

e-Diagnostics & EEC Workshop

“e” Standards Task Forces Goals and Status

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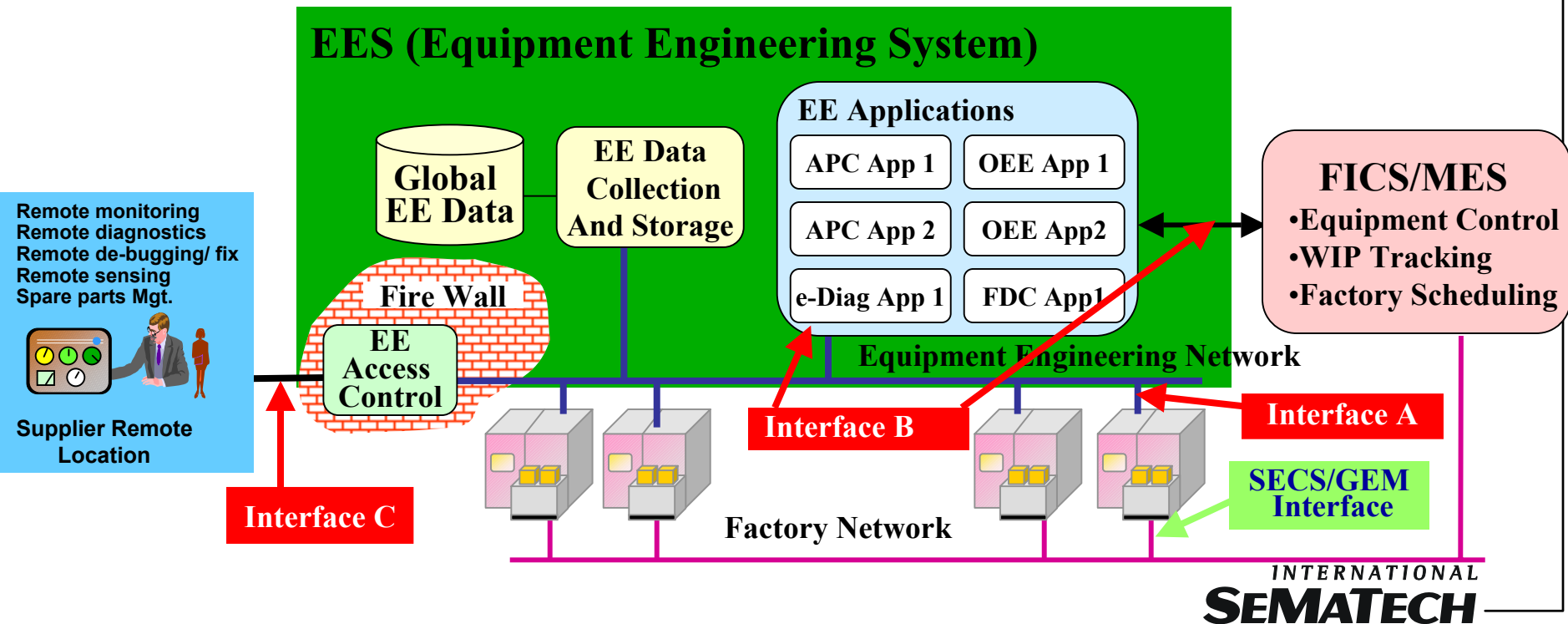
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Overview

- **The e-Manufacturing/EEC related standards effort is the largest combined effort I&CC has attempted**
 - **Global participation, including NA, Japan, Europe**
 - **Standing-Room Only meetings at recent SEMICONs**
- **Much progress has been made**
 - **Over 20 ballots (blue and yellow) are in the system**
 - **Many good ideas have been captured and reviewed**
- **Now we get to the hard part**
 - **The initial euphoria has passed**
 - **Blue ballots yield to yellow; yellow to 2nd yellow**
 - **Stamina and attention to detail are needed**

2002 Focus: Improved Data

- **Interface A** – Equipment Engineering Data Interface
 - Getting more & better data from the equipment
- **Interface B** – Among EEC Applications and to FICS/MES
- **Interface C** - External Access to EEC (e-Diagnostics)
- **SECS/GEM** – Still The Primary Equipment Control I/F



e-Standards Structure

- **I&CC (Information & Control Committee)**
 - **Business manager**
 - **Handles all ballot reviews, TFOFs, & SNARFs**
 - **True owner of all task forces**
- **IEE (International Equipment Engineering TF)**
 - **Documents the e-Manufacturing standards roadmap**
 - **Oversees other TF's scope**
 - **Detects and resolves overlap and dependencies**
- **e-Manufacturing Related TFs**
 - **Create the content**

IEE Task Force

(International Equipment Engineering)

- **IEE-NA**

- Coordinating EEC related Task Force activities
 - Resolving scope overlap and filling the holes
- Documenting Standards Roadmap
- Communication (among TFs and to general public)
- Time Synchronization Working Group – moving slowly...

- **IEE-Japan**

- Conduit for Japan feedback on EEC activities
- Constructing “Anchor Document” to paint big picture and document open issues
- Coordinating EEC related activities in Japan

- **IEE-Europe**

- Helping to focus European efforts on EEC activities
- Formed in April, 2002

DDA Task Force

(Diagnostics Data Acquisition)

- **Defining new data port for the equipment**
 - **Using open and available technology/standards**
 - **Addressing throughput and latency requirements**
 - **Defining data collection messaging**
 - **Adding context - relating data to the equipment**
 - **Defining security – protecting intellectual property**
- **Detailed status report follows**

RaP Task Force

(Recipe & Adjustable Parameters)

- **Defining an improved Recipe Mgt solution**
 - Remove need for “download every time” paradigm
 - Improved parameterization of recipes
 - Organize settings, data collection plans, APC algorithms, etc.
 - Document recipe content and relate to equipment
 - Address recipe naming and versioning issues
- **Blue ballot prior to SEMICON West 2002**
 - Yellow ballot after SEMICON Southwest

XML Task Force

- **XML Style Guide**
 - Documenting many usage decisions to promote a consistent approach to XML in I&CC standards
 - Document 3523 reviewed at SEMICON West 2002
- **XML Messaging**
 - New working group addressing transport technology issues – initiated May of 2002.
- **Common XML Components**
 - Planning new standard to define data types, etc.
 - SNARFed this week at the I&CC meeting

OBEM TF

(Object-Based Equipment Model)

- **Common Equipment Model**
 - **Documents the model of equipment structure**
 - **Based on current E98 model with added support for DDA**
 - **But without some of the “baggage” of OBEM**
 - **Extensible by RaP, DDA, and others**
 - **Doc. 3522 reviewed at SEMICON West – to be re-balloted at SEMICON Southwest 2002**
- **OBEM (Object-Based Equipment Model)**
 - **Provisional status to be addressed after passage of CEM**

Integrated Metrology

- **Defining communications between a metrology module and its host equipment**
 - **Must take into account the requirements on the factory interface of the host equipment**
- **SEMI Document 3529**
 - **Blue ballot available for review now**
 - **Yellow ballot may be reviewed at SEMICON Southwest 2002**

PCS Task Force

(Process Control Systems)

- **Defining communication to APC applications**
 - **This is related to “Interface B”**
- **Blue Ballot not quite ready for SEMICON West**

ECS Task Force

(Equipment Control Systems)

- **Defining:**
 - **Equipment Quality Information Parameters (EQUIPs)**
 - **A parameter of measure on a wafer that relates to the quality of the wafer (closeness to spec, performance, etc.)**
 - **Key input parameters that affect EQUIP outputs**
- **SEMI Document 3511**
 - **First ballot covers Chemical-Mechanical Polishers**
 - **Future ballots to address other equipment types**
 - **Yellow Ballot reviewed this week**

e-Manufacturing Standards Roadmap

SEMI Document/Standard	2002 Cycle 1	2002 Cycle 2	2002 Cycle 3	2002 Cycle 4	2003 Cycle 1	2003 Cycle 2	2003 Cycle 3	2003 Cycle 4
	Winter Mtg US/Jpn SEMICON Europa	SEMICON West Japan June Mtgs	SEMICON Southwest	SEMICON Japan	Winter Mtg US/Jpn SEMICON Europa	SEMICON West Japan June Mtgs	SEMICON Southwest	SEMICON Japan
International Equipment Engineering (IEE)								
#TBD - Time Synchronization			Due: Aug. 5th	Due: Sep. 10th	Blue Ballot			
Diagnostics Data Acquisition (DDA)								
#TBD - e-Diagnostics Guide (Overview)		SNARF	Blue Ballot		2nd Blue	Yellow Ballot	2nd Yellow	
#3508 - EDA Interim Interface	Blue Ballot	Guideline	Re-Ballot					Interface C to be Addressed in 2003
#3509 - Data Collection Std.	Blue Ballot			Yellow Ballot		Re-Ballot		
#3510 - Meta Data/Equipment Descr.	Blue Ballot		Interim I/F Complete	Yellow Ballot		Re-Ballot		
#3507 - Authentication/Security	Blue Ballot			Yellow Ballot		Re-Ballot		
#TBD - 3510.1 Tech. Spec (XML/SOAP)					SNARF	Blue Ballot	Yellow Ballot	
#TBD - 3507.1 Tech. Spec (XML/SOAP)					SNARF	Blue Ballot	Yellow Ballot	
#TBD - 3509.1 Tech. Spec (XML/SOAP)					SNARF	Blue Ballot	Yellow Ballot	
Interface A Validation (above stds)			Validation	Validation				Validation
XML								
#3523 - XML Style & Usage Guidelines	SNARF	Yellow Ballot	Expansion					
#TBD - Technology Spec (XML/SOAP)		SNARF	Blue Ballot		Yellow Ballot			
#TBD - Message/Data Dictionary		SNARF	Blue Ballot		Yellow Ballot	Expansion	Expansion	
Recipe and Adjustable Parameters (RaP)								
#3442 - Recipe & Adjustable Param.		Blue Ballot		Yellow Ballot	Re-Ballot			
#3528 - XML over SECS Transport		Blue Ballot	Yellow Ballot	Validation				
Data Quality (DQ)								
#TBD - Data Quality Test Methods		TFOF&SNARF	Blue Ballot	Validation	Yellow Ballot			
Process Control System (PCS)								
#3527 - Process Control System Std.	SNARF		Blue Ballot		Yellow Ballot	Validation		
Integrated Measurement (IM)								
#3529 - IM Object-Based IM Modules	Preview Doc	Blue Ballot	Yellow Ballot		Re-Ballot			
Object-Based Equipment Model (OBEM)								
#3479 - Removal of E98 Provisional Status	Modification		Modification		Modification			
#3522 - Common Equipment Model		Yellow Ballot	Re-Ballot					
#TBD - XML Schema for CEM			Yellow Ballot					
Equipment Control Systems (ECS)								
#3511 Key Quality (Control) Parameters	Preview Doc	Yellow Ballot	Expansion					

Summary

- **e-Mfg/EEC related standards activity is **HOT!****
 - **Several TFs meet weekly w/good attendance (~18hrs/week)**
 - **SEMI Winter Meetings had 50+ attendees in I&CC TFs**
- **The goal is steady, rapid progress**
 - **Interim DDA solution plus supporting stds (XML & CEM) target for Oct, 2002**
 - **RaP definition as early as December, 2002**
 - **Data interface definition by Spring, 2003**
 - **More activity to follow**

