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2025 Users Conference



Accelerating Digital Transformation in Semiconductor Manufacturing

Ranjan Chatterjee

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06.



GlobalFoundries™

Customer Presentation

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07.

Operational Costing Solution

Mike Nohr

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Industry Product Costing Challenges

Challenges

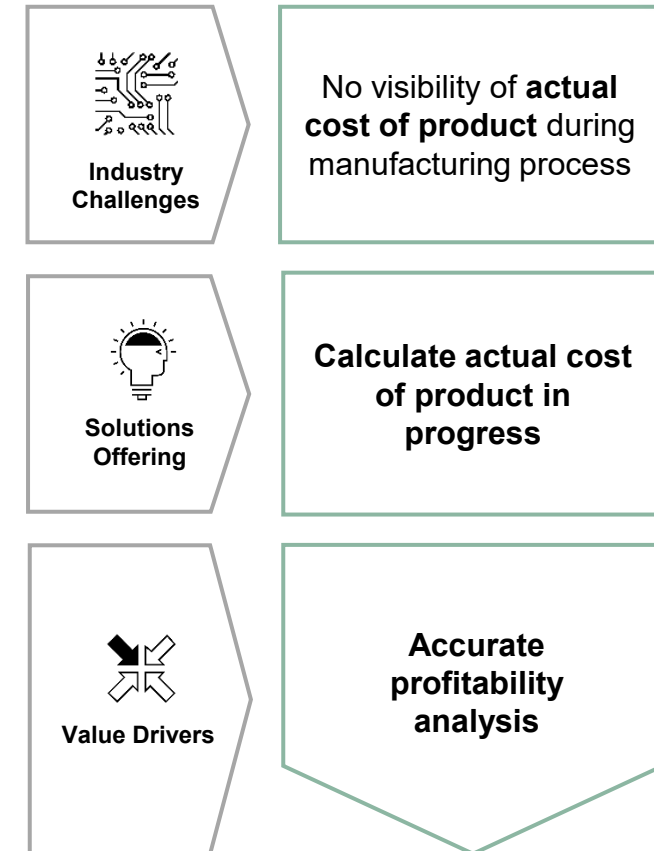
- Yield, material cost, consumption, and volume (capacity) changes
- Lack of visibility to do proper costing based on manufacturing process
- Valuation of inventory may not capture true product cost
- Standard cost may not reflect actual cost

Solution Capabilities

- Due to fluctuations in yield & consumption companies prefer actual costing vs. standard costing where possible
- Tighter integration between ERP and factory automation MES with Sapience Manufacturing Hub provides greater cost granularity to support actual product costing



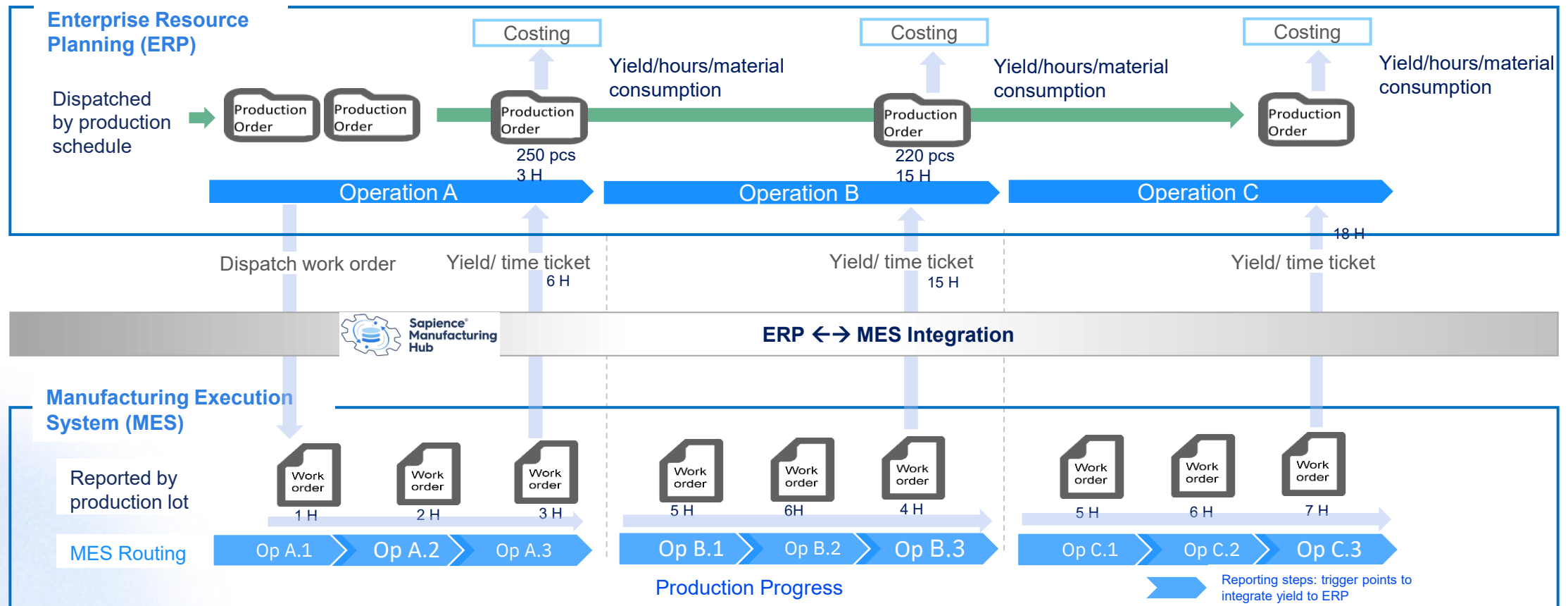
Operational Product Costing



ERP → SMHe → MES / Costing Integration Model

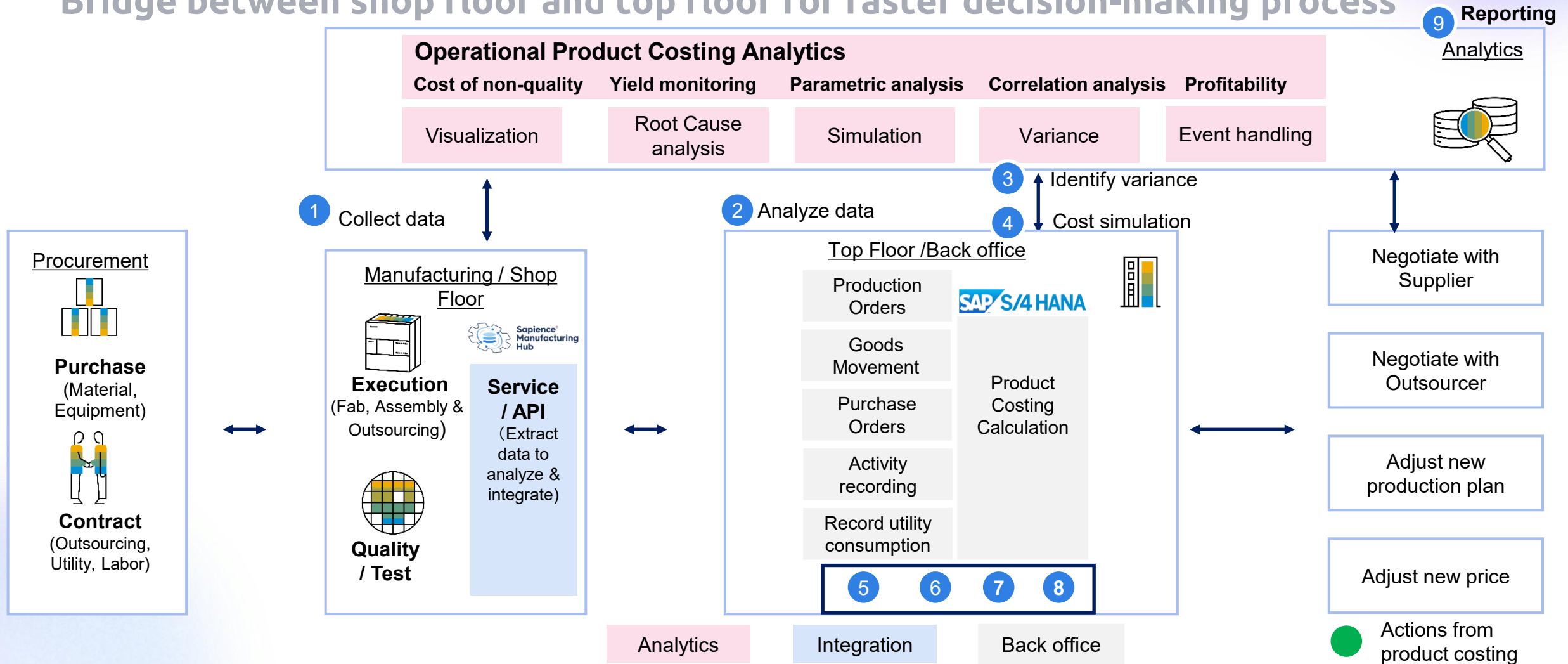
ERP and MES routing have different granularity levels:

- ERP Routing: For MRP, Production Costing (inventory valuation, variance analysis)
- MES Routing: Validate operation sequence, dispatch to shop floor, production genealogy (inspection and testing)



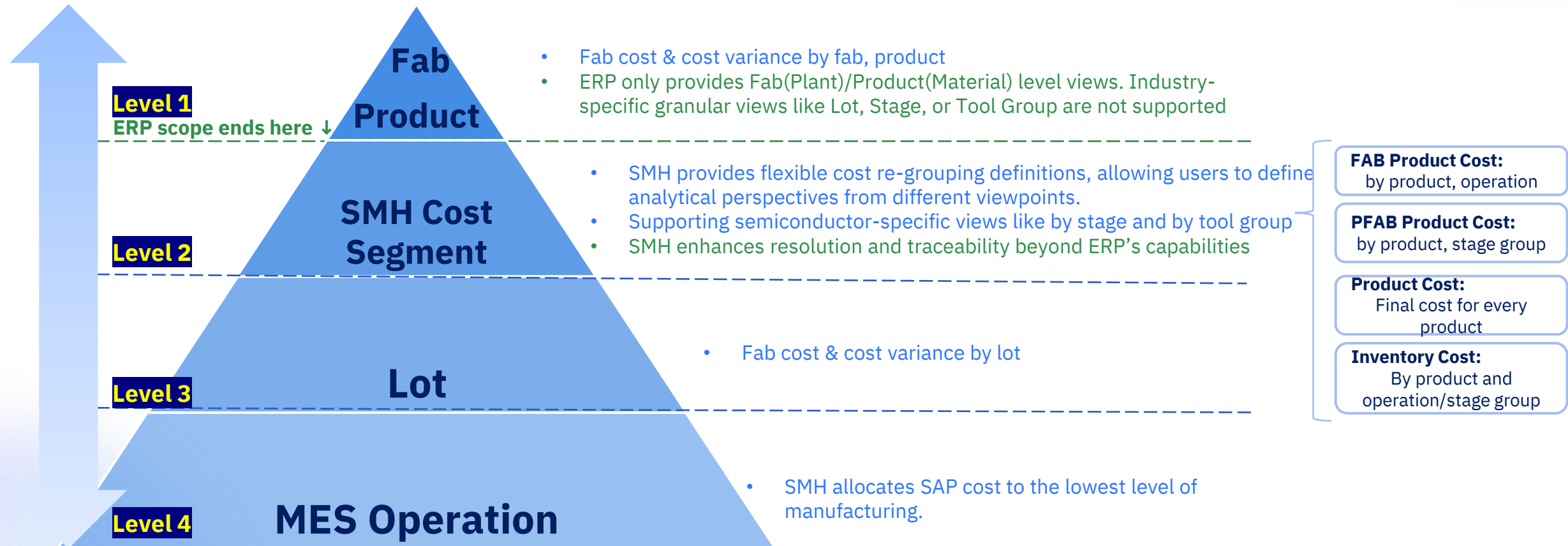
Sapience Operational Product Costing Analytics

Bridge between shop floor and top floor for faster decision-making process



Operational Product Costing Segments

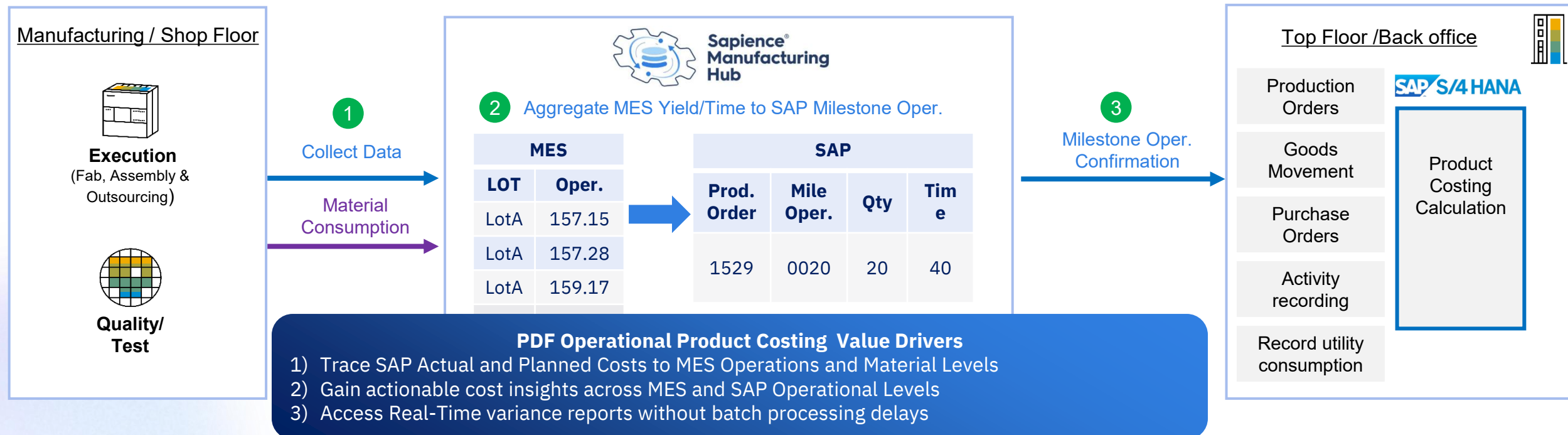
Monitor, analyze, and optimize production cost and performance at the most granular level



Production Orders & Good Movements

The ERP tracks the state of the production order through the manufacturing process but requires updating via order confirmation. This can be done with 3 approaches:

- Manual updates by users through ERP User Interface
- Batch job approaches queueing up a list of updates to the system and running them on a periodic basis
- **SMHe & Product Costing Approach - Real-time linking to the factory floor to synchronize the factory floor operations to the production order**



Event Handling (split, merge, rework, scrap)

Semiconductor manufacturing process is often more complex than other industries

- More manufacturing steps
- Multi-pass routing / loop operations (rework, test, burn-in)
- Lots rarely follow the planned route (split, merge, rework)

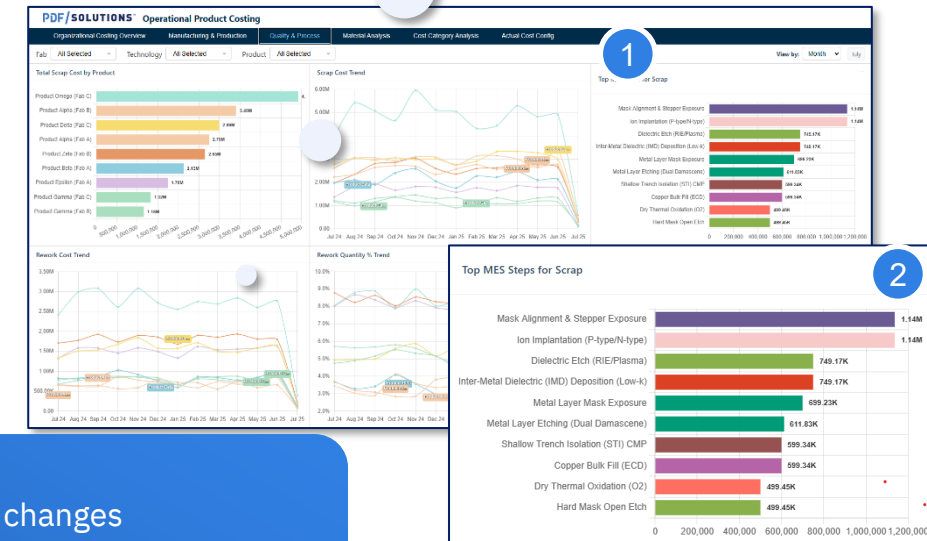
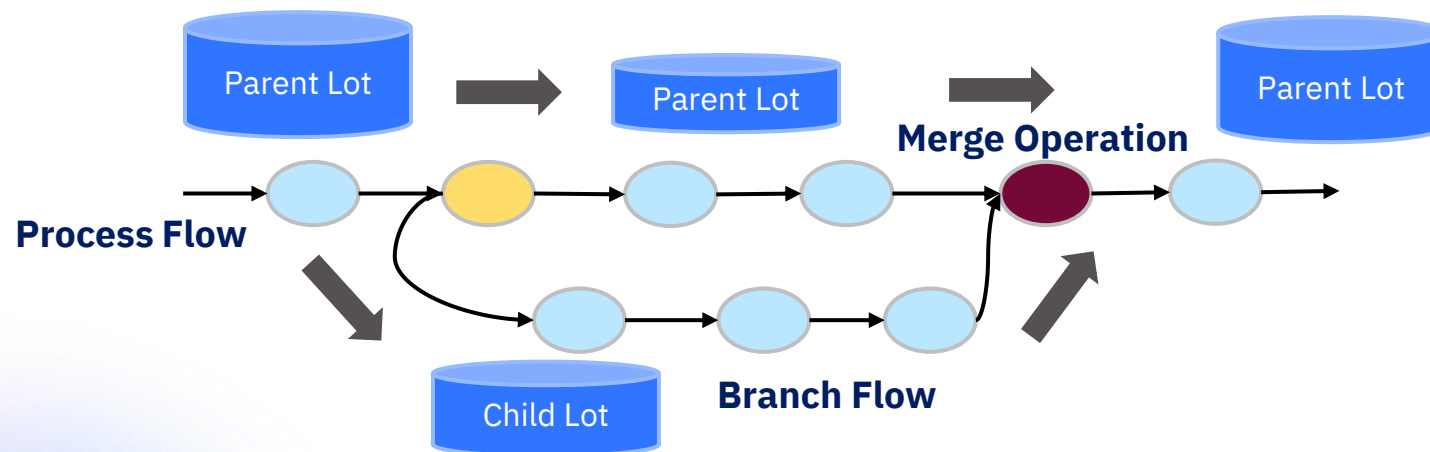
Traditional ERP systems face challenges handling some of this manufacturing complexity

- Ex. The system does not allow you to perform a merge operation on a released Production Order

Where is the most rework being done and what is the cost impact of that rework?

Which MES operational steps have the largest cost impact with respect to scrap?

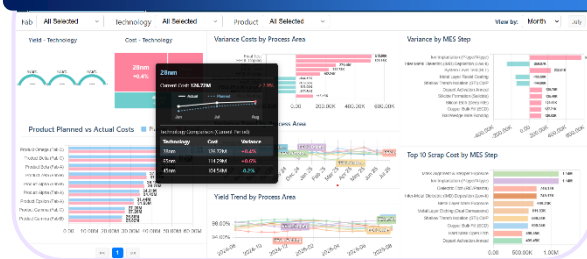
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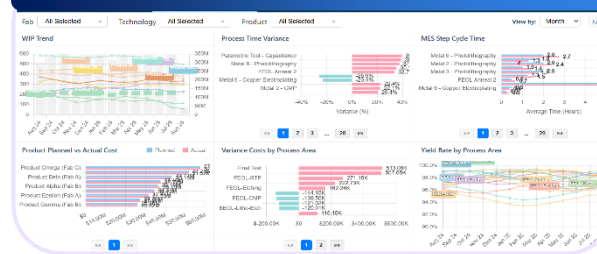
- PDF Operational Product Costing Value Drivers**
- 1) Interactive dashboards to quantify cost impacts of quality and operational changes
 - 2) Pinpoint high-impact MES Operation cost drivers
 - 3) Enhance cost accuracy with improved ERP Standard Costs and COGM

Root Cause Variance Analysis, Dashboards & Reports

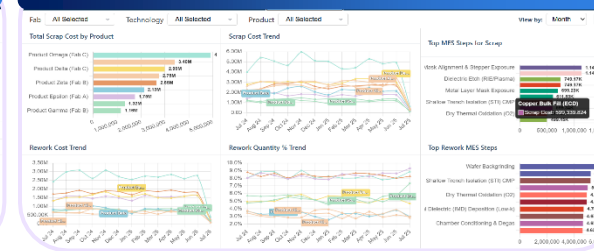
Enterprise Costs Overview



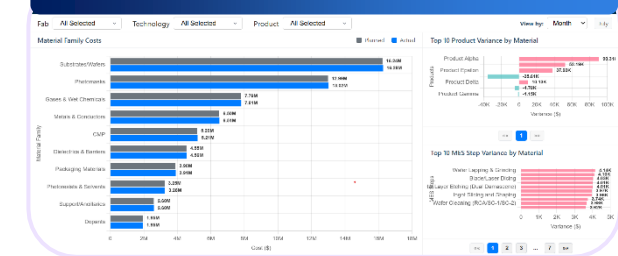
Manufacturing Costs



Quality Cost Impacts



Material Cost Variances

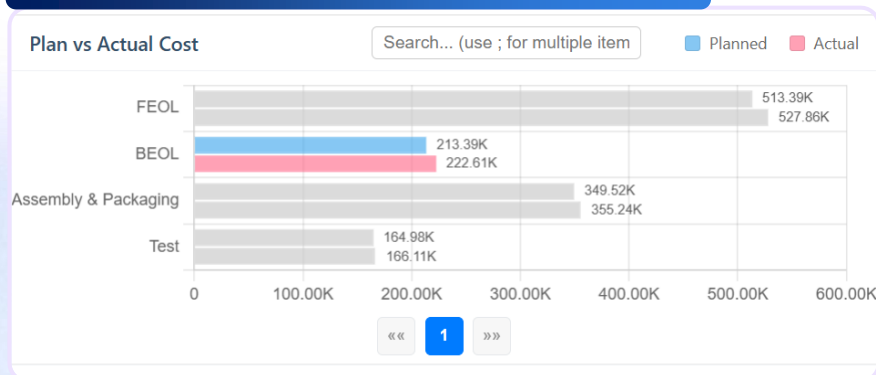


- Gain enterprise-wide **cost visibility**
- **Trace** semiconductor-specific **cost variances**

- Target **high-impact** changes to optimize COGM
- Analyze **material-driven** cost deviations

Identify overestimated plan costs and adjust standard costs for more accurate Cost of Goods Manufactured (COGM)

Cost Segment Root Cause Analysis



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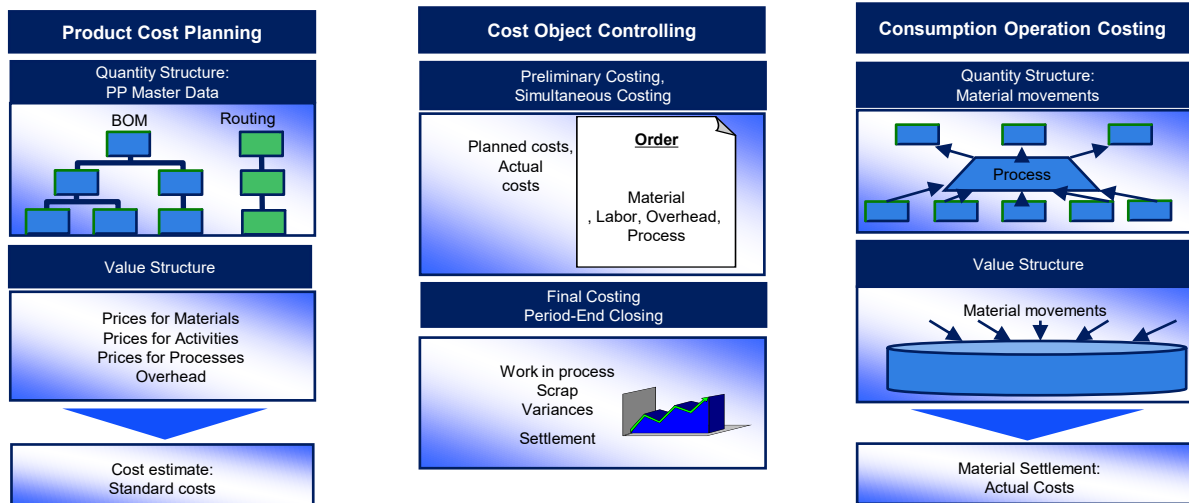
Top MES Operations by Cost Variance - BEOL (July)



Identify key areas of operational improvements

Accurate Consumption Based Operation Cost Insight & Analysis

Improve Probability and Product Costing Efficiency



Challenges

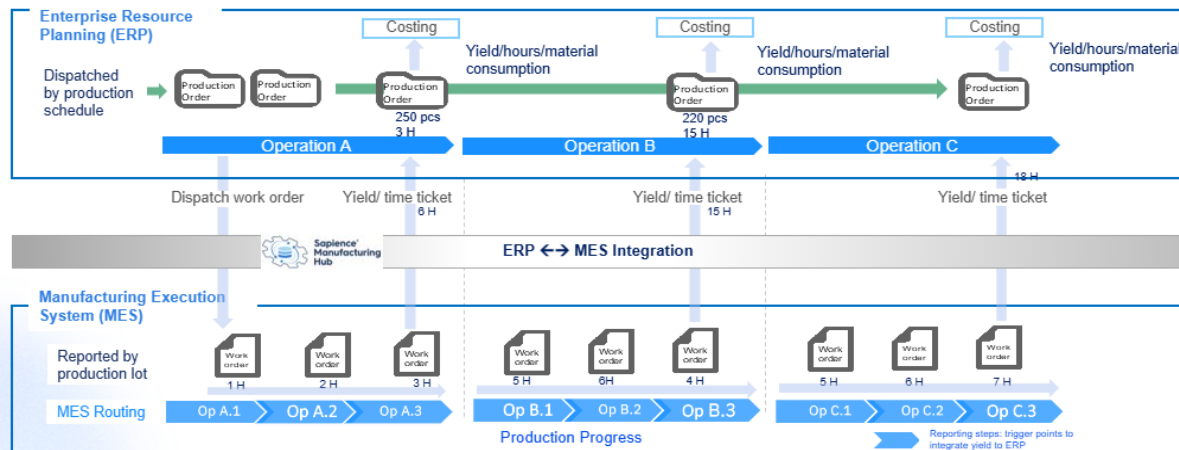
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Benefits

- Accurate profitability analysis in volatile markets
- Accurate valuation of finished goods inventory
- Accurate updates to standard costs for forward looking cost estimates
- Ability to monitor and increase manufacturing efficiency
- Strong financial basis for prioritization of improvement and utilization of resources



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Operational Product Costing Demo



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