ReSpace/MAPLD 2011

ReSpace Track Overview

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MAPLD vs. ReSpace Community

- MAPLD = Conservative (low risk, high reliability, high $ missions)
- ReSpace = Edgy (higher risk, lower reliability, low $ missions)
- Although MAPLD and ReSpace appear to be at opposite ends of the spectra, we do share some common ground.
Rethinking Space Electronics

• ReSpace (Revolutionary Electronics in Space) explores the most effective manner in which new technologies or technologies that are new to space are revolutionizing our business.

• This includes the use of:
  – Novel implementations of commercial electronics that enable the development of increasingly capable, compact and low cost spacecraft.
  – Reconfigurable electronics and microsystems.

• ReSpace addresses the underlying electronics, components, and systems technologies, which enable this revolution.
• **ReSpace** takes a look at bold operational concepts:
  – Novel approaches to space effects mitigation
  – Implementing “big” missions with small spacecraft (imaging, radar, etc.)
  – Systems engineering and design tools capable of demonstrating the lifetime cost, reliability, and performance impact of reconfigurable microsystems on spacecraft and constellations.

• **Practical modularity and innovative modules:**
  – Space Plug-and-Play (SPA) and related standards
  – Physical standards and interface standards
  – New compact spacecraft modules for attitude determination and control
  – Power generation and energy storage solutions
  – Software defined radios
2011 Session Overview

- **Session A: Onboard Processing**
  - Multicore systems, commercial processors and DSPs, etc.
  - Creating more efficient, scalable architectures
  - Integration of electronics hardware with software

- **Session B: New Technologies**
  - RHBD components and their applications
  - Extreme environment tolerant electronics
  - Miniaturized electronics for space

- **Session C: Missions and Systems**
  - Interplanetary use of small satellites
  - Reconfigurable and shape-changing systems
  - System Design using Space Plug-and-Play (SPA)
## Session Structure

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Time</th>
<th>Session Chairs</th>
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<tr>
<td>A</td>
<td>Onboard Processing</td>
<td>Wed 8:00–10:20AM</td>
<td>Mr. Rafi Some, Jet Propulsion Laboratory&lt;br&gt;Dr. Yutao He, Jet Propulsion Laboratory</td>
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<tr>
<td>B</td>
<td>New Technologies</td>
<td>Wed 1:00-5:25PM*</td>
<td>Mr. Anthony Lai, Ensign-Bickford Aerospace and Defense Company&lt;br&gt;Dr. Jim Lyke, Air Force Research Laboratory</td>
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<td>C</td>
<td>Missions and Systems</td>
<td>Thur 8:00-11:20AM</td>
<td>Dr. Steve Horan, NASA Langley Research Center&lt;br&gt;Dr. Adrian Stoica, Jet Propulsion Laboratory</td>
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* Note that Session B will end 25 minutes early than stated in the program.
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• The last presentation from ReSpace Session B, “Reconfigurable Space Weather and Space Situational Awareness (SSA) System Leveraging New Technology Detectors” has been moved to Session C to replace “Modular Latvian Nano Satellite VENTA-1 with the Payloads from Germany, Luxembourg, Sweden and the USA” due it’s cancellation.
Lunch will be served next in the Ballroom

MAPLD Session A begins after lunch at 1 pm