

e-Standards Task Forces

Goals and Status

Lance Rist

International SEMATECH

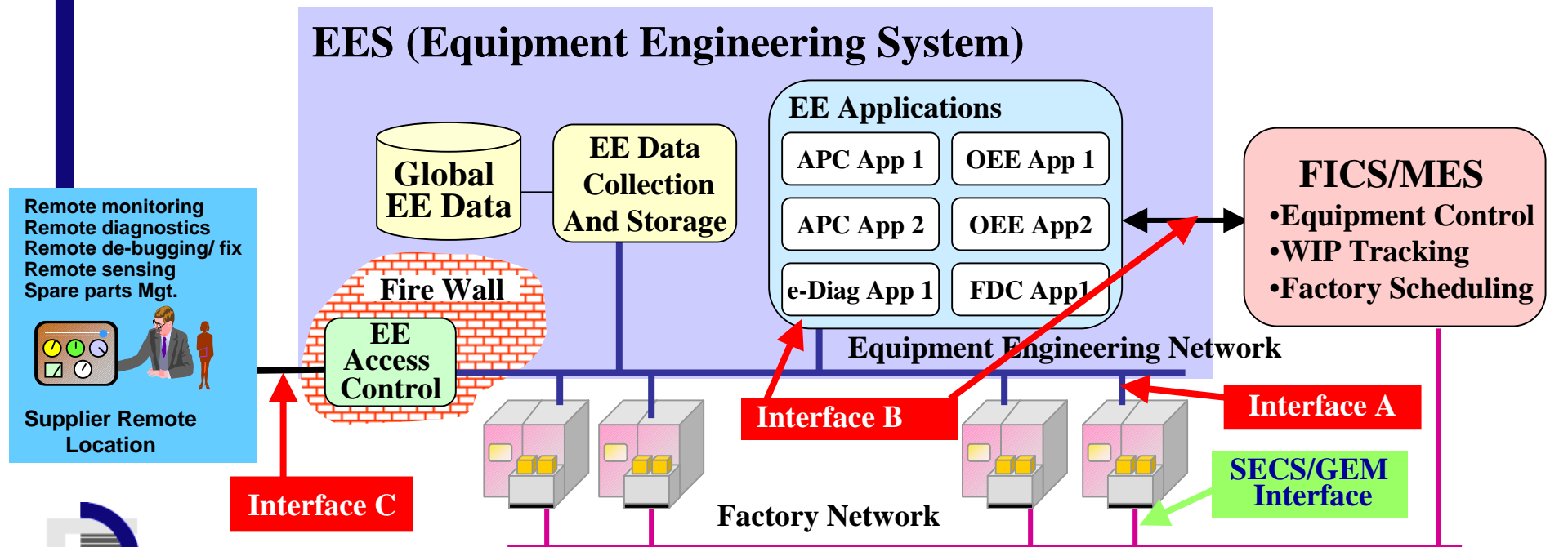


SEMI
EDUCATION

Rist - SEMICON Europa 2002 - Slide 1

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 Interface



Background

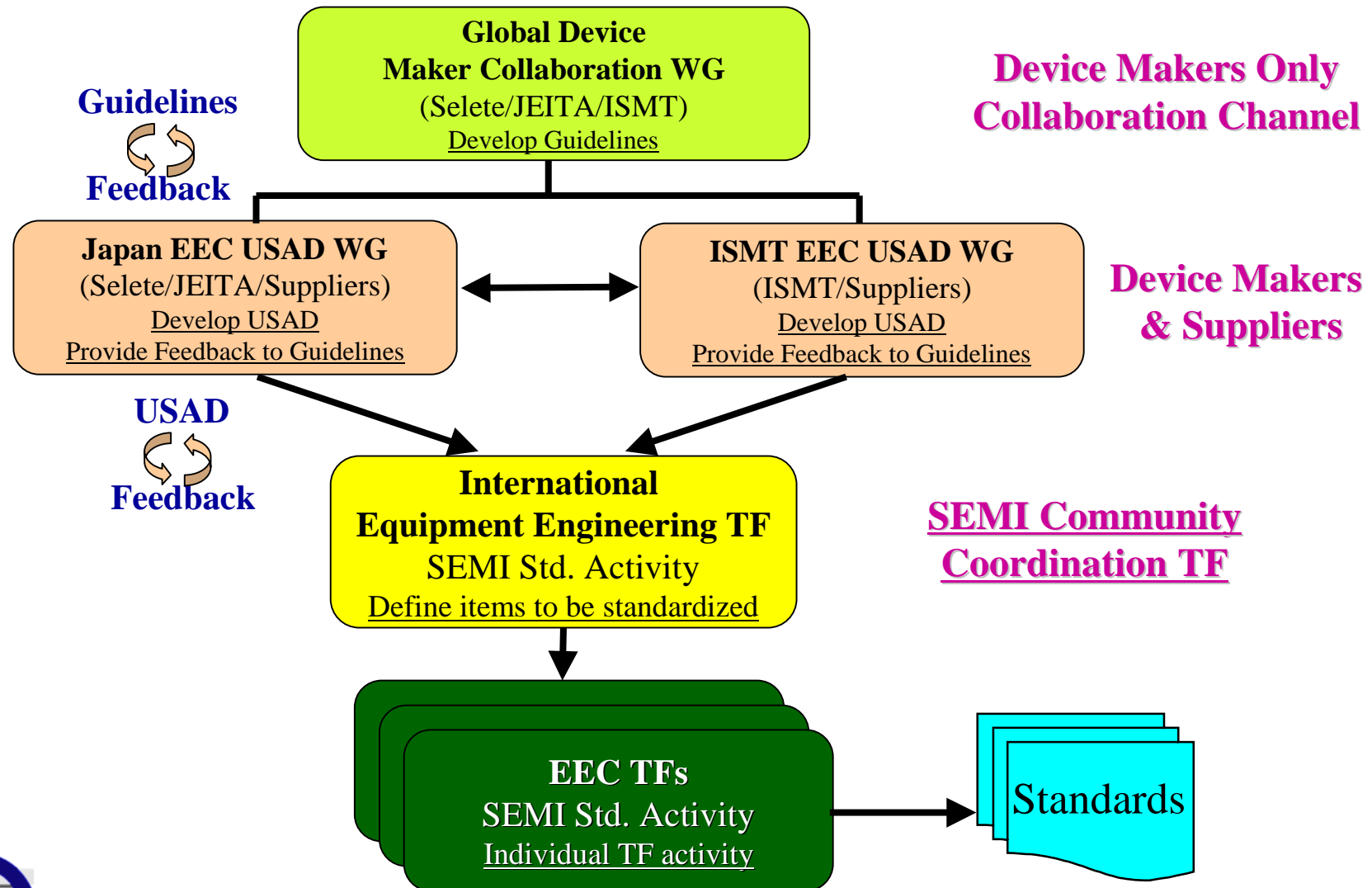
- **ISMT and Selete/JEITA are collaborating on guidelines for *Equipment Engineering Capabilities (EEC)***
 - **These guidelines represent IC maker consensus on high level requirements and capabilities**
- **Device makers are now working with suppliers to analyze and clarify these requirements**
 - **In order to transition from requirements definition to standards development and implementation**
- **The IEE TF is the entry point to the SEMI Standards process**
 - **USAD to set direction for standards activities**
 - **IEE TF to coordinate activity and ensure technical compatibility**
 - **Task forces to be spawned for specific standards**

**Global Device
Maker Collaboration WG**
(Selete/JEITA/ISMT)
Develop Guidelines

EEC USAD WG
(Device Makers/Suppliers)
Develop Req's
Provide Feedback to GLs

**International Equipment
Engineering TF**
SEMI Stds Activity
Manage Stds Development

Relationship of EE Work Groups



e-Standards Structure

- **I&CC (Information & Control Committee)**
 - **Business manager**
 - **Handles all ballot reviews, TFOFs, & SNARFs**
 - **True owner of all task forces**
- **IEE (Intl 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**

Data Acquisition

- **DDA (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
 - **Planning series of yellow ballots (blue out now)**
 - Overview & interim solution – SEMICON West 2002
 - SEMICON Southwest 2002 –Security, Equipment Services/Metadata, and Data Collection

Recipe Management

- **RaP (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 for SEMICON West 2002**
 - Yellow ballot to follow shortly

Supporting Task Forces

- **XML Task Force**

- **The direction is toward open standards**
- **XML is a powerful technology with many existing and emerging tools available**
- **There are many usage decisions that need a consistent approach**
 - **Style & usage – Schema vs. DTD, Element vs. Attribute, etc.**
 - **Model extensibility**
 - **Etc.**
- **Style & Usage Guideline**
 - **Yellow Ballot for SEMICON West 2002**
- **XML TF will address transport technology issues later**

Supporting Task Forces

- **OBEM (Object-Based Equipment Model)**
 - **DDA & RaP need a model of the equipment**
 - Updates of the current E98 model
 - But without some of the “baggage” of OBEM
 - **New effort – create a separate standard to document the Common Equipment Model**
 - Very similar to the current OBEM model
 - Yellow Ballot planned for SEMICON West 2002
 - OBEM TF to own and maintain the model

Other e-Manufacturing Task Forces

- **PCS (Process Control System)**
 - **Process control application needs & interactions**
 - **Yellow ballot ~Cycle 4, blue ballot earlier**
- **ECS (Equipment Control System)**
 - **Defining control “quality” parameters**
 - **Data items relating quality of process output**
 - **Control parameters that can affect the quality of process output**
 - **Blue ballot at SEMICON West 2002**
- **Sensor/Actuator Bus**
 - **Source of much of the data for EEC**
 - **May need to respond to EEC activities**

e-Manufacturing Standards Roadmap

SEMI Document/Standard	2002 Cycle 1	2002 Cycle 2	2002 Cycle 3	2002 Cycle 4	2003 Cycle 1
	Winter Mtg US/Jpn SEMICON Europa	SEMICON West Japan June Mtgs	SEMICON Southwest	SEMICON Japan	Winter Mtg US/Jpn SEMICON Europa
EEC Related Standards Activities					
International Equipment Engineering (IEE)					
No SNARF's Currently Planned					
Diagnostics Data Acquisition (DDA)					
#3508 - e-Diagnostics Guide (Overview)	Blue Ballot	Guideline	Re-Ballot		
#3509 - Data Collection Std.	Blue Ballot		Yellow Ballot		Re-Ballot
#3510 - Meta Data/Equipment Descr.	Preview Doc	Blue Ballot	Yellow Ballot		Re-Ballot
#3507 - Authentication/Security	Blue Ballot		Yellow Ballot		Re-Ballot
#TBD - Message/Data Dictionary			Blue Ballot		Yellow Ballot
Interface A Validation (above stds)			Validation	Validation	
XML					
#3523 - XML Style & Usage Guidelines	SNARF	Yellow Ballot	Expansion		
#TBD - Technology Spec (XML/SOAP)			Blue Ballot		Yellow Ballot
Recipe and Adjustable Parameters (RaP)					
#3442 - Recipe & Adjustable Param.		Blue Ballot	Yellow Ballot	Validation	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	Re-Ballot
Integrated Measurement (IM)					
#3398 - IM Software Interface Std.	Preview Doc	Blue Ballot	Yellow Ballot		Re-Ballot
#3529 - IM Object-Based IM Modules		Blue Ballot	Yellow Ballot		Re-Ballot
Object-Based Equipment Model (OBEM)					
#3479 Removal of E98 Provisional Status	Modification		Modification		
#3493 OBEM-XML Mapping (Japan)	Yellow Ballot	Re-Ballot			
#3522 Common Equipment Model		Yellow Ballot	Expansion		

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#3522 Common Equipment Model		Yellow Ballot	Expansion					
Equipment Control Systems (ECS)								
#3511 Key Quality (Control) Parameters	Preview Doc	Yellow Ballot	Expansion					
Sensor/Actuator Bus (Subcommittee)								
#TBD - Time Synchronization								
Equipment Integration (EITF)								
#3218 Aspects Interface	Provisional							

Interface A Standardized

Interface C to be Addressed in 2003

RaP Standardized

1st Interface B Standard

Integr. Metrology Standardized



Summary

- **e-Mfg related standards activity is HOT!**
 - **Several TFs meet weekly w/good attendance (~18hrs/week)**
 - **SEMI Winter Meetings – 50+ attendees in I&CC**
- **The goal is to move quickly**
 - **Hope to have support stds as early as July, 2002**
 - **Data interface definition for October, 2002**
 - **RaP definition as early as October, 2002**
 - **More activity to follow**