

November 2005

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Welcome to the fourth newsletter of the *2007 iNEMI Roadmap* cycle. 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 6 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 | 4. Medical |
| 2. Automotive | 5. Netcom (Network, Datacom & Telecom) |
| 3. Consumer/Portable | 6. Office/Large Business Systems |

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

Recent Activity

TWG Changes. With the increasing importance of organic electronics to various market segments (Consumer/Portable, Military, etc.), iNEMI has decided to organize a new TWG called Organic and Printed Electronics Technology. Dan Gamota, Motorola, has agreed to chair this new TWG and plans to begin organizing calls in January. If you are interested in becoming a part of this new effort, please contact me at your convenience.

I am pleased to announce that Eric Strid, Cascade Microtech, has agreed to Chair the RF Components and Subsystems TWG for the 2007 cycle. Eric has been associated with this TWG in past cycles and is well qualified for this leadership position.

One change that will impact the roadmap team is the decision by our long-standing partner, the United States Display Consortium (USDC), to not provide the Displays Chapter for the 2007 Roadmap. USDC leadership will be changing, and current leadership did not feel they could commit for the new team. Instead of having a standalone Displays Chapter we will ask those chapters that are impacted by display technology to address issues related to display technology in their respective chapters for this cycle. iNEMI thanks the USDC for their many years of supplying excellent content for the iNEMI Roadmaps.

PEG Update. In other news, we have taken the feedback from the PEG kick-off meeting in Chicago, updated the format of the 2004 PEG spreadsheet of key attributes, and distributed it to the 2007 PEG Chairs. They will be filling in the key attributes data over the next several months and presenting their progress at the next iNEMI Technical Committee (TC) telecom, scheduled for December 8th. In previous roadmap cycles, the PEG chairs have told us that the feedback provided by the TC in this review has been very valuable.

IPC Works Presentation. I presented information about the iNEMI Roadmap process and described highlights of the 2004 Roadmap as part of a roadmaps panel at the IPCWorks 2005 Conference in Las Vegas, October 26. The panel, led by Jack Fisher of Interconnect Technology Analysis Inc., compared the leading global roadmaps and how they could be used to deal with an increasingly competitive environment. Roadmaps from IPC, iNEMI and Japan

were discussed and compared. This sharing of ideas between roadmaps helps foster continuous improvement of all the participating roadmap groups.

Upcoming Events

The **2007 iNEMI Roadmap** kick-off in Europe will be held in conjunction with Productronica (Munich, Germany) on November 16 from 1:00 until 5:00 p.m. in room A 61 of the convention center. The meeting will be followed by a social hour. The preliminary agenda and announcement have been sent out and are included at the end of this newsletter. If you plan to attend this meeting, please download a registration form from the iNEMI website at:

http://thor.inemi.org/webdownload/roadmapping/2007_Roadmap/Productronica_Registration.doc. A complete listing of all iNEMI events at Productronica is available at <http://www.inemi.org/cms/calendar/Productronica.html>. For additional information, contact Chuck Richardson, iNEMI, at +1 256-880-0922, chuck.richardson@inemi.org.

Get Involved

Work is continuing to fill a few remaining openings for both PEG and TWG leadership positions. We are presently requesting applicants for the positions of Netcom PEG Chair and 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 1/11/2006: (offer APEX TWG meetings)
- February 2006 PEG Workshop/TWG Kick-off at APEX Meeting in Anaheim:
 - Product Sector Tables Complete – Chapters Written
 - Cross cut issues addressed
- April, 2006 Roadmap Workshop - Japan
- May 15, 2006 Teleconference With TWG Chairs
- May 24, 2006 – Open Roadmap Presentation in Herndon, VA
- May 25, 2006 – TC Meeting in Herndon
- May 25, 2006 – TWG/PEG Cross Cut Meeting, Herndon
- June, 2006 - Roadmap Workshop Europe
- 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
- Feb, 2007 – Industry Release at APEX

Agenda

iNEMI 2007 Roadmap Kickoff

16 November 2005, 13:00 – 17:00

Co-Sponsored by IEEE CPMT Society, Fraunhofer IZM, IMAPS Europe

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|---------------|--------------------------------|---------------------------------------|
| 13:00 – 13:10 | Welcome and Introduction | Jim McElroy, CEO, iNEMI |
| 13:10 – 13:30 | iNEMI Roadmapping Process | Chuck Richardson, iNEMI |
| 13:30 – 13:45 | CPMT Participation in Roadmap | Rolf Aschenbrenner, Fraunhofer IZM |
| 13:45 – 13:55 | IMAPS Participation in Roadmap | Paul Collander, Poltronic |
| 14:10 – 14:30 | Automotive PEG* | Galen Reeder, Delphi |

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|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 14:30 – 14:50 | Packaging TWG** | Juergen Wolf, Fraunhofer IZM |
| 14:50 – 15:05 | Board Assembly TWG | Kim Hyland, Solectron |
| 15:05 – 15:20 | Break | |
| 15:20 – 15:40 | Environmentally Conscious Electronics TWG | Nils Nissen, Fraunhofer IZM |
| 15:40 – 16:20 | Breakouts <ul style="list-style-type: none"> • Identify key European TWG areas • Identify key companies for participation • Identify strategies for European recruitment <ul style="list-style-type: none"> Automotive Netcom | Galen Reeder, Delphi Paul Collander, Poltronic |
| 16:20 – 16:45 | Report back | Breakout leaders |
| 16:45 – 17:00 | Summary and Next Steps | Bob Pfahl, Paul Collander |
| 17:00 – 18:00 | Social Hour | |

* PEG = Product Emulator Group

** TWG = Technology Working Group