Presentation Guidelines

The workshop sponsors and participants appreciate clear and legible presentations. In addition, the presentations themselves will constitute the published proceedings. Therefore, presenters are required to submit charts of the highest quality. Toward the goal of consistent quality and legibility, we ask that presenters adhere to the following guidelines when preparing their viewgraphs and posters.

VIEWGRAPHS AND POSTERS

Typeface

- Set regular text using a bold 18-point font. A bold sans serif font such as Helvetica is preferred for its readability in a large auditorium.
- Other sized fonts may be used as necessary, such as bold 24-point for titles, bold 16-point for sub-points, etc. However, do not use a font size smaller than 14-point, and always use bold fonts.

Format

- Visually center all viewgraphs within a 9" by 7" area, with at least a 1/4-inch margin inside the frame.
- Orient the viewgraphs horizontally (landscape).
- Limit your viewgraphs to 10 lines of text. Wider comprehension is aided by succinct visuals.

Posters

- Total poster area: 4' tall by 6' wide. This space will be arranged as two 4’ x 3’ felt-covered boards placed side by side.
- Total available area: 3’ 6” tall by 6’ wide. The title banner will consume the top six inches of the poster area. Lincoln Laboratory will be providing a title banner with the poster title, name(s) of the author(s), and the author affiliation(s).
- Recommended poster panel size: 11" tall by 15" wide. Authors should enlarge 8.5" x 11" panels by 30% to arrive at the final 11" x 15" panels. The poster panels must be oriented horizontally (landscape).
- A single 4’ x 3’ board fits 8 - 8 ½” x 11” poster panels or 6 - 11” x 15” poster panels.
- Poster panels must be mounted on a firm background such as foam core.
- Lincoln Laboratory will provide pins or Velcro to facilitate mounting the poster panels on the felt-covered poster boards.
GRAPHICAL MATERIAL

Graphs and Tables

- Use 2-point rules for curves. Do not use line widths smaller than 1-point anywhere on graphs or tables.
- The same rules for fonts above apply to text within all graphs and tables. It is recommended that axis labels and table headings be set with at least a 16-point font.

Images

- Ensure that all images such as photographs, artwork, etc., can be photocopied legibly. High contrast images are more easily reproduced.
- Ensure that all text appearing in the image is large and legible.

PRESENTATION FORMAT

- A professional projectionist will display viewgraphs on a large screen behind the speaker. Speakers are provided with a podium, microphone, laser pointer, and a queuing button for the projectionist.
- To assist the projectionist, electronic presentations should be in Microsoft Power Point. If you will be using hard-copy format, all viewgraphs should be placed within frames and clearly numbered.
- For non-viewgraph visuals, please contact Ms. Francine James at (781) 981-4842 to make arrangements. Electrical outlets and a 5’ x 3’ table can be provided for demonstrations. If you are planning a demonstration, please contact Ms. Francine James by 22 August 2003 so we can prepare the facility.

SAMPLE SLIDE (next page)
ABSTRACT DISCLOSURE AUTHORIZATION FORM

FOR PUBLIC DOMAIN SESSIONS
Seventh Annual Workshop on High Performance Embedded Computing (HPEC 2003)
MIT Lincoln Laboratory
Attn: Francine James
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Phone: (781) 981-4842
Fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 29 August 2003 for inclusion in the abstract booklet, the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the abstract must be omitted.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: ____________________________________________
Author(s): _____________________________________________________
Name of organization: ___________________________________________
Address: _______________________________________________________
Telephone: ______________________________________________________
Classification: UNCLASSIFIED
Based on IR&D? ___ Yes ___ No
Presentation cleared for public release by: ____________________________ Case # __________

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

Disclosure authorization is not required for this presentation because (check one only):
___ no government funds are involved, or
___ presentation is under fundamental research under 6.1 funding

I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.
___ Unclassified presentation by DoD personnel.
___ Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency __________________________ Certifying Official † __________________________
(typed) (signed)

Telephone ____________________________ Date ____________ Title __________________________

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS
see instructions on reverse side

MIT LINCOLN LABORATORY
Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2003 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of materials. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

Part I: Basic information about the presentation to be completed by all presenters

Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for the written abstract. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 29 August 2003. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the abstract is prepared. No abstracts will be accepted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author’s agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark “yes” here and skip the rest of Part I. Otherwise, please provide the name of the office or agency providing the clearance for public release and the case number associated with the abstract and presentation.

Instructions for Part II

If the research being presented is based on academic funding, or is based on fundamental research under 6.1 funding, please check the appropriate line and skip the remainder of Part II.

If the research being presented involves government funds and is not fundamental research under 6.1 funding, select either “Unclassified presentation by DoD personnel” or “Unclassified contractor presentation of material not related to work under DoD contract”, and complete the remainder of Part II.
PRESENTATION / POSTER DISCLOSURE AUTHORIZATION FORM

FOR PUBLIC DOMAIN SESSIONS

Seventh Annual Workshop on High Performance Embedded Computing (HPEC 2003)
MIT Lincoln Laboratory
Attn: Francine James
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Phone: (781) 981-4842
Fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 29 August 2003 for presentation at the Workshop and for inclusion in the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the presentation must be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: ________________________________________________________________________________
Author(s): ________________________________________________________________________________
Name of organization: ________________________________________________________________________________
Address: ________________________________________________________________________________
________________________________________________________________________________
Telephone: ________________________________________________________________________________
Classification: UNCLASSIFIED
Based on IR&D? ___ Yes ___ No
Presentation cleared for public release by: ____________________________________ Case # ___________________

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

Disclosure authorization is not required for this presentation because (check one only):
___ no government funds are involved, or
___ presentation is under fundamental research under 6.1 funding

I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.

___ Unclassified presentation by DoD personnel.
___ Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency ____________________________________________ Certifying Official † ____________________________________________ (typed)
__________________________________________ (signed)

Telephone _________________________ Date ______________ Title ____________________________

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

see instructions on reverse side

MIT LINCOLN LABORATORY
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The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2003 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of materials. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

Part I: Basic information about the presentation to be completed by all presenters

Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for the presentation and the proceedings document. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 29 August 2003. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the presentation is prepared. No presentations will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author’s agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark “yes” here and skip the rest of Part I. Otherwise, please provide the name of the office or agency providing the clearance for public release and the case number associated with the abstract and presentation.

Instructions for Part II

If the research being presented is based on fundamental research under 6.1 funding, please check the appropriate line and skip the remainder of Part II.

If the research being presented involves government funds and is not fundamental research under 6.1 funding, select either “Unclassified presentation by DoD personnel” or “Unclassified contractor presentation of material not related to work under DoD contract”, and complete the remainder of Part II.
PRESENTATION / POSTER DISCLOSURE AUTHORIZATION FORM

FOR CLOSED / LIMITED

Seventh Annual High Performance Embedded Computing Workshop (HPEC 2003)
MIT Lincoln Laboratory
Attn: Francine James
244 Wood Street
Lexington, MA 02420-9108
Phone: (781) 981-4842
Fax: (781) 981-2517

Do not use this form for public domain materials.

This completed form must be received by 29 August 2003 for oral presentation at the Workshop. Unless this form is received prior to presentation, the presentation will be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: ________________________________________________________________________________
Author(s): _________________________________________________________________________________________
Name of organization: ______________________________________________________________________________________
Address: _________________________________________________________________________________________
Telephone: ____________________________________________ Classification: ___________________________________________________________________________
Based on IR&D? ___ Yes ___ No

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

(For classified presentations and unclassified/limited presentations relating to work done under classified contracts.)

I hereby authorize oral disclosure of this presentation at the above Workshop.

Overall classification of the presentation is: __________________________________________________________________
Classified papers should be marked:

Classified by: _____________________________________________________________________________________
Declassify on: _____________________________________________________________________________________

Sponsoring Agency/Certifying Official †
__________________________________________________________ (typed)
__________________________________________________________ (signed)

Telephone _________________________ Date ______________ Title ____________________________

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR CLOSED / LIMITED SESSIONS

see instructions on reverse side

MITLINCOLNLABORATORY
Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2003 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of all classified material. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

Part I: Basic information about the presentation to be completed by all presenters

Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for both the oral presentation and the limited distribution proceedings. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 29 August 2003. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the presentation is prepared. No presentations will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author’s agency or the appropriate user agency.

Instructions for Part I
If the research being presented is based on IR&D (internal research and development) or academic funding, mark “yes” here.

Instructions for Part II
Authors presenting a classified paper or authors who are contractors presenting unclassified papers relating to work done under DoD must have Part II completed by a certifying official. The author is responsible to send or deliver the form to the appropriate certifying authority along with a copy of their written summary or presentation materials. The form should be completed by the certifying official and forwarded to the Lincoln Laboratory address at the top of the form by the date listed. Please note that it can take six weeks to receive disclosure authorization after the presentation is prepared.
Copyright Release
High Performance Embedded Computing 2003
Workshop

22-25 September 2003
(22 September – U.S. Only Session)

Lincoln Laboratory
Massachusetts Institute of Technology

Send completed form to:
Ms. Francine James
MIT Lincoln Laboratory
244 Wood Street / Room C-385
Lexington, MA 02420-9108
Tel: 781-981-4842 | Fax: 781-981-2517

Whereas MIT Lincoln Laboratory is the publisher of the Abstract Booklet and the Proceedings of the High Performance Embedded Computing 2003 (HPEC) Workshop, and the undersigned is the Author of an abstract and presentation/poster at that Workshop entitled:

________________________________________________________________

The Author hereby grants permission to MIT Lincoln Laboratory to publish that abstract in the Abstract Booklet and the presentation/poster in the Proceedings. Said Abstract Booklet and Proceedings will be printed for limited distribution controlled by MIT Lincoln Laboratory. The Author hereby represents that the above granted permission is not in conflict with or a violation of any previously issued permissions or copyrights to that material. If previous copyrights have been granted, the Author attaches hereto permission of the copyright holder for this publication and the necessary information for credit lines.

The Author retains all rights to said material in accordance with U.S. Code Title 17, Copyrights, revised to 1 January 1978.

The Author shall receive no payment from MIT Lincoln Laboratory for use of this material.

If Author is an employee of the U.S. Government (including the military), please check one:

_____ This material was prepared as part of my official duties for the U.S. Government.

_____ This material was prepared on my own volition, outside my official duties for the U.S. Government.

Approved and Accepted: AUTHOR:

______________________________ (signature)

______________________________ (typed or printed name)

DATE: __________________________
High Performance Embedded Computing Workshop 2003

22-25 September 2003
(22 September, U.S. Only Session)

Lincoln Laboratory
Massachusetts Institute of Technology

Author Deadlines

Please submit the following information and materials to:

Ms. Francine James
Attn: HPEC 2003
MIT Lincoln Laboratory
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Voice: (781) 981-4842
Fax: (781) 981-2517
E-Mail: hpec@ll.mit.edu

By 22 August, 2003

• Name of Presenter

By 29 August, 2003

• Electronic version of the presentation viewgraphs or poster panels in Microsoft PowerPoint format
• Authorization to Publish for the abstract in the Abstract Booklet

By 5 September, 2003

• Copyright Release Form for both the abstract and the presentation viewgraphs/poster panels
• Authorization to Publish for the presentation viewgraphs/poster panels in the Proceedings

If the above information and materials are not received by these deadlines, the abstract and the presentation/poster cannot be included in the Workshop Abstract Booklet and Proceedings.
Please submit all appropriate information and materials to:

Ms. Francine James  
Attn: HPEC 2003  
MIT Lincoln Laboratory  
244 Wood Street, Room C-385  
Lexington, MA 02420-9108  
Voice: (781) 981-4842  
Fax: (781) 981-2517  
E-Mail: hpec@ll.mit.edu
Instructions For Foreign National Attendees

This is a reminder to our foreign national guests attending the HPEC Workshop on 22-25 September 2003 (22 September, U.S. Only Session). You should begin the paperwork for your visit to Lincoln Laboratory immediately. As outlined in the attached procedure you must first contact your embassy. If you have any questions regarding the procedure please contact the Security Office at Lincoln Laboratory (phone: 01-781-981-2402).

The following outlines the process used for DoD foreign national visits.

1. Visitor contacts their embassy in Washington, D.C. Visitor must justify the visit and the need for government-to-government interaction. This is done by producing an invitation for the visit or attendance at meeting/conference and/or explaining the need to process an official DoD visit request because of Lincoln Laboratory's physical location on Hanscom Air Force Base. Although not necessary, it is recommended that the visitor work within the Air Ministry liaison at their embassy.

2. Embassy official enters request for visit in DoD FORDTIS system. If the embassy is not on-line with FORDTIS, they should use the manual process. In both cases the request should be addressed to USAF, SAF/IA. The request should contain the following information:

b. Mailing address: 244 Wood Street, Lexington, MA 02420-9108
c. Fax No. (781) 981-0110
d. Tel No. (781) 981-2402
e. Visit Point of Contact: Foreign Visits Staff
f. Tel. No. (781) 981-2402
g. Visit Dates
h. Anticipated level of classified information to be involved: This is marked UNCLASSIFIED, unless a special project has been approved and appropriate bilateral security agreements exist.
i. Purpose of Visit: Specific justification added here.
j. Embassy Remarks: Additional remarks as required.
k. U.S. Equipment: Add text concerning any U.S. hardware involved in this visit.
l. FMS Case: If this visit supports an FMS case, the approved FMS number should be added here.
m. Program/Agreement: If the visit supports a specific bilateral program its name will be listed here.
n. Knowledgeable U.S. Person: The embassy should list the U.S. government program manager or sponsor here.
All requests should be forwarded via USAF SAF/IA. Routing to other U.S. Government agencies slows the process considerably.

Once the request is forwarded to USAF it will be staffed by SAF/IA (Secretary of the Air Force/International Affairs). The request will be routed down to USAF ESC/INF (a local USAF office at Hanscom Air Force Base).

ESC/INF will coordinate the visit request with the Security Office at MIT Lincoln Laboratory. Once we respond affirmatively, the foreign embassy will receive notice of approval of the visit.

A few pointers:

This process works best when the request is made promptly. Some foreign embassies place time limits on requests (i.e. 60 days).

Always ensure that the CAGE code (3G050) is on the request. It identifies MIT Lincoln Laboratory in the system.

Foreign embassies may wish to forward a copy of their request to MIT/LL. Courtesy copies can be faxed to P.H. Mahoney (781) 981-0110. The copy should contain the Foreign Visit (FORDTIS) Case ID number. This aids MIT/LL track the visit as it routed through U.S. Government channels.

Lastly, please ensure that the request is routed through USAF.

Questions can be directed to Pat Mahoney at the address below.

Patrick H. Mahoney
Senior Group Administrator
Group 11, Security
(781) 981-2402
F (781) 981-0110
Secure (781) 981-6193
mahoney@LL.MIT.EDU
# PRELIMINARY AGENDA

## Workshop at a Glance

<table>
<thead>
<tr>
<th>Day 0 (U.S. Only Session)</th>
<th>Check-in/Setup:</th>
<th>1130</th>
</tr>
</thead>
</table>
| 22 September               | Sessions:        | **Session 0**: Advanced Hardware and Space Computing  
|                            | Poster / Demo S: | Advanced Hardware and Space Computing |
| Attendance Restricted to U.S. Citizens | Adjourn: | 1700 |

<table>
<thead>
<tr>
<th>Day 1 23 September</th>
<th>Check-in/Setup:</th>
<th>0730</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Keynote Address</strong>:</td>
<td></td>
</tr>
</tbody>
</table>
|                    | Sessions:        | **Session 1**: New Challenges/New Architectures  
|                    | Poster / Demo A: | Applications |
|                    | **Session 2**: Applications |  
|                    | **Focus 1**: VSIPL |  
|                    | Adjourn: | 1650 |
|                    | **Banquet Speaker**: | |
|                    | **Banquet**: | |

<table>
<thead>
<tr>
<th>Day 2 24 September</th>
<th>Check-in/Setup:</th>
<th>0730</th>
</tr>
</thead>
</table>
|                    | Sessions:        | **Session 3**: Advanced Hardware  
|                    | Poster / Demo B: | Hardware |
|                    | **Session 4**: Reconfigurable Computing |  
|                    | **Focus 2**: Parallel Matlab |  
|                    | Adjourn: | 1710 |

<table>
<thead>
<tr>
<th>Day 3 25 September</th>
<th>Check-in/Setup:</th>
<th>0730</th>
</tr>
</thead>
</table>
|                    | Sessions:        | **Session 5**: Current and Emerging Standards  
|                    | Poster / Demo C: | Software |
|                    | **Session 6**: Advanced Software |  
|                    | Adjourn: | 1730 |

* Denotes presenter other than first author  
★ Denotes outstanding submission
High Performance Embedded Computing Workshop
22-25 September 2003
(22 September, U.S. Only Session)

PRELIMINARY AGENDA

22 September (U.S. Only Session)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>1130</td>
<td>Check-in / Poster Setup / Lunch</td>
</tr>
<tr>
<td>1215</td>
<td>Welcome</td>
</tr>
<tr>
<td>1220</td>
<td>Invited Speaker: David Martinez / MIT Lincoln Laboratory</td>
</tr>
<tr>
<td>1250</td>
<td>Session 0: Advanced Hardware &amp; Space Computing</td>
</tr>
<tr>
<td>1400</td>
<td>Poster / Demo S (U.S. Only Session): Advanced Hardware &amp; Space Computing</td>
</tr>
<tr>
<td>1415</td>
<td>Break (View Posters, 30 min.)</td>
</tr>
<tr>
<td>1450</td>
<td>Session 0 (Continued): Advanced Hardware &amp; Space Computing</td>
</tr>
<tr>
<td>1700</td>
<td>Adjourn</td>
</tr>
</tbody>
</table>

1130 Check-in / Poster Setup / Lunch
1215 Welcome

David Martinez / MIT Lincoln Laboratory

1220 Opening Remarks
Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

1230 Challenges in Embedded Computing when Applied to Phased-Array Architectures (Invited)
David Martinez / MIT Lincoln Laboratory

1300 Session 0: Advanced Hardware & Space Computing
James Anderson / MIT Lincoln Laboratory

1310 FPGA Based Radar Processing Using System Level Design Tools
William Phillips / Northrop Grumman Corp.
Tim Motyka / Northrop Grumman Corp.
Tim Oechsler / Northrop Grumman Corp.
Nissa Shaw / Northrop Grumman Corp.
Kristina Viehmann / Northrop Grumman Corp.

1340 High Performance, Fault Tolerant Computing in Space
Robert Hillman / Maxwell Technologies
Chad Thibodeau / Maxwell Technologies

1410 Poster / Demo S: Advanced Hardware & Space Computing
James Anderson / MIT Lincoln Laboratory

Poster Session S Précis

Poster S.1 Integrating Sensor in Network Centric Battlefield Through Sensor Link Protocol
Gregory Brown / Raytheon Company
Sanjeev Venkatesan / Raytheon Company

Poster S.2 Utilizing Radar Scene Generation as Risk Reduction for Aegis BMD System Development
Dan Curtis / Lockheed Martin NE & SS

* Denotes presenter other than first author
★ Denotes outstanding submission
### 22 September (U.S. Only Session) (Continued)

#### Poster S.3
**An FPGA-based Architecture for VideoSAR Image Formation**  
Michael Holzrichter / Sandia National Labs  
Philip Ortiz / Sandia National Labs

#### Poster S.4
**Development of Embedded Synthetic Wide-Band Radar Processing for AEGIS Ballistic Missile Defense**  
Wojcieh Klimkiewicz / Lockheed Martin NE & SS  
Philip Barile / Lockheed Martin NE & SS  
Joseph Cook / Lockheed Martin NE & SS  
Nathan Doss / Lockheed Martin NE & SS  
Jane Kent / Lockheed Martin NE & SS  
Mike Lontoc / Lockheed Martin NE & SS  
Edward Monastra / Lockheed Martin NE & SS  
Kevin Park / Lockheed Martin NE & SS  
John Russo / Lockheed Martin ATL

#### Poster S.5
**An Open Architecture for Next Generation Space Onboard Processing**  
David Ngo / BAE Systems  
Michael Harris / BAE Systems IEWS  
Kenneth Hunt / Air Force Research Laboratory

#### Poster S.6
**Performance of Adaptive Array Beamforming Using Fixed Point Math**  
Steven Shauk / Northrop Grumman

#### Poster S.7
**Radiation Tolerant Front-end Processor for Wideband Radar Sensors**  
William Song / MIT Lincoln Laboratory  
James Anderson / MIT Lincoln Laboratory

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<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1420</td>
<td>Break (View Posters)</td>
</tr>
</tbody>
</table>
| 1450  | Session 0 (Continued): Advanced Hardware & Space Computing  
Henk Spaanenburg / Pentum Group, Inc. |
| 1500  | Data Flow Implementation for Space Based Radar Onboard Processing  
John Samson, Jr. / Honeywell Space Systems  
Minesh Patel / Honeywell Space Systems |
| 1530  | Migrating High Performance Computing to Space  
John Samson, Jr. / Honeywell Space Systems |
| 1600  | The Design of a 0.13 µm CMOS Embedded Digital Decoder ASIC for an Advanced Digital Receiver  
Charles Snell / Lockheed Martin NE & SS  
Melody Jiang / Lockheed Martin NE & SS  
Robert Lewis / Lockheed Martin NE & SS  
Leopold Pellon / Lockheed Martin NE & SS  
Junius Pridgen / Lockheed Martin NE & SS  
Dipakkumar Tailor / Lockheed Martin NE & SS |
| 1630  | ★ FPGA Beamforming in a Wideband Airborne Radar System  
Sarah Leeper / MIT Lincoln Laboratory  
Ryan Haney / MIT Lincoln Laboratory  
Huy Nguyen / MIT Lincoln Laboratory  
Michael Vai / MIT Lincoln Laboratory |
| 1700  | Adjourn |

---

* Denotes presenter other than first author  
★ Denotes outstanding submission
**High Performance Embedded Computing Workshop**  
22-25 September 2003  
(22 September, U.S. Only Session)

**PRELIMINARY AGENDA**

### 23 September

#### Day 1 at a Glance

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<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>0730</td>
<td>Check-in / Poster Setup / Continental Breakfast</td>
</tr>
<tr>
<td>0830</td>
<td>Welcome</td>
</tr>
<tr>
<td>0835</td>
<td>Keynote Address: Dr. John Parmentola / Army Director for Research and</td>
</tr>
<tr>
<td></td>
<td>Laboratory Management</td>
</tr>
<tr>
<td>0905</td>
<td>Opening Remarks</td>
</tr>
<tr>
<td>0915</td>
<td>Session 1: New Challenges/New Architectures</td>
</tr>
<tr>
<td>0925</td>
<td>Invited Speaker: Dr. Ruth David / President and CEO, ANSER Institute</td>
</tr>
<tr>
<td></td>
<td>for Homeland Security</td>
</tr>
<tr>
<td>0955</td>
<td>Break (15 min.)</td>
</tr>
<tr>
<td>1010</td>
<td>Session 1 (Continued): New Challenges and New Architectures</td>
</tr>
<tr>
<td>1140</td>
<td>Poster / Demo A: Applications</td>
</tr>
<tr>
<td>1235</td>
<td>Lunch (View Posters)</td>
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**Auditorium**

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>1345</td>
<td>Session 2: Applications</td>
</tr>
<tr>
<td>1525</td>
<td>Break (View Posters, 25 min.)</td>
</tr>
<tr>
<td>1550</td>
<td>Session 2 (Continued): Applications</td>
</tr>
<tr>
<td>1650</td>
<td>Adjourn</td>
</tr>
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</table>

**Room S2-180**

<table>
<thead>
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<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
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<td>1345</td>
<td>Focus 1: VSIPL</td>
</tr>
<tr>
<td>1525</td>
<td>Break (View Posters, 25 min.)</td>
</tr>
<tr>
<td>1550</td>
<td>Focus 1 (Continued): VSIPL</td>
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<tr>
<td>1700</td>
<td>Reception (View Posters)</td>
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<tr>
<td>1800</td>
<td>Banquet Speaker: Dr. Ray Kurzweil / Kurzweil Technologies</td>
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<tr>
<td>1845</td>
<td>Banquet</td>
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0730  **Check-In & Continental Breakfast**

0830  **Welcome**  
*David Martinez / MIT Lincoln Laboratory*

0835  **Keynote Address**  
**Title TBD**  
*Dr. John Parmentola / Army Director for Research and Laboratory Management*

0905  **Opening Remarks**  
*Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory*

0915  **Session 1: New Challenges and New Architectures**  
*David Cousins / BBN Technologies*

0925  **Homeland Security: Challenges for the Computing Community**  
*(Invited)*  
*Dr. Ruth David / President and CEO, ANSER Institute for Homeland Security*

0955  **Break**

1010  **The Mercury System: Embedding Computation Into Disk Drives**  
*Roger Chamberlain / Washington University*  
*Ron Cytron / Washington University*  
*Mark Franklin / Washington University*  
*Ronald Indeck / Washington University*

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* Denotes presenter other than first author  
★★ Denotes outstanding submission
23 September (Continued)

★ 1040  **Hybrid Optical/Digital Processor for Radar Imaging**  
Keith Frampton / Essex Corporation  
Patrick Stover / Annapolis Micro Systems, Inc.

1110 **HPCS Application Analysis and Assessment**  
Jeremy Kepner / MIT Lincoln Laboratory  
David Koester / The MITRE Corporation

**Poster / Demo A: Applications**  
Rick Pancoast / Lockheed Martin

**Poster Session A Précis**

**Poster A.1**  
Optimizing System Compute and Bandwidth Density for Deployed HPEC Applications  
Randy Banton / Mercury Computer Systems, Inc.  
Richard Jaenicke / Mercury Computer Systems, Inc.

**Poster A.2**  
Parallelization of an Electromagnetic Analysis Tool  
Milissa Benincasa / Black River Systems Company  
Chris Card / Black River Systems Company  
Alan George / Black River Systems Company

**Poster A.3**  
Predicting Trends in the Delivered Performance of General-Purpose RISC Processing Platforms in Radar and SIGINT Applications  
Mark Merritt / Mercury Computer Systems, Inc.

**Poster A.4**  
Measuring HPCS Productivity  
Stuart Faulk / University of Oregon  
John Gustafson / Sun Microsystems, Inc.  
Adam Porter / University of Maryland  
Lawrence Votta / Sun CARE

**Poster A.5**  
The Decomposition of HPEC Applications Mapped to the Natural Decomposition of a Solution Architectures - Another Way to Think About Solving HPEC Problems  
Joseph Germann / SKY Computers, Inc.

**Poster A.6**  
Development of a High Performance Embedded Radar Video Processor for Target Tracking and Radar Video Distribution  
David Johnson / Primagraphics, Ltd.

**Poster A.7**  
Software Protection: An Essential Layer of Security  
Jeff Hughes / AFRL / SN

**Poster A.8**  
Polymorphic Actor-Oriented Design for Heterogeneous Embedded Software  
Edward Lee / University of California at Berkeley

**Poster A.9**  
A Flexible Software Architecture for High Performance Synthetic Aperture Processing  
Brian Markle / Array Systems Computing, Inc.

**Poster A.10**  
Health Maintenance System: An Application of Recovery Oriented Computing for HPEC Systems  
Gerry Pocock / SKY Computers, Inc.

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★ Denotes outstanding submission
23 September (Continued)

**Poster A.11**  
A Configuration Protocol for Embedded Networked Devices on Secure Wireless Networks  
Larry Sanders / University of Kansas  
* Joseph Evans / University of Kansas  
Benjamin Ewy / Ambient Computing, Inc.

**Poster A.12**  
An Open Architecture for an Embedded Signal Processing Subsystem for the Fire Control System MK 92 Combined Antenna System's Radar  
Stephen Shank / Lockheed Martin NE & SS  
Juan Camacho / Indra  
Miguel del Dicastillo / Indra  
John Johansson / Lockheed Martin NE & SS  
William Paterson / Lockheed Martin NE & SS  
Bernard Pelon / CSPI  
Eva Ramiro / Indra  
Francisco Solvez / Indra  
Leon Trevito / Lockheed Martin NE & SS

**Poster A.13**  
Partitioning of a Signal Detection Algorithm to a Heterogeneous Multicomputing Platform  
Michael Vinskus / Mercury Computer Systems, Inc.

**Poster A.14**  
Energy and Latency Efficient Design of a Personnel Detection and Tracking System  
Edward Wanek / Raytheon  
Egor Andreev / University of Southern California  
Julius Bogdanowicz / Raytheon  
Seonil Choi / University of Southern California  
Raymond Maylone / Raytheon  
Sumit Mohanty / University of Southern California  
Jingzhao Ou / University of Southern California  
Viktor Prasanna / University of Southern California  
Ronald Scrofano / University of Southern California

1235  
Lunch (View Posters)

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23 September (Continued)

**Focus 1: VSIPL**
James Lebak / MIT Lincoln Laboratory
Room S2-180

**Successful VSIPL Software Application Migration-A Case Study: NATO Seasparrow Illumination Radar Signal Processing**
Daniel Averill / Avatar Engineering, Inc.

**Session 2: Applications**
Gary Shaw / MIT Lincoln Laboratory
Auditorium

**LDART: A Large Scale Network of Embedded Systems for Laser Detection and Reciprocal Targeting**
Jathan Manley / Honeywell Labs
Robert Demers / Honeywell Labs
Jan Jelinek / Honeywell Labs
Michael Rhodes / Honeywell Labs
Jay Schwichtenberg / Honeywell Labs
Vicraj Thomas / Honeywell Labs
Brian Van Voorst / Honeywell Labs
Phil Zumsteg / Honeywell Labs

**Open Architecture Implementation for an Embedded Tactical Environmental Processor**
Tom McNellis / Lockheed Martin NE & SS
Dave Lusk / Lockheed Martin NE & SS
Tim Maese / Lockheed Martin NE & SS
Wayne Sabin / Lockheed Martin NE & SS

**Beamforming for Radar Systems on COTS Heterogeneous Computing Platforms**
Jeffrey Rudin / Mercury Computer Systems, Inc.

**Break (View Posters)**

**Using Rational Rose RealTime to Develop a High Performance Radar Signal Processor (A Case Study)**
Kevin Obenland / SAIC
Stephen Clark / SAIC
Travis Slocumb / SAIC

**Future Trends in High End Computing and the Impact on HPEC**
Robert Peterkin, Jr. / DoD High Performance Computing

**Adjourn**

**Reception (View Posters)**

**Banquet Presentation**
The Emergence and Impact of Intelligent Machines
Dr. Ray Kurzweil / Kurzweil Technologies

**Banquet**

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★ Denotes outstanding submission
High Performance Embedded Computing Workshop
22-25 September 2003
(22 September, U.S. Only Session)

PRELIMINARY AGENDA

24 September

Day 2 at a Glance

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<td>Check-in / Poster Setup / Continental Breakfast</td>
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<tr>
<td>0830</td>
<td>Announcements</td>
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<tr>
<td>0835</td>
<td>Invited Speaker: Mr. John Bourgoin / MIPS Technologies</td>
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<tr>
<td>0905</td>
<td>Session 3: Advanced Hardware</td>
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<tr>
<td>1015</td>
<td>Break (15 min.)</td>
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<tr>
<td>1030</td>
<td>Session 3 (Continued): Advanced Hardware</td>
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<tr>
<td>1130</td>
<td>Poster / Demo B: Hardware</td>
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<tr>
<td>1225</td>
<td>Lunch (View Posters, 60 min.)</td>
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<td>1335</td>
<td>Session 4: Reconfigurable Computing</td>
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<tr>
<td>1515</td>
<td>Break (View Posters, 25 min.)</td>
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<td>1540</td>
<td>Session 4 (Continued): Reconfigurable Computing</td>
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<tr>
<td>1640</td>
<td>Invited Speaker: Mr. Robert Graybill / DARPA IPTO</td>
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Auditorium

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Room S2-180

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0730  Check-in & Continental Breakfast

0830  Announcements
Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

0835  Title TBD (Invited)
Mr. John Bourgoin / MIPS Technologies

0905  Session 3: Advanced Hardware
Joseph Germann / SKY Computers, Inc.

0915  Area and Power Performance Analysis of a Floating-point Based Application on FPGAs
Gokul Govindu / University of Southern California
Seonil Choi / University of Southern California
Padma Gundala / University of Southern California
Viktor Prasanna / University of Southern California
Ling Zhuo / University of Southern California

0945  An FPGA Implementation of Two-Dimensional Finite-Difference Time-Domain (FDTD) Algorithm
Wang Chen / Northeastern University
Panos Kosmas / Northeastern University
Miriam Leeser / Northeastern University
Carey Rappaport / Northeastern University

1015  Break

1030  High-Performance Scalable Base-4 Fast Fourier Transform Mapping
Greg Nash / Centar

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★ Denotes outstanding submission
24 September (Continued)

1100 Digital Signal Processing at 1 GHz in a Field-Programmable Object Array
Dirk Helgemo / MathStar, Inc.

1130 Poster / Demo B: Hardware
Michael Vai / MIT Lincoln Laboratory

Poster Session B Précis

Poster B.1 Application of General Purpose HPC Systems in HPEC
David Alexander / Silicon Graphics, Inc.

Poster B.2 Switched-Fabric Interconnects
William Carson / VMETRO, Inc.
Tom Bohman / VMETRO, Inc.

Poster B.3 Integrated Architectural Level Power-Performance Modeling Toolkit
David Brooks / Harvard University

Poster B.4 Efficient Split Radix FFTs in FPGAs
Tom Dillon / Dillon Engineering, Inc.

Poster B.5 Considerations for Algorithm Selection and C Programming Style for the SRC-6E Reconfigurable Computer
Russ Duren / Naval Postgraduate School
Douglas Fouts / Naval Postgraduate School

Poster B.6 High-Performance Linear Algebra Processor Using FPGA
Jeremy Johnson / Drexel University
Prawaat Nagavajara / Drexel University
Chika Nwankpa / Drexel University

Poster B.7 Development of an FPGA-Based Two-Transform Pulse Compressor
Skip Mansur / Integrated Sensors, Inc.

Poster B.8 Acceleration of the Retinal Vascular Tracing Algorithm Using FPGAs
Shawn Miller / Northeastern University
Miriam Leeser / Northeastern University

Poster B.9 High-Speed Data Recording in Sensor Systems
Ronnie Sanford / VMETRO, Inc.
Tom Bohman / VMETRO, Inc.

Poster B.10 The eXtreme Adaptive DSP Solution to Sensor Data Processing
Martin Vorbach / PACT XPP Technologies
Leo Mirkin / SKY Computers, Inc.

1225 Lunch (View Posters)

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<td>David Cousins / BBN Technologies</td>
<td>John Grosh / OSD</td>
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<th>Time</th>
<th>Custom Reduction of Arithmetic in Linear DSP Transforms</th>
<th>Parallel Performance of Pure MATLAB &quot;M-files&quot; Versus &quot;C-code&quot; as Applied to Formation of Wide-Bandwidth and Wide-Beamwidth SAR Imagery</th>
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<td>Smarahara Misra / Carnegie Mellon University</td>
<td>John Nehrbass / The Ohio State University</td>
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<td>* James Hoe / Carnegie Mellon University</td>
<td>Stan Ahalt / The Ohio State University</td>
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<td>Markus Pueschel / Carnegie Mellon University</td>
<td>Juan Carlos Chaves / The Ohio State University</td>
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<td>Ashok Krishnamurthy / The Ohio State University</td>
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<td>Mehrdad Soumekh / SUNY Buffalo</td>
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<th>Time</th>
<th>Precision Modeling and Bit-Width Optimization of Floating-Point Applications</th>
<th>A Parallel Implementation of the Normal Compositional Model for Hyperspectral Analysis Based on MatlabMPI</th>
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<td>Zhihong Zhao / Alternative Systems Concepts, Inc.</td>
<td>David Stein / MIT Lincoln Laboratory</td>
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<td>* Miriam Leeser / Northeastern University</td>
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<td>Stewart Reddaway / Worldscape Defense Company</td>
<td>Siddharth Samsi / The Ohio State University</td>
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<td>Ken Cameron / ClearSpeed Technology, Ltd.</td>
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<td>Michael Koch / Lockheed Martin NE &amp; SS</td>
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<td>Simon McIntosh-Smith / ClearSpeed Technology, Ltd.</td>
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<th>Time</th>
<th>DARPA Polymorphous Computing Architectures (PCA) for Embedded Defense Signal and Image Processing Applications</th>
<th>A Parallel Data Mining Toolbox Using MatlabMPI</th>
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<td>Michael Koch / Lockheed Martin NE &amp; SS</td>
<td>Parna Khot / The Ohio State University</td>
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<td>Stephen Crago / University of Southern California</td>
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<td>Matthew French / USC / ISI East</td>
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<tr>
<th>Time</th>
<th>Kernel Benchmarks and Metrics for Polymorphous Computer Architectures</th>
<th>Parallel Matlab: The Next Generation</th>
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<td>James Lebak / MIT Lincoln Laboratory</td>
<td>Jeremy Kepner / MIT Lincoln Laboratory</td>
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<td>Hank Hoffmann / MIT LCS</td>
<td>Nadya Travinin / MIT Lincoln Laboratory</td>
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<td>Janice McMahon / MIT Lincoln Laboratory</td>
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<tr>
<td>1640</td>
<td>Mr. Robert Graybill / DARPA IPTO</td>
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25 September

Day 3 at a Glance

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<tr>
<td>0835</td>
<td>Invited Speaker: Dr. Mari Maeda / National Science Foundation</td>
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<tr>
<td>0905</td>
<td>Session 5: Current and Emerging Standards</td>
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<tr>
<td>1020</td>
<td>Break (15 min.)</td>
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<tr>
<td>1035</td>
<td>Session 5 (Continued): Current and Emerging Standards</td>
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<tr>
<td>1120</td>
<td>Poster / Demo C: Software</td>
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<td>1215</td>
<td>Lunch (View Posters)</td>
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<tr>
<td>1325</td>
<td>Session 6: Advanced Software</td>
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<tr>
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<td>Invited Speaker: Dr. Craig Lee / Aerospace Corporation</td>
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<tr>
<td>1505</td>
<td>Break (View Posters, 25 min.)</td>
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<tr>
<td>1530</td>
<td>Session 6 (Continued): Advanced Software</td>
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<tr>
<td>1730</td>
<td>Adjourn</td>
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0730 Check-In & Continental Breakfast

0830 Announcements

Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

0835 Title TBD (Invited)

Dr. Mari Maeda / National Science Foundation

0905 Session 5: Current and Emerging Standards

Craig Lund / Mercury Computer Systems, Inc.

0935 An Update on CORBA Performance for HPEC Algorithms

Bill Beckwith / Objective Interface Systems, Inc.

1005 VXS, A High Speed Cu Switch Fabric Interconnect for VME

* Henry Wong / Motorola

* James Fedder / Tyco Electronics

* James Thompson / Naval Surface Warfare Center

1020 Break

1035 UML

1050 Real-Time Java

1105 Data Reorganization Initiative

Kenneth Cain / Mercury Computer Systems, Inc.

Myra Prelle / Mercury Computer Systems, Inc.

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★★ Denotes outstanding submission
Poster Session C Précis

**Poster C.1**  An Overview of the Common Component Architecture  
Robert Armstrong / Sandia National Labs  
David Bernholdt / Oak Ridge National Laboratory

**Poster C.2**  Gedae Runtime Kernel Performance Characterization  
Kerry Barnes / Gedae, Inc.  
* William Lundgren / Gedae, Inc.

**Poster C.3**  A Middleware for Embedded Adaptive Dependability  
Tom Bracewell / Raytheon IDS  
Priya Narasimhan / Carnegie Mellon University

**Poster C.4**  The Earth System Modeling Framework: A High-Performance Software Architecture and Infrastructure for Climate and Weather Applications  
Cecelia DeLuca / NCAR

**Poster C.5**  High-Performance Code Generation for FIR Filters and the Discrete Wavelet Transform Using SPIRAL  
Aca Gacic / Carnegie Mellon University  
Jose Moura / Carnegie Mellon University  
Markus Pueschel / Carnegie Mellon University

**Poster C.6**  Distributed Real-Time Embedded Video Processing  
Tiehan Lv / Princeton University  
Burak Ozer / Verificon Corporation  
* Wayne Wolf / Princeton University

**Poster C.7**  R-Stream: Enabling Efficient Development of Portable, High-Performance, Parallel Applications  
Peter Mattson / Reservoir Labs, Inc.  
Richard Lethin / Reservoir Labs, Inc.  
Allen Leung / Reservoir Labs, Inc.  
Kenneth Mackenzie / Reservoir Labs, Inc.  
Eric Schweitz / Reservoir Labs, Inc.  
Peter Szilagi / Reservoir Labs, Inc.

**Poster C.8**  High Performance Flexible DSP Infrastructure Based on MPI  
Tom McClean / Lockheed Martin NE & SS  
Stephen Shank / Lockheed Martin NE & SS

**Poster C.9**  Building the Support for Radar Processing Across Memory Hierarchies: On the Development of an Array Class with Shapes Using Expression Templates in C++  
Lenore Mullin / University of Albany  
* Lawrence Bush / Rensselaer Polytechnic Institute  
Xingmin Luo / University of Albany

**Poster C.10**  Simulation and Real-Time Verification of Video Algorithms on the TI C6400 Using Simulink  
Donald Orofino / The MathWorks, Inc.

**Poster C.11**  Low Overhead Real-Time Computing with General Purpose Operating Systems  
Michael Raymond / Silicon Graphics, Inc.

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**25 September (Continued)**

**Poster C.12** Dynamic Resource Management for a Sensor-Fusion Application via Distributed Parallel Grid Computing  
Albert Reuther / MIT Lincoln Laboratory  
Joel Goodman / MIT Lincoln Laboratory

**Poster C.13** An Alternative Method for Retrieval Distributed Data  
Jaime Vazquez / University of the Valley of Mexico-campus Tlalpan

**Poster C.14** DAFS Storage for High Performance Computing Using MPI-I/O: Design and Experience  
Vijay Velusamy / MPI Software Technology  
Peter Corbett / Network Appliance, Inc.  
* Arkady Kanevsky / Network Appliance, Inc.  
Anthony Skjellum / MPI Software Technology

1215 Lunch (View Posters)

1325 **Session 6: Advanced Software**  
Albert Reuther / MIT Lincoln Laboratory

1335 **Title TBD** (Invited)  
Dr. Craig Lee / Aerospace Corporation

1405 **Distributed Embedded Real-Time Agent Resource Management**  
Carl Hein / Lockheed Martin ATL  
Aron Rubin / Lockheed Martin ATL

1435 **Internet Worm and Virus Protection for Very High-Speed Networks**  
John Lockwood / Washington University

1505 Break (View Posters)

1530 **Evolution of the Milieu Approach for Software Development for the Polymorphous Computing Architecture Program**  
Yoginder Dandass / Mississippi State University  
Ben Abbott / Southwest Research Institute  
Theodore Bapty / ISIS/Vanderbilt University  
Anthony Skjellum / MPI Software Technology  
Charles Summey / MPI Software Technology  
Hong Yuan / MPI Software Technology

1600 **The Morphware Stable Interface: A Software Framework for Polymorphous Computing Architectures**  
Dan Campbell / Georgia Institute of Technology  
Dennis Cottel / SPAWAR Systems Center  
Randall Judd / SPAWAR Systems Center  
Kenneth Mackenzie / Reservoir Labs, Inc.  
Mark Richards / Georgia Institute of Technology

1630 **Multimedia Macros for Portable Optimized Programs**  
Juan Carlos Rojas / Northeastern University  
* Miriam Leeser / Northeastern University

1700 **New FFTW Developments**  
Matteo Frigo

1730 Adjourn

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