



International Electronics Manufacturing Initiative

Environmentally Conscious Electronics (ECE) TWG



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Mikrointegration

- **2004 ECE TWG Structure**
- **2004 Highlights from Environmentally Conscious Electronics (ECE) Roadmap**
- **Future Challenges for the 2007 Roadmap**

- **Broader International Participation**

- IEEE CPMT



- **Released to public at Apex on February 22, 2005**

- **New organization of the chapter**

- Design
 - Energy
 - Recycling
 - Materials
 - Sustainability

- Broader Input



Chair: Mark Newton, Dell

Co-chair: Joe Johnson, Microsoft

Materials Team

Leader: Holly Evans, Strategic Counsel LLC

Fern Abrams, IPC Jutta Müller, Fraunhofer IZM
Eric Austerman, Jabil Mark Myles, Goodbye Chain
Brenda Baney, Delphi Scott O'Connell, Dell
Todd Brady, Intel Bob Pfahl, iNEMI
Dan Camarda, Centor Fran Planinsek, Storage Tek
James Goeppinger, Storage Tek
Hansjörg Griese, Fraunhofer IZM
Carol Handwerker, NIST
Tony Kingsbury, Dow
Becky Linder, AeA

Recycling Team

Leader: Heather Bowman, HP

Eric Austerman Jabil
Reggie Cardill, NJIT
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Jason Linnell, EIA
Fran Planinsek, Storage Tek

Energy Team**Leader: Todd Brady, Intel**

H. Scott Matthews, CMU

Robert White, Dell

Design Team**Leader: Anne Brinkley, IBM**

Bill Hoffman, Motorola

Patrick Eagan, U. Wisconsin

Larry Weinberg, Boeing

Sustainability Team**Leader: Todd MacFadden, Bose**

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David Dickinson, Consultant

Hansjörg Griese, Fraunhofer IZM

Matt Kelly, Celestica

Tony Kingsbury, Dow

John Lott, DuPont

H. Scott Matthews, CMU

Mark Myles, Goodbye Chain

Bill Olson, Motorola

Dave Stangis, Intel

Harvey Stone, Goodbye Chain

Phil Trowbridge, AMD

**New trends in environmental regulation of materials:
Challenges as well as opportunities for industry**

- **How to integrate cost-efficient materials compliance strategies across multi-tiered global supply chains**
- **RoHS: Defining ‘homogeneous materials’; qualifying exemptions; Implementing documentation & testing**
- **Cd and Pb-free PVC cables**
- **Hg in CCLs**
- **Pb-free for high reliability requirement applications**
- **Halogen free: Plastics, laminates, components**
- **REACH risk assessment for chemical emissions**

Globally, the electronics industry is being asked to take responsibility for products at end of life

- **Operational infrastructure to support WEEE**
 - Register/track/pay in regional markets
 - Financial guarantees
 - Logistics & reverse logistics
 - Electronic component recovery and reuse
- **Integration of business policies & procedures to meet compliance requirements**
 - Placed on the market; Producer vs. importer responsibility
- **Development of recycling technologies & markets**
- **Meeting EU product recycling targets**
 - IT products (Category 3): 65% recyclable, 75% recoverable

Minimizing energy consumption: A major focus for electronic equipment manufacturers

- **CA Appliance efficiency regs: Effective July 2006 for external power supplies**
- **Increasing market pressure from EuP & voluntary energy standards for PCs/TVs**
- **Cost efficient methods to improve energy efficiency of power supplies**
- **Enabling power management of IT equipment**
 - **Educating users on enhanced power management**
 - **Balancing standby power with network & usability demands**

DFE: Integrated at beginning of Design Cycle

- **Automated data management systems for materials declarations**
- **Product compliance & verification testing**
 - Today: Regulated/non-regulated materials
 - Tomorrow: DfE attributes (need additional design team resources)
- **Qualification of replacements for hazardous substances**
- **LCA / SLCA tools**
- **WEEE compliance verification process**

The NEMI ECE TWG identified sustainability as a new focus area for the Roadmap

- **Consensus building between sustainability views**
- **Definition of sustainability (first focus fields)**
 - **Operations: Consumption/emissions of materials & energy**
 - **Products: Minimizing ‘environmental footprint’ over the entire life-cycle**
- **Standard sustainability indicators and reporting protocols**

- **Roadmap 2007 discussion topics in short**
 - **Sustainability metrics**
 - **RoHS / WEEE / EUP aftermath**
 - **Voluntary agreements**
 - **Steps to legislative harmonization**
 - **Continuous improvement in companies**
 - **Strategic vision of sustainable electronics**
 - **Closer cross-linkage to technology roadmaps**

- **Beginning the Roadmap 2007 Process**
 - **As we recover from implementing RoHS & WEEE, IPP/ EuP/ REACH will continue to drive market/competitive pressure towards product sustainability metrics**
 - **Some RoHS topics and EUP will continue**
 - **Exemption updates → exemption management**
 - **Compliance tests and control measures still developed**
 - **Staged entry of EUP implementation measures**
 - **More voluntary industry agreements (?)**
 - **Monitor and map developments**
 - **Approaches to curb legislative inflation**
 - **International legislative harmonization**

- **Beginning the Roadmap 2007 Process**
 - **Implementing continuous improvement (CIP) in companies – learning from experiences**
 - **The electronics industry must develop a strategic vision of sustainable electronics**
 - **Closer cross-linkage to technology roadmaps**
 - **Evaluating the technology parts of iNEMI and other roadmaps to chart environmental effects of technological trends**

- ➔ **All are invited to join the ECE group of the iNEMI 2007 roadmap.**

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