



NEMI Environmental Programs



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2002 NEMI Environmentally Conscious Electronics Roadmap Recommendations

To remain competitive global electronics firms will need to:

- **Develop, qualify, and introduce new materials, components, and processes in 2002-6 to enhance recyclability, improve energy efficiency, and reduce ecological impact.**
- **Develop and implement efficient methods for data exchange of environmental attributes to meet the requirements of European and Japanese regulations on Electronics and Automotive products.**
- **Educate the supply chain to the new materials requirements and end-of-life responsibilities.**
- **Develop tools to address the complex decision and tradeoff process to develop products with minimal environmental burden.**

Connect with and Strengthen Your Supply Chain



NEMI's Development Focus

- **Pb-Free Solder**
 - ✓ Solder Alloy
 - ✓ Components/PWB
 - ✓ Process Development
 - ✓ Solder Reliability
 - ✓ Tin Whiskers
- **Standards for communication of “Materials Content Declaration” Information.**
- **Supply Chain Readiness for WEEE RoHS**
 - ✓ Educating Distributors
 - ✓ Flushing out the supply chain
 - ✓ Labeling Pb-free semiconductor components
 - ✓ Identifying and Developing Take Back, Recycling Infrastructure in Europe
- **Ecodesign-Guidelines, Tools, Templates, Metrics**
Connect with and Strengthen Your Supply Chain



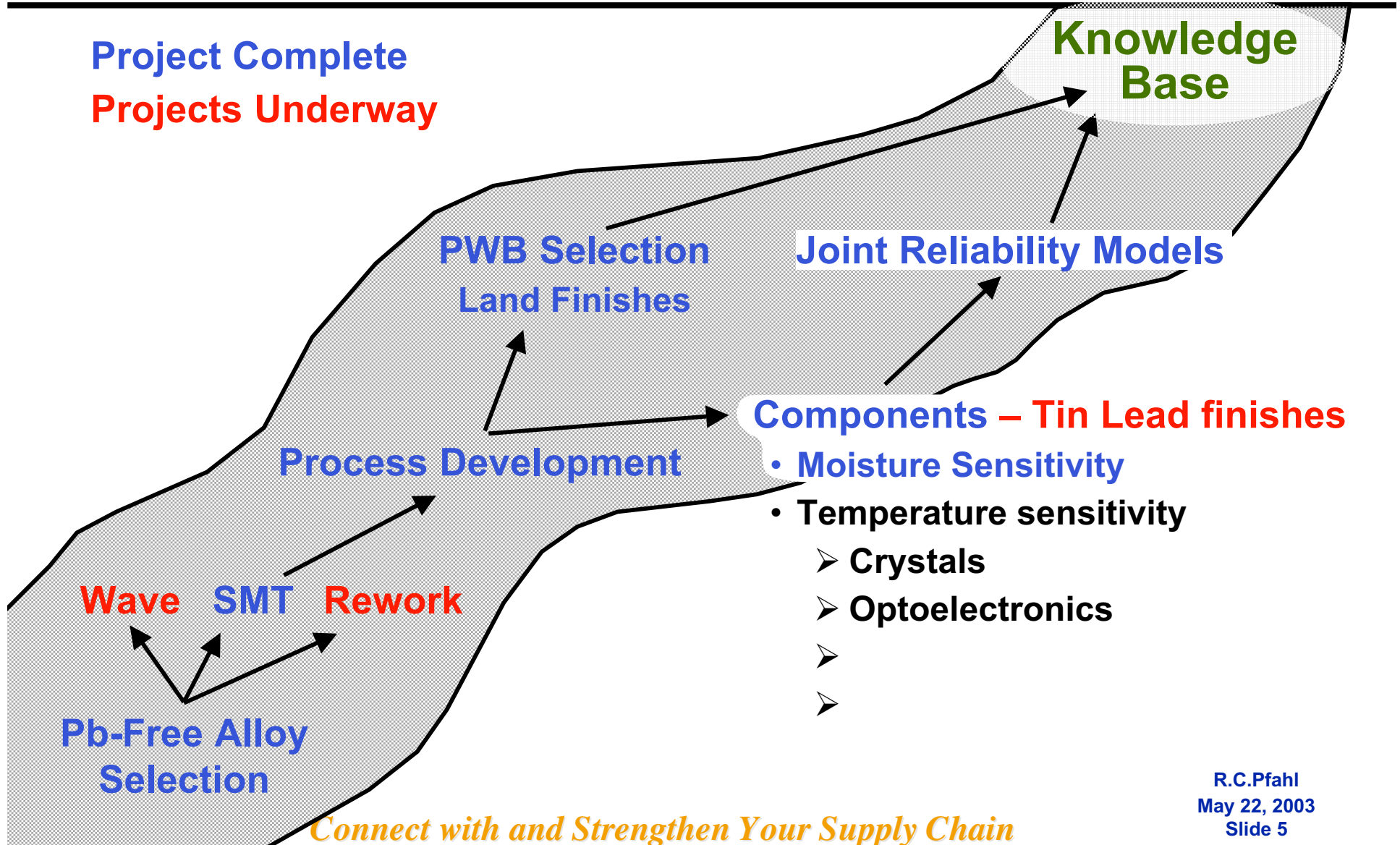
Addressing the RoHS Directive

- **North American Pb-Free Activities (NEMI)**
 - Solder Alloy
 - Components/PWB
 - Process Development
 - Solder Reliability
 - Tin Whiskers
- **Materials of Concern (EIA)**
 - ✓ Materials Declaration Guide
 - ✓ Regulatory Tracking Tool

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North American Pb-Free Activities (NEMI) Lead-Free Deployment Roadmap





Participants in NEMI Pb-Free Projects

OEMs/EMS

Alcatel
Celestica
Cisco

Delphi/Delco
Hewlett-Packard
IBM
Intel
Jabil
Kodak
Lace Technologies
Lucent
Motorola
Nortel Networks
Sanmina-SCI
Solectron
StorageTek

Material Suppliers

Alpha Metals
Cookson
Heraeus
Indium
Kester
Shipley

Components

AMD
ChipPac
FCI Electronics
Intel
Motorola
Texas Instruments

Govt. & Other

CMAP
IPC
NIST
SUNY-B/IEEC

Equipment

Agilent
BTU
Universal
Vitronics-Soltec

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Pb-Free Technology Status

- **NEMI projects have moved the industry forward in knowledge and understanding of Pb-free materials and processes.**
- **Continuing to work to fill in knowledge Gaps.**
- **Building the knowledge base equivalent to today's SnPb solder will not be done overnight.**
- **NEMI is open to working with other groups to insure that all major gaps are addressed in an effective & timely manner.**

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Addressing the WEEE Directive (AeA and NEMI) North American Status

- **North American OEMs are generally not prepared to implement the Product Take Back requirements of WEEE.**
- **NEMI has decided to focus initial recycling efforts on WEEE requirements (driven by schedule).**
- **NEMI hosted a product take-back workshop in October 2002 to educate supply chain on new end-of-life requirements members**
 - ✓ **AEA Provided Support on Legislative Status**
 - ✓ **EIA Provided Support on Materials Declaration**

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Next Steps

- Meeting to further discuss closing gaps was held on Monday evening, May 19, 2000 at the IEEE-ISEE conference.
- Prioritize potential collaborative projects and decide which to pursue.
- Develop plans and determine member interest.
- Commence projects.