

Association Connecting Electronics Industries

A collage of various electronic circuit boards, including a green board with a large black chip, a yellow board with multiple integrated circuits, and a red board with a complex layout of components. The boards are arranged in a vertical stack, with some overlapping. The background is a light blue gradient with a white curved border on the left side.

**IPC INTERNATIONAL
TECHNOLOGY
ROADMAP
for ELECTRONIC
INTERCONNECTIONS**

2008 – 2009

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ROADMAP OVERVIEW

The electronic interconnection supply chain consists of three basic links that begin with the fabrication of semiconductors and their associated packaging. The next link is the fabrication of the interconnecting substrate for both the semiconductor package and the product printed board. The final link is the assembly and test. Today, many of these functions are accomplished in a variety of partnerships. The shift in the business model, developed through outsourcing many of the activities, requires that the links between the three elements is strengthened through clear and unambiguous communication. It is also important that each player in the supply chain understands their contribution to the product reliability.

In many cases, the EMS provider helps in the design function. Using the tools at their disposal they are responsible for the documentation and for procuring component parts as well as printed boards. As the agent of the OEM, the EMS provider also faces the challenges of requirements to meet new legal directives to remove hazardous substances from the electronic products, implement more robust processes and face greater density packaged in smaller form factors. Another supply chain challenge, directed toward the printed board manufacturing is keeping up with the integration scale of silicon. The circuit board now contributes to the electrical function; thus, changes in material and mounting structure can dramatically change the electrical performance of the final product.

An area where consortia, made up of users and suppliers, have been very successful is in the area of hazardous material properties. Since the EU directives have identified a group of materials that are restricted from the European market, companies have banded together to look for alternatives. These issues have become a global problem even for companies that have no intention of placing their product on the European market. Component suppliers have already changed termination finishes from the traditional tin lead to new alloys that do not contain lead in excess of the permitted allowance. Therefore many of the assembly processes have been reviewed and revised to handle the attachment requirements for the new finishes.

This 2008/2009 roadmap identifies the research that is needed or the pain being suffered by members of the supply chain. A great deal of focus is placed on the timing needed to meet the new global hazardous material elimination directives. Since dealing with regulations in several different markets it has become paramount to be aware of the different requirements per global sector and the manner in which the supply chain must be prepared to provide documentation indicating compliance. The energy and focus of technology drivers has been to define, educate and recommend how to meet these regulatory requirements.

Thus the roadmap considers all portions of the electronics technology sectors and provides information on the status and challenges facing the industry in order to be compliant and also maintain traceability of the product origins. Figure 1 shows the different technology sectors leading to the final product.

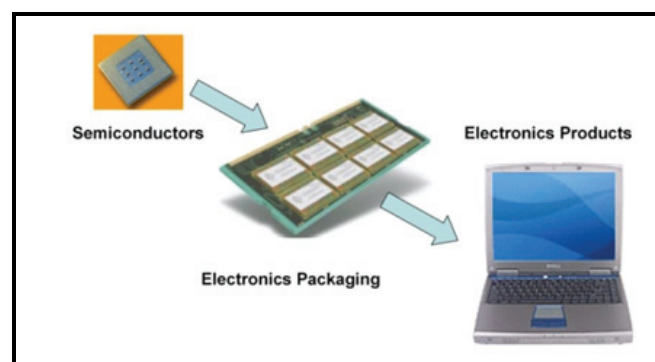


Figure 1 – Technology Sector Manufacturing Flow