Collaborative Alliance for Semiconductor Test (CAST)
Technology Community

CAST Overview
September 2018
CAST Charter

• A SEMI Technology Community that develops, coordinates, and directs all SEMI services for the semiconductor test community.

• Charter includes:
  – Foster pre-competitive collaboration
  – Research, develop and promote standards that enable industry productivity improvements
  – Perform pre-competitive benchmarks
  – Act as a representative and an advocate for the members
CAST Strategic Direction

• Inspired by the ITRS Roadmap

• Focused on areas identified as “challenges” and for which no known solution is existing or for which solutions are undesirable.

• CAST role is to
  – Put the relevant actors/technical leaders together
  – Formulate options
  – Define guidelines leading to standards
  – Undertake/Sponsor pre-competitive initiatives

• Working groups have been set up on Test Cell Communications, Test Data Standards, and Device ID & Traceability.
CAST Membership

Benefits
• Influence technology direction
• Networking in a non-competitive environment
• Professional development
• Industry recognition (company & individual)
• Leverage industry-wide resources

• Membership:
  – SEMI members
    • No fees
    • Submit CAST membership application
      – Designate representatives to serve in the steering committee and in the working group(s)
    • Voting
  – CAST Customer Advisory Panel (CAP) members
    • Open to chipmakers
    • No fees
    • Non-voting
Industry Stakeholders

- ATE: Teradyne, Advantest, Xcerra, Roos, Astronic
- Handler / Prober: Xcerra, Tesec, FF/Cascade
- Probecard, etc.: FormFactor/Cascade
- Software: Optimal+, Galaxy/Mentor, PDFSolutions
- Systems: Cisco
- Chipmakers: Maxim, STMicro, TI, Infineon, AMD, ASE/ISE, Integra, UTAC, Global Foundries, Qualcomm, NVidia
- IDM: STMicro, TI, Infineon, AMD

CAST
CAST Structure

**Steering Committee**
- Senior Level Representation
  - Equipment Vendors, IDMs, Fabless, OSATS, solution providers
  - Meets quarterly to review progress on programs and identifying new solutions needed by the industry

**Topic Leaders**
- Recognized Technology Leaders
- WG leaders on Identified Key topics for the Test Industry
- Report Working Groups’ activity status & updates on monthly basis to steering committee

**Working Groups**
- Focused teams with broad industry participation
- Regular meetings
- Publish standards or guidelines
**Activities**

• **Rich Interactive Database (RITdb)**
  - **Focus:** Develop the next-generation format following STDF to allow more flexibility in data types and support for adaptive test.
    - RITdb enables a real-time streaming model that provides the ability to collect and monitor data/systems from sand to landfill
  - **Rationale:** While Standard Test Data Format (STDF) is widely used in the semiconductor industry, there is a need for more efficient and flexible format to manage “big test data.”

• **Tester Event Messaging for Semiconductors (TEMS)**
  - **Focus:** Establish a vendor-neutral way to collect test cell data by standardizing ATE data messaging system based on industry-standard internet communication protocols between a test cell host and a server.
  - **Rationale:** Address surging demand for real-time data analysis, real-time ATE input and control of the test flow to improve test yield, throughput, efficiency, and product quality.

• **Chip ID & Traceability**
  - **Focus:** develop a standardized approach for enabling traceable die-level identification (ID) throughout the IC manufacturing, test, and assembly processes to the point of use in the final system.
  - **Rationale:** Many product types representing significant volumes that do not provide ID traceability. Without component-level traceability, it is extremely difficult to analyze failures and drive corrective action
Current Activities [1/2]

- Rich Interactive Test Database (RITdb)
- Tester Event Messaging for Semiconductor (TEMs)
Current Activities [2/2]

- Chip ID & Traceability
Status Indicators / Process Flow

SEMII
CAST

SEMII
Standards

Identify → Scope/Recruit → Develop → Framework → Pre-Draft

Initialize → Draft → Ballot → Publish
Accomplishments

- Obtained SEMI control of STDF specification
- Enhancements to STDF
  - Scan datalog extensions standardized
  - Memory datalog extensions standardized
- Handler Interface guidelines published
- Initiated RITdb WG
- Initiated TEMS WG
- Initiated Chip ID & Traceability WG
- Annual Workshops conducted
Join CAST

- Quarterly Steering Committee calls
- Regular working group calls
- LinkedIn group (~400 global members)
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