Data Acquisition and Analysis for Cu CMP

[Use of opsEnvironmental software for analysis of chemical, energy, and water consumption in fabs]

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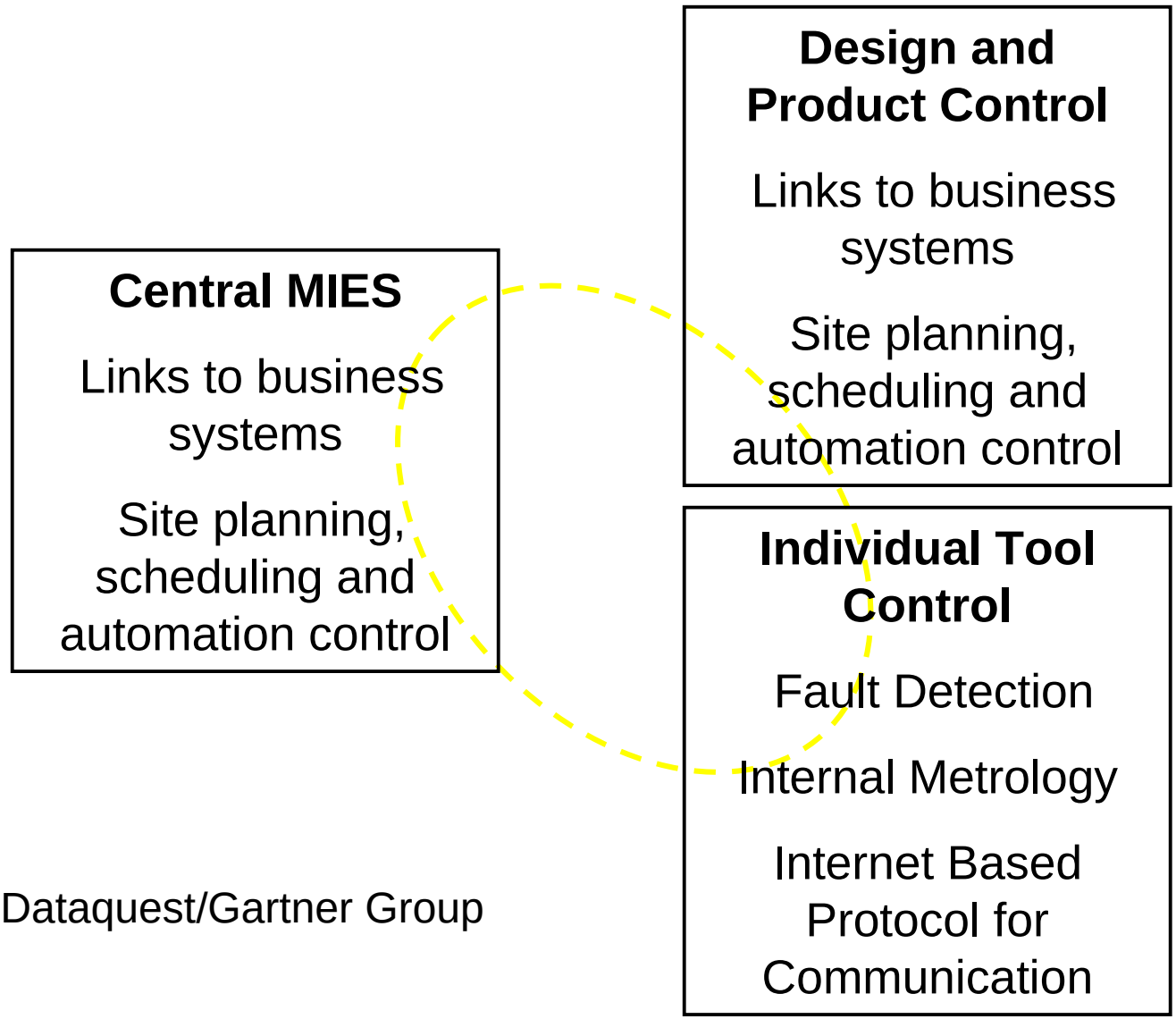
Transition to 300 mm

The transition to 300 mm wafers now underway affords the most significant opportunity in the history of the semiconductor industry to collectively and systematically control and lower manufacturing costs*.

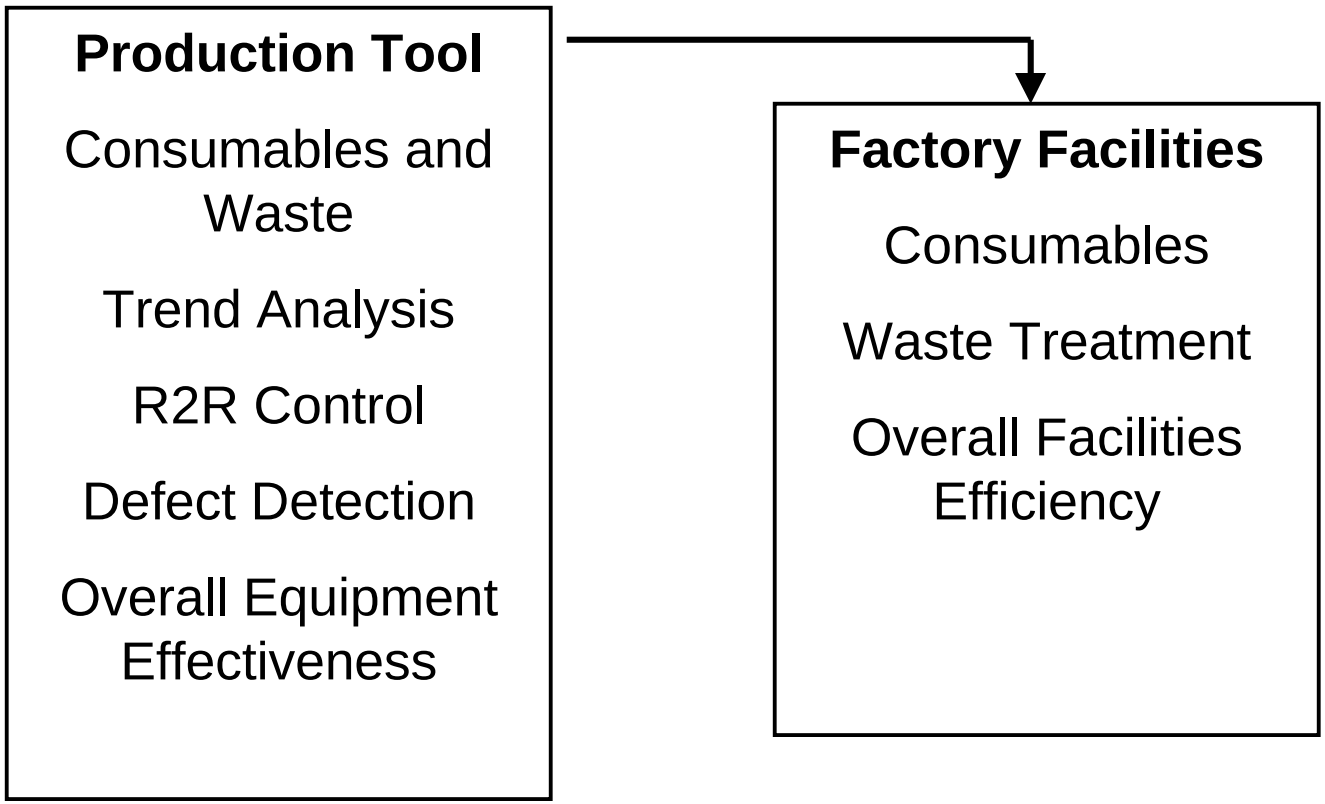
*1999 International Technology Roadmap for Semiconductors

Factory Connectivity



Source: Dataquest/Gartner Group

Individual Tool Control



ESP opsEnvironmental Software

- Customers include

American Airlines	Boeing
Lockheed Martin	Marathon Ashland
Lafarge Cement	New Century Energy

- Object-based enterprise software
- Combination client-server and web deployment
- Key functionality: live data linking, calculations, ticklers, and reporting

ESP opsEnvironmental Software

- Example: Airline paint booth operations
  - Live Data Linking: Signal read from sensors on paint booth dry filters
  - Calculations: Pressure drop calculated and compared against regulatory set points
  - Ticklers: Maintenance notified via email, pager, visible signs when set point exceeded
  - Reporting: Number of excursions recorded and reported, across multiple booths and facilities

Trial Project

- SEMATECH sponsored study on post-copper CMP
- Goal: Chemical, water, and/or energy use data acquisition to enable trend analysis and process optimization
- Subject: Applied Materials CMP tool operating in Texas Instruments Fab

Trial Project (cont.)

- Unknowns:
  - Existing data availability from tool
  - Ease of collecting additional parameters
  - Transferability to other fab processes
  - CMP tool optimization opportunities