Fault – Tolerant Spaceborne Computing Employing New Technologies 2009 Conference

High Performance Spaceborne Computing Architecture Working Group

Sandia National Laboratories
May 29th, 0830-1200

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Architecture Working Group Objectives

Foster Collaborative Community Interests

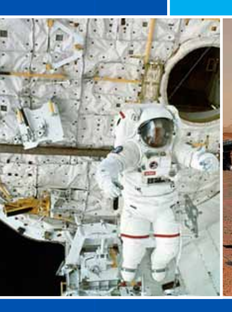
Introduce Several Computer Architectures Presently Under Development for Space Applications

Highlight Several Enabling Technologies Necessary for a Common Spaceborne Computing Architecture

- ➔ Open System Architectures
- ➔ Software Middleware and API's
- ➔ Software Development Tools and Environments
- ➔ Run Time Infrastructures
- ➔ Virtualization Techniques
- ➔ Heterogeneous Computing Nodes and Accelerators
- ➔ Serial Switch Fabrics and Protocols
- ➔ Standards for Physical Form Factors
- ➔ Plug-and-Play Hardware Infrastructures
- ➔ Standard Input/Output Protocols

Highlight Challenges of a Common Spaceborne Computing Architecture

Discuss the need for a Common Spaceborne Computing Architecture and How to Move Forward



0830 – 0840 MITRE	**"Introduction"** Richard Stempien
	"Next Generation Space Applications and Needs"
	"Common Spaceborne Computing Architecture" **-Definition** **-Benefits and Challenges**
0840 – 0910 Honeywell	**"Progression of an Open Architecture: from Orion to Altair and LSS"** Mitch Fletcher
0910 – 0940	**"Leveraging COTS for Building a Common Space Processing Architecture"** Ian Troxel
0940 – 1010	**"Computing: One of Several Trades for AFRL Space Electronics R&D"** Kenneth Hunt
1010 – 1020	**BREAK**
1020 – 1050 Sandia National Laboratories	**"Heterogeneous Cluster Architecture"** Kevin Robbins
1050 – 1120	**"Review of Plenary Conference Briefs in Context of a Common Spaceborne Computing Architecture"**
Honeywell	**"Dependent Multiprocessor Architecture for Space Applications"** John Samson
NASA	**"Aries Manned Platform Architectures"** Robert Hodson
BAE SYSTEMS	**"Interoperability of Standard Interfaces within a Spaceborne Computer"** Richard Berger
reservoir labs	**"Automatic Kernel Mapping to Spaceborne Computing Architecture Using the R-Stream Compiler: Prototype Results"** Peter Szilagyi
Raytheon	**"Monarch: A High Performance Signal Processing Building Block for Spaceborne Computing"** Kenneth Prager
Raytheon	**"User Responsive ISR: Driving the Need for Enterprise – Wide Adaptive Processing"** Duncan Crawford
1120 – 1200	**Summay All**

- **Should we Pursue a Common Spaceborne Computing Architecture?**
- **Vehicles to Encourage Community Participation**
  -On-going Architecture Working Group
  -Draft Proposal for Pilot Coordination Effort across DoE,NASA,AF…