems must succeed
  - We all share responsibility for the death of the LEO communications revolution
- Science — observations of transient phenomena; responsive science with tomorrow’s experiment based on today’s results
- Education — experiments launched while the student is still a student, or at least still in astronautics
- Crewed missions — can we make them safer by having responsive launch available?
  - Consumables brought up as needed to extend on-orbit life
  - Inspection missions launched when needed to evaluate potential problems
  - “Spare parts” brought up to mitigate any launch or on-orbit failures

**Answer: All of 'em.**



“I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to Earth.”

– John Kennedy, before a joint session of Congress, May 25, 1961

“The U.S. Air Force has kick-started a major study on quick-to-launch boosters capable of enhancing the nation’s warfighting abilities,... Given a Pentagon go-ahead and funding, the Air Force could first fly a multi-stage system by 2014.”

– Leonard David, in *Space News*, March 28, 2003

“If it takes us 11 years to create a Responsive Space capability, we all oughta find a different line of work.”

– Jim Wertz, Challenge to the First Responsive Space Conference, April 1, 2003

**We can do better. We must do better.  
Let’s get started and find out how.**