



# Welcome to the 2011 CubeSat Developers Workshop !



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# This Past Year Has Been Exciting

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- **Productive Year for Boeing, Leveraging Our Tensor™ | CS Line of Advanced Performance CubeSats**
  - **US Government Order for additional 10 CubeSat Buses (total of 20)**
  - **Recent US Government Announcement for Two Space Environment Experiment CubeSats**
- **Other Significant Activities**
  - **Several CubeSat Launches worldwide**
  - **Various US Government and other organization's programs for CubeSats, and developing key components**



 **Tensor™**

# The CubeSat Community Continues to Evolve

- *Scott's "Top Five" Latest Observed Trends...*

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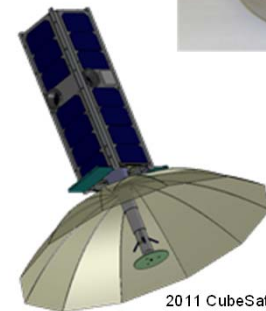
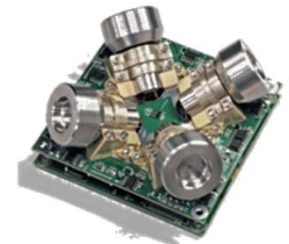
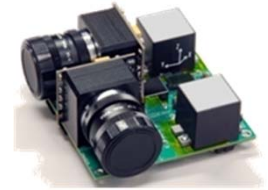
- 1) Continued Mission Diversification Across CubeSat Developers**
  - a) Expanding from university training and low cost technology test beds, to now providing useful science and other relevant data**
- 2) Operationally Relevant Missions Starting to Become Reality**
  - a) For example; SMC/XR SENSE, others**
- 3) "Big Aerospace" waking up to the potential of CubeSats...**
  - a) NRO Colony II and SMC/XR SENSE programs validate the Government interest in CubeSats is real and backed by serious funding (*by CubeSat levels*)**
  - b) Struggling to figure out how to produce reliable CubeSats with advanced capabilities at the low cost needed**
- 4) Miniature, High Performance Propulsion Continues to be the Unfulfilled Technology to Enable Future Key Missions**
- 5) CubeSat Compatible Payloads Still Lagging in Development**
  - a) Need advanced capabilities in miniature, low power packages**

# Boeing's Advanced CubeSat Development

*- Continued Focus on Operationally Relevant Missions*

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- **Complete Attitude Determination and Control subsystem**
  - Low power Star Tracker for precision attitude knowledge
  - Nano-reaction wheel assembly for precision attitude control
- **Multi-thruster and single-thruster propulsion modules for orbit maneuvering and/or maintenance**
- **Flight proven, extensible electrical power collection and distribution subsystem**
  - Extensive selection of Solar Array configurations to support wide range of flight orientations and power levels
- **Advanced Command & Data Handling subsystem**
- **High Gain S-Band antenna**



# 2011 GAINSTAM Workshop

*- Follow-On to Very Successful 2008, 2009, and 2010 Workshops*

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## *2011 Government and Industry Nano-Satellite Technology and Mission (“GAINSTAM”) Workshop*

- **Workshop goal is to raise awareness of the current state-of-the-art in nano-satellite technology beyond what is generally available from presentations at open workshops and from commercial websites**
- **November 2<sup>nd</sup> and 3<sup>rd</sup> , 2011, Huntington Beach, California**
  - **Wednesday: Open Forum for all Government and Industry Organizations (ITAR Limited)**
  - **Thursday: Access Controlled Forums for Company Proprietary and Classified (TS/SCI) Presentations**
- **Presentations by Key Members of the Government and Industry**
- **Facilitated Discussions on Future Missions and Technology Developments**

# *Thank You*

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# *Enjoy the 8<sup>th</sup> Annual CubeSat Developers Workshop !*