

Streamlining the Order-Delivery Process with a Framework for Improving Manufacturing Systems

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Introducing the research project and the framework (1/2)

- Aim is to support companies in improving manufacturing systems
- The framework assists in
 - evaluating manufacturing systems
 - identifying potential for improvement

Introducing the research project and the framework (2/2)

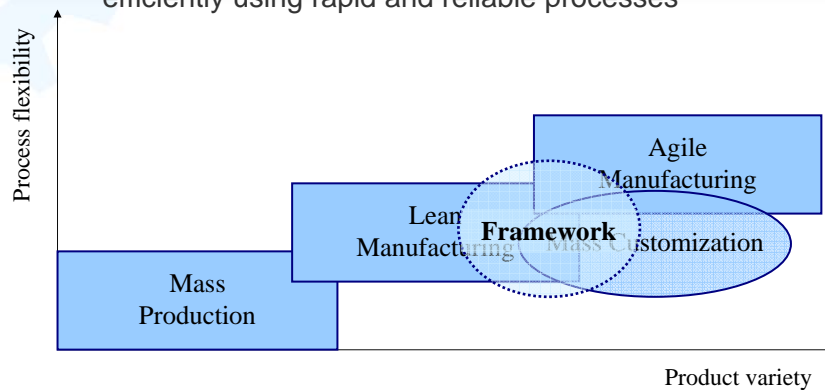
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- Focus is limited in order to ensure relevance and applicability
 - Make-to-order companies
 - Customer-specific, mature products
 - Production volume in the region of hundreds per year
 - Manufacturing and order-delivery process
- Considers structure, organisation and capabilities of manufacturing system

The framework and production paradigms

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Objective aimed at by the framework:
“Produce the required product variety and volume efficiently using rapid and reliable processes”



Structure of the framework

Decision area	Desired characteristics	Manufacturing objectives					
		Quality	Time	Reliability	Product Flexibility	Volume Flexibility	Cost
Product architecture	Characteristic 1		X		X	X	
Manufacturing system structure	Characteristic 2			X	X		X
	Characteristic x		X			X	X
Manufacturing equipment							
Production operations and control	Characteristic y	X		X		X	
Information and communication	Characteristic n	X			X		X
Human resources							

Manufacturing objectives



Key features of a streamlined order delivery process



Desired characteristics of a manufacturing system

Key features of a streamlined order-delivery process

- Rapid configuration of a customer-specific product and immediate start of manufacturing
- Efficient and controlled manufacturing process
- Combining cost-efficiency and flexibility in the order-delivery process

Rapid configuration and immediate start of manufacturing (1/2)

- Aim is to simplify and speed up the first phases of the order-delivery process
 - BOM and production order rapidly created from the customer requirements and specifications
 - Ability to start manufacturing immediately
- With regard to manufacturing objectives, the aim is to shorten the delivery time

Rapid configuration and immediate start of manufacturing (2/2)

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Product architecture

- Modular product architecture
- Product platforms
- Product structure consists of predefined parts and components

Information and communication

- Availability of useful and relevant information
- Rapid and reliable information flow

Efficient and controlled manufacturing process (1/2)

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- Aim is to create a fast, reliable and cost-efficient order-delivery process
- Efficient manufacturing process
 - Manufacturing system structure and product structure correspond to each other (product-based layout)
 - Short distances between manufacturing units
 - Availability of useful and relevant information
 - Rapid and reliable information flow
- Aim is to shorten lead or delivery time and reduce costs

Efficient and controlled manufacturing process (2/2)

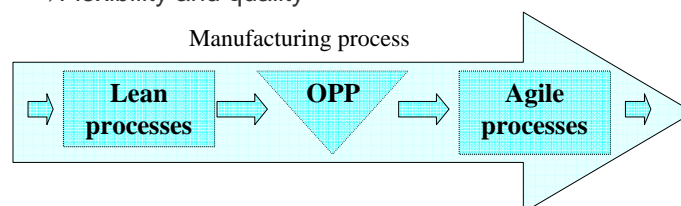
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- Controlled manufacturing process
 - Small number of levels in the bill of materials
 - Manufacturing methods support integration and reduction of manufacturing phases
 - Responsibility for production control is allocated to manufacturing units
 - Production operations are standardised
- Contributes towards the achievement of reliability and quality targets

Combining cost-efficiency and flexibility in the order-delivery process (1/2)

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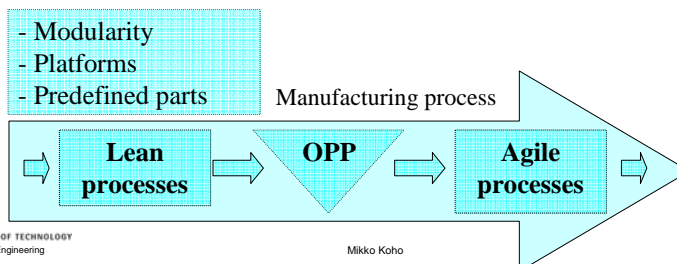
- Based on the Leagile principle (Mason-Jones, Naylor, Towill 2000) – aims to combine lean and agile processes
- Standardised and efficient lean processes upstream from OPP
 - ⇒ Efficiency, costs and quality
- More flexible agile processes downstream from OPP
 - ⇒ Flexibility and quality



Combining cost-efficiency and flexibility in the order-delivery process (2/2)

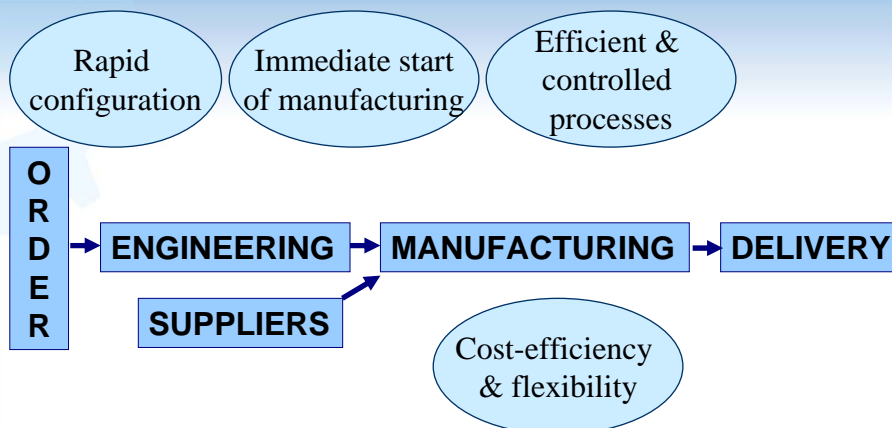
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- Lean and agile manufacturing principles are combined in the manufacturing system
- Modular product architecture
- Product platforms are used
- Product structure consists of predefined parts and components



Streamlining the order-delivery process

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Thank you for your attention!

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