

January 2006

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Welcome to the sixth newsletter of the *2007 iNEMI Roadmap* cycle and the first of 2006. This and subsequent newsletters will be completely dedicated to keeping you informed about the progress of the *2007 iNEMI Roadmap*. Please pass this newsletter on to anyone within your technical network who might be interested in becoming involved in this effort.

Roadmap Overview

As a reminder, and to inform new recipients, my name is Chuck Richardson. Working with Jim Arnold (Motorola), iNEMI's Director of Roadmapping, I am responsible for staff management of the roadmap effort. Since I don't know how familiar you are with the roadmap, I would like to give you a quick overview of its make-up. This document is made possible by volunteers from the electronics industry (iNEMI members and non-members) that form groups and committees to develop chapters, presently for 5 Product Emulator Groups (PEGs) and 19 technology and business/infrastructure areas. Each chapter anticipates manufacturing technology needs over a 10-year horizon. Each of the PEGs has a chair or co-chairs and as many group members as needed for a broad-based view of that emulator's scope (usually 2-5 individuals).

2007 iNEMI Roadmap Product Emulator Groups (PEGs):

1. Aerospace / Defense
2. Automotive
3. Consumer / Portable
4. Medical
5. Office / Large Business Systems / Communications

The PEGs will define OEM requirements for their product sectors from both a business and technology perspective. Needs are presented in each PEG chapter, using key attribute tables and text according to templates that are furnished by the iNEMI Technical Committee. Each PEG chair will be expected to attend two to three face-to-face meetings during the 2006 calendar year, but most of the group's work is done by telephone and over the Internet.

The Technology Working Groups (TWGs) use the OEM requirements detailed in the 5 PEG chapters to prepare each of their roadmap chapters, detailing where they stand — and expect to progress over the next 10 years — with respect to the stated needs. Other than the TWG chairs, who are expected to attend a minimum of three meetings, no travel is required to participate in a

TWG, and this activity requires only as many hours as you want to dedicate to it, depending upon how involved you wish to be.

2007 iNEMI Roadmap Technology Working Groups (TWGs):

- | | |
|--|---|
| 1. Board Assembly | 10. Optoelectronics |
| 2. Connectors | 11. Organic and Printed Electronics Technology (new for 2007) |
| 3. Energy Storage Systems | 12. Packaging |
| 4. Environmentally Conscious Electronics | 13. Passive Components |
| 5. Final Assembly | 14. PLIM (Product Lifecycle Information Management) |
| 6. Interconnect Substrates - Ceramic | 15. RF Components & Subsystems |
| 7. Interconnect Substrates - Organic | 16. Semiconductor Technology |
| 8. Mass Data Storage | 17. Sensors |
| 9. Modeling, Simulation & Design Tools | 18. Test, Inspection & Measurement |
| | 19. Thermal Management |

Recent Activity

PEG Update. PEGs are working toward completing their chapter drafts for presentation at the roadmap kickoff meeting on February 6th.

We have been unable to find a Netcom PEG Chair, so the plan is to roll the Netcom requirements back into the Office/Large Business Systems PEG and add a third section “Communications” - similar to what was done in 2002. This PEG will be known as Office/Large Business Systems/Communications Product Emulator Group and the “Communications” section will be supported by “Netcom” people that participated in 2004.

TWG Update. Several new *2007 iNEMI Roadmap* leadership positions have been recently finalized: Steven Davidson, Delphi, has agreed to be the new chair for the Final Assembly TWG; Henry Utsunomiya, consultant, will co-chair the Interconnect Substrates (Organic) TWG; Michael Reagin, Delphi, has agreed to co-chair the Test, Inspection & Measurement TWG; Tim McBride, Texas Instruments, has agreed to chair the Sensors TWG; and Carl Fisher, 3M, has agreed to replace Tom Roth as co-chair of the Thermal Management TWG. We thank Tom for his support on the 2002/4 roadmaps and wish him well in his new position in Seattle, Washington. We also wish to thank Mike Smith, Teradyne and Stig Oresjo, Agilent for their years of chairing the “TIM” Chapter. Mike and Stig have confirmed that they will continue to support this TWG with their expertise during 2006/7.

Please join in welcoming all the new roadmap leaders to the *2007 iNEMI Roadmap* team and in thanking their respective companies for their support for this important project. There will likely be a few other Chair announcements to share with you in the near future.

I (with Linda’s help) sent out a 2004 Roadmap Chapter in “Word” format to the 2007 Chapter Chairs for use in developing the 2007 version – assuming there was one available. For new

chapters, we sent an example chapter that could be used to serve as a possible tool. If you did not receive your 2004 copy, please let me know.

As usual, Jim Arnold and I plan to have a pre-kick off meeting telecom to make sure that everyone is informed concerning the logistics and process of the kick off meeting. Presently the date is set for January 23, 2006 from 11:00 A.M. -12:00 P.M EST. If you plan to attend the kick off meeting in Anaheim and cannot make the call on that day, or there is a time that you cannot make the call that day, please let me know. We will hold the call to no more than 1 hour.

Upcoming Events

The **2007 iNEMI Roadmap** (North America) kickoff meeting is scheduled for 1:00 PM – 5:00 PM PST February 6 and 8:00 AM – 5:00 PM PST February 7 at the Disney Paradise Hotel, 1717 South Disneyland Drive, Anaheim, California 92802, United States, in conjunction with APEX 2006. This meeting will be held in the Crystal Cove room and is open to all who wish to participate in the 2007 iNEMI Roadmap, or are interested in learning more, with the potential of participating. The afternoon of February 6 will be used for introductory and PEG presentations, and the following day will be used for informative presentations, TWG organizing and breakout sessions, followed by short reports from the breakout groups. Cross cut matrix issues will also be discussed. I have included a proposed agenda for your information at the end of this newsletter. I am informed that you need to book your rooms early as there is expected to be a shortage this year. Hotel details may be found at the iNEMI public website: <http://www.inemi.org/roadmapping/status.html>. I have also included a registration form at: http://thor.inemi.org/webdownload/calendar/APEX_2006/Roadmap_Registration_APEX.doc and at the end of this newsletter that you can use to let us know which TWG(s) you are interested in meeting with at the kick off meeting. This information will help us better meet the needs for meeting space during breakout sessions. Please fax or email the form to Dee-Dee Taylor at: dtaylor@inemi.org.

The **2007 iNEMI Roadmap** schedule has been changed to permit roadmap workshops in Berlin, Germany and Shanghai, China next Spring and Summer. We have been informed that there may need to be more “tweaking” required due to some holidays on the 25th and 26th of May. The preliminary revised schedule is listed at the end of this newsletter for your information. Please note particularly that the previously scheduled “Open Roadmap Presentation in Herndon, VA” has been moved up to May 17 from May 24 so TWG Chairs and others planning to attend will need to arrange their travel plans accordingly for this important benchmark, face-to-face meeting.

Get Involved

Work is continuing to fill a few remaining openings for TWG leadership positions. We are presently requesting applicants for the position of Optoelectronics TWG Chair. If you have been thinking about serving the industry as a Chapter Chair, please contact me and I will work with you to decide if this is the cycle to get involved. You are not required to be an iNEMI member to participate in roadmap development or to chair one of the groups. In fact, the more diversified the representatives working on the roadmap, the broader the reach and the more valuable the

final product is to the industry. With the wide range of technology categories, it should be easy to find one that stirs your interest and calls you to participate.

The iNEMI roadmap has become recognized as an important tool for defining the “state of the art” in the electronics industry as well as identifying emerging and disruptive technologies. It also fuels development of future iNEMI projects and sets priorities for industry R&D over the next 10 years. With the “globalization” of the iNEMI roadmap, the next “edition” should become even more important as a tool for identifying technology gaps and possible solutions for an increasingly global industry.

If you would like to be involved with the **2007 iNEMI Roadmap** team, or be added to the mailing list of this monthly newsletter, please contact Chuck Richardson at Chuck.Richardson@inemi.org.

For more detailed information about the meetings discussed above, please contact Linda Anderson-Jessup at +1 703-834-2086 or linda.jessup@inemi.org.

From the Editor: We hope that you will find this newsletter interesting and informative. If you would like to access an issue of a past roadmap newsletter or check other roadmap information, please use the iNEMI website link: <http://www.inemi.org/roadmapping/status.html>.

Please provide comments to Chuck Richardson at 1-256-880-0922 or email Chuck.Richardson@inemi.org.

2007 iNEMI Roadmap Calendar

- 3Q2005: Select Product Sector Champions, teams and refine data charts
- 3/4Q05: Product Sector Champions Develop Emulators
 - September 6, 2005 – Teleconference with P.E. Group Chairs
 - September 30, 2005 - Roadmap Kick-off with PEG/TWG/TC at SMTAI
 - November 16, 2005 – European Kick-off at Productronica
 - December 2005 – Review meeting with TC on PEG Emulators
- 2004 chapter, format, Exec. Summary mailed to each TWG chair (Word 6.0) 1/4/2006
- Organizing Teleconference with TWG Chairs 1/23/2006
- February 2006 - PEG Workshop/TWG Kick-off at APEX Meeting in Anaheim:
 - Product Sector Tables Complete – Chapters Written
 - Cross cut issues addressed
- April, 2006 – Possible Asian Workshop
- May 8, 2006 – Teleconference with TWG Chairs
- May 17, 2006 – Open Roadmap Presentation in Herndon, VA
- May 18, 2006 – TC Meeting in Herndon (Roadmap)
- May-June 2006 – Roadmap Workshop in Europe
- June 27-30, 2006 – Roadmap Workshop at HDP '05, Shanghai, China
- July 1, 2006 – TWG Drafts Due for TC Review
- August 9, 2006 – TC Face-to-Face Review with TWG Chairs in Kokomo

- September 2006 – Council Review of Key Issues and Preliminary Summary @ SMTAI, Final Roadmap Chapters Due 9/22/06
- October 31, 2006 – Edit, Prepare Appendix A-D, Executive Summary
- November 20, 2006 – Go To “Press”
- December 4, 2006 – Ship to Members
- February 2007 – Industry Release at APEX

2007 iNEMI Roadmap U.S. TWG Kickoff Meeting
Disney's Paradise Pier Hotel, 1717 South Disneyland Drive, Anaheim, CA
Crystal Cove Room
Preliminary Agenda

Monday, February 6, 2007

Time	Subject	Presenter
1:00 p.m.	Welcome/Overview	Jim Arnold, Motorola
1:15 a.m.	Business Issues for 2004 Roadmap	Jim McElroy, NEMI
1:30 – 5:00	Product Emulator Group Presentations: (30 minutes each)	
1:30 p.m.	Portable/Consumer Products	Susan Noe, 3M
2:00 p.m.	Office/Large Business System/ Communications	Tom Pearson, Intel
2:30 p.m.	Defense and Aerospace Products	Bill Murphy, Lockheed Martin
3:00 p.m.	Automotive	Jim Spall, Delphi
3:30 – 3:45	Break	
3:45 p.m.	Medical	Anthony Primavera, Guidant
4:15 p.m.	iNEMI / ITRS Design Issues	Juan-Antonio Carballo, Intel
4:45 p.m.	Summary	Jim Arnold, Motorola
5:00 p.m.	Close	

Tuesday, February 7, 2007

Crystal Cove Room

Time	Subject	Presenter
7:30 a.m.	Continental Breakfast	
8:00 a.m.	Introduction to Breakout Sessions	Jim Arnold, Motorola
8:15 a.m.	Break-out Sessions	(Follow TWG signs to break-out sessions)
12:00 Noon	Lunch	
1:00-4:15p.m.	Technical Working Group Reports:	

Business Processes / Technologies:

1:00 p.m. Product Lifecycle Information Management Eric Simmon, NIST

Design Technologies:

1:10 p.m. Environmentally Conscious Electronics Joe Johnson, Cisco
1:20 p.m. Modeling, Simulation & Design Tools Sanjeev Sathe, ASE
1:30 p.m. Thermal Management Cam Murray, 3M

Manufacturing Technologies:

1:40 p.m. Board Assembly Dongkai Shangguan, Flextronics
1:50 p.m. Test, Inspection & Measurement Mike Reagin, Delphi
2:00 p.m. Final Assembly Steve Davidson, Delphi
2:10 - 2:25 Break

Component Subsystem Technologies:

2:25 p.m. Passive Components Phillip Lessner, Kemet
2:35 p.m. RF Components & Subsystems Eric Strid, Cascade Microtech
2:45 p.m. Packaging Joe Adam, Skyworks
2:55 p.m. Semiconductor Technology Alan Allan, Intel
3:05 p.m. Organic Substrates Jack Fisher, iNEMI/IPC
3:15 p.m. Mass Data Storage Tom Coughlin, Consultant
3:25 p.m. Connectors John MacWilliams, Bishop
3:35 p.m. Energy Storage Systems Dan Doughty, Sandia Labs
3:45 p.m. Optoelectronics TBD
3:55 p.m. Sensors TBD
4:05 p.m. Organic and Printed Electronics Dan Gamota, Motorola
4:15 p.m. Ceramic Substrates Howard Imhof, Metalor
4:15 p.m. Summary/Close Jim Arnold, Motorola
4:30 p.m. Hard Stop

CONFIRMATION FORM
Roadmap Kick-Off Meeting
February 6 - 7, 2006

Please check the appropriate boxes by double-clicking and selecting "check" for default and fax this form to 703-834-2735 or e-mail information to dtaylor@inemi.org by January 23, 2006.

- I will attend on Monday, February 6, 2006, 1:00 PM to 5:00 PM PST
 I will attend on Tuesday, February 7, 2006, 8:00 AM to 5:00 PM PST
There will be a continental breakfast on Tuesday (2/7) at 7:30 a.m.

If you have a special request for this meeting that requires our assistance, please let us know:

I am interested in/plan to participate in the following Technology Working Group(s) (TWG(s)):

- Board assembly
 Connectors
 Energy storage systems
 Environmentally conscious electronics
 Final assembly
 Interconnect substrates – ceramic
 Interconnect substrates – organic
 Mass data storage
 Modeling, simulation & design tools
 Optoelectronics
 Organic & printed electronics technology
 Packaging
 Passive components
 Product lifecycle information management
 RF components & subsystems
 Sensors
 Test, inspection & measurement
 Thermal management
- Undecided**

Name (print or type) Company Date

Email address Phone number