

2008 Automation Summit

Siemens

# Plant Information Needs in Turbulent Times

C a m b a s h i

Julie Fraser, Principal Industry Analyst



# Agenda

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- **Production Challenges**
- **Engineering & IT Converge**
- **Why Plantwide Systems are Critical**
- **Information From Outside Production**



# 21<sup>st</sup> Century Manufacturing

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- Global supply, demand, production, competition





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# 21<sup>st</sup> Century Manufacturing

- Global supply, demand, production, competition
- Capable, complex, configurable products
- Well informed customers
- Increasing regulations
- Delivering solutions





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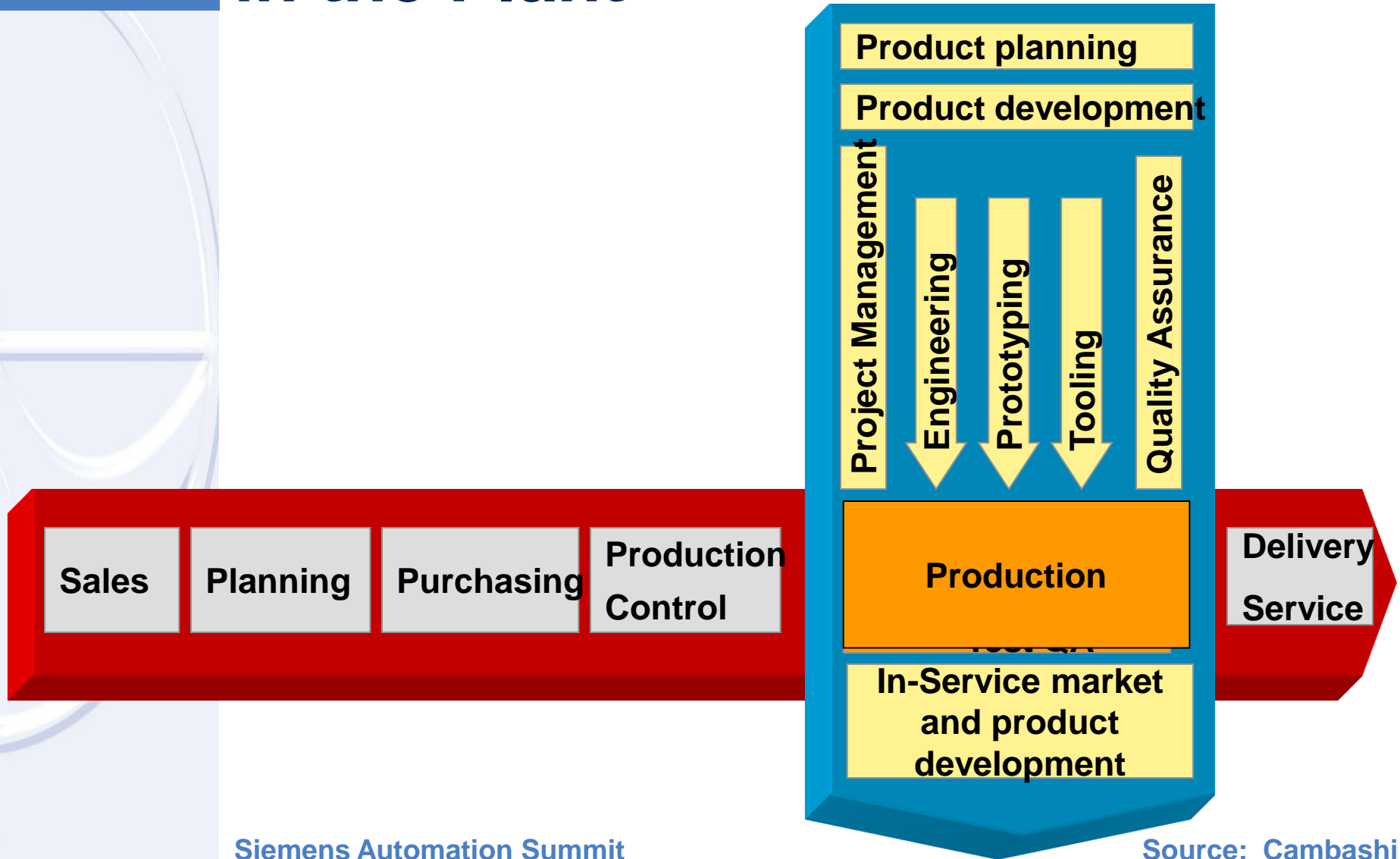


***Demand-driven responsiveness***



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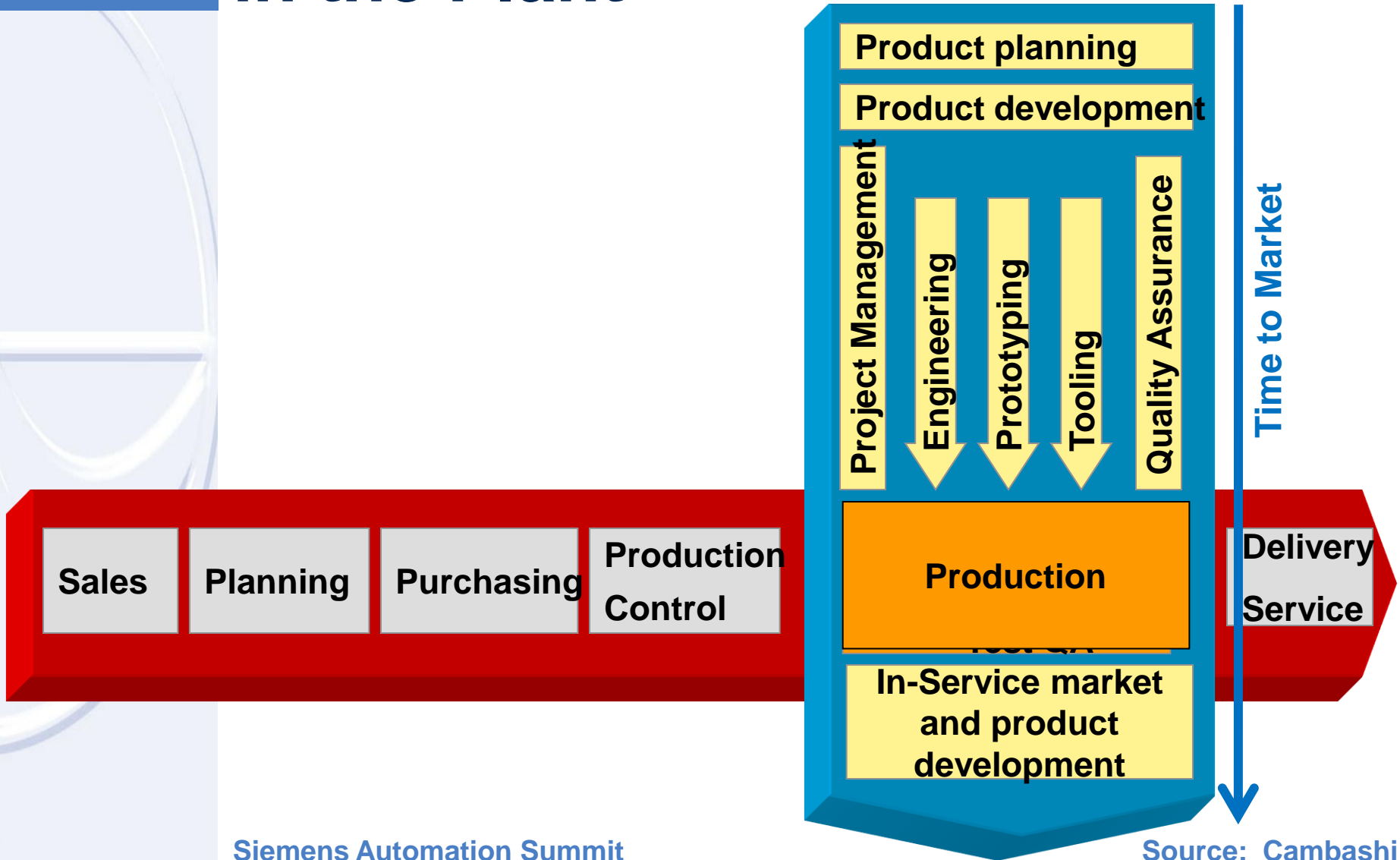
# Product & Order Needs Converge in the Plant





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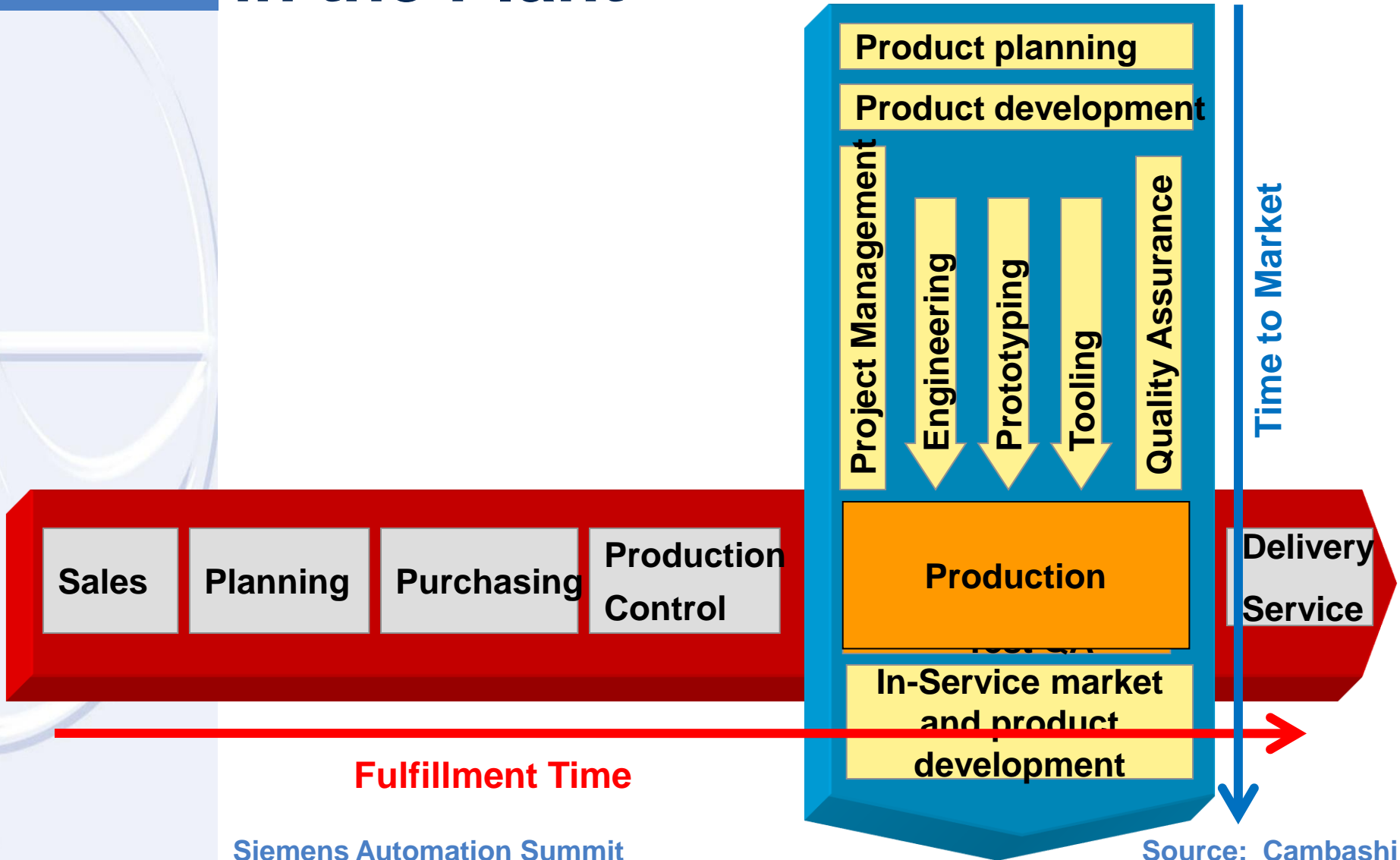
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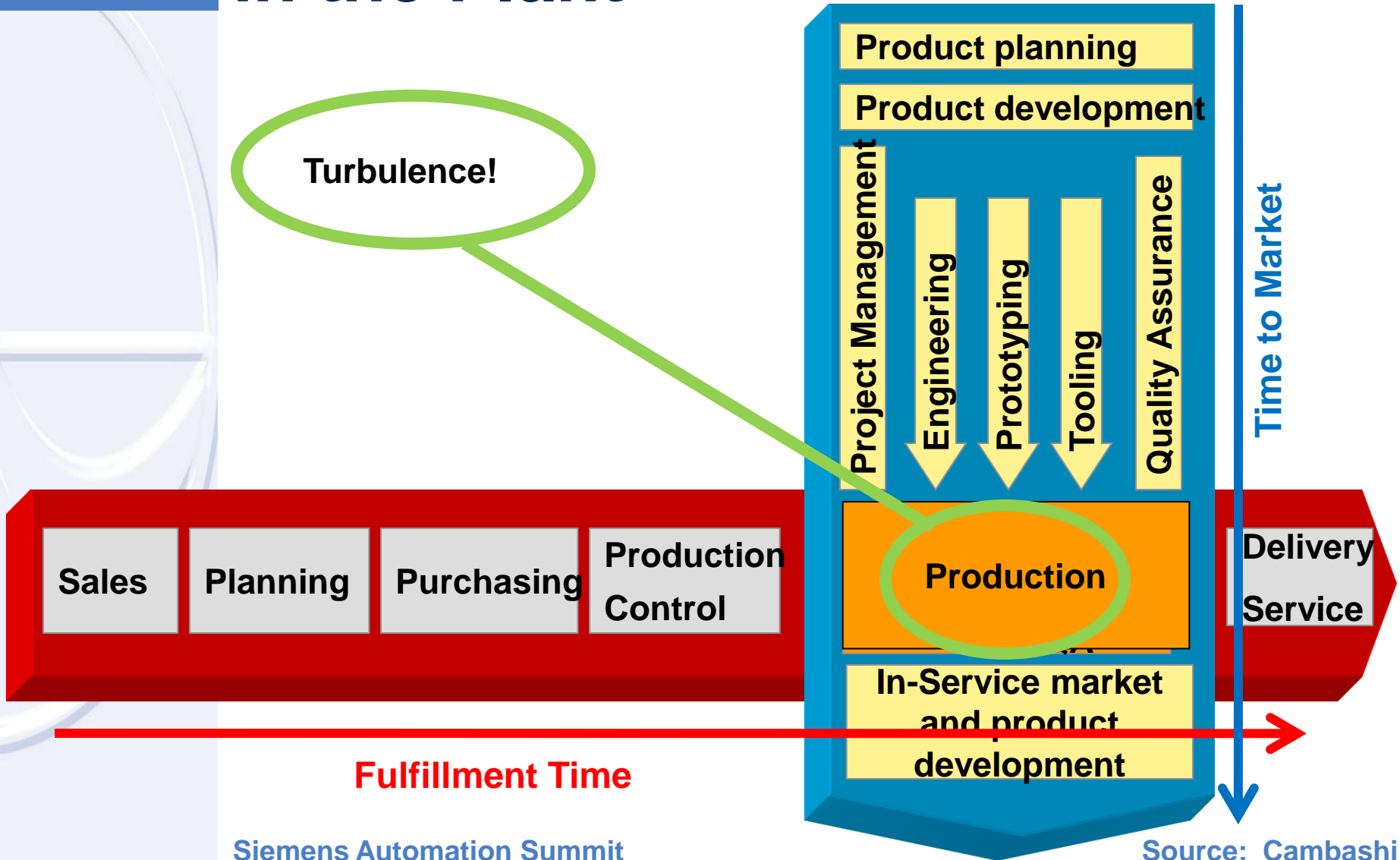




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# Product & Order Needs Converge in the Plant

Turbulence!

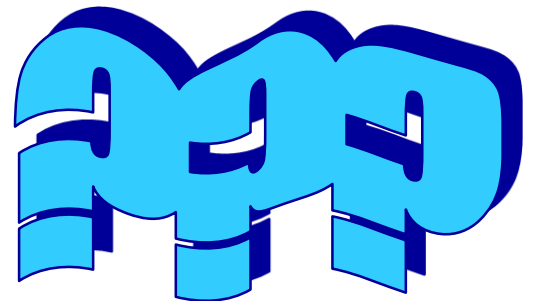




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# What is Your Top Production Plant Challenge?

- Ramping up: time to quality & volume
- Gaining repeatability and predictability
- Lowering costs to compete
- Matching output to demand
- Improving yield & quality with higher mix



Source: Cambashi



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# End of Industrial Era: to Knowledge-based Revolution



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# End of Industrial Era: to Knowledge-based Revolution

- Bar rising for quality, service & efficiency



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- Outsource and manage partner network to deliver customer experience



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**The new  
frontier:**

**Flexibility,  
Teamwork  
and Visibility**



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# Cross-Discipline Teamwork as a New Core Competence

Procurement

Development

Sales

Distribution



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- The “innovation network”



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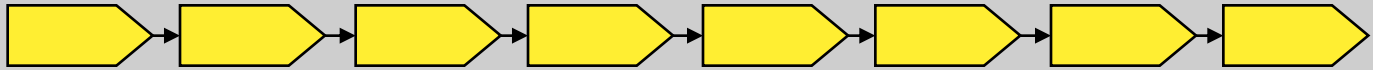
**All need plant input!**



# Information Flow

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**In-house engineering and manufacturing**

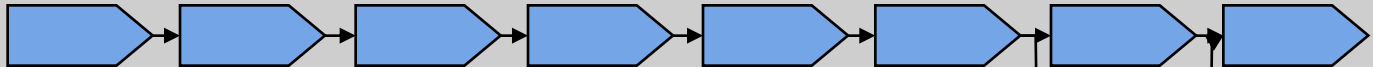




# Information Flow

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## In-house engineering and manufacturing



## Specialist finishing process





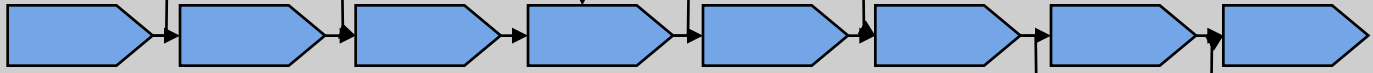
# Information Flow

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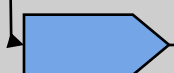
**Suppliers participate in product and process design**



**In-house engineering and manufacturing**



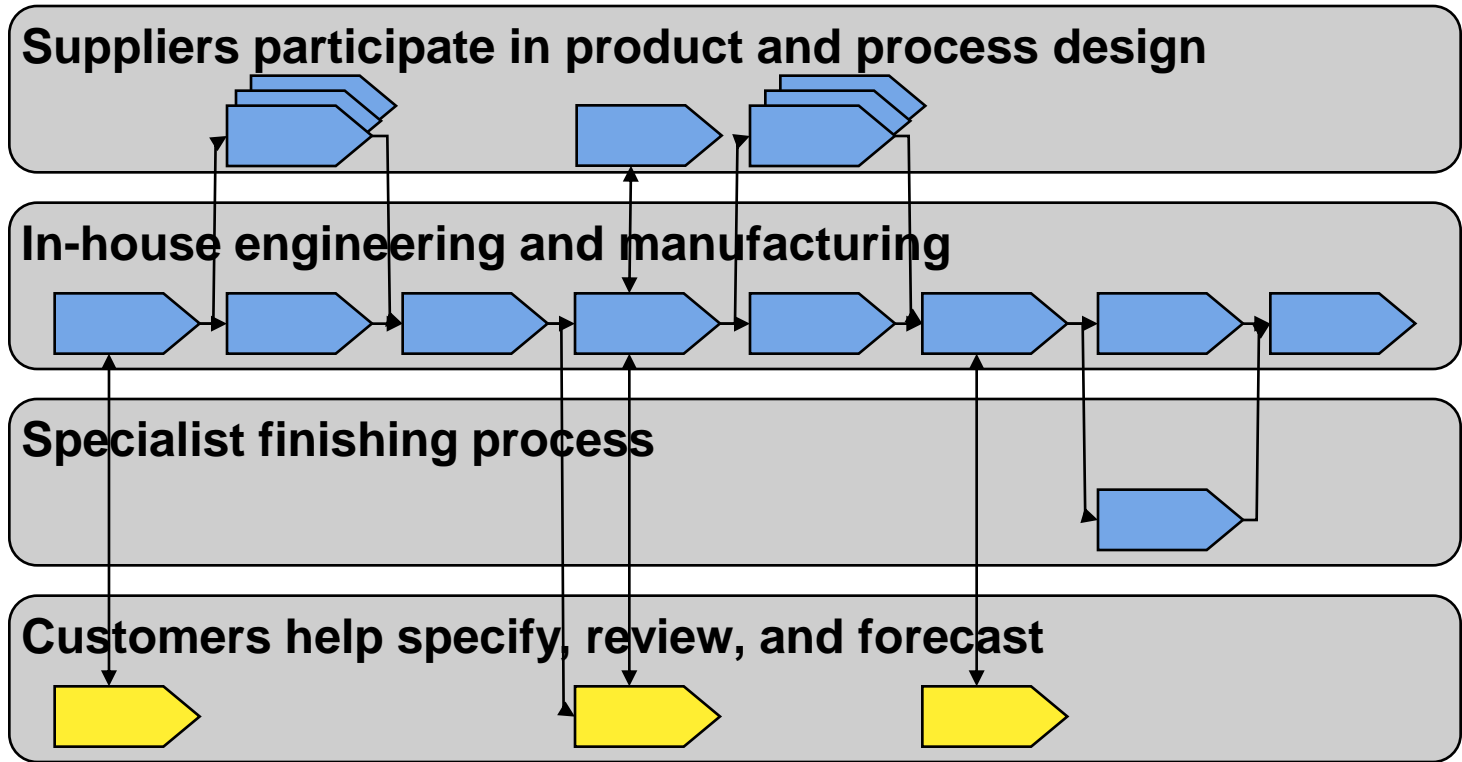
**Specialist finishing process**





# Information Flow

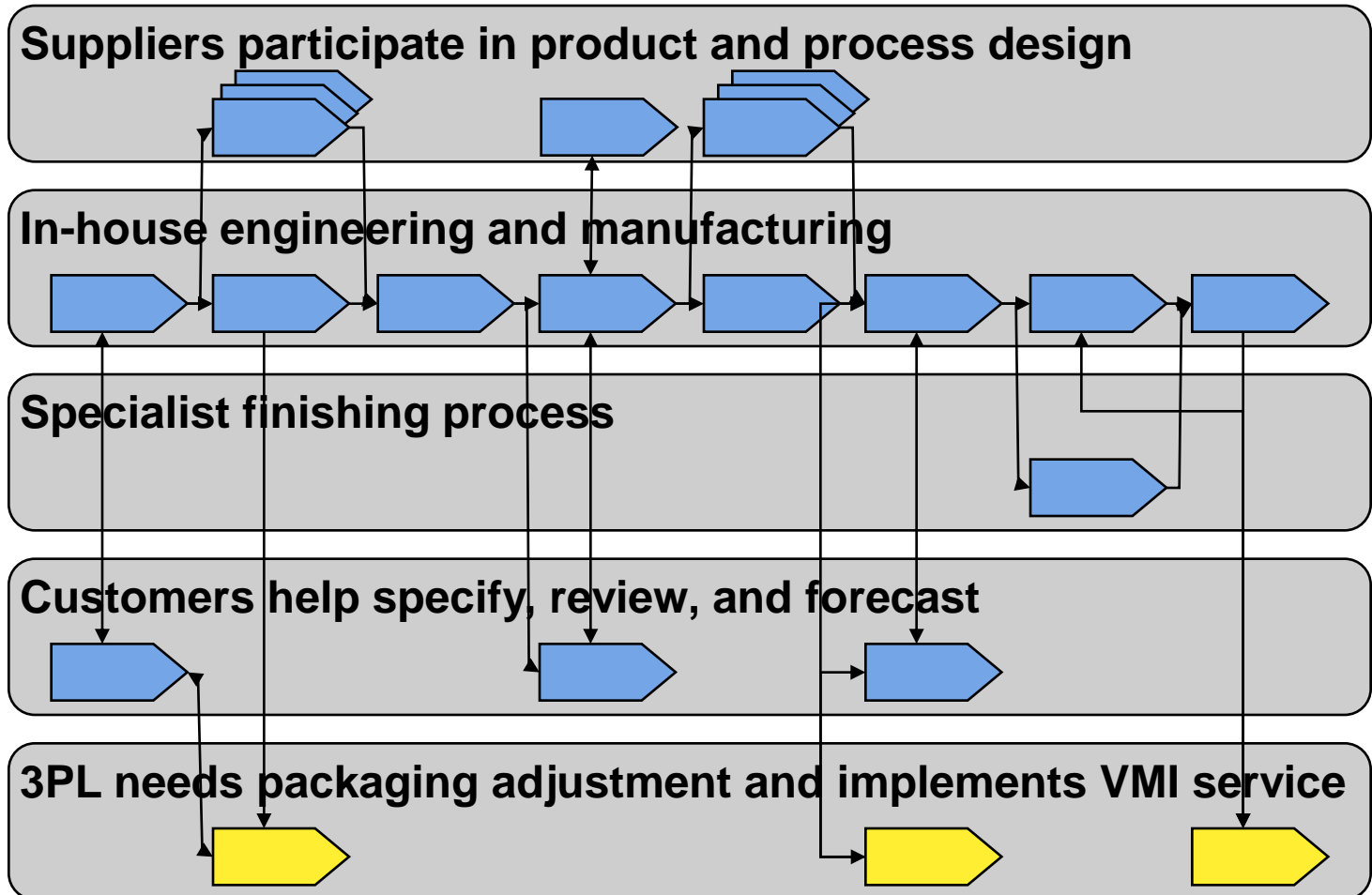
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# Information Flow

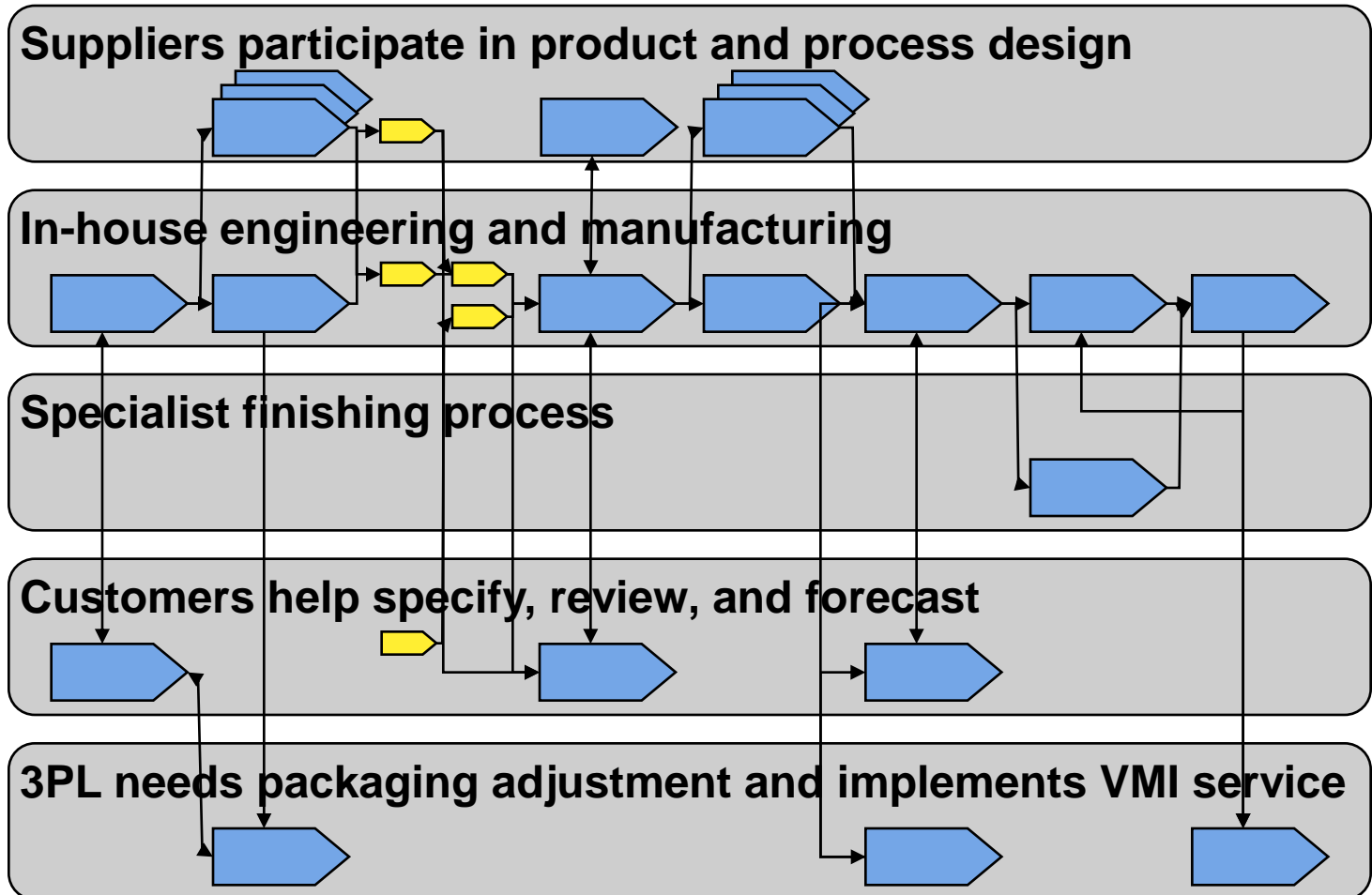
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# Information Flow

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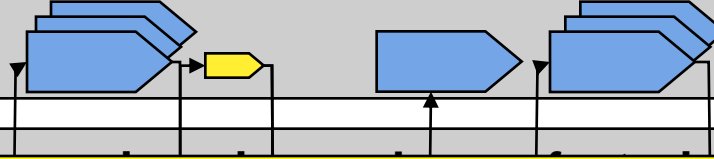




# Information Flow

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Suppliers participate in product and process design



***“If your diagram doesn’t show everything happening in parallel, it’s wrong”***

*Cambashi interview*

3PL needs packaging adjustment and implements VMI service





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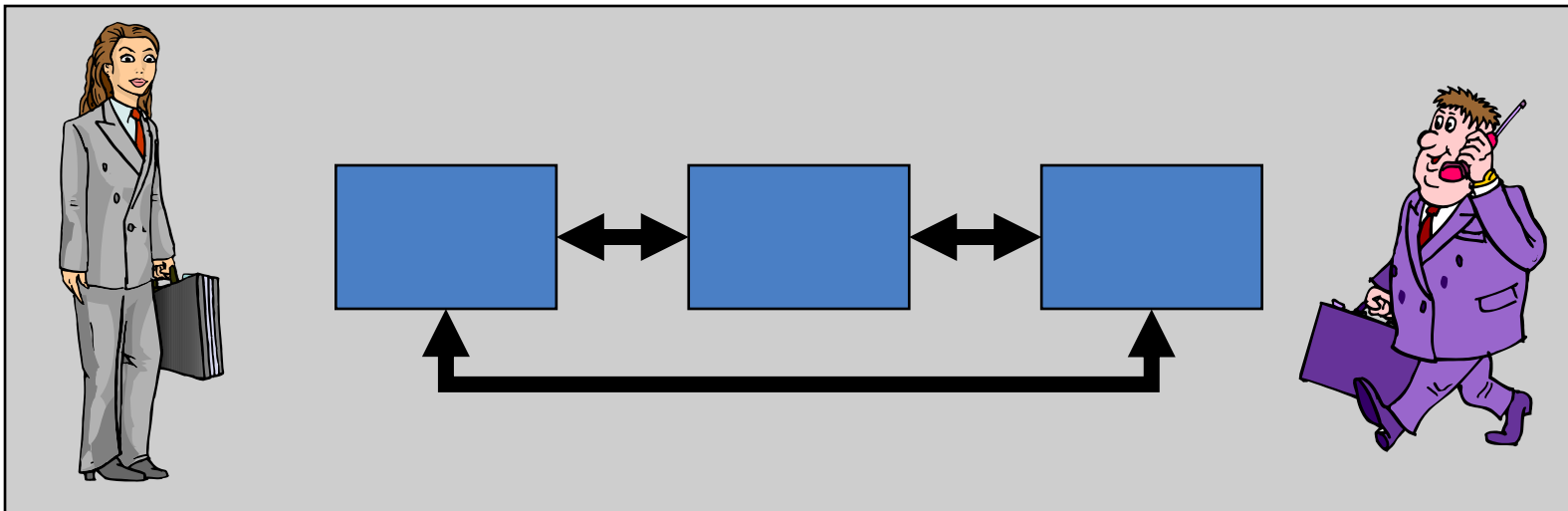
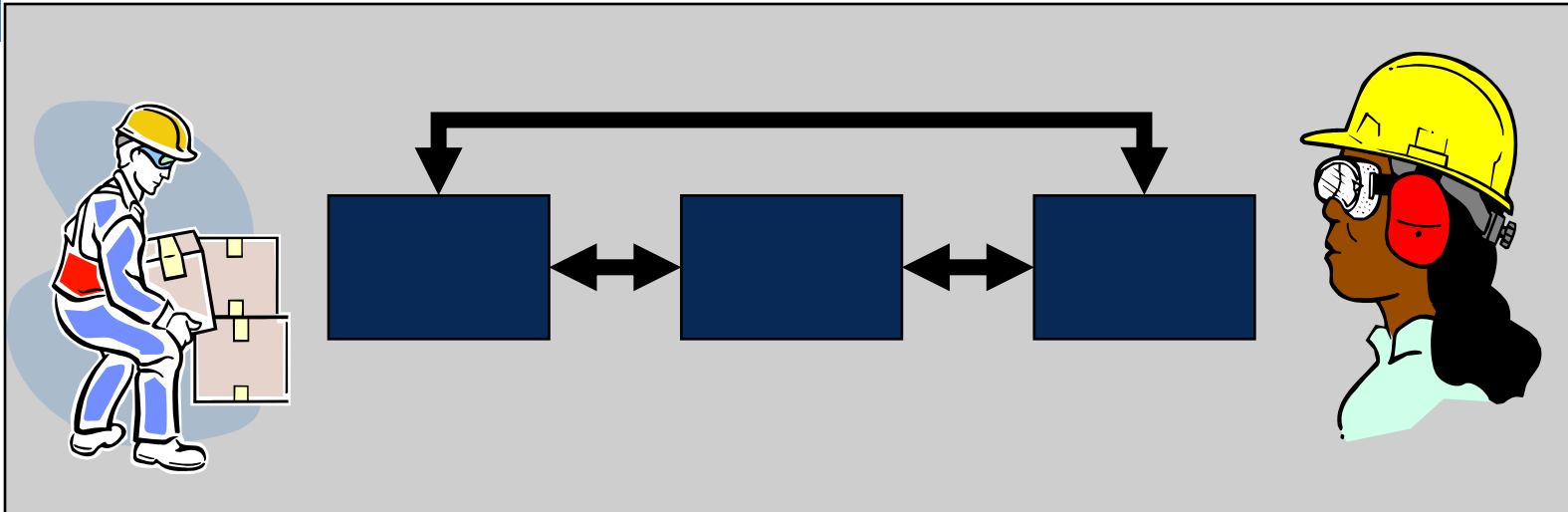
# Production, Engineering & IT are Converging

- Fewer resources dictate leverage
- Engineering: Manufacturing, Process, Controls, Mechanical, Electrical, etc.
- New product needs
- Ongoing stable production
- Product & Process Change



# The Hard Hats and the Suits

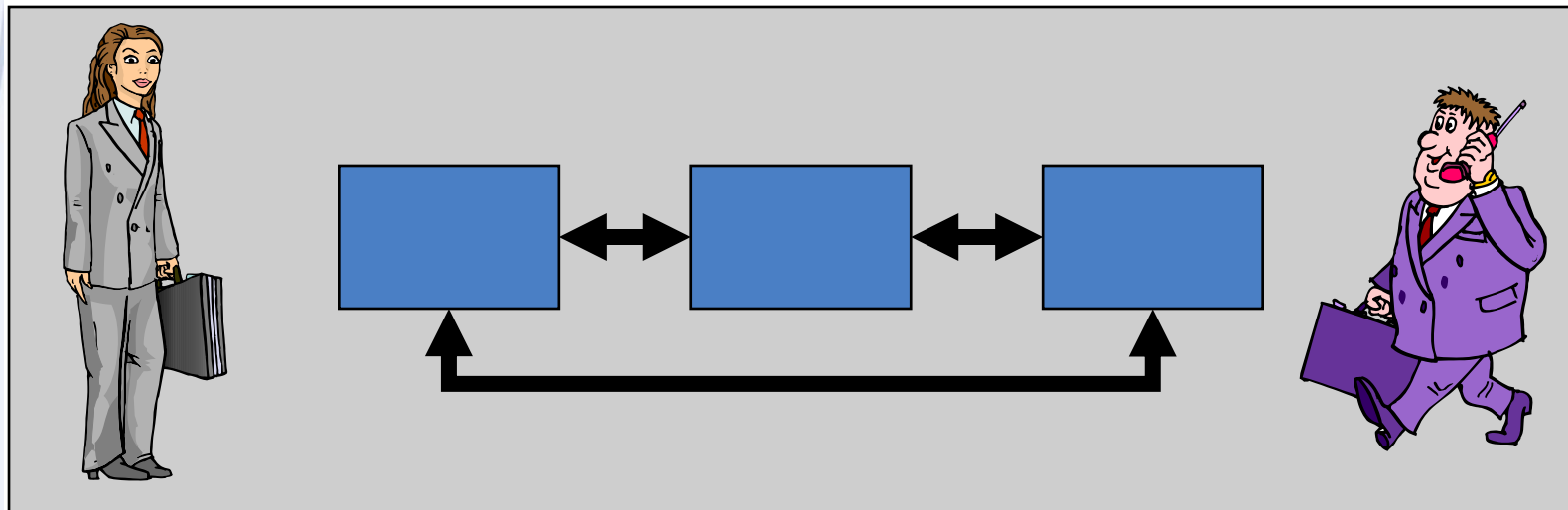
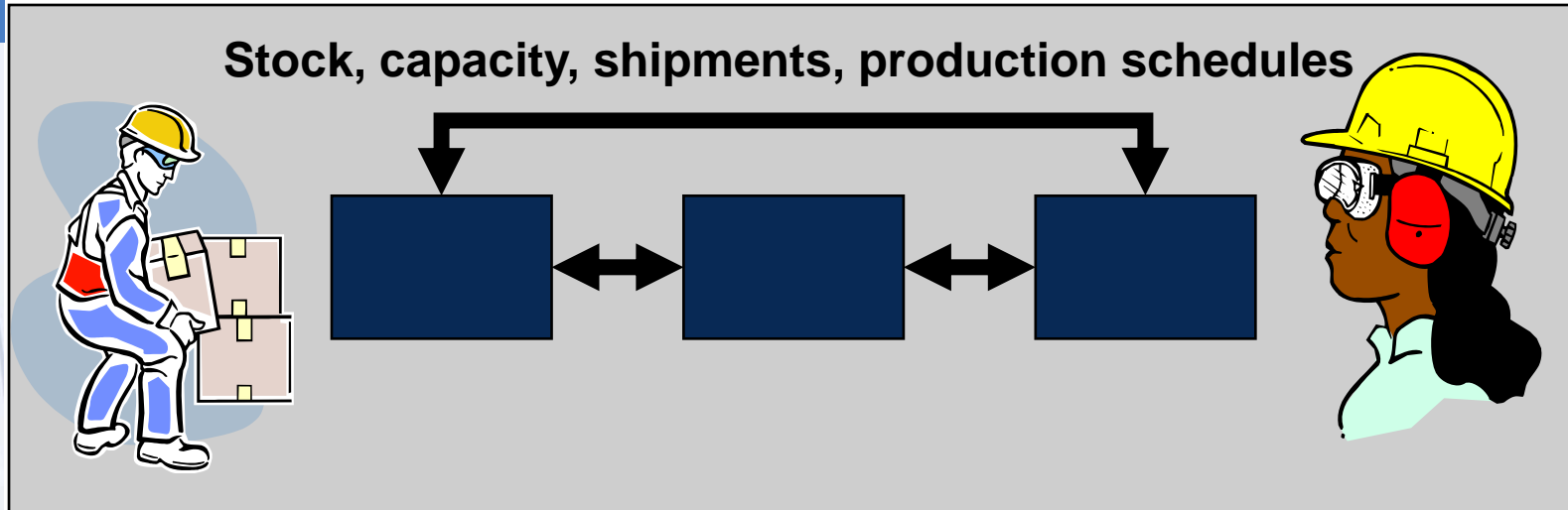
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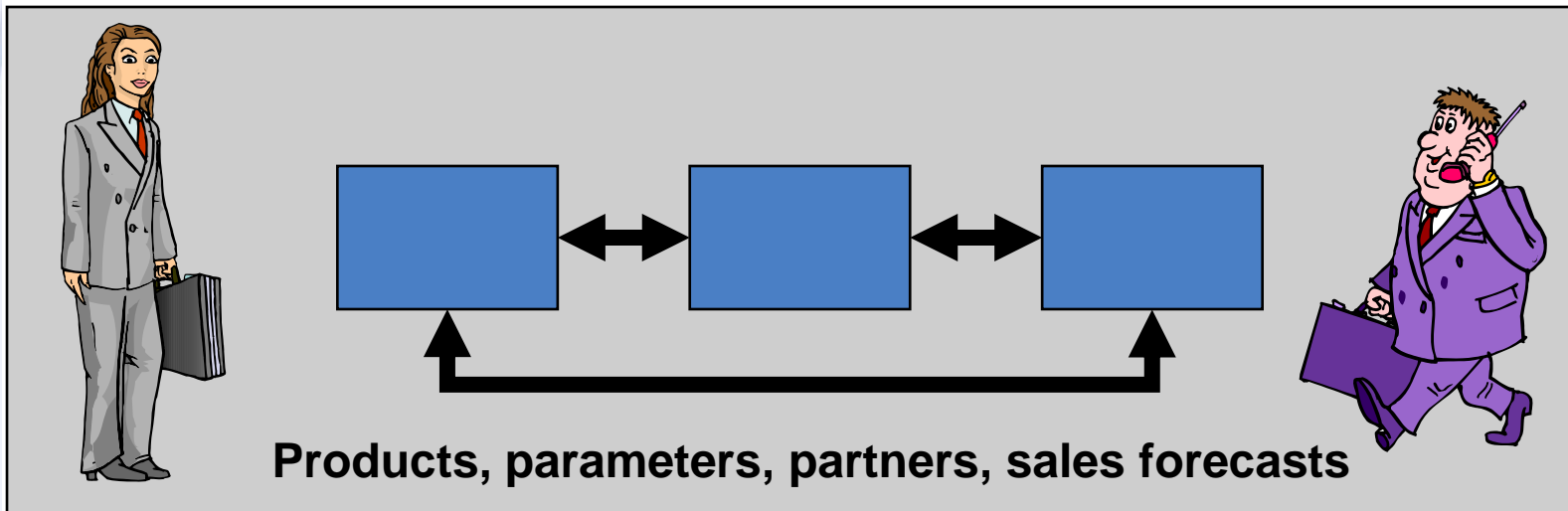
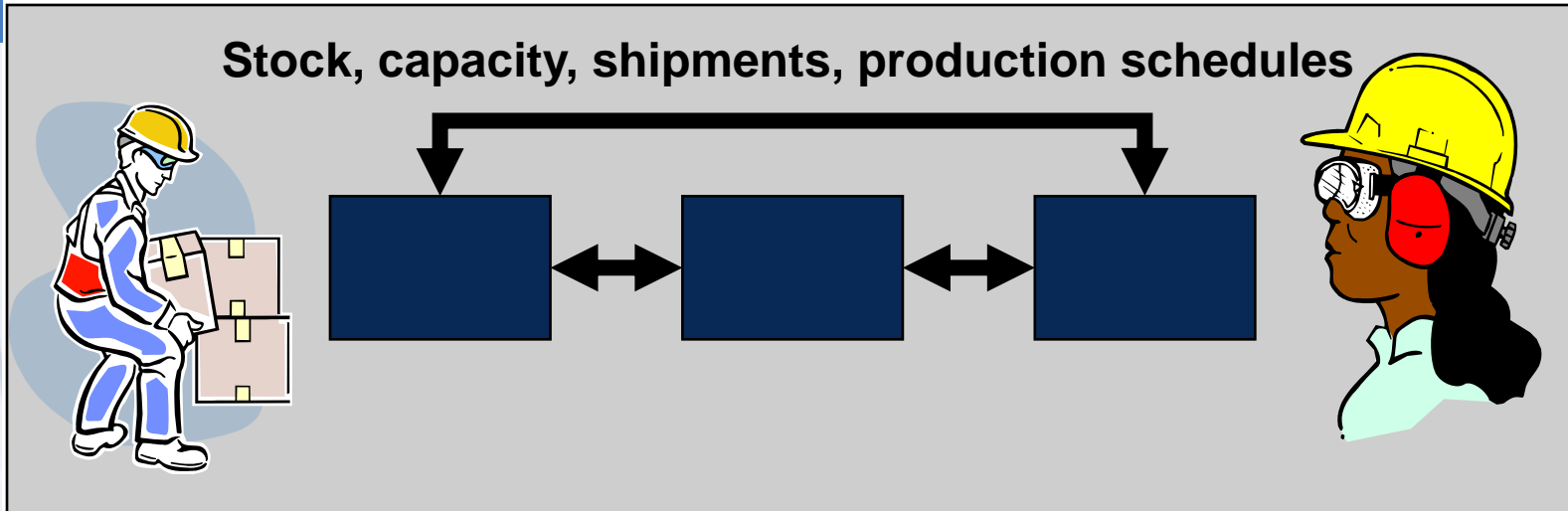
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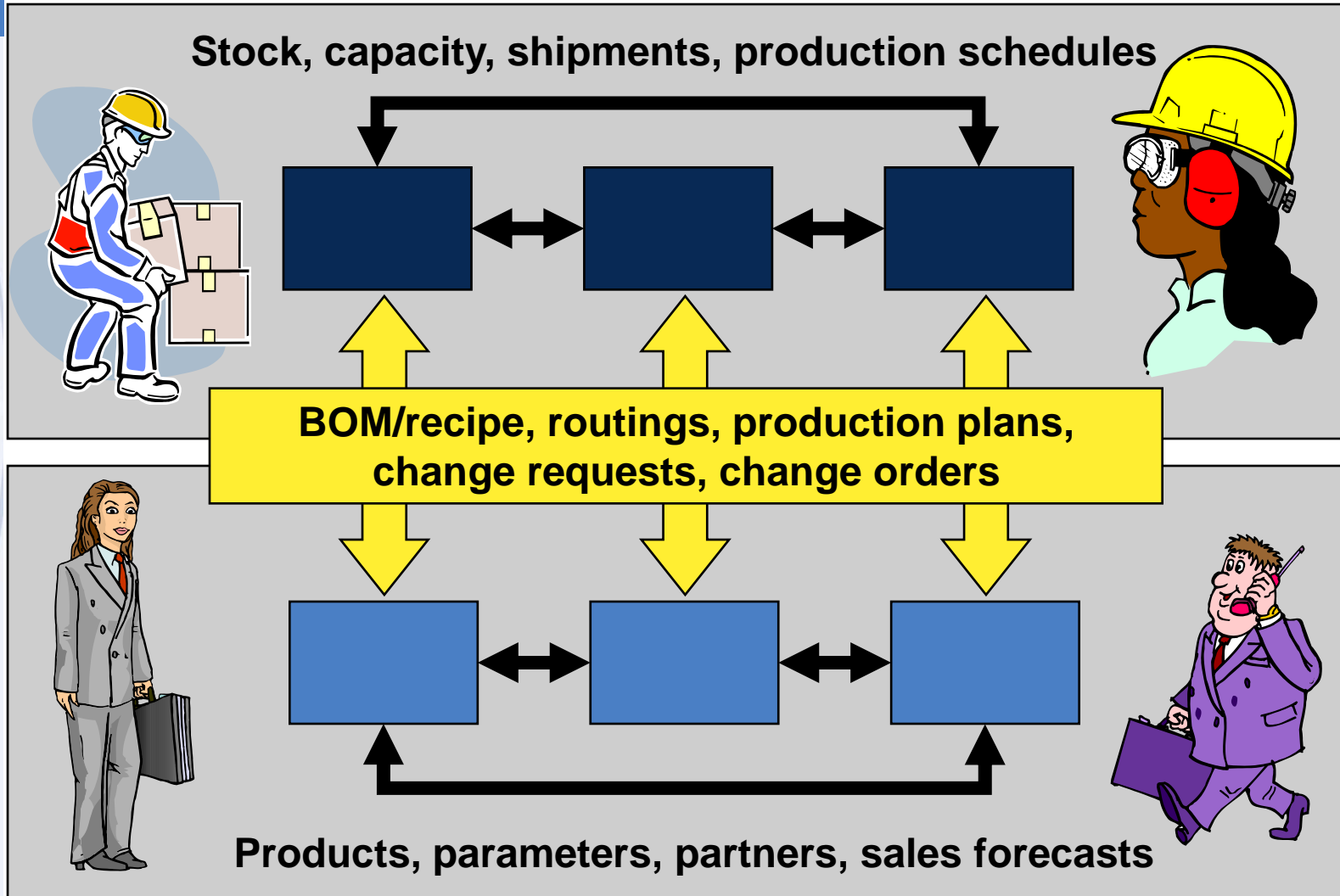
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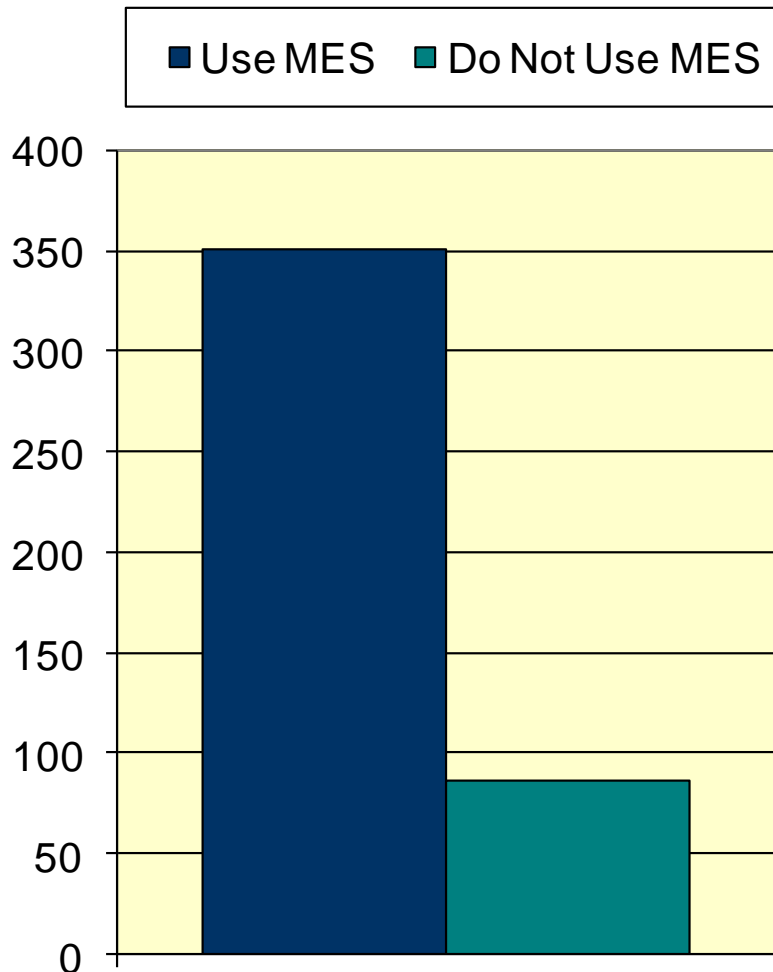
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# Why Care about MES?

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Change in plant-level profitability  
(annual value of shipments minus  
materials and manufacturing costs)  
over the past 3 years\*, %

- Plants using MES increased profitability 4X more than others
- Continuous Improvement

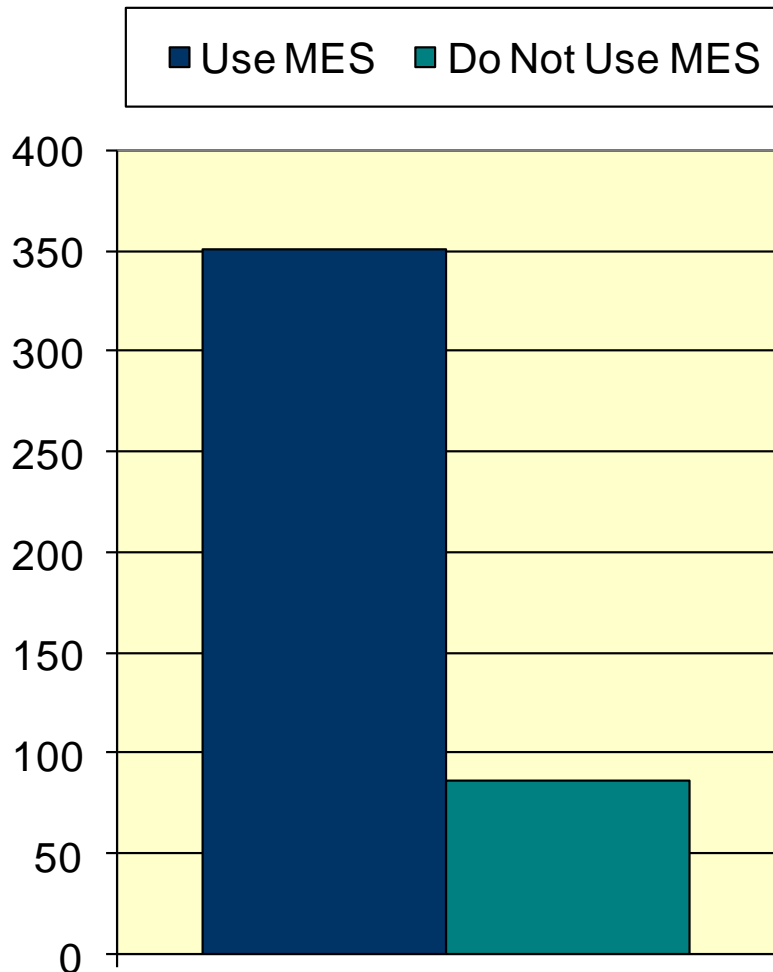
© 2004 Industry Directions et al  
*MES Performance Advantage:  
Best of the Best use MES*

Source: Cambashi



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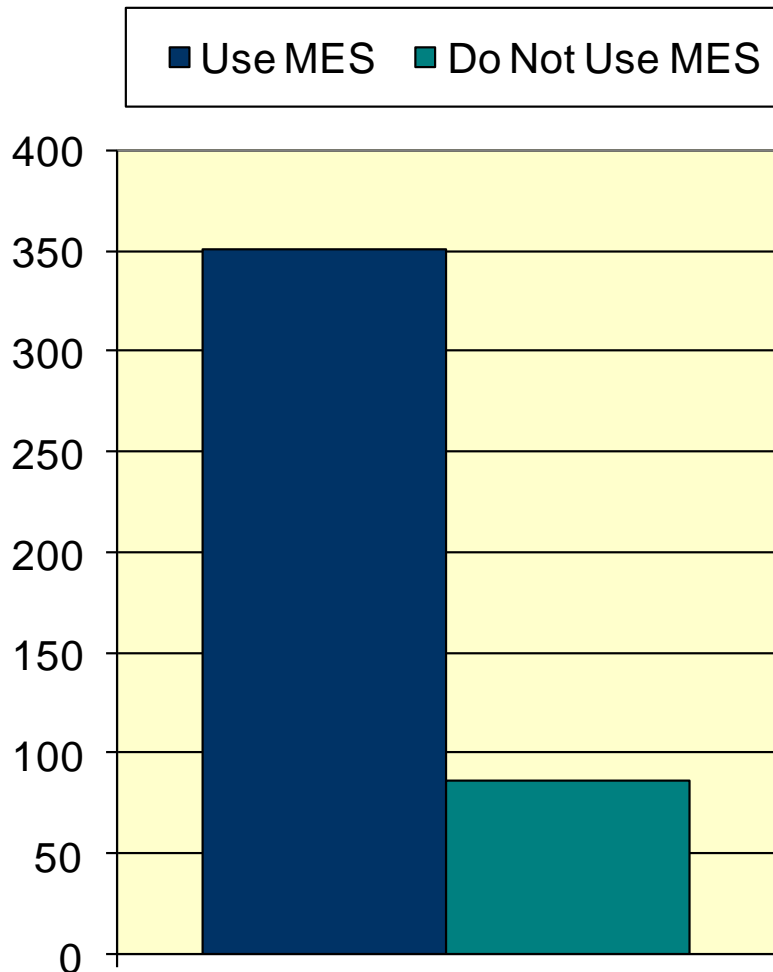
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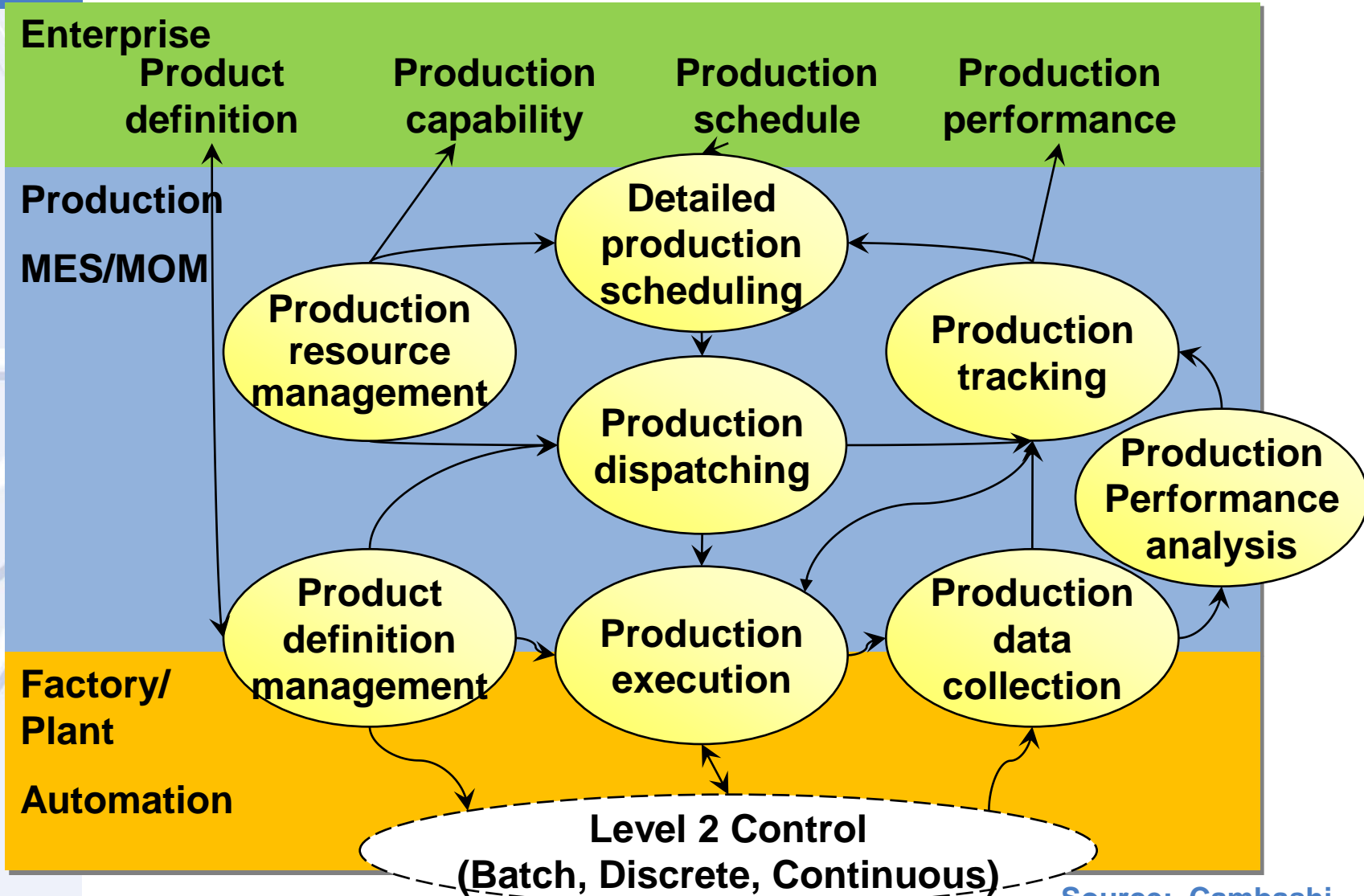
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# S-95 Defines MES or MOM

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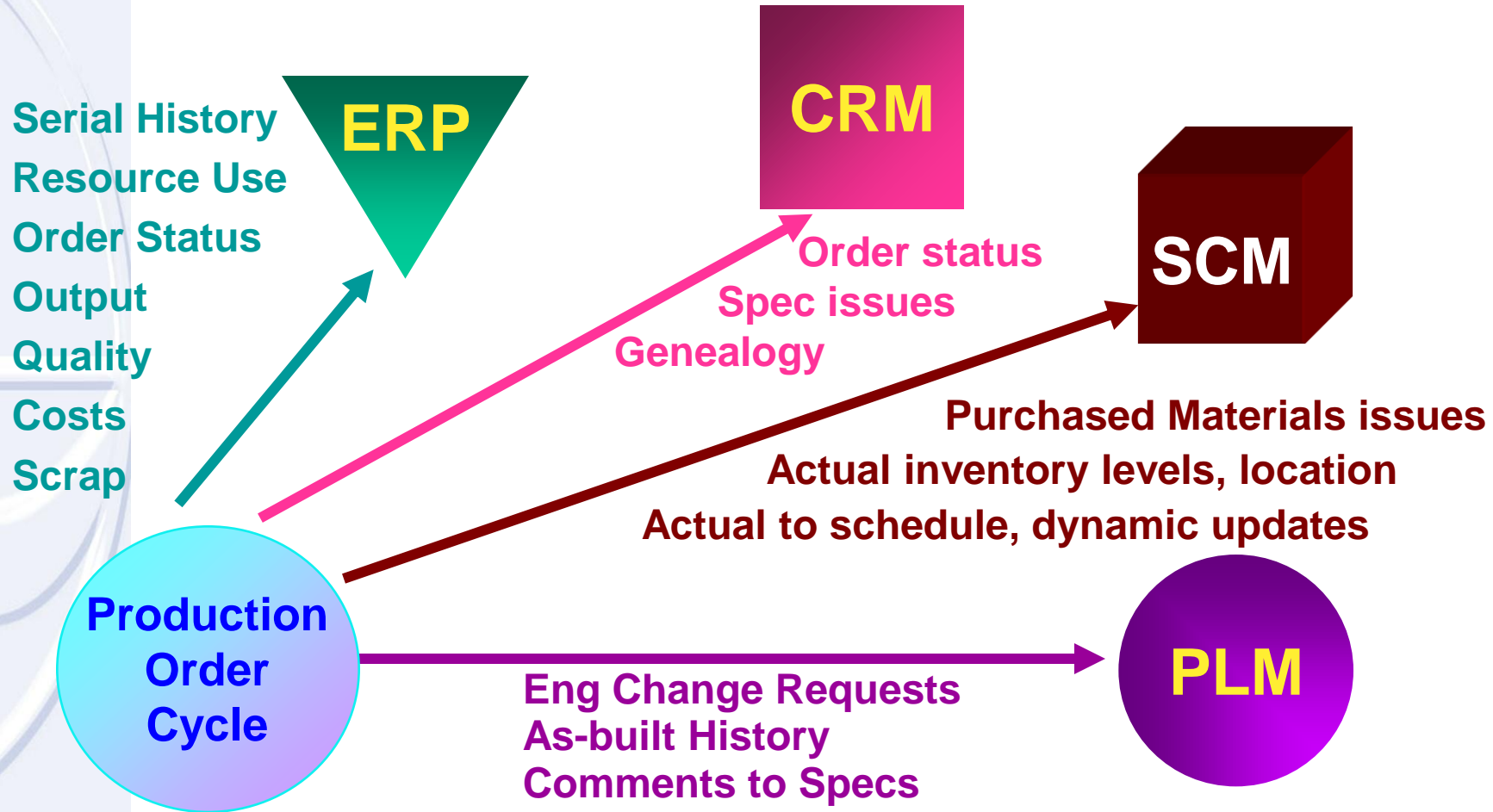


Source: ISA S95 Committee (modified)

Source: Cambashi



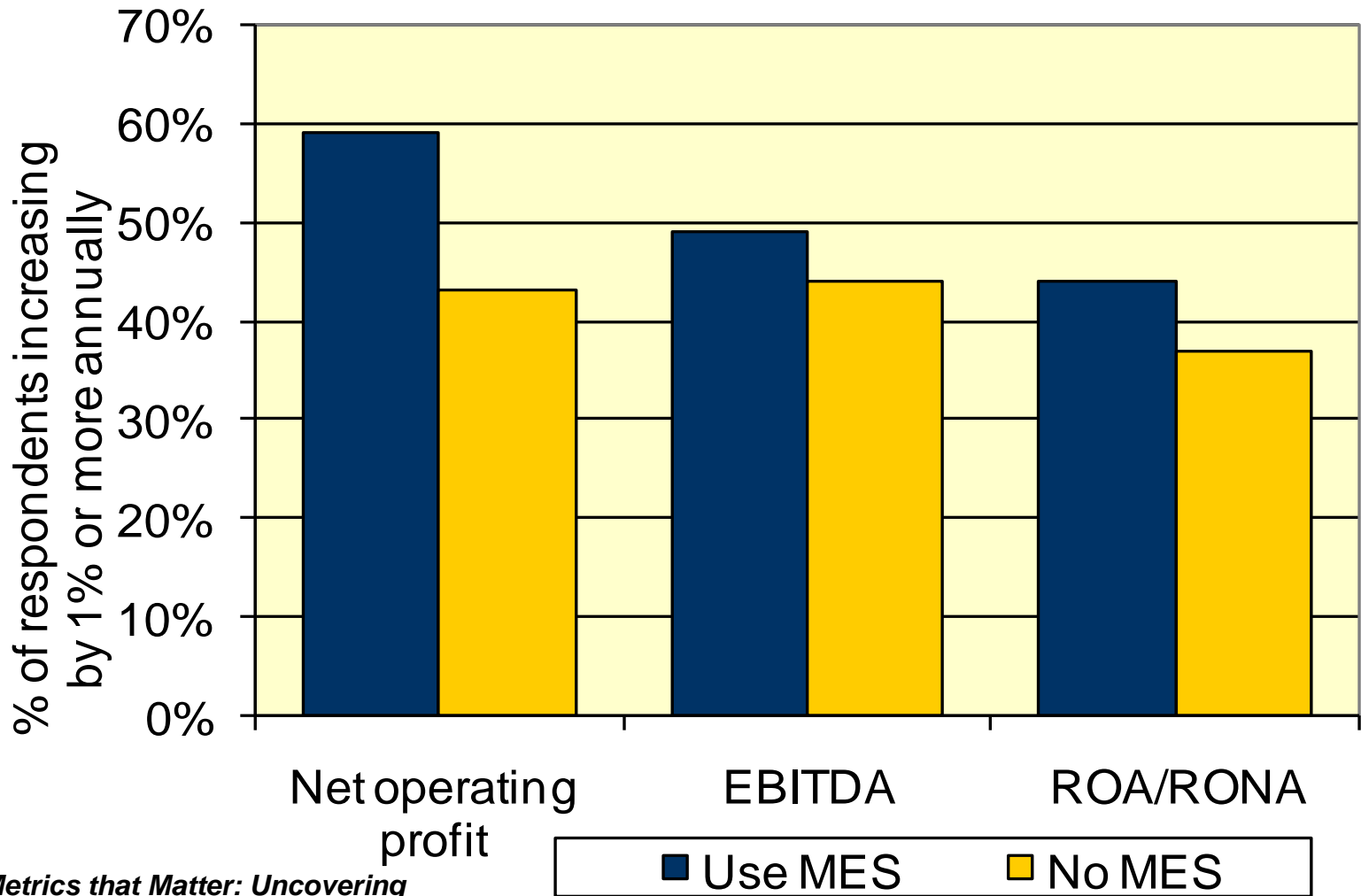
# Plant Sends Key Information to Enterprise Applications





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# MES Users are More Likely to Improve on Financial Measures



Source: *MESA Metrics that Matter: Uncovering KPIs that Justify Operational Improvements*  
© 2006 MESA International & Industry Directions Inc.

Source: Cambashi



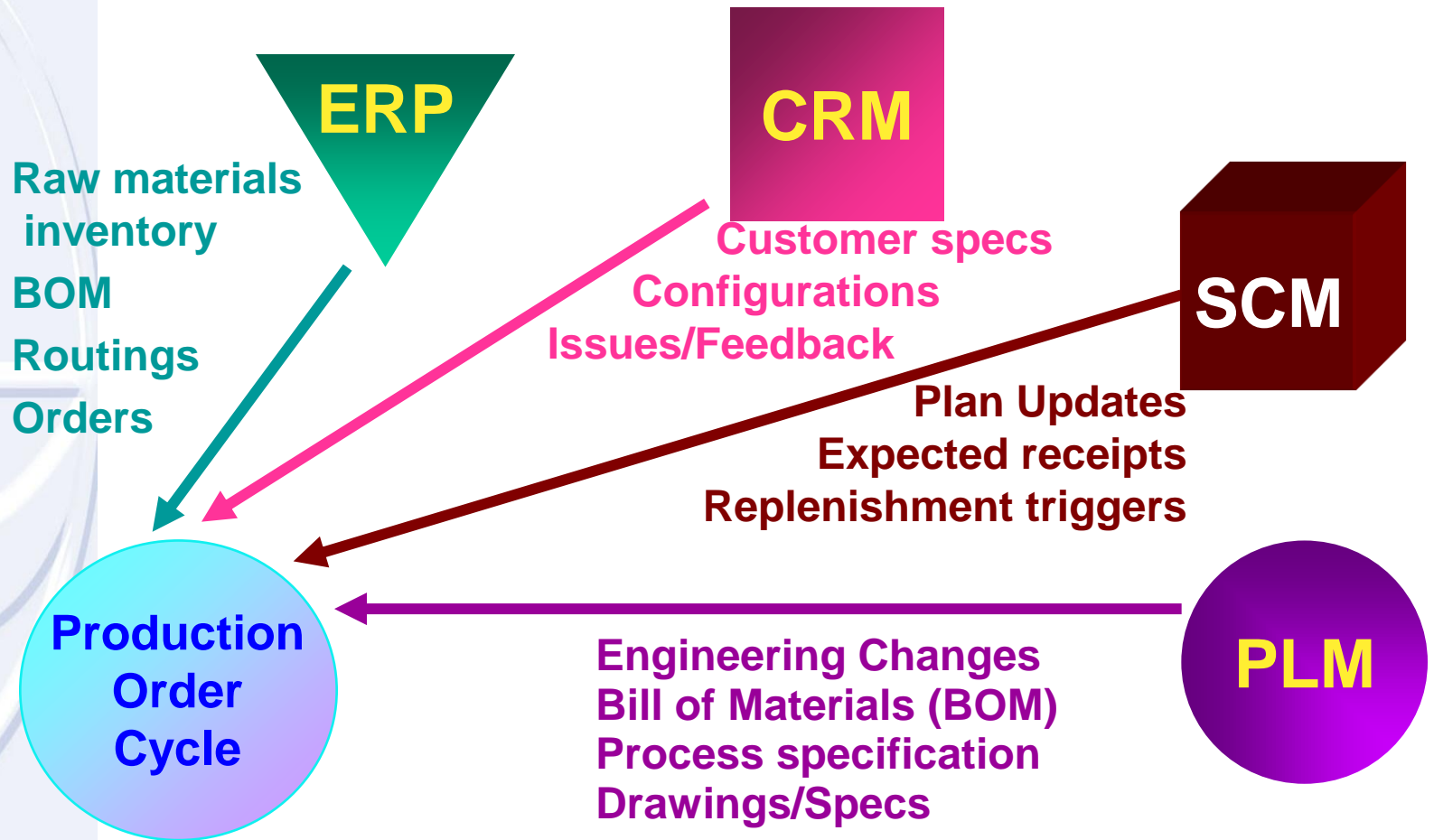
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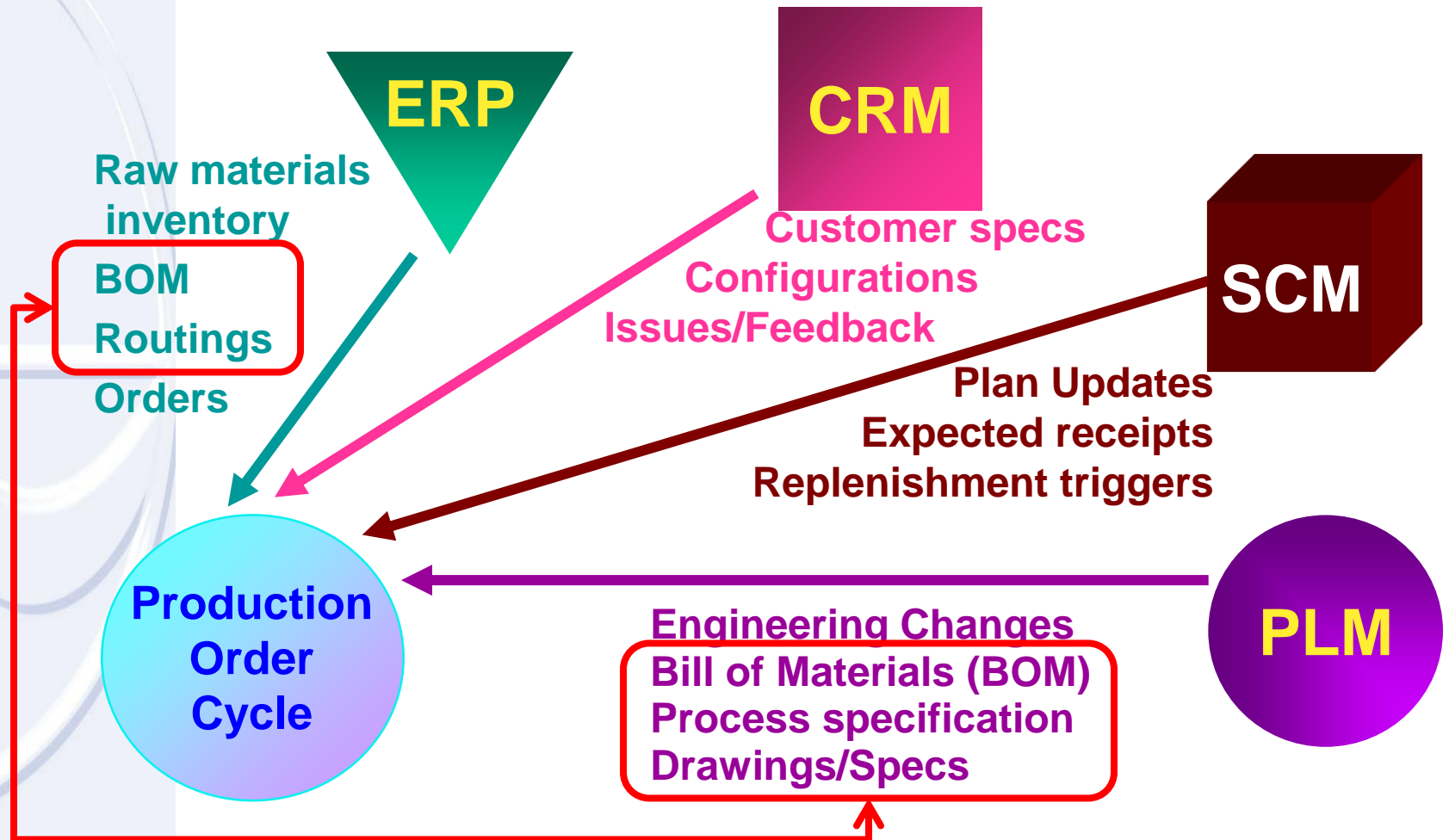


# Enterprise Applications Provide Plant Information, Too!





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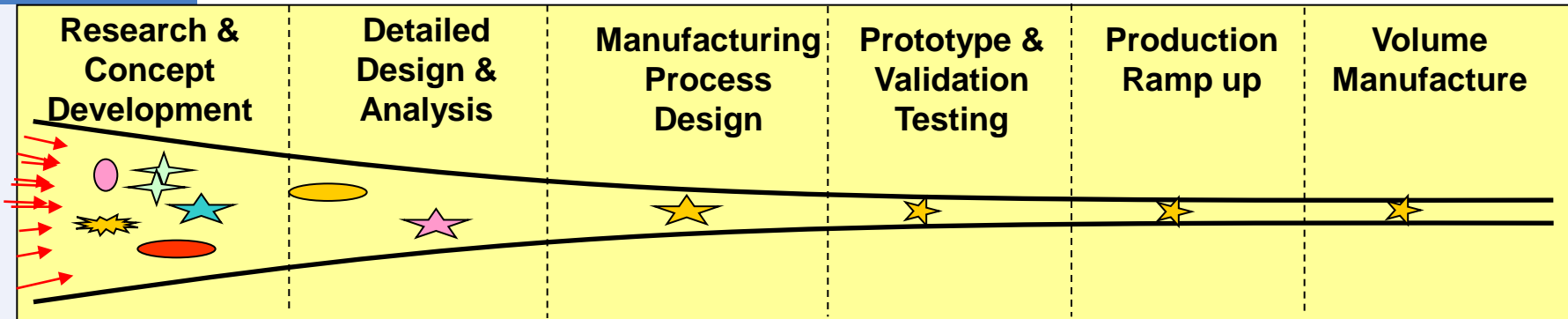


**Synch. Opportunity and risk!**



# Product Development is Key

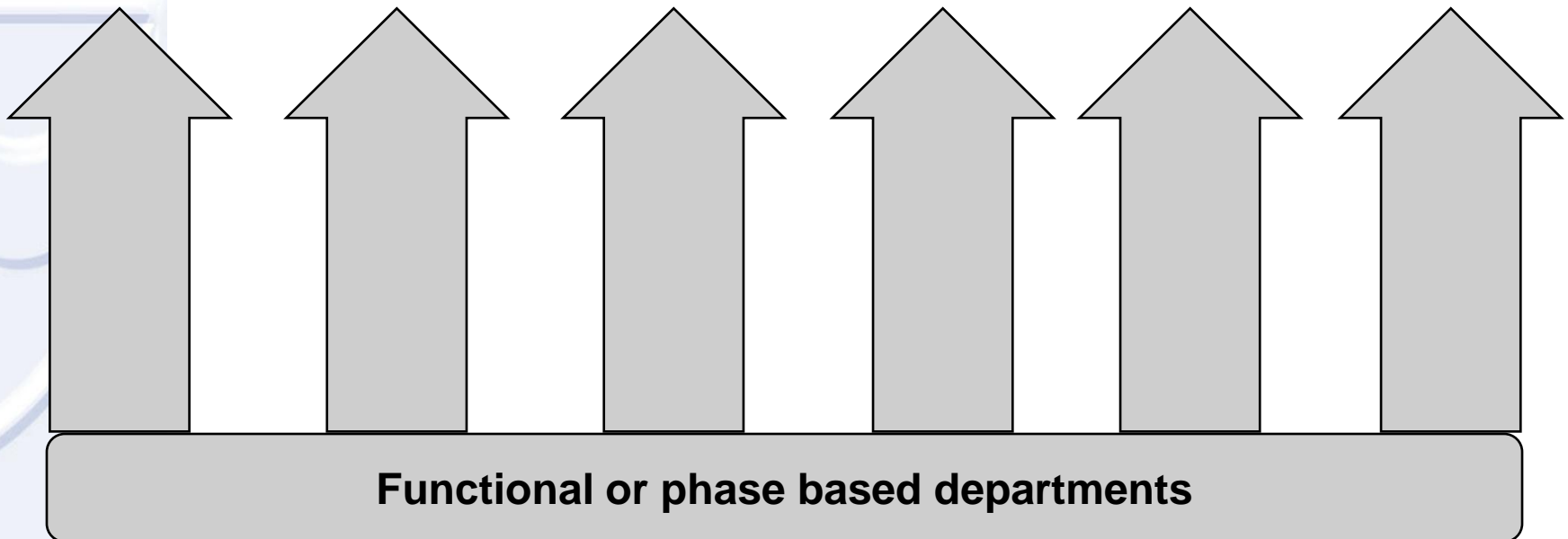
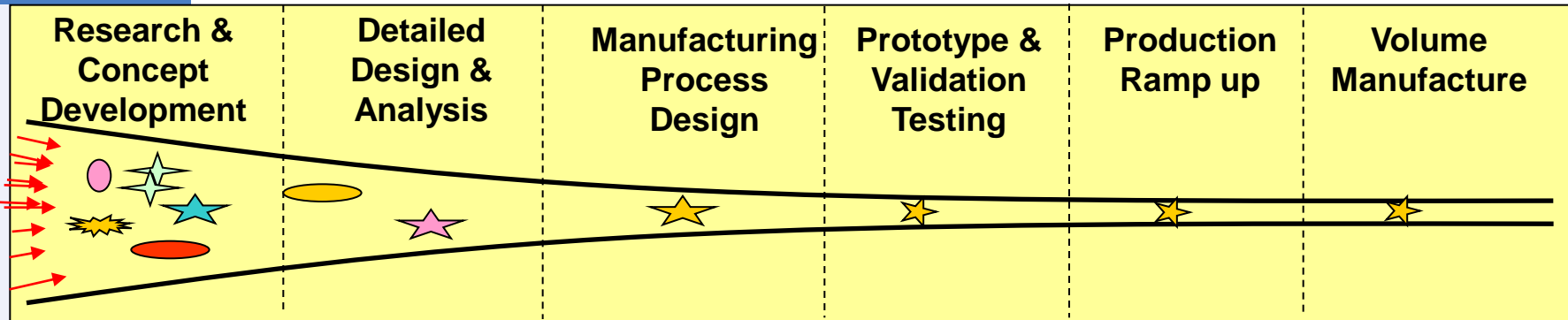
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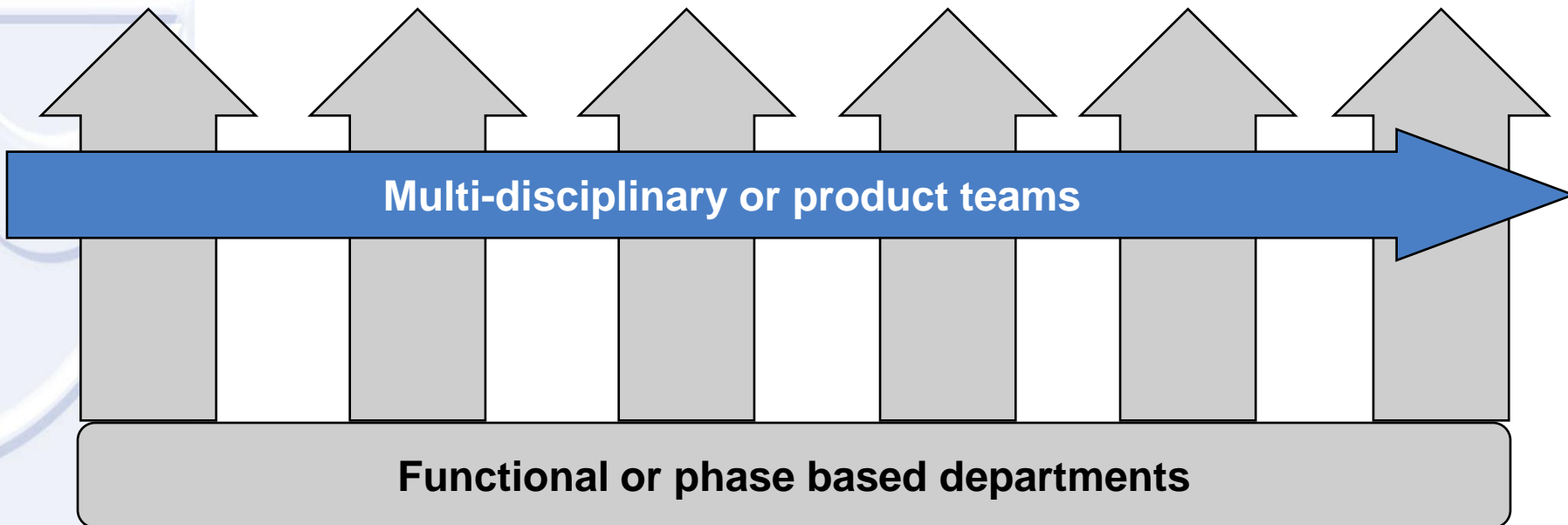
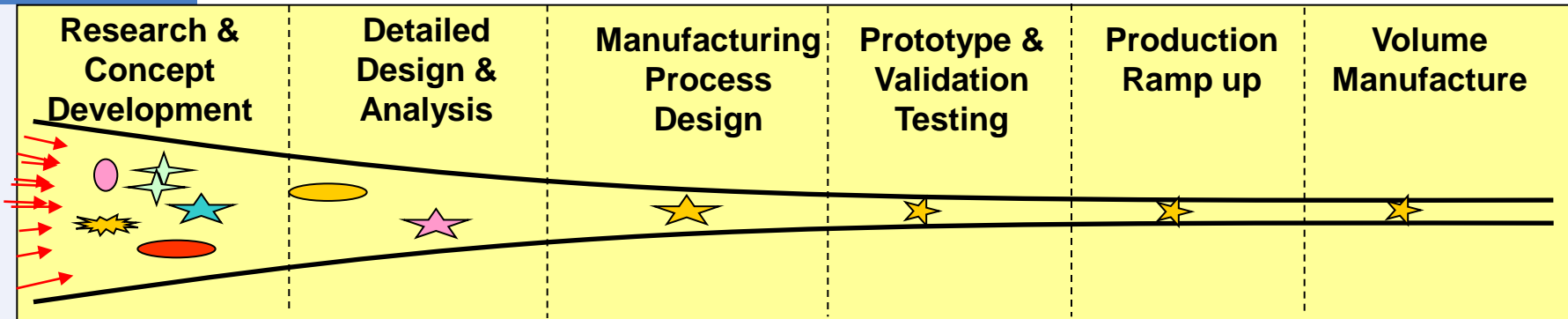
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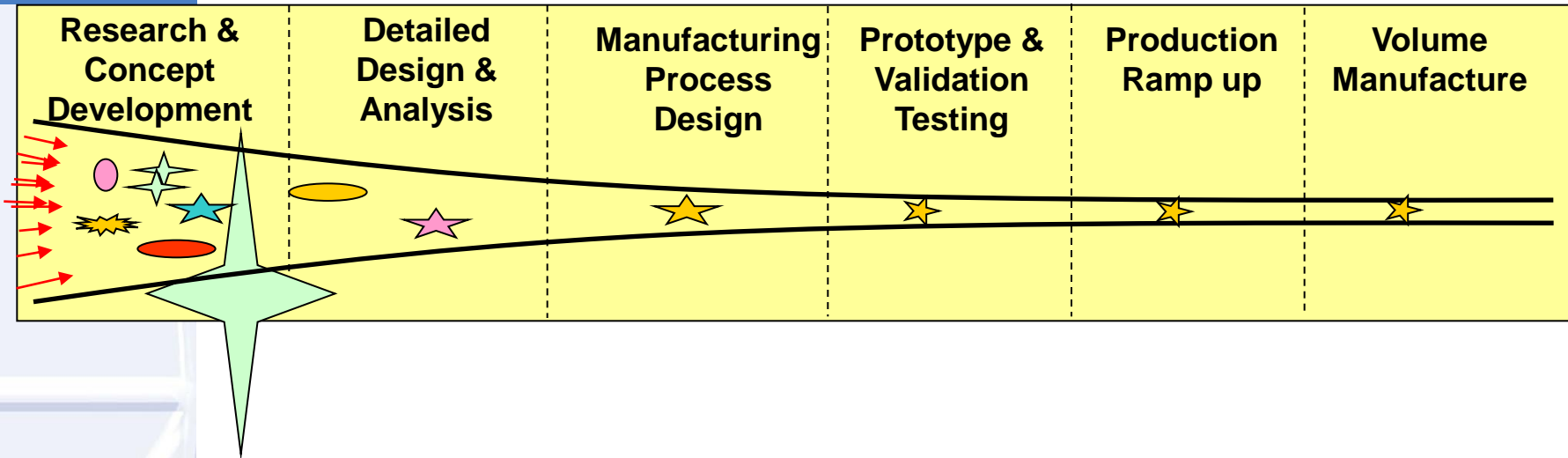
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# Some typical IT Applications

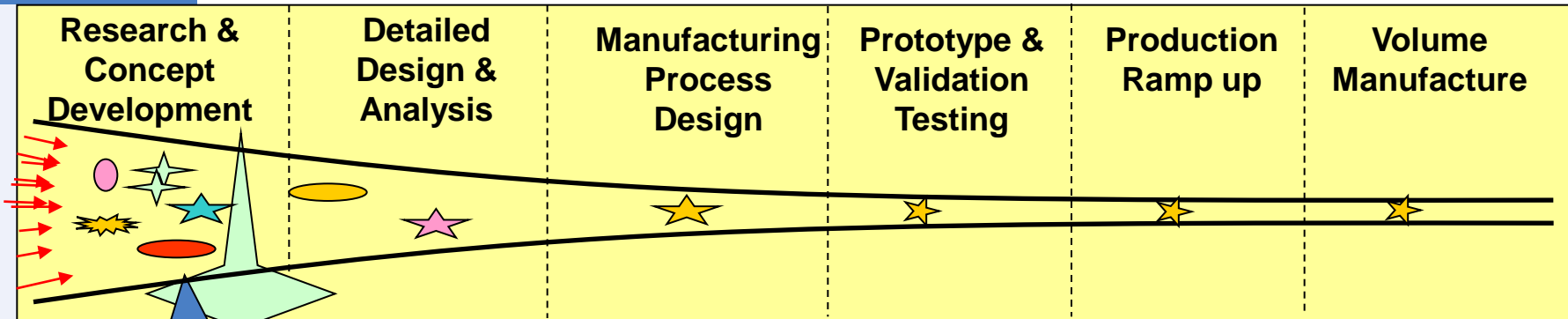
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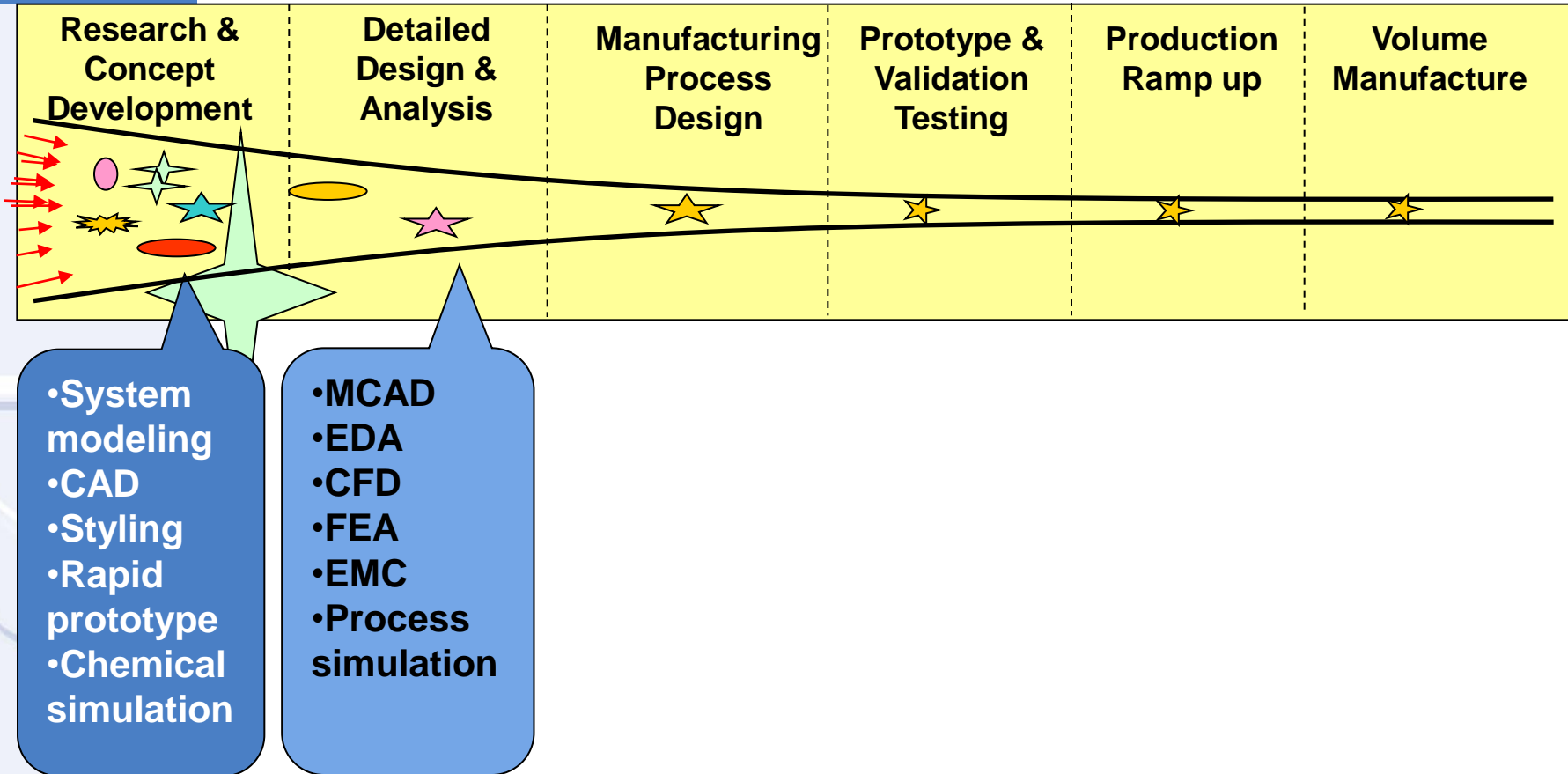


- System modeling
- CAD
- Styling
- Rapid prototype
- Chemical simulation



# Some typical IT Applications

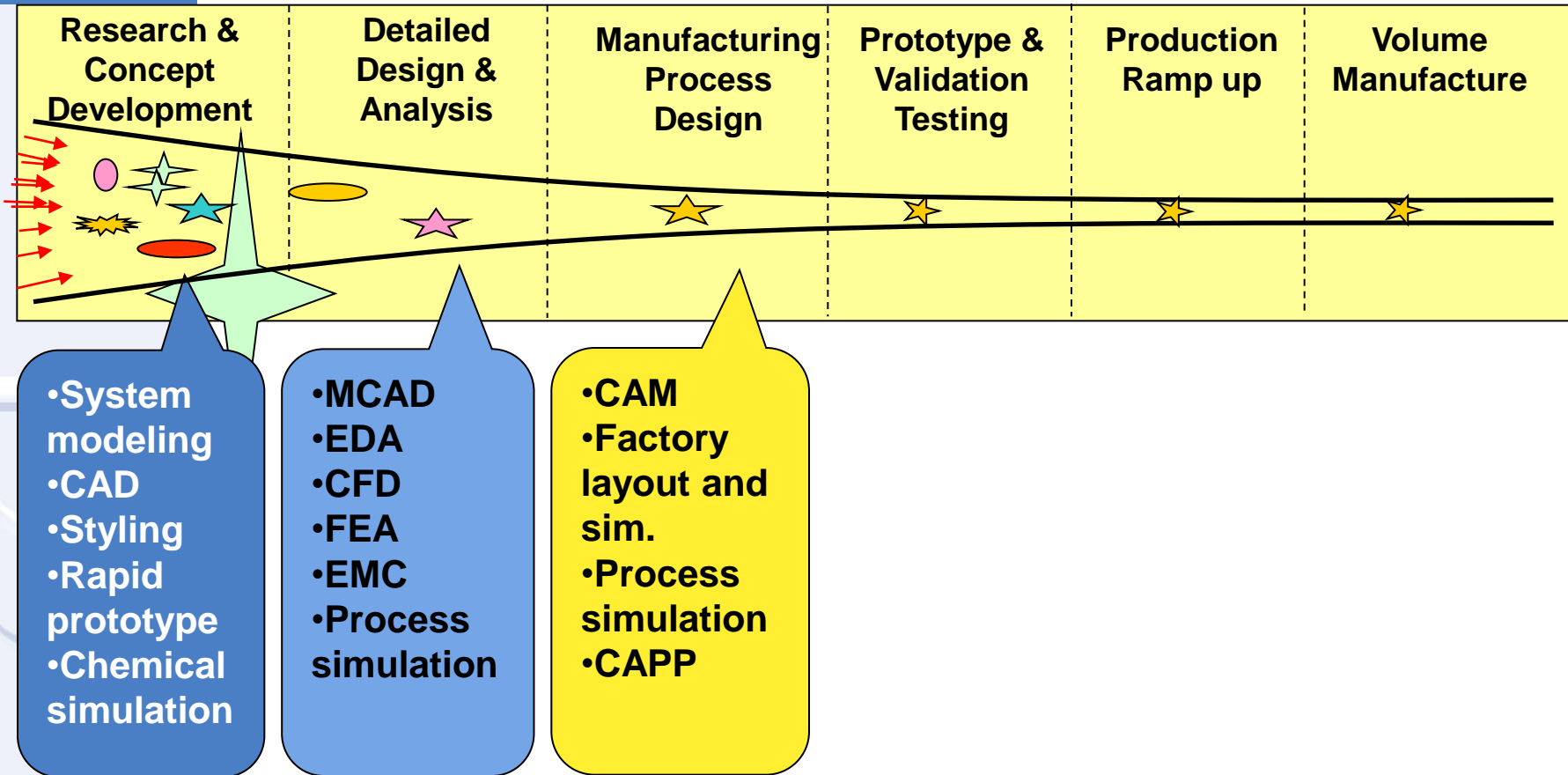
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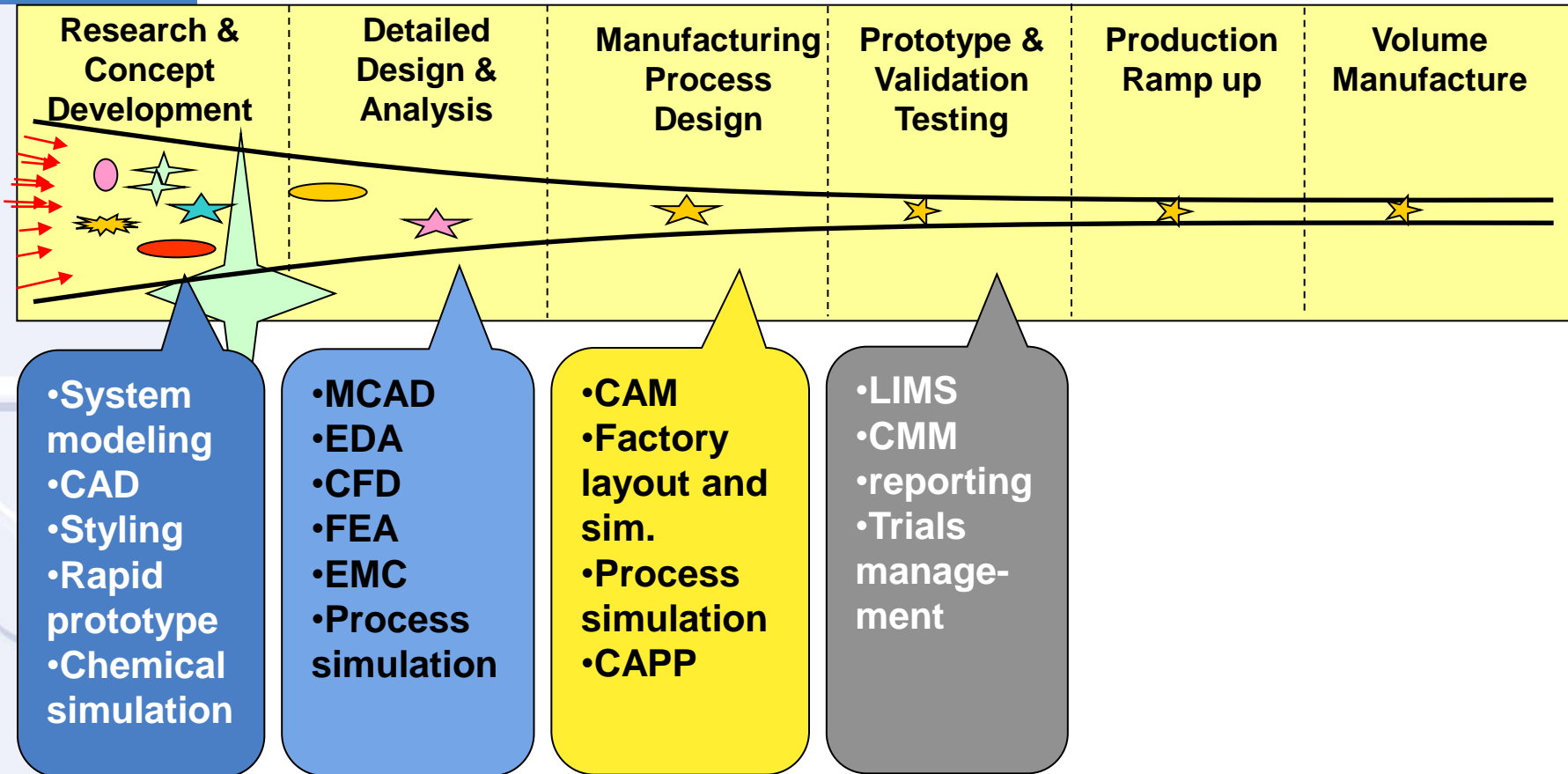
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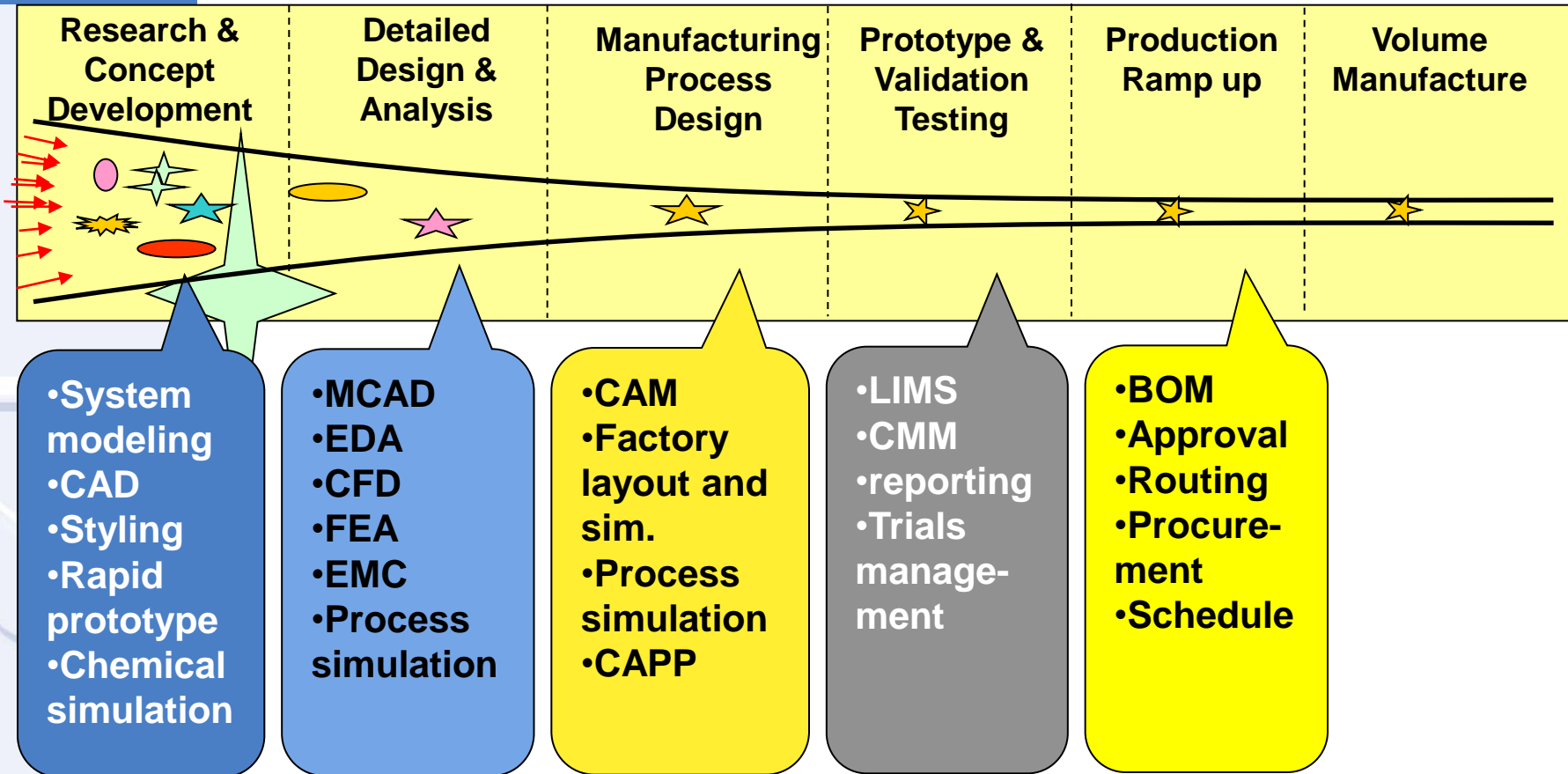
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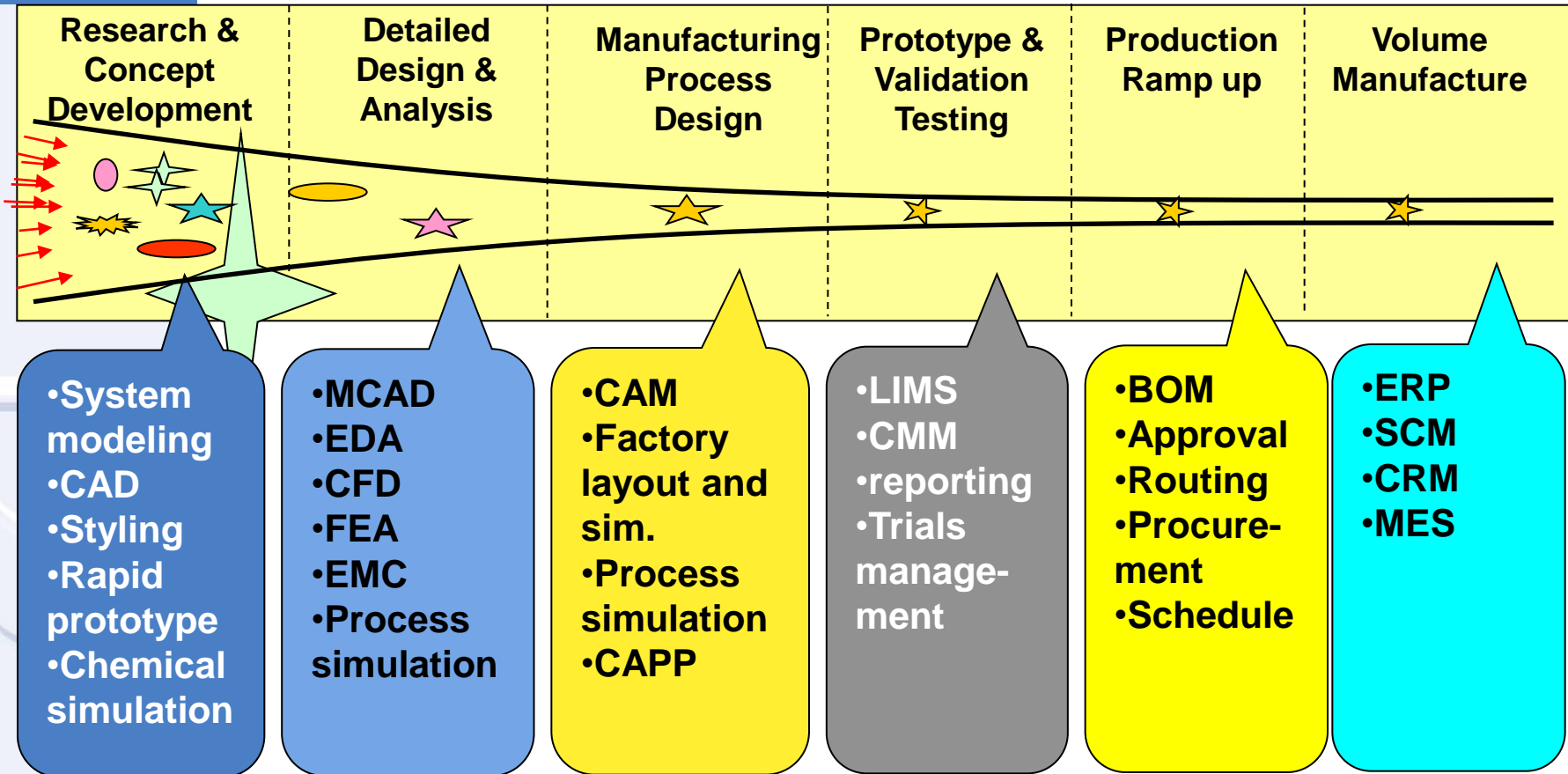
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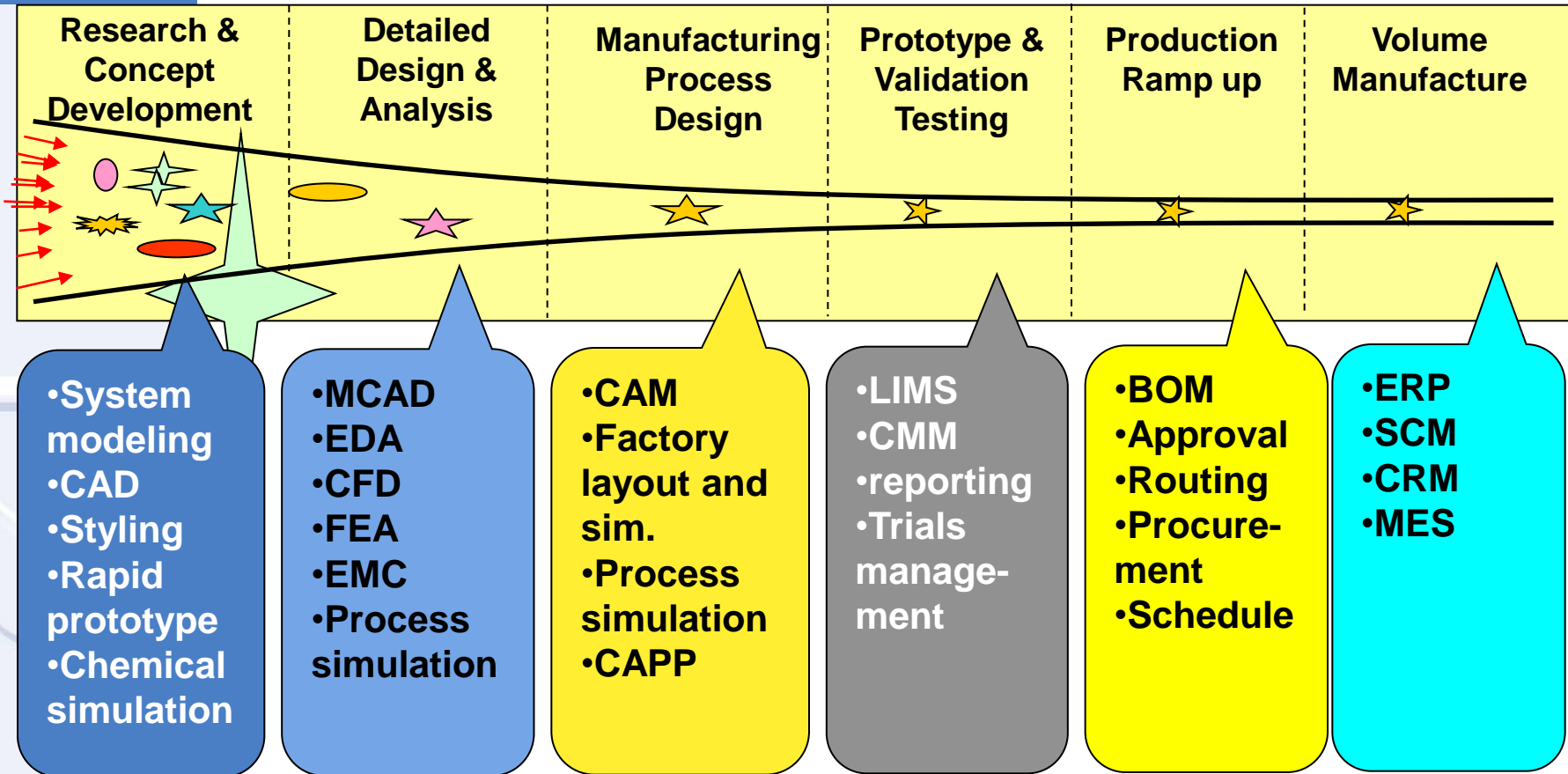
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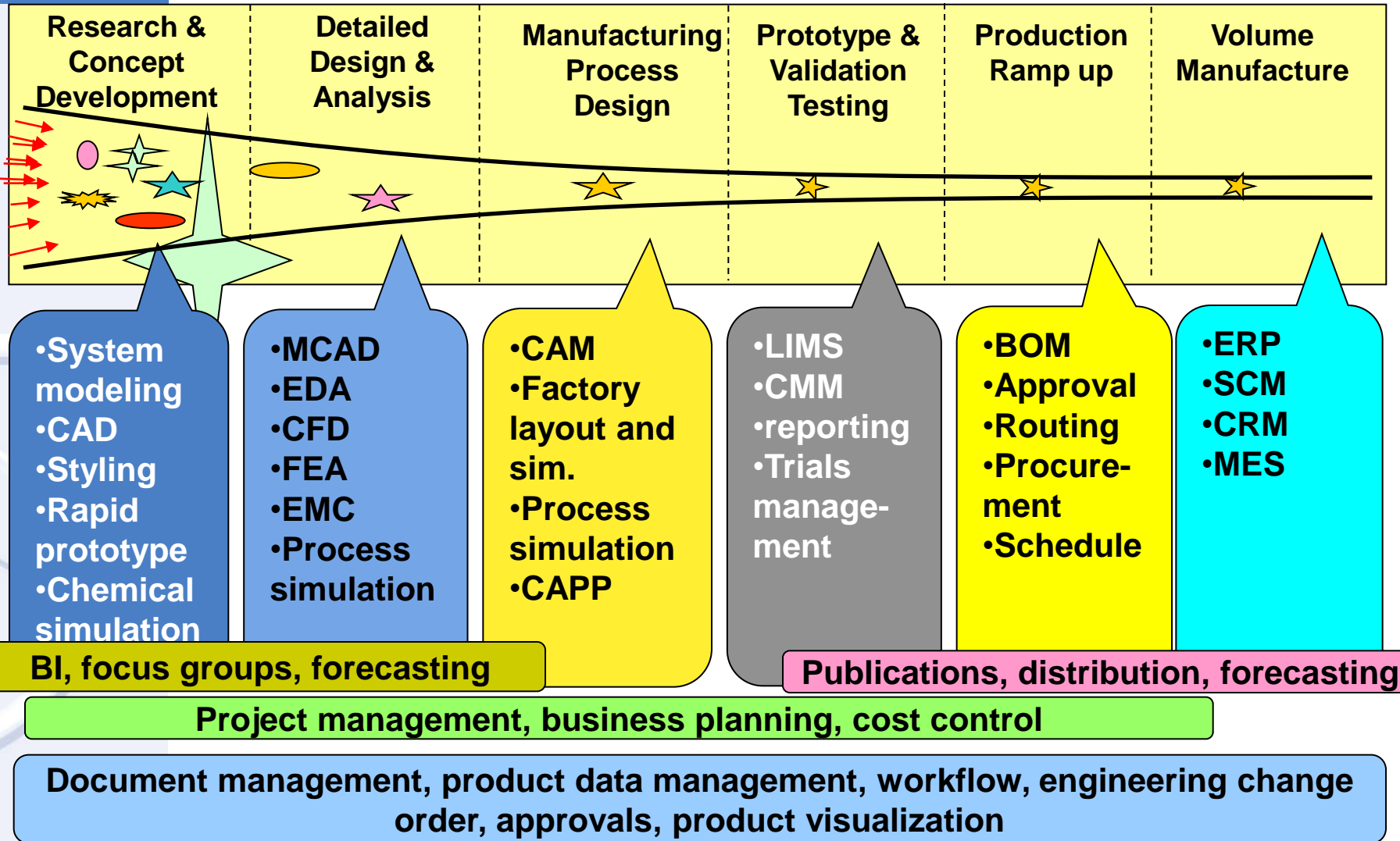


Document management, product data management, workflow, engineering change order, approvals, product visualization



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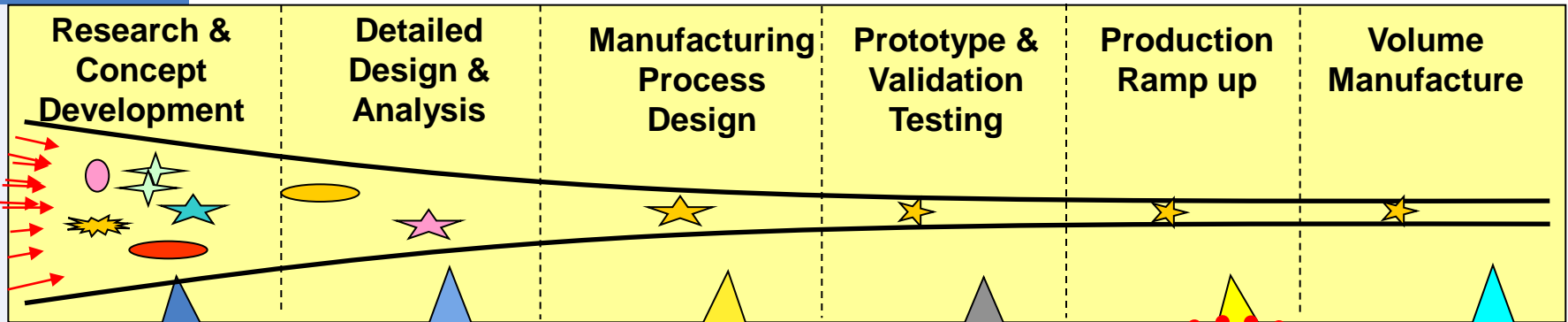
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# The PLM footprint

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- System modeling
- CAD
- Styling
- Rapid prototype
- Chemical simulation

- MCAD
- EDA
- CFD
- FEA
- EMC
- Process simulation

- CAM
- Factory layout and sim.
- Process simulation
- CAPP

- LIMS
- CMM
- reporting
- Trials management

- BOM
- Approval
- Routing
- Procurement
- Schedule

- ERP
- SCM
- CRM
- MES

BI, focus groups, forecasting

Publications, distribution, forecasting

Project management, business planning, cost control

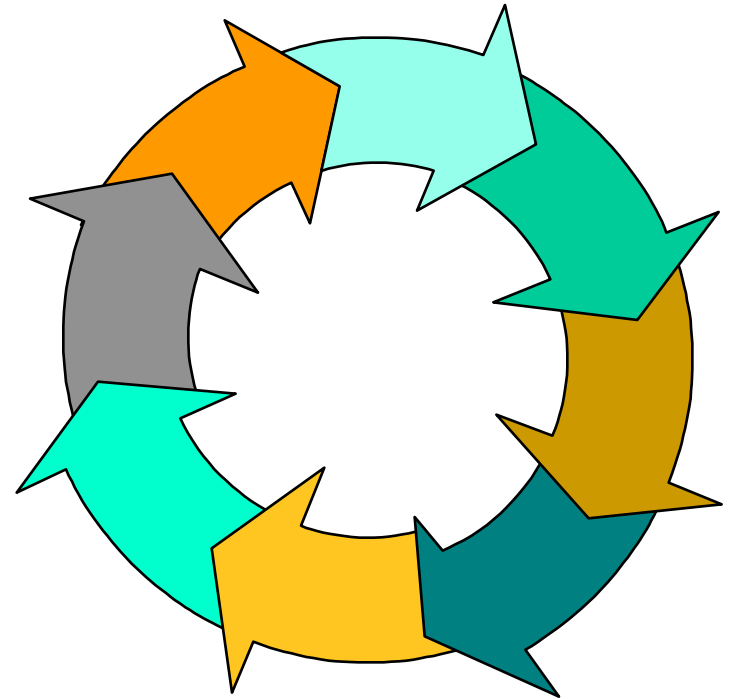
Document management, product data management, workflow, engineering change order, approvals, product visualization



# Plant Information Needs in Turbulent Times

## Two-way transfer to:

- Stay in Sync with
  - Sales
  - Design Eng.
  - Supply Chain
  - Strategy
- Contribute to
  - New Products
  - Customer Service
  - Business Success



Siemens Automation Summit

Cambashi Inc.

**Thank you!**

Julie Fraser, Principal Industry Analyst

[Julie.fraser@cambashi.com](mailto:Julie.fraser@cambashi.com)