

Rapid FDC/APC Productivity Improvement Will Require Global Cooperation

Brad Van Eck

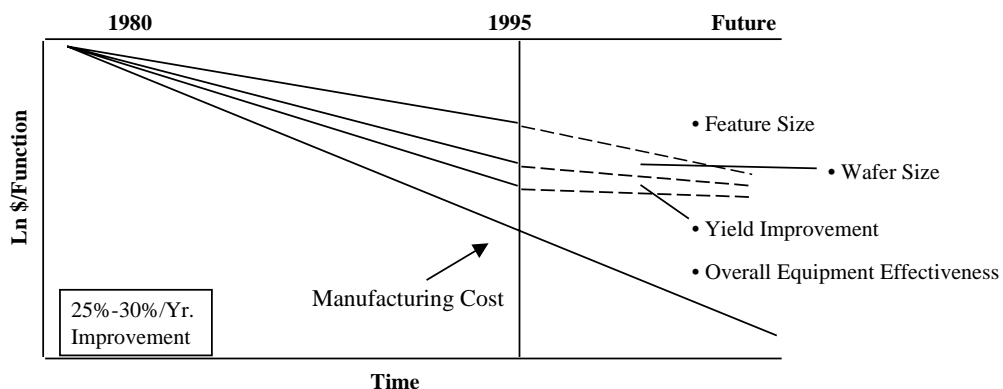
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Keeping the Productivity Engine on Track 25-30% Cost Learning Curve requires OEE Improvement



Factor	1980	1995	Future
Shrinking feature sizes	12%	12-14%	12-14%
Larger wafer sizes	8%	4%	<2%
Yield improvements	5%	2%	<1%
Other Equipment Productivity (OEE)	3%	7-10%	>9-15%



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APC/FDC Improves Equipment Productivity

Chip makers believe APC/FDC will reduce costs!

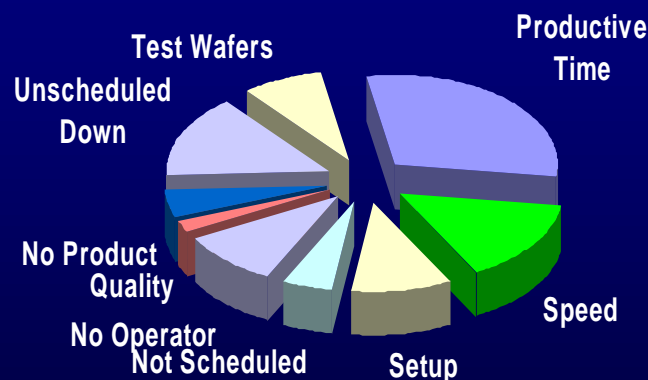
- Reduce time to detect yield excursions or scrap
- Reduce time to diagnose and repair equipment
- Reduce time to re-qualify tools after repair/clean
- Reduce variation, wafer-wafer, lot-lot, or tool-tool
- Reduce number of Non-Products Wafers (NPWs)
- Reduce spare parts and maintenance costs
- **Improve Overall Equipment Effectiveness (OEE)**



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Productivity Pie

APC and FDC data systems can improve the amount of **Productive Time** by reducing the amount of time in the non-productive pieces of the pie.



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The Use of APC/FDC is Growing Rapidly as a Method to Improve Equipment Productivity

- **The SEMATECH Sponsored APC Symposium**
 - Will have its 13th meeting on October 6-11, 2001
 - Had 18 Corporate Sponsors in 2000
 - Tutorial and Short Course
 - Technical and Poster Sessions (~100 presentations)
 - Over 30 Supplier Exhibits are expected this year
 - Third party software & sensors supplier user groups
 - Integrated Measurement Association Meeting
 - SEMI Standards Meetings
 - Over 500 people are expected to attend in 2001
 - www.aecapcsymposium.org
- **Europe's 2nd APC Symposium is on April 18-20, 2001**
 - www.aecapc-europe.com



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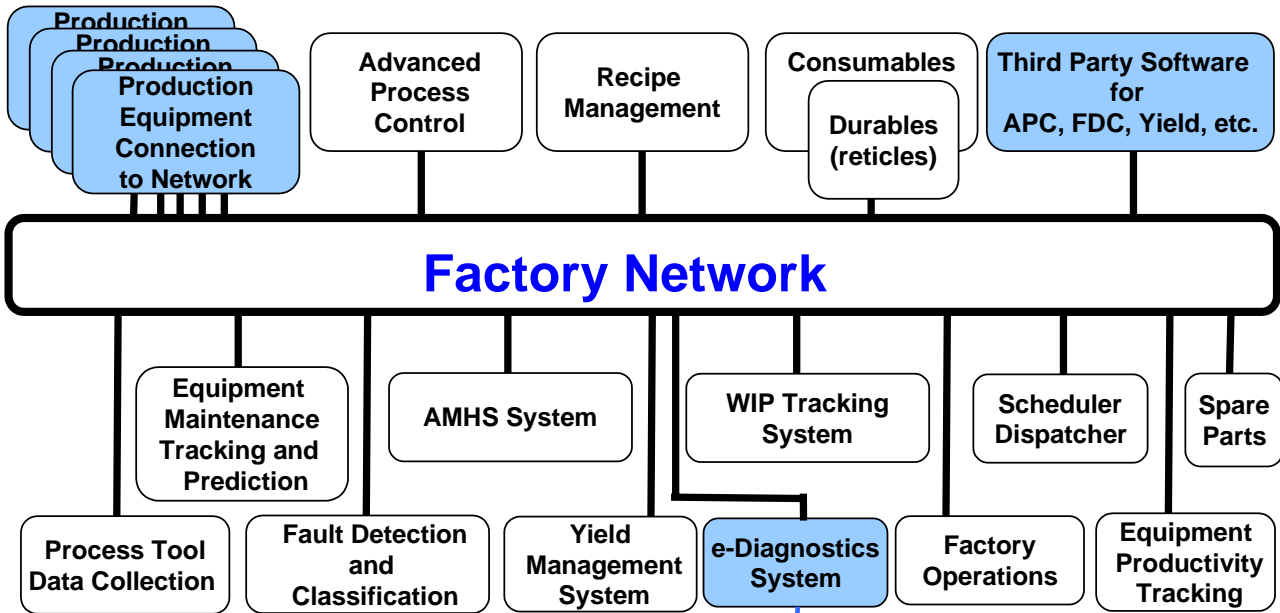
Selete and ISMT Collaboration

- **In order to accelerate the implementation of APC/FDC in high volume manufacturing**
- **Selete and ISMT have agreed to develop consensus guidelines, user requirements, and standards**
- **These guidelines must be useful to BOTH Selete's and ISMT's member companies**
- **Flexible and configurable systems will allow chip makers to customize them to meet both current and future needs**
- **Only Global cooperation can create guidelines that will work for the entire semiconductor industry**



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OEE Improvement through Global Factory Information System Guidelines Equipment Engineering System (EES)

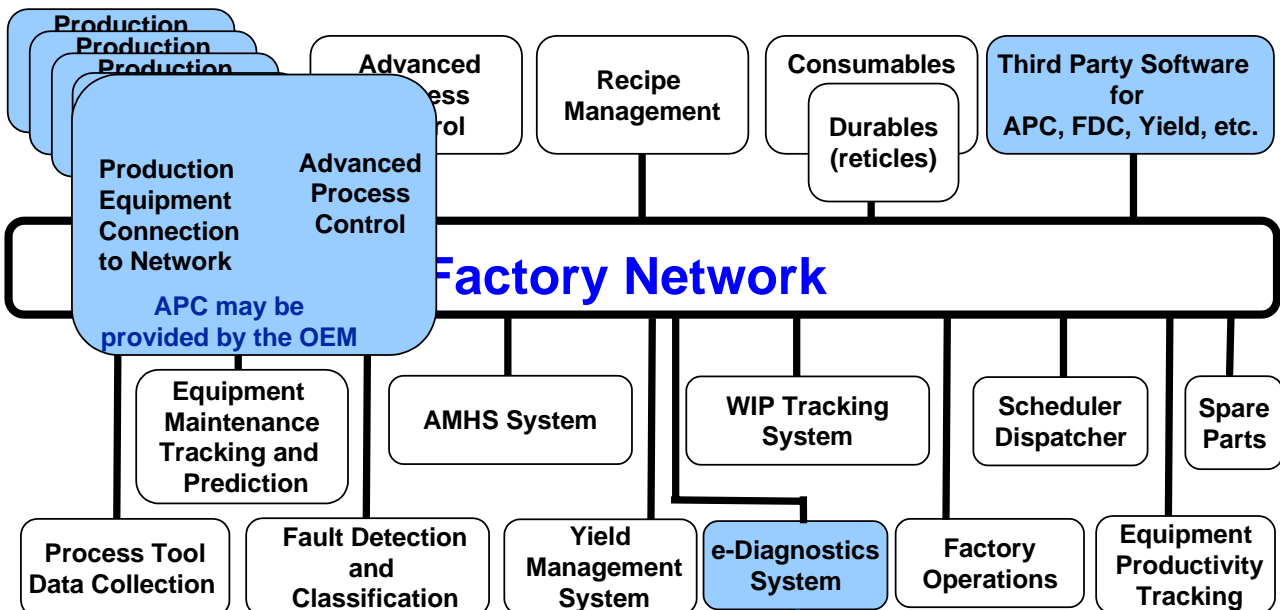


Thanks to Blaine Crandell, Texas Instruments, for the initial concept for this foil.



The chip maker selects who will provide the APC system

- Equipment Supplier
- Third party software supplier
- A custom in-house APC system



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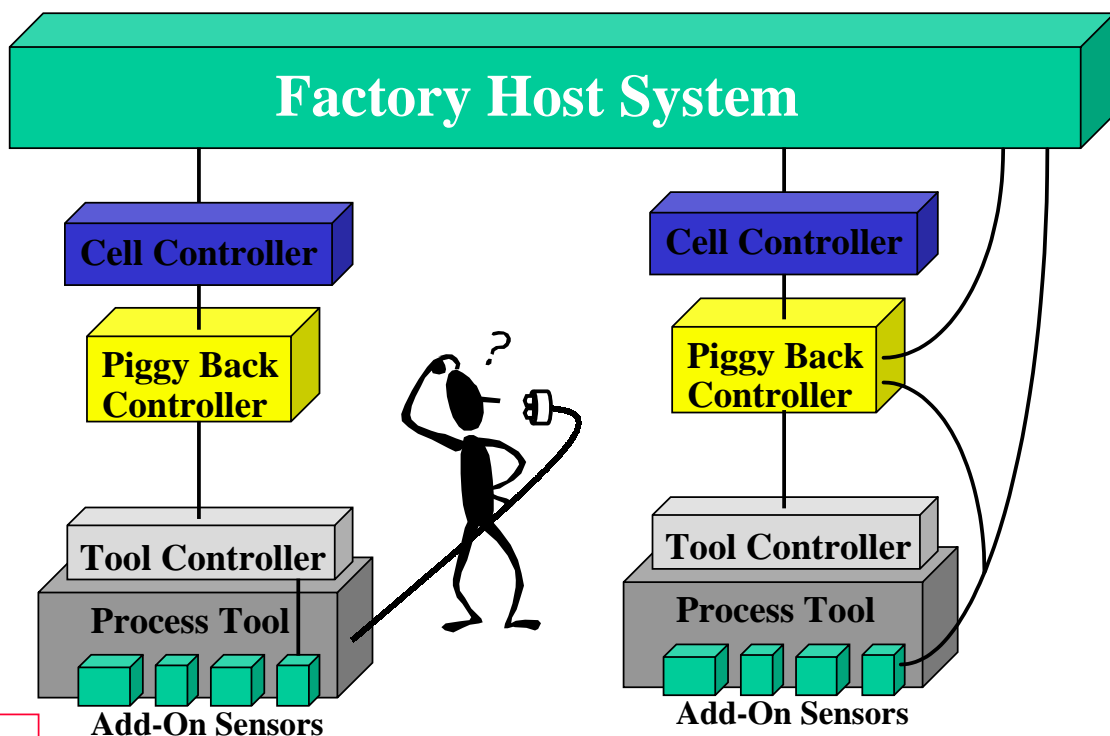
Only a Global Consensus Set of Guidelines can. . . .

- Give our suppliers a clear understanding of our needs for achieving improved productivity
- Give our suppliers guidance on the open interfaces needed
 - Equipment suppliers
 - Metrology and sensor suppliers
 - Software suppliers
- Allow chip makers to build flexible and extendable APC/FDC (EES) systems



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The key challenge is integration because there is no global integration plan



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The Future Needs for APC/FDC are Global

- **Chip makers and equipment suppliers must develop a common consensus strategy for APC/FDC**
- **This strategy must be:**
 - **A consensus GLOBAL strategy**
 - **A strategy that solves the integration problem**
 - **A strategy that leads to open consensus standards**
 - **A strategy with a workable business model for our suppliers**
 - **A strategy that allows USER configuration**

