Automotive Electronics Workshop

Outcomes From Breakout Groups
Grenoble; Sept 2013
iNEMI Methodology; Items is Red from WS

Technology Roadmap Process
ID key market trends
Technology evolution & disruptive technologies
Looking 10 years into the future

Further Refine Opportunities
Use technology working groups
Use organized workshops
To ID collaborative projects where the supply chain is ready to engage

Critical Analysis of Roadmap
Extract key gaps and challenges

Organize & Direct Projects
Teams formed to clearly identify scope and deliverables
Manage collaborative R&D process
Typically 25 Active iNEMI projects running in parallel
Objectives:

- Create a working understanding and sharing of the key gaps that are faced by the Automotive electronics manufacturing industry.
- ID those where collaboration would be most beneficial.
- Work in sub groups to further define the problems and opportunities:
  - Description of current situation.
  - Clear problem statement.
  - Desirable solutions/deliverables targeted.
1. Miniaturization and Systems Integration Challenges for Automotive

2. Materials Focus Including Thermal, EMI, Reliability, and Environmental Regulations

Key areas of potential collaboration follow.

Note: There is NO priority assigned to the following 7 items.
• **1.) Problem Statement:** Rapid growth in automotive electronics under hood is pushing current technology thermal and density limits. Thus part counts are exploding and thermal solutions are exotic and expensive

• **Desired Solution:** Key supply chain players to identify detailed materials requirements and specs for high temperature, high frequency and high density PCB technology at acceptable cost points

• **Key Deliverables:**
  – Requirements clearly agreed up, solutions identified
  – Reliability demonstrated
2.) Problem Statement: With the rapid growth of complex systems in packages (SIP, 2.5D, etc) in automotive, the clarity of ownership for total system characterization and issue ownership is lacking.

Desired Solution: Create an agreed to methodology that clarifies optimal model and ownership for doing systems level definition and characterization on complex new packages for automotive

Key Deliverables:
- Documented methodology; buy-in from key supply chain players
- Potential auto industry standard down the road
3.) **Problem Statement:** Cost of system level test and diagnostics for complex (3000 parts) integrated modules is far too high.

**Desired Solution:** The development of zero DPM escape test strategies and capabilities for high complexity automotive modules including:
- Module level DFT requirements
- Physical/electrical access specifications
- Component level BIST
- Test equipment solutions to support
- With Fault Diagnostic Capabilities

**Key Deliverables:**
- New test standards
- New test modeling tools
Miniaturization Challenge

4.) Problem Statement: Industry standards such as JEDEC and others have not kept up with rapid changes and innovation is packages such as SIP. Result is that industry must deal with many too many package types thus impacting cost and time to market.

Desired Solution: Engage all key supply chain members on the definition of updated standards that result in optimized package selections for automotive.

Key Deliverables:

- Define the priorities with the scope of work on critical standard updates needed that will thus narrow the list of vendor specific options
- Organize and update standards as required.
5.) Problem statement: Specifications for new materials for automotive are classically based on bulk properties which are not useful with the latest required materials.

Desired Solution: Necessary specifications on key materials properties, application and system compatibility; both detailed and comprehensive

Key Deliverables:
- Select top “X” key materials.
- Develop specs required
- Potential automotive industry standard.
6.) Problem statement: The automotive electronics industry lacks an aligned methodology for qualification of challenging new materials that respond to market needs such as high temp; lower cost; longer reliability

**Desired Outcome:** Definition of an efficient qualification method for new materials that provides key performance attribute data required to meet application specs.

**Desired results:**
- Qualification methodology for new materials for automotive.
7.) Problem Statement: There are regulatory requirements being set prior to full application assessment and testing of new materials that meet automotive challenges in high temp, long life reliability, cost targets severely limiting innovation

**Potential Business Impact:** Reduce the time to market of critical new materials at more compelling cost points

**Desired Outcome:** Qualification method for new Materials

**Current Situation:** Existing iNEMI project on “Develop a stakeholder aligned methodology for Alternative Materials Assessment” is available for sign up. Go to [www.inemi.org](http://www.inemi.org)
Next Steps

• iNEMI to survey participants & critical industry players to see where interest lies; complete by 11/15
  – To participate in project definition
  – To be chairs of project definition teams. Remember, the chair position has MORE influence on definition outcome

• Review survey results and select top collaborative opportunities to take forward and announce results by 12/1

• Create project formation teams for highest interest areas within 45-60 days
www.inemi.org

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