

Selete

Global Collaboration: EEC

**ISMT e-Diagnostics Seminar
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Content

- **Objective**
- **What's been done so far and what to be done next**
- **Organization in Japanese Activity**
- **Equipment Engineering Operation**
 - **Task sharing**
- **EE Capability Wish List under Study**
- **EE Operation Analysis**
 - **In-Factory and Out-Factory Task Combination**
 - **Process Adjustment Capability**
- **International Collaboration**

Objectives

- **Move to highly efficient factories**
 - **e-Manufacturing**
 - Induce smooth and rapid transition for common merit
- **International collaboration**
 - **ISMT and Selete/JEITA**
 - **Investigate necessary capabilities**
 - leverage tool performance & availability
 - exactly the same purpose between US and Japan
 - **Task sharing**
 - between device makers and suppliers
- **More cooperation in the industry**
 - **Guideline roll out**
 - based upon necessary IT structure closed to tools
 - **Collaboration activity schedule**

What have to be done next in international collaboration @Selete and as collaboration

- **MES Capabilities**

- Global production scheduling
- Product mix and single wafer control

Area of competition

- **AMHS**

- Interoperability through integrator

- **Round Trip Scenario Capabilities**

- Base Functionality Requirement
- Tool S/W Functionality Implementation

**addressed in
GJG
& SEMI Std.**

- **Tool Availability Improvement**

- Do what legacy system can not do

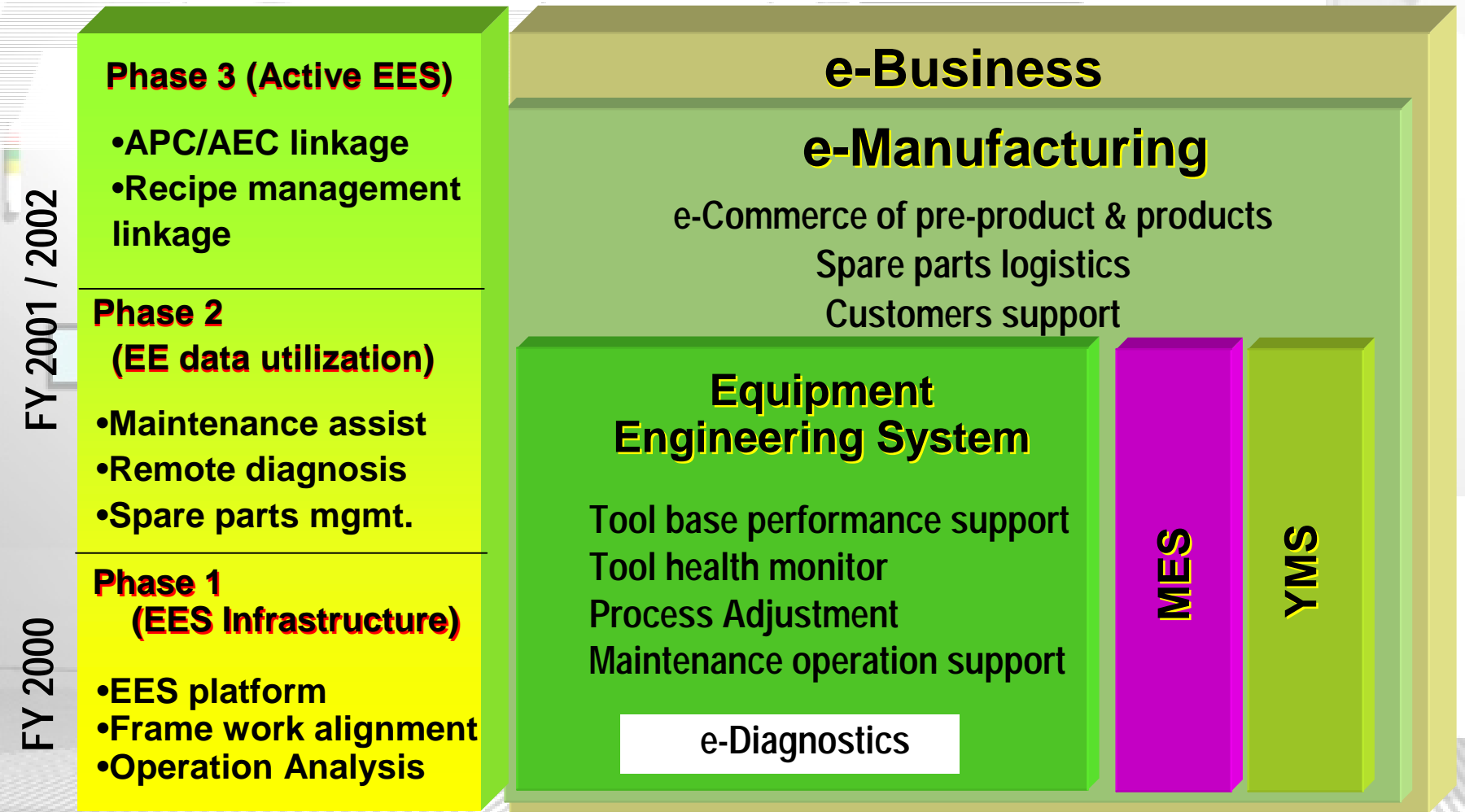
- **Better Process Control Capabilities**

- Process adjustment in automation context
- AEC/APC Capability Implementation
- Cross Machine Difference Control

**Activity
in 2001**

Japan WG Activity Status

- **Japan combined working group plan**
 - **for EES and e-Manufacturing**

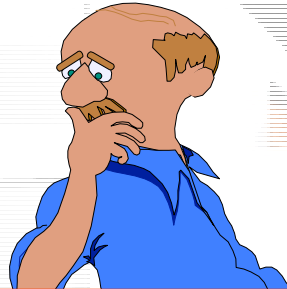


Equipment Engineering Operations

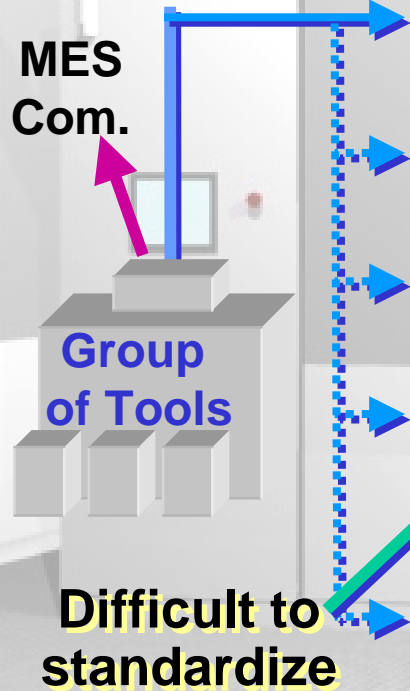
- **EE refers all operations for tool availability improvement and performance maintenance in and out of the factory**
 - Line throughput maintenance and improvement
 - Tool health monitoring and troubleshooting
 - Tool performance improvement
 - especially newly introduced tools
 - Collaboration with suppliers (improvement, troubleshooting, re-design.....)
 - Tool, parts, assembly versions, modification management
 - Maintenance operation management, planning, preparation
 - Process performance adjustment

Current Equipment Engineering Operation

Only this portion has been taken care of by legacy factory system

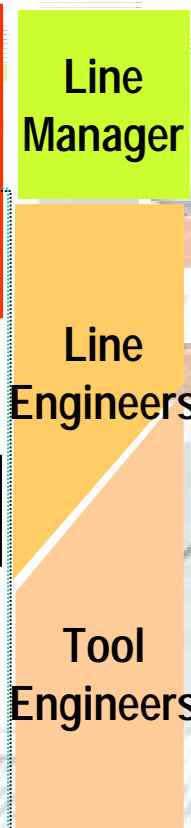


- Tool suppliers receive EE info through this guy
- This guy does everything



Detailed Equipment Information

Performance & Availability Tracking
Maintenance Mgmt.
Consumables & spare parts Mgmt.
Detailed Health Monitor
Tool Improvement M to M Mgmt. Failure analysis Supplier feedback

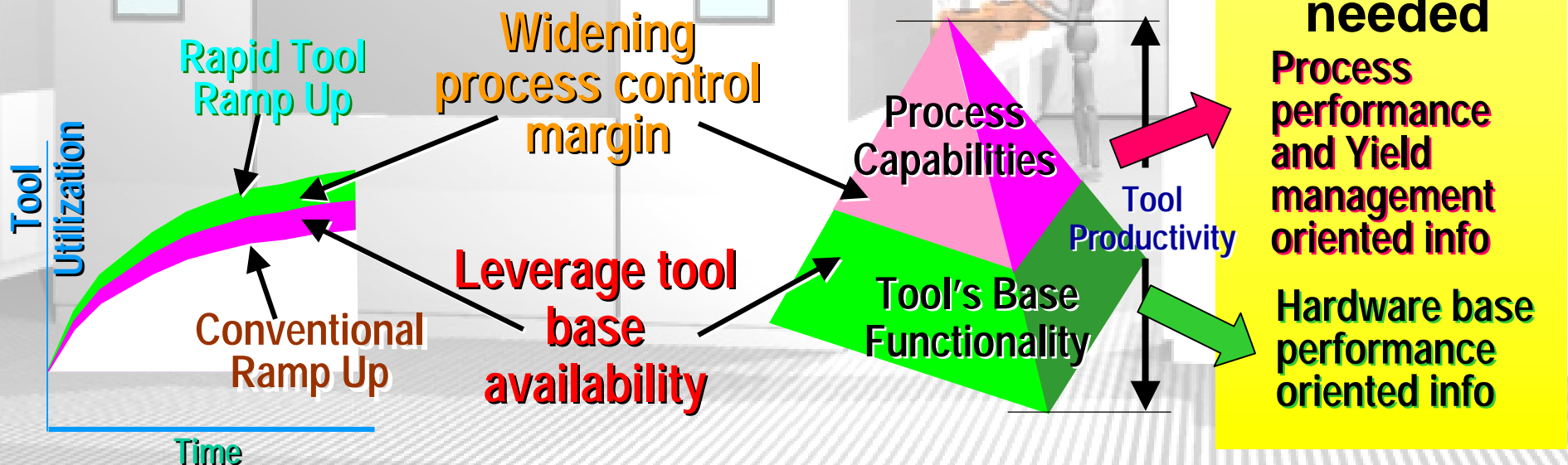


- Communicate with suppliers
 - Collects EE info
 - Analyze & make decision
 - Adjustment of process parameters under one single recipe
- Not all EE info is utilized effectively**

Equipment Engineering Capabilities

Entirely different task and information needed

- **Better tool performance comes out of two areas**
 - **Process performance improvement & maintenance**
 - Device makers do concern what they understand or feel responsible to
 - **Base functionality improvement & maintenance**
 - Task sharing has not been well defined in industry
 - Access to necessary information has not been well defined
 - Example
 - Supplier's FDC or Device maker's FDC, or both?

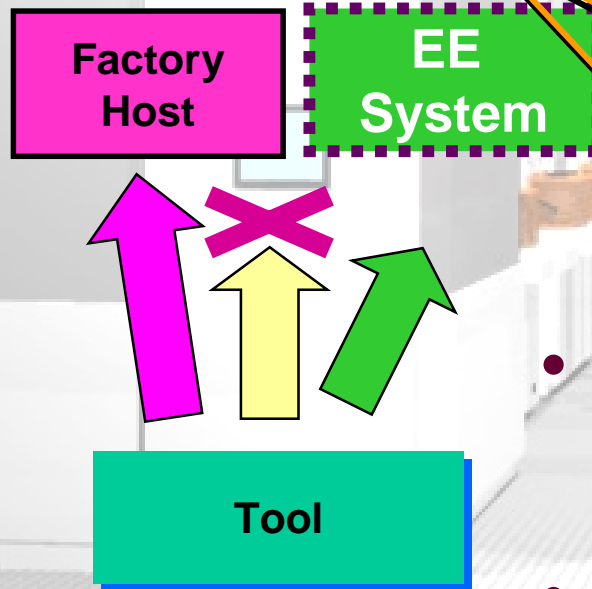


Where task sharing starts for the better Equipment Engineering

Discrepancy between what host and EE activity wants to know

- **Examples of host view info**
 - Event reports of processing
 - Alarm / warning reports
 - EFEM status
- **Let's not go beyond EFEM**

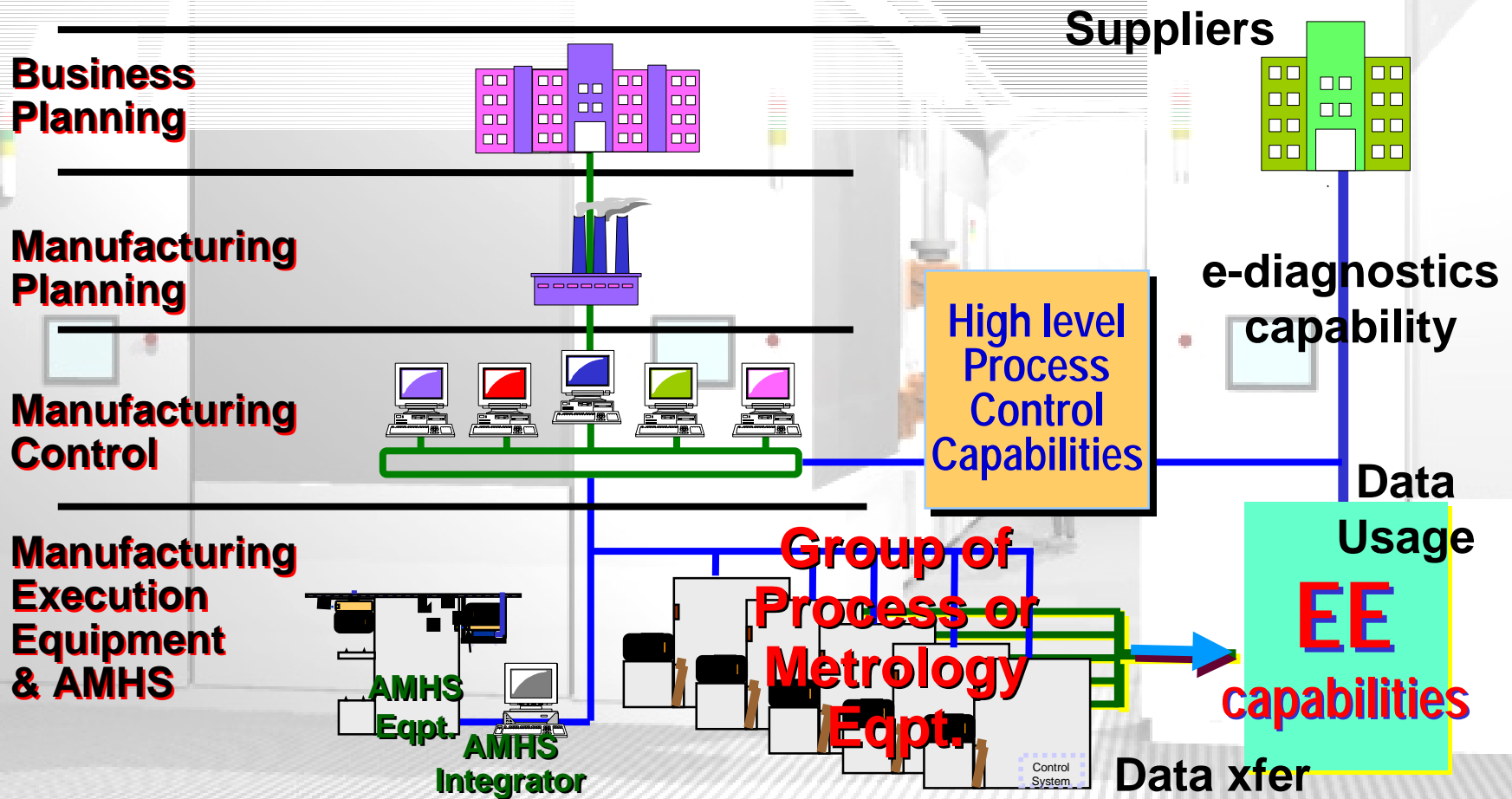
Do not try casting'em into the host view



- **Examples of equipment view info**
 - Components and sub-assembly status
 - Consumables & parts life status
 - Resultant process condition
- **Ask supplier *nicely***
 - to provide necessary EE info
- **Let EES grow for itself**

Big Picture

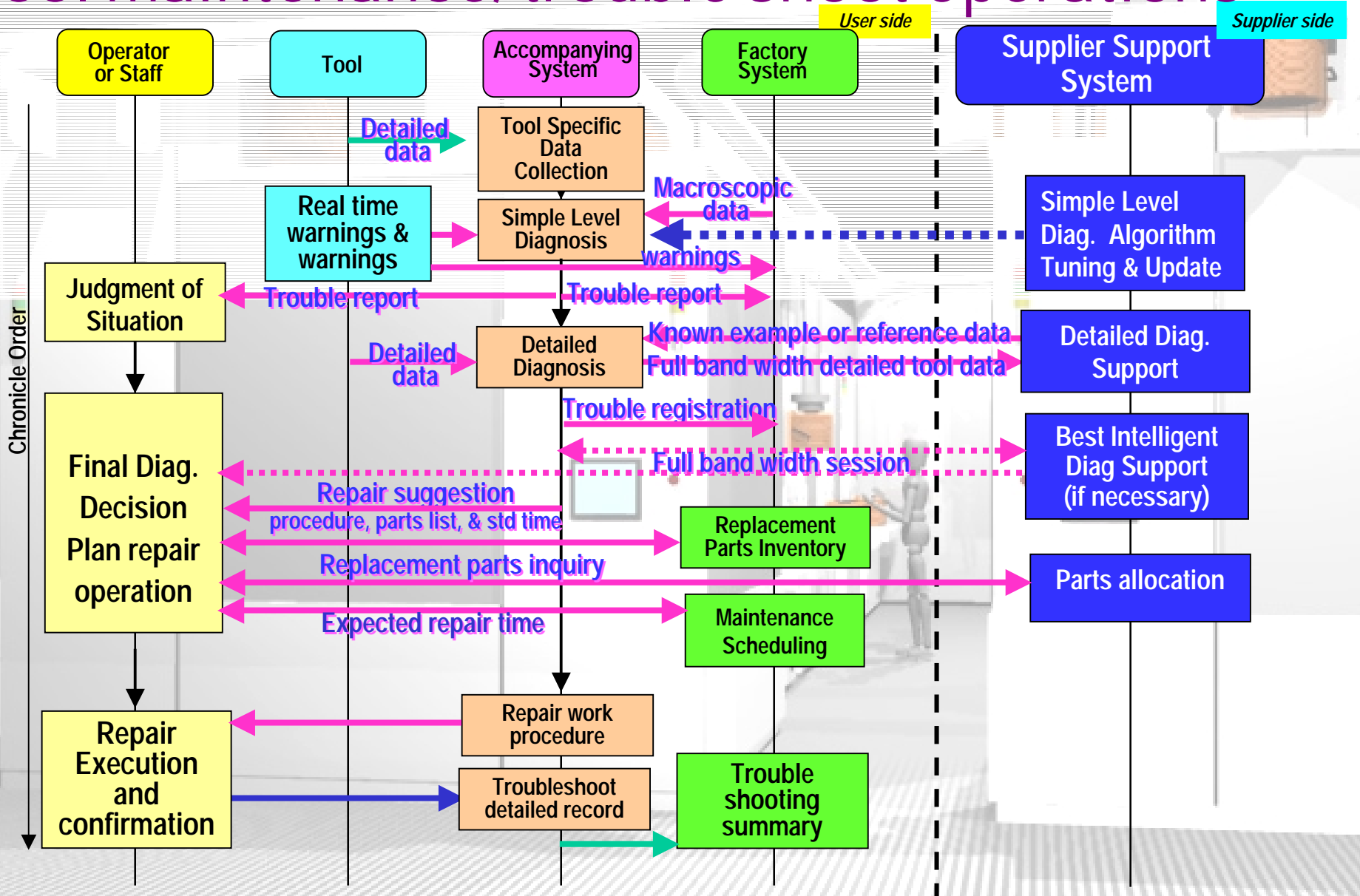
- **EES Independency and Linkage**
 - **Some systems need link between MES & EES**



EE Capability Wish List under Study

- **Following operations have been studied intensively**
 - **Category1 (Appreciable systemization made)**
 - Manufacturing execution instruction
 - Tool's macroscopic status management
 - **Category2 (Not much done yet, anticipated from where we are)**
 - Detailed tool monitoring down to level of subsystems
 - Tool and parts version and modification management
 - Maintenance operation aid
 - **Category3 (not directly anticipated: newer capabilities)**
 - Rapid tool improvement thru sharing detailed tool operation data with suppliers
 - More 3rd vendor involvement for more application S/W
 - More direct supplier involvement by remote diagnosis
 - **Category4 (not directly anticipated: newer capabilities)**
 - Tool performance adjustment under automation context

Tool maintenance/trouble shoot Operations

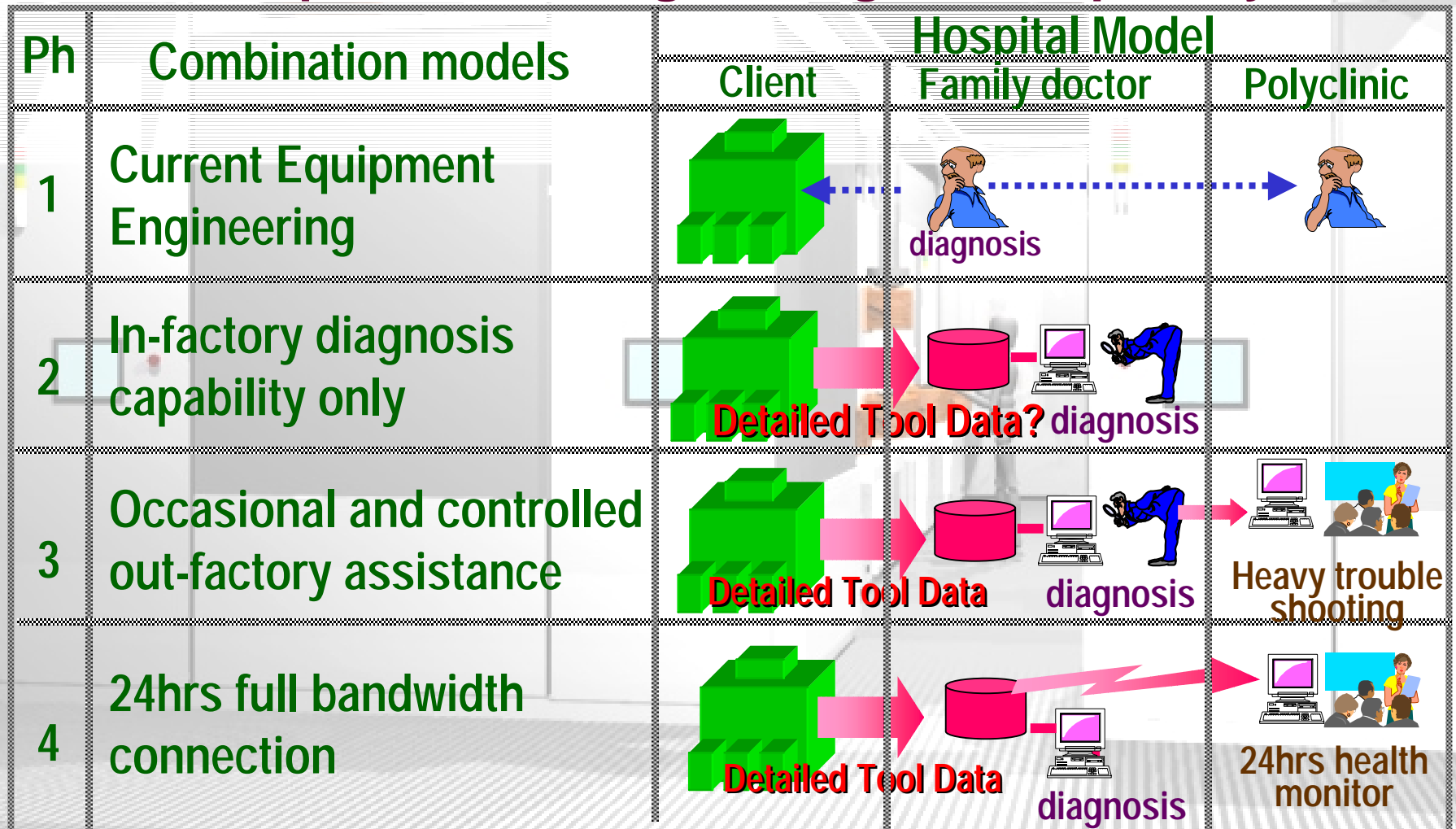


Operation Analysis

- **Examine various EE operations and map to OACs**
 - to define rationalized EE operations
 - to find necessary EE capabilities
 - to see EES coverage
 - to see in-factory and out-of-factory operations
 - too see task sharing interface
- **Operation analysis is still in progress**
 - Improved EE operations are well planned
 - EE capability, necessary data, and output info are identified
 - Operation models show EES coverage and linkage with factory system
 - Task sharing interface is well described

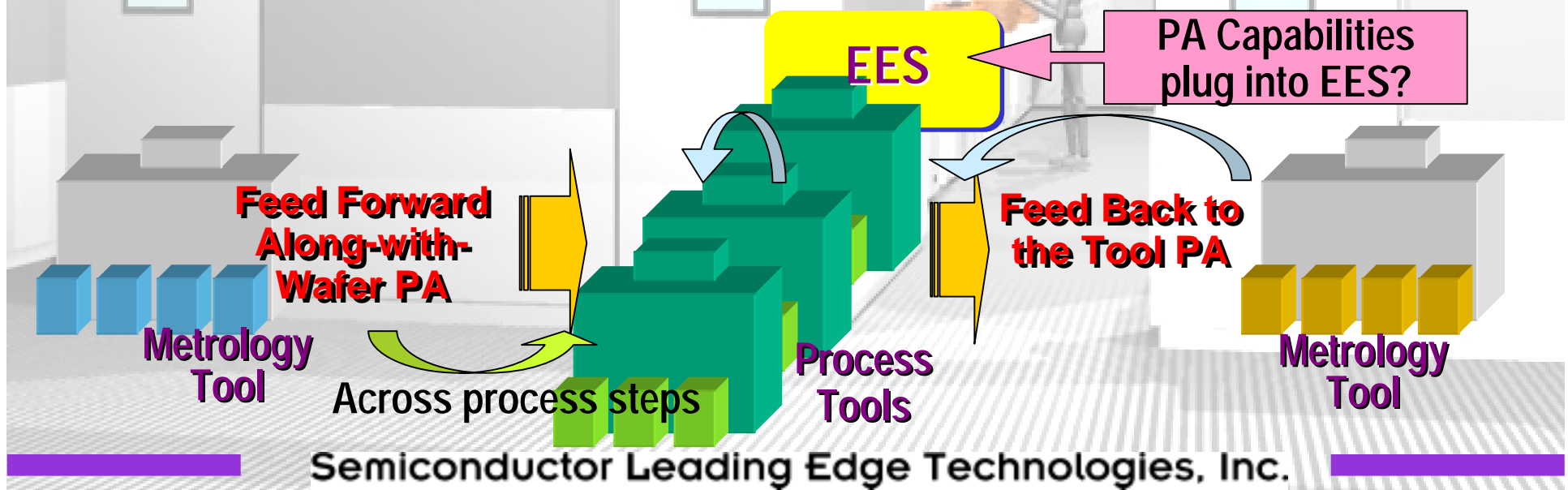
In-Factory and Out-Factory Task Combination

- How we may combine in and out of factory intelligence for better EE operation through e-diagnosis capability



Process Adjustment Capabilities

- Stabilization of process performance
- M-to-M difference management
 - single recipe for group of tools
 - currently done by operators ==>> one of EE capabilities
- Process adjustment capabilities
 - PACs belonging to MES area
 - PACs belonging to EES area



International EE Capabilities Collaboration

- **Proposal for new Infrastructure**
 - Another ISMT & JEITA/Selete consortia driven global activity
- **Area of collaboration**
 - Establish international consensus on required EE Capabilities
 - based on factory system architecture consensus
 - Introduction of EECs into factory frame work
- **Unified message mandatory**
 - Unified requirements
 - Roll out guidelines and best practice documents in FY2001

