2007 iNEMI Roadmap Highlights & Trends		
State of the Art		
Situation	**Examples**	**Implications**
Market / product sector convergence		
Medical-consumer	Home diagnostics	User-friendly interface, higher volume / lower cost.
Automotive-entertainment	DVD in the car	Harsher environment for consumer products.
Communication-entertainment	Transmission of music & pictures	Increased integration & greater miniaturization.
Computing-entertainment	Integration of PC with media centers	Harmonization of interface standards.
Miniaturization and thinner	Ultra-thin cell phones, low-profile packaging, stacked thin die	Ongoing technology and manufacturing investments in package and HDI.
NPI limited by environmental requirements	Growing list of requirements: China RoHS, EU REACH, etc.	Adds complexity and uncertainty to design and start-up. Global harmonization is needed.
Outsourcing of manufacturing continues to grow faster than overall industry	Migration to India and Vietnam	Integration of design & manufacturing functions is more challenging than ever. More impetus for industry-standard DFX methodology.
R&D moving to lower-cost regions / emerging markets	Technology centers in China & India	More responsive to local needs. Moving away from "one size fits all." Changing role for developed regions.
Anticipated Paradigm Shifts		
Shift	**Examples**	**Implications**
New forms of data Input: displays, cameras, sensors, speech	Collision avoidance, smart RFID tags (e.g., sensors).	Drives new growth areas for electronics. Simplifies or enhances user experience.
Optical interconnect by 2017? No!	Work remains at exploratory level.	Competing technologies can meet needs at lower cost.
Low-frequency (printed) electronics for data input	Alternative technology for RFID item-level tags	Facilitates low cost point required by some applications.
Packaging materials will change over the next decade to meet reliability requirements	As density increases, today's material properties present barriers: TCE mismatch, dimensional stability, etc.	Investments in new materials systems. May require rethinking traditional reliability validation methodology.

10-Year Challenges	
Challenge	**Description**
Closing technology gaps:	
Active device technology	New CMOS structures; “beyond CMOS” topologies.
Thermal management	New materials and active cooling techniques.
Communications bandwidth	Growing requirements for moving data across the environment (from hand-held devices through the network).
Design and simulation tools	Ability to do concurrent design for circuit, thermal, mechanical, etc.
Science-based environmental improvements	Current regulations may not consider full “cradle to grave” impact.
Creating new product markets with social value:	
Energy	Higher efficiency power supplies, new energy sources for portable products.
Healthcare	Home diagnostics connected to healthcare professionals.
Security	Tamper-proof recognition / validation.