

# EEC Applications Implementation Desires & Concerns e-Manufacturing Workshop October 18, 2002

**Blaine Crandell / Texas Instruments  
([b-crandell@ti.com](mailto:b-crandell@ti.com))**

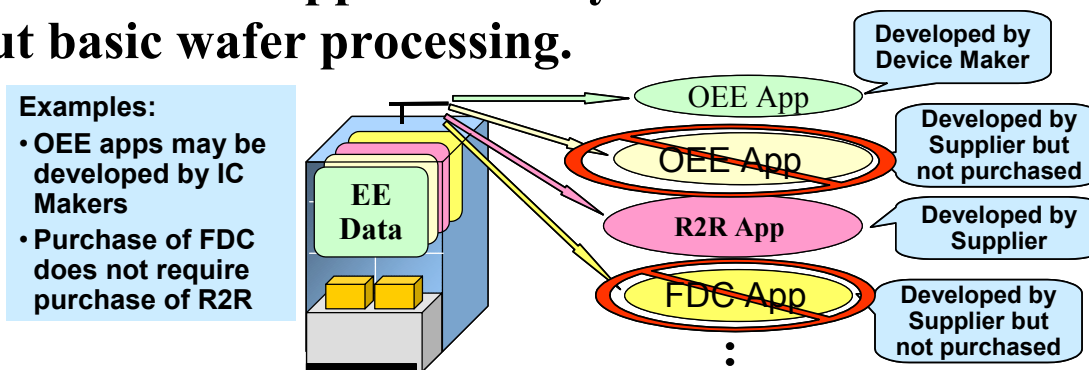
**Shige Kobayashi / Selete ([kobayashi2@selete.co.jp](mailto:kobayashi2@selete.co.jp))**

# EEC Applications

- **Device Makers have a strong need for these types of applications**
  - **Fault Detection and Classification (FDC)**
  - **Equipment Performance Monitoring (OEE)**
  - **Equipment health monitoring**
  - **Advanced Process Control (APC)**
  - **e-Diagnostics**
  - **Run to Run Control (R2R)**
  - **Equipment Performance Conditioning, Control, and Configuration (EPC3)**
  - **Many others**

# EEC applications may be supplied by an equipment supplier, third-party supplier or a device maker.

- **Modular:** EEC applications should be developed in a modular fashion using standard interfaces.
- **Independent:** The purchase of an EEC application is not dependent on the purchase or use of other EEC applications, whether from an equipment supplier or third-party supplier. Device makers must be able to independently purchase the best individual EEC application on the market.
- **Optional:** The use of EEC applications may significantly enhance process performance but such applications/systems must not be required in order to carry out basic wafer processing.

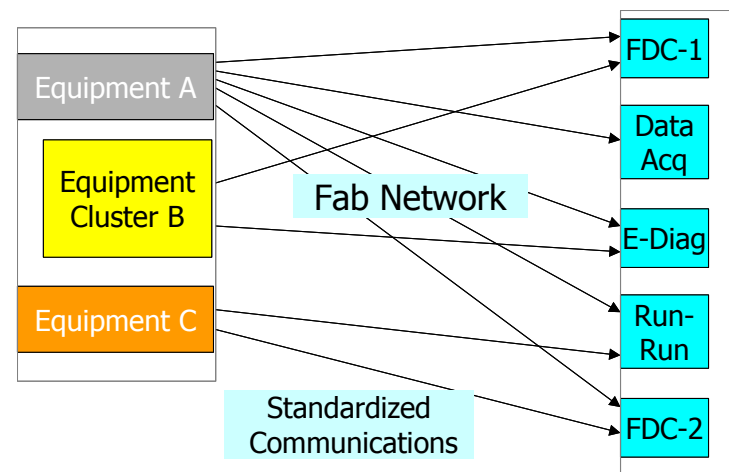
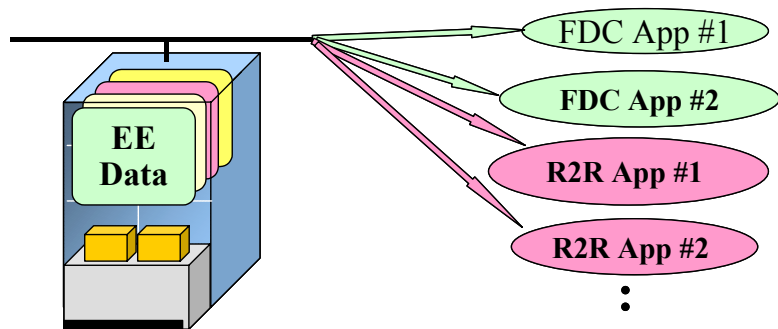


**Examples:**

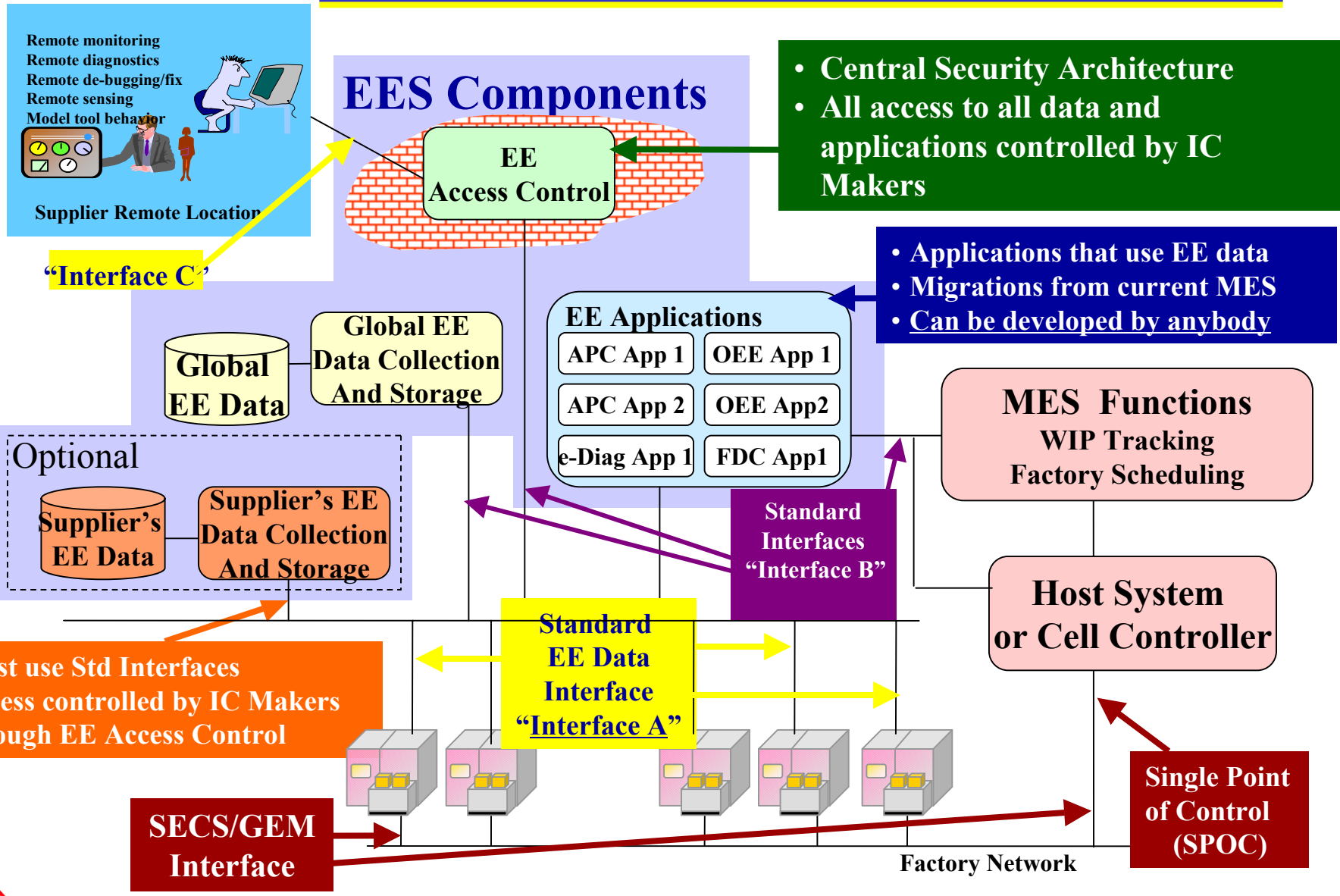
- OEE apps may be developed by IC Makers
- Purchase of FDC does not require purchase of R2R

# Equipment will allow for multiple EEC applications of a similar type

- The expected Equipment Engineering Systems will be a collection of EE Capabilities. Capabilities of a similar type may be provided by multiple Equipment and Third-Party Suppliers and must be able to coexist in EES. For instance, multiple FDC applications may exist for a single process equipment, perhaps dealing with different device and process technologies.



The initial focus of EEC activity and the key to success is to obtain timely and accurate Equipment Engineering Data from the equipment



• Must use Std Interfaces  
 • Access controlled by IC Makers through EE Access Control

• Central Security Architecture  
 • All access to all data and applications controlled by IC Makers

• Applications that use EE data  
 • Migrations from current MES  
 • Can be developed by anybody

# All Suppliers Should Implement and Utilize “Interface A”

- All suppliers are encouraged to utilize “Interface A” for their applications
- High quality third-party vendor applications are expected to be provided to the market using “Interface A”
  - “Interface A” assures easy application integration, maintenance or upgrade
- Connection to “Interface A” does not necessarily mean that the application is external to the equipment physical footprint boundary

# EEC Applications

- It is supposed equipment suppliers are the best to provide such EE capabilities
  - However, some device makers are better at some capabilities than the suppliers
    - Therefore timely and accurate equipment data is important to be collected and transmitted from the equipment
- It will be a competition of Equipment Engineering Capability!
  - Use “Interface A” to implement such capabilities
    - The winning capability can be readily adapted

# EEC Implementation Concerns

- **EEC applications will be mission critical and require high availability, 24/7 uptime.**
- **Implementations will not have:**
  - **common architectures**
  - **common hardware systems**
  - **common databases**
  - **common user interfaces**
  - **common model builders**
- **Implementations will be difficult to install and maintain**
- **Implementations will have a high cost of ownership (COO)**

## Database (DB) Issue

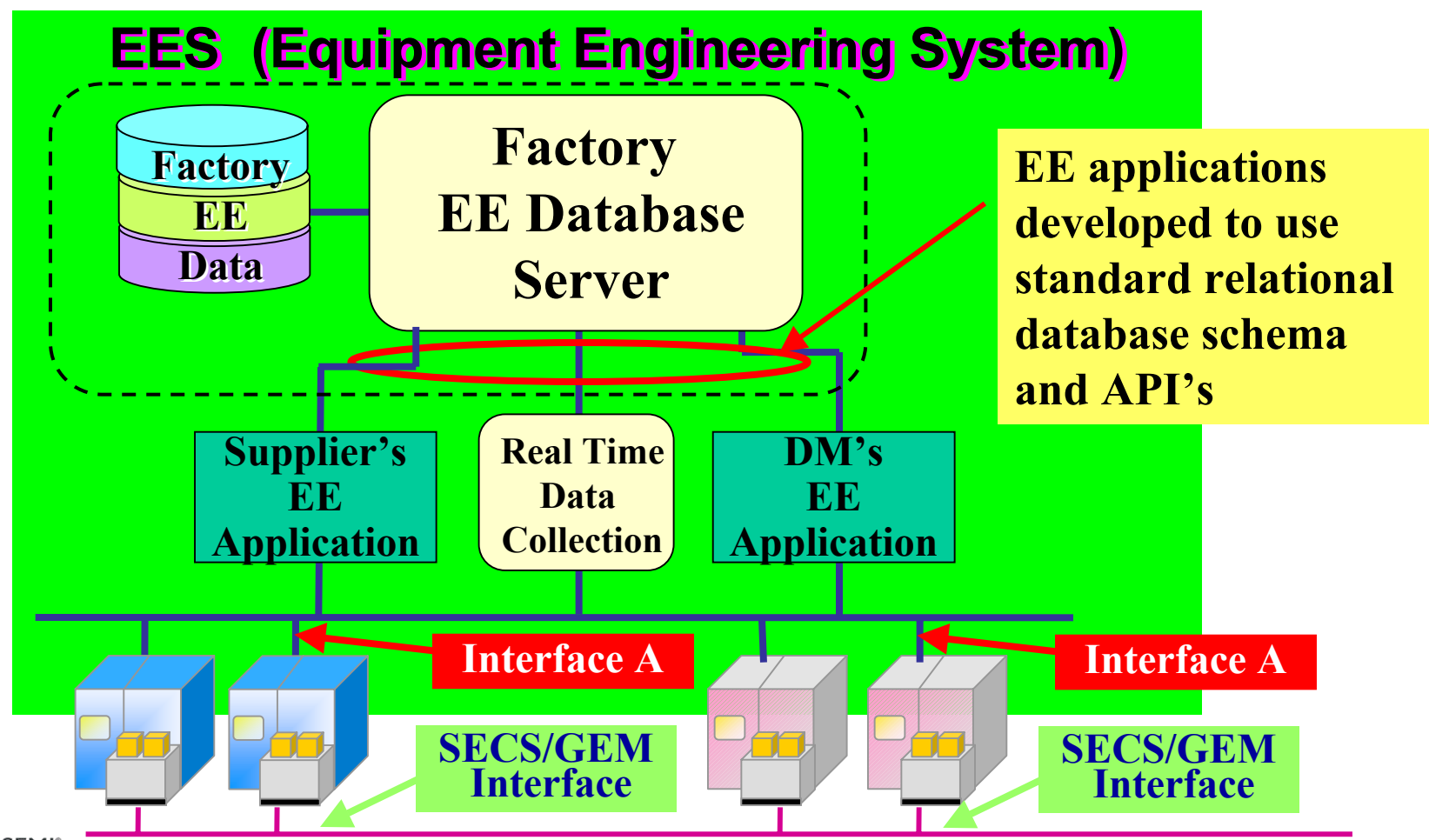
- **Database support requires skilled and costly database administrators**
- **Databases require large amounts of reliable disk storage**
- **Databases require regular backups and can require significant downtime to restore**
- **Having to support multiple different database products will be difficult and cost prohibitive**
- **This issue needs a lot of discussion**

## Database(DB) Issue

- **Migration from supplier specific DB to factory's centralized DB may be one solution.**
- **How can this be accomplished?**
- **Can an architecture be defined to allow the EEC applications to use the device makers database of choice?**
- **Here's a conceptual picture for thought:**

# Database(DB) Issue Goal

Separate the application from the database server



## Summary

- **EEC applications are needed and desired by device makers**
- **Obtaining timely and accurate equipment data is the key to success**
- **Equipment suppliers need to implement and utilize “Interface A”**
- **Device makers want the ability to choose the best EEC applications available**
- **Device makers are concerned about the diverse architectures and databases**
- **We need to work together to find a cost-effective solution**