
e-Factory Implementation Strategy on the other side of the globe

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What's happening in Japan for e-Diag

- **Aug 2000**

- EIAJ electron device productivity dept. came to have “e-Mfg Study/ Working Group”. (hereafter “**JWG**”)
- Volunteer members gathered from EIAJ, Selete, SEMI J, and, SEAJ, and decided to participate in JWG to act as Japanese counter part with ISMT activity.

- **Sept 15-17, 2000**

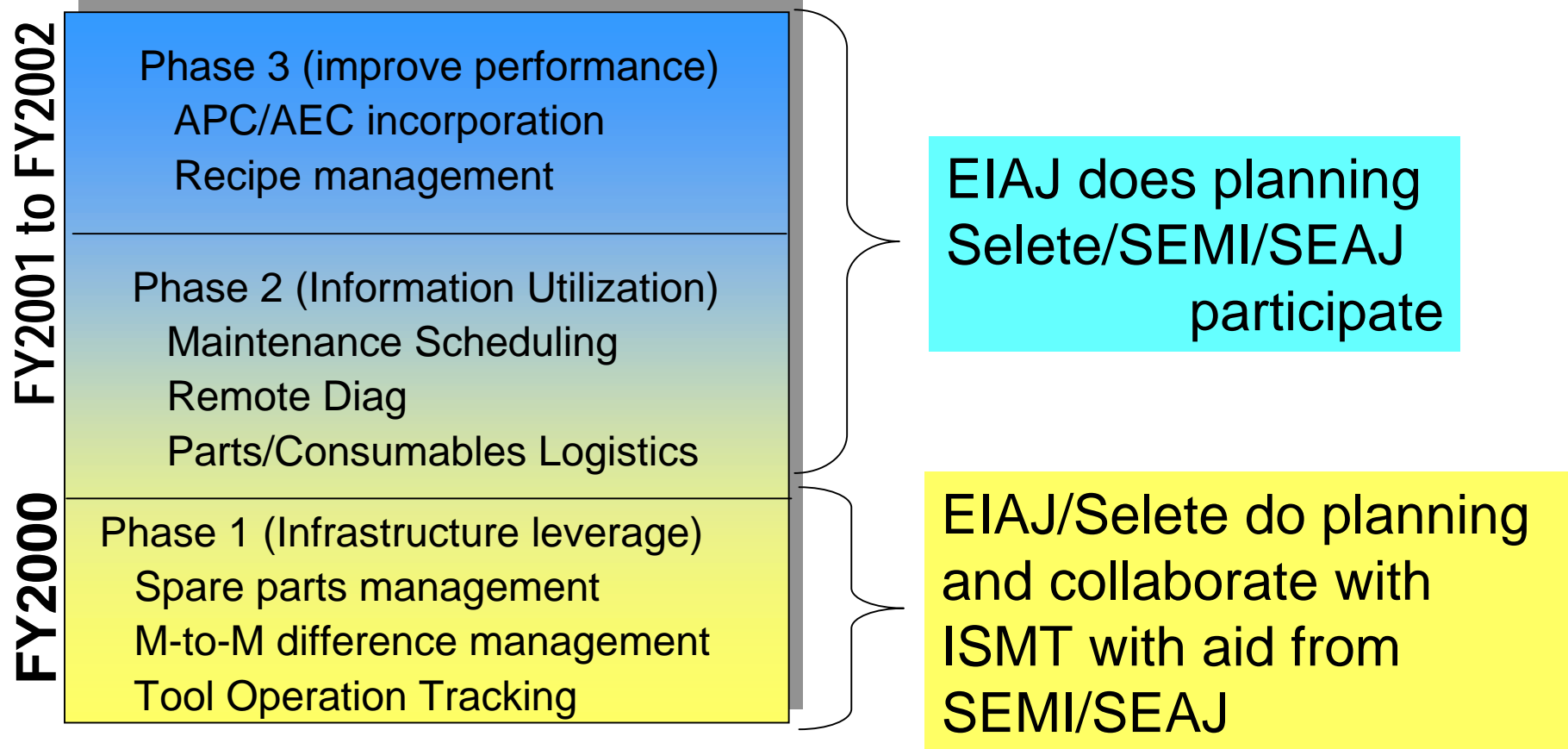
- JWG had a camp on *Equipment Engineering*

- **Sept 20, 2000**

- ISMT and JWG had the first VC
 - confirm international collaboration is a MUST
 - agreed to have a meeting in Austin
 - JWG to report e-Diag/Mfg activity status in Japan @SEMICON SW

Activity Organization for e-Mfg in Japan

EIAJ Activity Overview



Needs Building Up for e-Manufacturing

- **e-Manufacturing includes**
 - **Equipment Engineering activity support**
 - **Faster equipment improvement**
 - **Prompt & clear recognition of equipment deficiency reasons**
 - **Earlier detection of eq. malfunction**
 - Spare parts logistics
 - Utilization of technical database for EE
 - Chip buyers support
 - Product and pre-product's e-commerce
- **JWG is focusing on *Equipment Engineering***

User Requirements for EE Info Utilization

- **Need an infrastructure to fully utilize EE info**
 - that works for everyone
 - inside factory
 - outside factory
 - that enables detailed EE info utilization
- **Need good EE info usage models**
 - Utilization by
 - line manager
 - eq. engineers
 - eq. suppliers
 - procurement personnel
 - All these guys need
 - different data resolutions in EE info
 - different S/W applications to dig out useful information

What we do with the current EE info infrastructure (1)

- Send all the relevant info to “the direction of host”
 - Eq. guys expecting CIM guys being able to provide useful S/W applications
 - CIM guys expecting eq. guys being able to develop useful S/W applications
- Useful S/W applications can not be in full operation at the time of tool deliveries.
 - We start development of EE application S/W when we receive the tool
 - Tool ramp-up period is the very timing EE aid is most needed.

What we do with the current EE Info Infrastructure (2)

- **Questions**

- Is this really the way we keep doing EE for the next 10 years?
- Can we meet the requirement in productivity roadmap by doing this?

- **Answer is definitely NO.**

- 90% of what both of us are doing is probably consumption of precious resource on what is a very common problem.

Shall we go forward to a new infrastructure?

- **Do we need to develop EE info utilization basic functionality for ourselves?**
 - Rarely need some secret/competitive S/W
 - Third vendor should show up
- **We do not want to spend \$\$\$ to propose a new EE IT infrastructure**
- **We do not want to spend \$\$\$ over what can be possibly standardized**

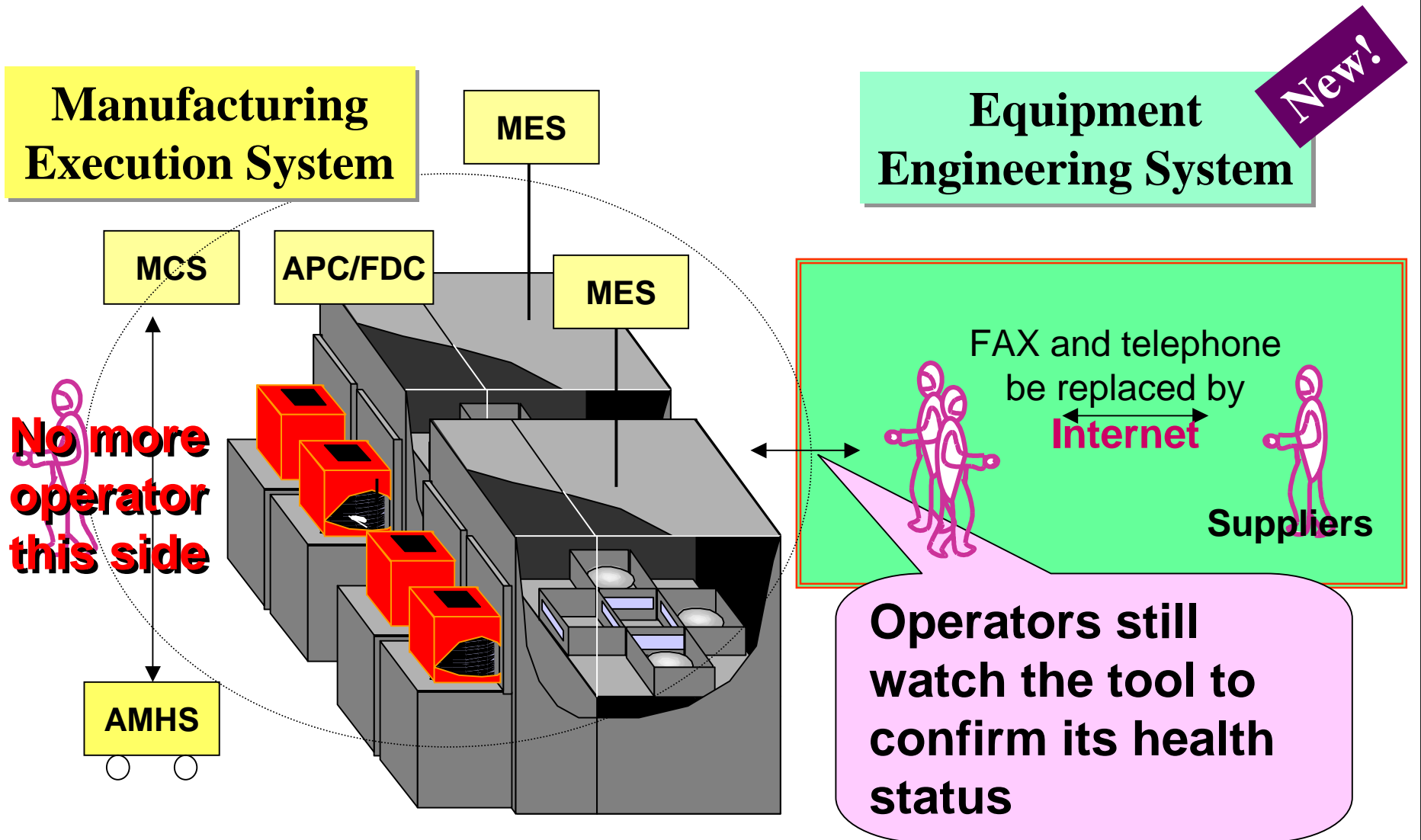


- **Answer is obvious**
 - need WW consensus on new EE IT infrastructure
 - need an open IT platform for EE system be defined
- **Go ahead for collaboration with ISMT to most effectively drive the industry.**

What was the outcome of JWG camp?

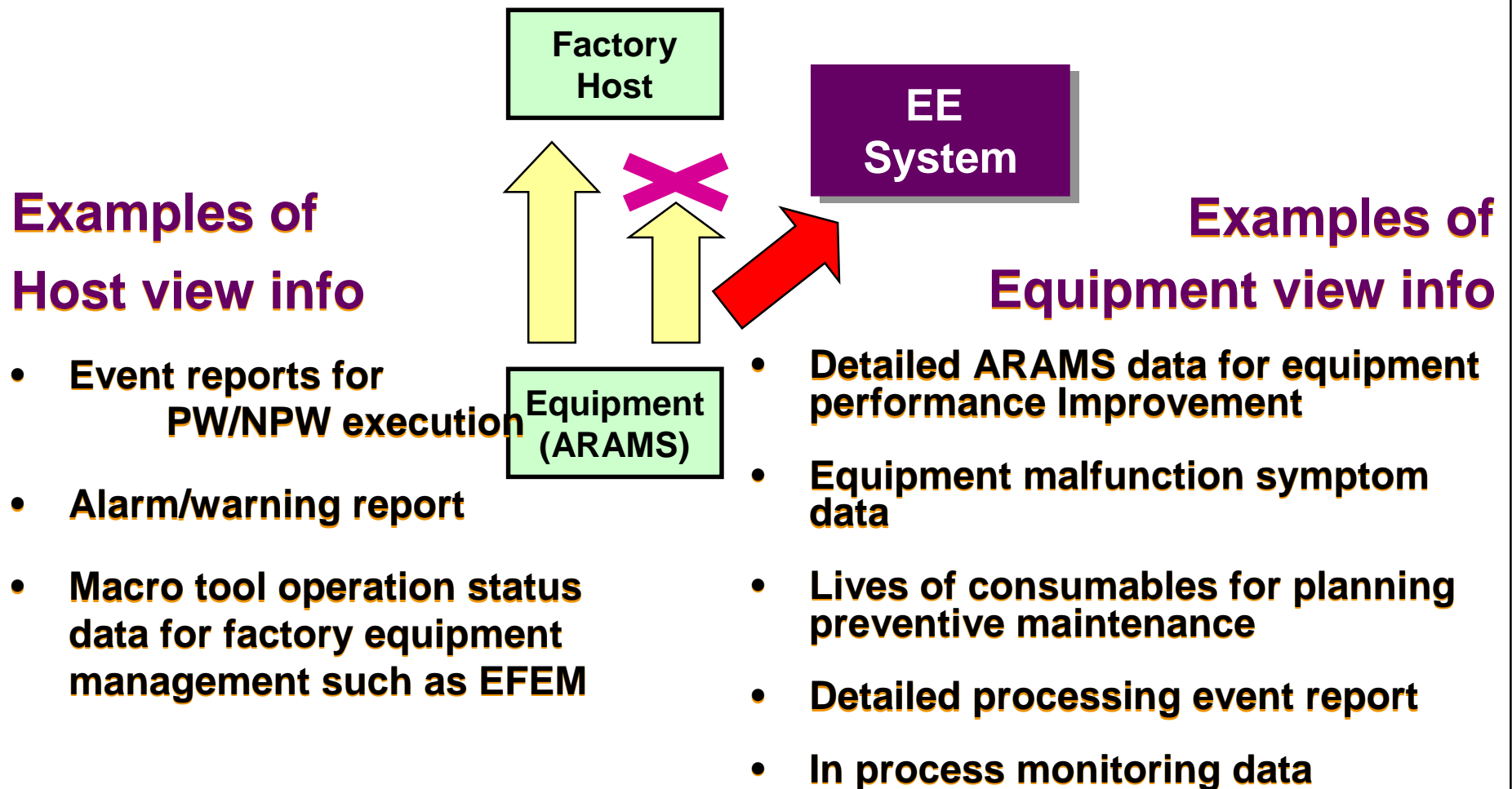
- JWG worked out following issues in 3 day camp
 - address common ways to improve tool availability & factory operation in tool usage-wise
 - analyze detailed operations upon common events in factory
- Much of the time was spent in discussion on
 - what is the openness of EE operation
 - what is the openness of EE IT infrastructure
 - **JWG came to believe this is the collaboration point**

What EE System will replace?



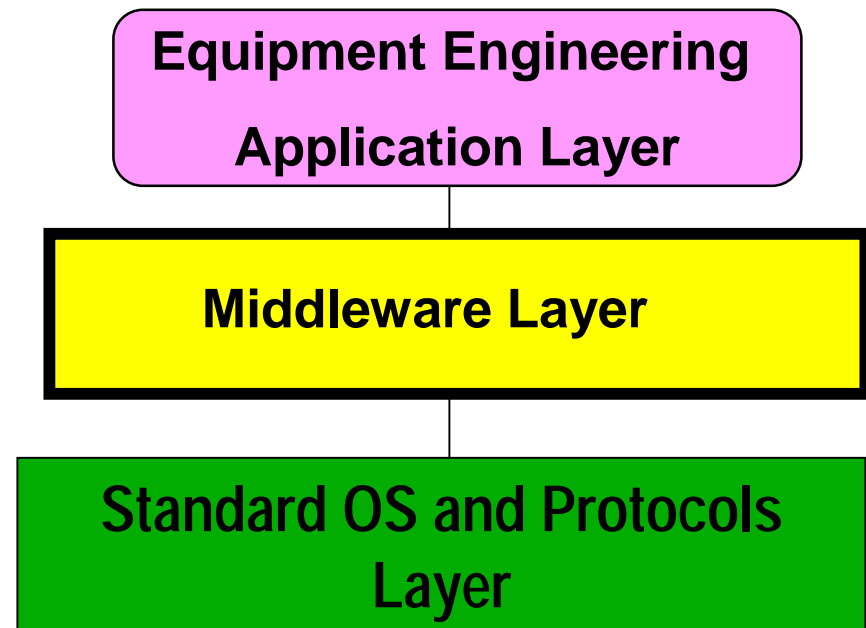
Separate MES and EES

Solve discrepancy between what host and EE operation want to know



What is IT requirement for EES?

- **Independent EES IT structure from MES**
 - Should assure wide freedom in implementation styles
- **How can we assure freedom?**
 - Equipment Engineering Application Layer
 - Middleware Layer
 - Provides open platform
 - This could be the key collaboration issue
 - Standard OS and Protocol Layer
 - Use the most common one
 - TCP/IP, XML, ??



Conclusion

- **Need to have an industry consensus**
 - introduce an open architecture which provides more freedom in EE system development
- **International collaboration is a MUST**
- **Consensus will allow**
 - effective EE systems which utilize detailed EE information
 - more flexibility and safer extendibility of EE systems
 - more outsourcing and S/W suppliers involvement in EE system development
 - rapid implementation of e-Factory basement layer
 - development cost saving both in device makers and tool suppliers

JWG Action Items

- **Convince device makers, tool suppliers, and SW vendors**
 - this is the way of semiconductor factory evolution
 - 3Q & 4Q of FY2000
- **Start international collaboration right away**
 - define scope of collaboration
 - bring about open architecture in e-Diagnostics/EES
 - need to share EE info usage model in e-Diagnostics and EES
- **Plan examination of motif systems for FY2001**
 - encourage introduction of new component into the factory
 - prove the real value of the system
 - seek methodology to bring about some “standardization” in interfacing, architecture, performance, functionality to assure system openness