

EDA: Enabling the e-Manufacturing Vision

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INTERNATIONAL SEMATECH



Environmental Pressures and Some Motivations for Change

Large Process Complexity
+
2-3 Year Technology Nodes

Need to Focus Few Expert
Resources on Solving Issues
vs. Finding Data

Complex Equipment
Design
+
Fierce Competition for
Next Design Win

High Cost of Mis-
Processing (100's to
1000's of die)

Time to Money for Install,
Configure, & Qualification

Pay for Performance – High
Cost of Downtime

Innovation is Needed to Get the Right Data and have the Right
Tools to Meet the Complex Needs of Future Technology

Some Applications for EDA

Sufficient data from complex tools
(Llitho, multichamber, IMM)

Process Engineer managed
Data Collection

Better Equipment serviceability by
e-Diagnostics for hookup and
troubleshooting

Real time
closed loop FDC

Fast R2R
W2W control

Off/near tool process
controllers
(IC Maker owned)

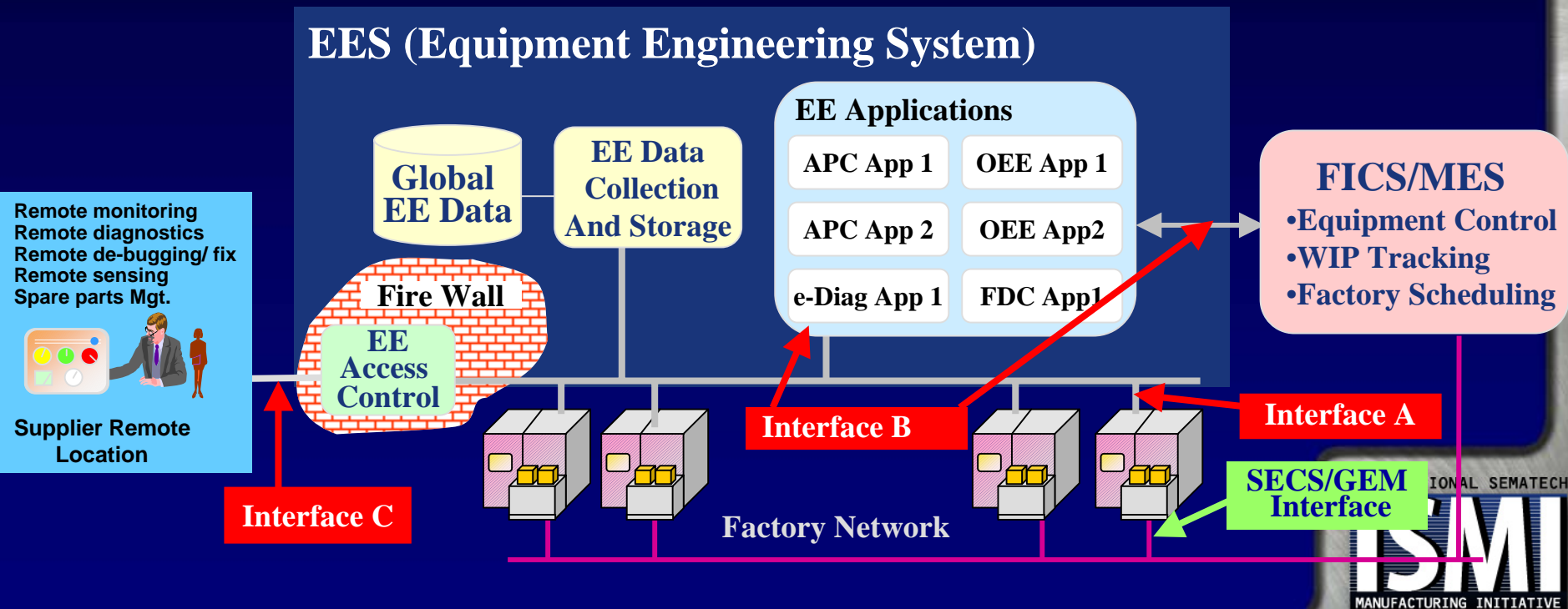
Enable functionality
impossible with current IT technology (SECS).

e-Diagnostics status today at IFX

- Different proprietary applications in use from several equipment suppliers acquisition
- Allowing any available tool interface to provide e-Diagnostics data today
- IFX standard solution for remote access: Tarantella
- Piloting several centralized applications
- Does not allow tool specific servers to enable e-Diagnostics data acquisition in our 300 mm facilities
- Require in future:
 - Only Interface A for equipment data acquisition
 - Only Interface C to move data in/out of the factory
- Beneficial for ICM and Equipment Supplier

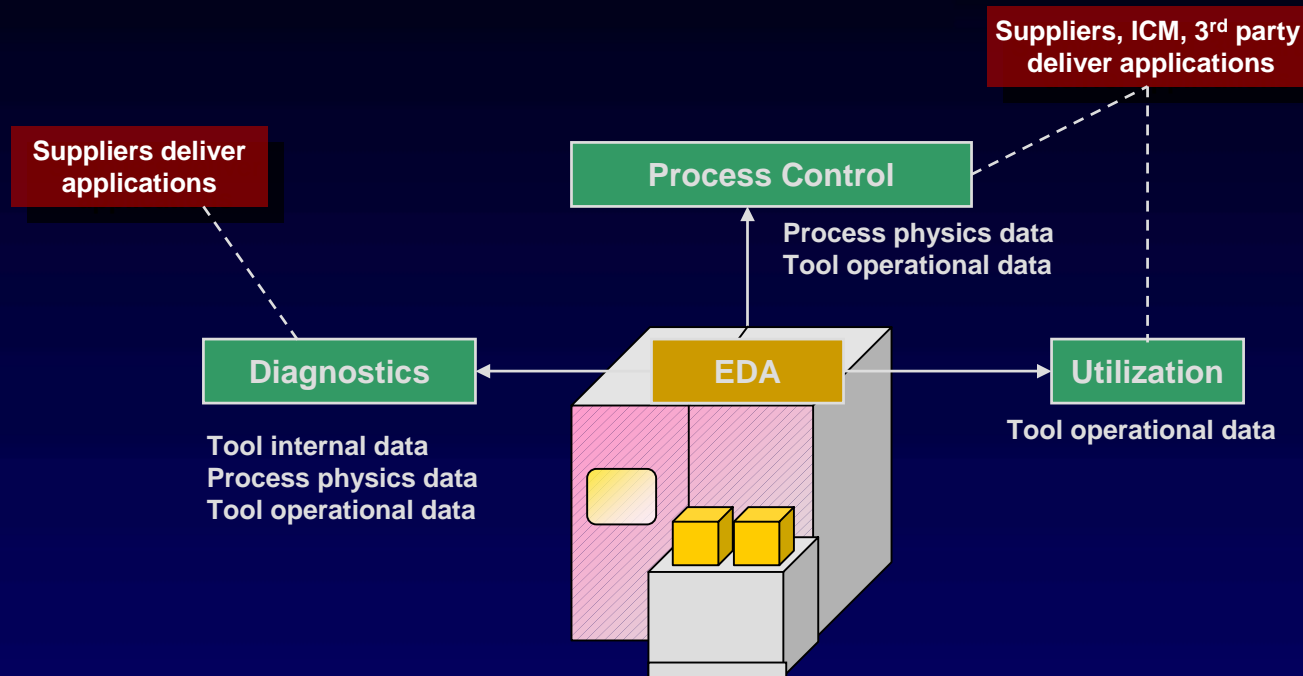
What Areas Will EEC Standardize?

- **SECS/GEM** – Still the primary equipment control I/F
- **Interface A** – Equipment Engineering Data Interface
 - First Goal: More & better data from the equipment
- **Interface C** - External access to EEC (e-Diagnostics)
- **Interface B** – Among EEC applications and to FICS/MES



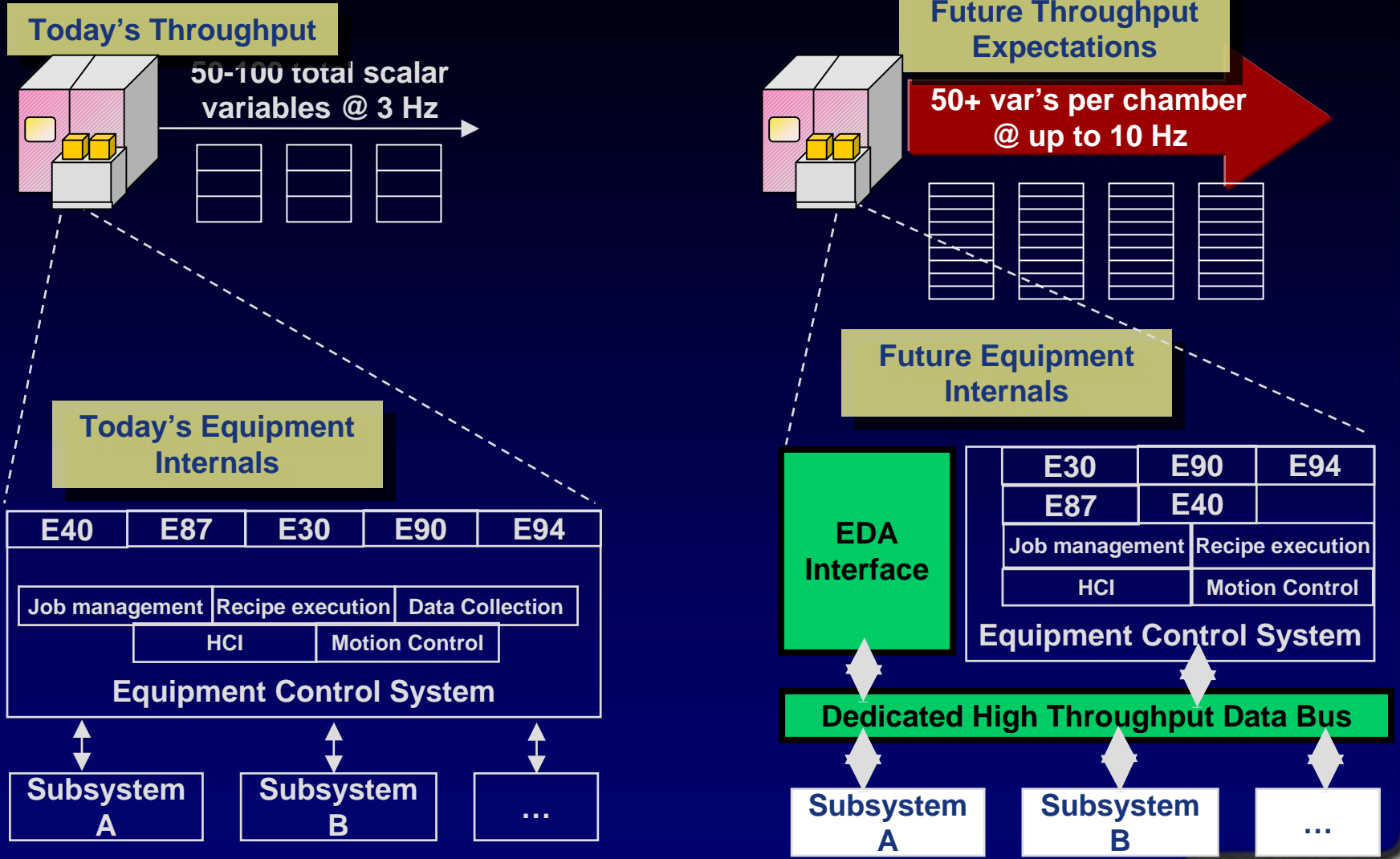
EDA Role in Manufacturing

Diagram is Conceptual Only



- EDA refers to SEMI E120, E125, E132, and E134
 - Includes associated implementation specs like E120.1, 125.1, 132.1, 134.1 and Usage Scenarios
 - ISMI MC's intend to use EDA as the Primary Data Pipe for all Equipment Data
 - Includes both Operational (job context) and Process Related Data (traces)
- Both Internal Factory Applications and External Supplier Applications will Leverage the EDA Interface
 - Equipment e-Diagnostic Data Available External to the Factory will come from EDA
 - Equipment Data needed for Factory Applications will come from the EDA Interface

Equipment Architecture Expectations



- Fast internal data bus – centralized data provision
- Consistency of data through SECS and Interface A
- Migration strategy
- Starting with new equipments, retrofits in 300 mm



Where is Infineon going

E37 HSMS E5 SECS E30 GEM E39 OSS

E87 CM E40 PJM E94 CJM E90 STS

E84 PIO E54 SAN

I300I Guidelines
ISMT 300 mm Scenarios

TOS II
2000

E109 Reticle Mgmt. E127 Integrated Metrology Linked Litho (#3682) E116 Equipment Performance

Data Utilization (FDC, R2R)
HVM Guideline (MOSE)
e-Diagnostics Guidebook

E126
EQIP

TOS III
2004

E121 XML Style Guide
E128 XML Message Structure
#3570 XML Common Components
#3851 Measurement Units in XML

E132 Authentication
E120 Common Equipment Model
E125 Equipment Self Description
E134 Data Collection

EDA Port (Interface A)
e-Diagnostics (Interface C)

E133 PCS (Interface B)

#3442 Recipe adjustable Parameter

#3652 Data Quality Guideline

EEC Guidelines

TOS IV
2005