

**TERADYNE**



**SEMICON West 2006**

**STDF Data Logging for Volume Diagnosis**

**Semiconductor Test Division**

# STDF Background

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- **STDF = Standard Test Data Format**
- Flexible data storage format
  - Designed to facilitate data interchange between testers, databases and data analysis tools – data pipeline, not database
  - Independent of source hardware and software
- Specification created by Teradyne
  - Intended for general industry use – no fees or royalties involved
  - Originally released in 1985
  - Current version is V4
    - Released in ~1993 based on feedback from customers, other ATE vendors, etc.
  - Has become de facto industry standard
    - Supported by numerous ATE vendors
      - Teradyne, Verigy, Credence, LTX, etc.
    - Supported by numerous data analysis tools
      - Salland, Soto Tech, Pintail, Galaxy, internal tools, etc.

# STDF V4 and Scan Diagnosis

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- Existing FTR (Functional Test Record)

- Advantages

- Can support storage of cycles, pins and actual/expect data per cycle

- Disadvantages

- Does not store ancillary data (voltages, frequencies, etc.)
    - Does not support “ATPG” diagnostic information (First/Last Pattern, etc.)
    - Does not store other useful diagnostic information
      - First/Last cycle executed
      - Total Failures captured
      - Buffer overflow

- Existing GDR (Generic Data Record)

- Advantages

- User customizable record can store any data desired

- Disadvantages

- No standard – leads to divergent solutions for ATE vendors, customers and data analysis tools

# STDF V4 and Scan Diagnosis

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- Does it make sense to use STDF for Scan diagnostic data storage
  - Advantages
    - “Standard” format facilitates use by all interested parties
      - In alignment with original STDF format goals
    - Scan data in context with all other device / wafer / lot information
      - Functional test results
      - Parametric results
    - Compact format relative to ASCII files
    - May result in faster test throughput
    - Single data storage format eases burden of SW development
  - Disadvantages
    - Current specification not designed to hold currently desired data
    - Requires additional SW work by ATE vendors, customers, analysis tools, etc.

# What to do...

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- Get agreement on:
  - Whether or not storing diagnostic data in STDF makes sense
  - Whether or not V4 GDR usage makes sense
    - Required data to be stored
      - May vary by ATE vendor
    - Field types
    - Field formats (string / integer / etc.)
  - Whether or not V5 STDF specification is required
    - Timing relative to V4 GDR
    - Other possible V5 issues
      - Bugs
      - Other DFT related fields (MBIST?)