Welcome to CAST
Test Cell Communications WG

Oct 6, 2009
CAST agenda

• Review SEMI Anti-trust Guidelines

• Agenda Items
  – List/define the data source and data receivers in and around the test cell.
    • Partition sources/receivers that are present today
  – Begin to partition those sources/receivers
    • GOAL: determine where the best place for sources/receivers need to reside
  – Start forming a picture that would lead to a "state machine" type of approach to the data flow in a test cell.
SEMI ANTITRUST GUIDELINES

SEMI activities are a coordinated effort among competitors in the semiconductor equipment and materials industry and are, therefore, subject to antitrust laws. Although this coordination is perfectly legal under U.S. antitrust laws, we want to make sure that no antitrust risks are raised by the manner in which the SEMI program is carried out. Accordingly, these guidelines may go somewhat beyond the prohibitions of the law, but that is done in the interest of safety.

The penalties for violating antitrust laws can be quite severe, including large fines and even imprisonment of individuals found guilty of illegal conduct. Contrary to the popular belief that the government has relaxed antitrust enforcement, in recent years the Justice Department has recommended jail sentences for the majority of persons convicted of violating antitrust laws. Moreover, the U.S. Supreme Court has ruled that a trade association may be held legally responsible for the unauthorized, as well as authorized, acts of its members. Accordingly, every effort must be made to avoid even the appearance of impropriety.

**LAWFUL ACTIVITIES**

As a basic premise, the goals of SEMI are clearly lawful. The proposed activities, if properly conducted, will not be found to violate the antitrust laws because they will not have an adverse effect on the competitive market place. SEMI relies heavily on the judgment of SEMI staff members to see that topics which may give an appearance of an agreement that would violate antitrust laws are not discussed at SEMI meetings. The presence of a SEMI staff member at a meeting, however, should not invite probing to determine how far a discussion can proceed before it becomes apparent that it is improper and is cut off. Each SEMI member has the responsibility in the first instance to avoid raising improper subjects for discussion. This reminder has been prepared to ensure that participants in SEMI meetings are aware of this obligation.

**UNLAWFUL ACTIVITIES**

The most common violations of the antitrust laws are agreements among competitors to fix prices or allocate customers. As for SEMI, the most important thing to keep in mind is that its purpose is to promote the semiconductor equipment and materials industry, sponsor education and training, and promote industry standards. SEMI does not market particular semiconductor equipment or materials products. Accordingly, it is not the business of SEMI to consider or discuss matters relating to product development marketing, purchasing, or pricing decisions of individual companies.

The Do's and Don'ts presented below highlight only the most basic antitrust principles. Participants in SEMI meetings should consult counsel in all cases involving specific situations, interpretations, or advice.
DO NOT

1. **DO NOT IN FACT OR APPEARANCE** discuss or exchange information regarding:
(a) Individual company current or projected prices, price changes, price differentials, markups, discounts, allowances, terms and conditions of sale, including credit terms, etc., or data that bear on prices, including profits, margins or cost.

(b) Industry pricing policies, price levels, price changes, differentials, or the like.

(c) Changes in industry production, capacity, or inventories.

(d) Individual company bids or intentions to bid for particular products, procedures for responding to bid invitations, or specific contractual arrangements.

(e) Plans of individual companies concerning the design, characteristics, production, distribution, marketing, or introduction dates of particular products, including proposed territories or customers.

(f) Matters relating to actual or potential individual suppliers that might have the effect of excluding them from any market or of influencing the business conduct of firms toward such suppliers or customers.

(g) Individual company current or projected cost of procurement, development, or manufacture of any product.

(h) Individual company market shares for any product or for all products.

**DO NOT** discuss or exchange information regarding the above matters during social gatherings incidental to SEMI-sanctioned meetings, even in jest.
SEMI
ANTITRUST GUIDELINES

DO

1. Adhere to prepared agendas for all SEMI meetings.

2. Insist that meeting minutes be prepared and distributed to all participants, and object whenever meeting minutes do not accurately reflect the matters which transpired.

3. Understand the purposes and authority of each SEMI committee or other group in which you participate.

4. Consult with SEMI's legal counsel or your company counsel on all antitrust questions related to SEMI meetings.

5. Protest against any discussions or meetings which appear to violate the antitrust laws, disassociate yourself from any such discussions or activities, leave any meeting in which they continue and report the activity to the SEMI President and CEO so that similar conduct can be avoided in the future.

SEMI's policy is to discuss thoroughly with legal counsel any proposed programs or policy decisions before they are implemented. If any participant has a question as to the legality of a proposed course of action, the matter should be immediately referred to the SEMI President and CEO who will discuss it with legal counsel. In this manner, SEMI can ensure continued pursuit of its legitimate objectives with maximum protection for its participants.
Breakout Session Overview

• Objective
  – Begin the definition process for the “data-centric” view of a test cell.
  – Investigate the most likely places for standards to bring value to the semiconductor industry.
Accomplishments in Past Meetings

• From the June Meeting
  – Attained an agreement to focus on data-centric view for the test cell
    • Focus less on physical connectivity, more on data flow
    • Define information/data sources and receivers
    • Determine best location for the source or the receiver to reside
  – Derive a logical model for the data flow
    • Promote the idea of “critical” data and “interesting” data
    • Level of data importance will determine flow – real time or stored for post-processing
  – Embrace legacy models through “adaptors” in the new model.
    • Maintains compatibility with deployed system
  – End result should be a model that adds value and provides incentive for all to participate to meet the standard
Where are we today?

EDA

STDFV4.0 2007

STIL

Tester

Handler

Prober

Probe Card/
Loadboard

Docking

Proprietary

GEM/SECS

Proprietary

Factory

Auto

(OEE)
A Framework for the Future

Test Attribute Specification

EDA Tools

Test Pattern Validation

Test Pattern Conversion

Test Program Generation

Test Program Validation

Diagnosis Interface Specification

STIL

Test Program Validation

Test Pattern Conversion

Test Program Generation

Off-line and On-line Tools

User Code

Application Programming Interface

Automation Interfaces

Datalog Specifications

Portable TIM Interface Specification

Docking and Interface Specification

Handlers, Probers, etc

Device Interface Specification

PTIM

DUT

Tester

PTIM

PTIM

PTIM

PTIM
Adding Functions to Test Cell with Data Sources and Sinks

Real-time Test Cell

ATC

Proxy

Prober/Handler

Cell Controller

Adaptive Engine

I/F

TP

Cor

Setup Info

Travelers Docs

Probe Plans

Recipes

Data Sources and Sinks

Database(s)

Data Analysis

EDA Tools

Monitoring

OEE

Throughput

Factory Floor

Operator Interface

Local & Remote

Setup

Tester Handler Prober

Operator Interface

Events

Tool, MES, Maint ...

Datalog

STDF

Rule Editor

Tracking

Die Level
End-to-End

Post Processing

Outlier Anal Wafer Maps

Feed Forward

PCM Inspection Reticle

Maintenance / Calibration

Tools

Probe Cards

Load boards

Data Exchange Bus (Data Models, Formats, Libraries, subscription, distributed ...)

Agents

Problem Detection

Agents

MES

Planning Scheduling Tracking

Agents

Problem Detection
Wafer Sort Block diagram

- Manf. Execution System
  - SECS/GEM
  - Cell Controller
    - Cell Host
      - Tester
      - Prober
    - Results Database
Final Test Block diagram

- Manf. Execution System
  - SECS/GEM
  - Cell Host
  - Cell Controller

- Results Database
- Tester
- Handler