



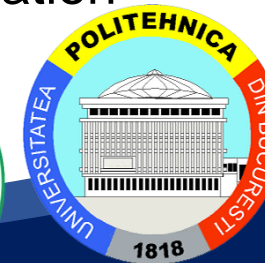
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Course #3: Smart Operations Management

Module 2: Smart Production in Planning and Controlling
Company's Operations Integrated Production Planning and
Shop-flow Control System Concept

Lesson 2-2: Inventory Management under Real-time Situation



Curriculum Development
of Master's Degree Program in
Industrial Engineering for Thailand Sustainable Smart Industry

Supply Chain Inventory Planning (1)

- 3 Types of Flows:
 - Material
 - Information
 - Finance
- Traditional Supply Chain:
 - Model with steady-state utilizing average parameters/conditions.
 - Dynamic characteristics were ignored such as demand fluctuations, lead-time delays, sales forecasting, etc.



Supply Chain Inventory Planning (2)

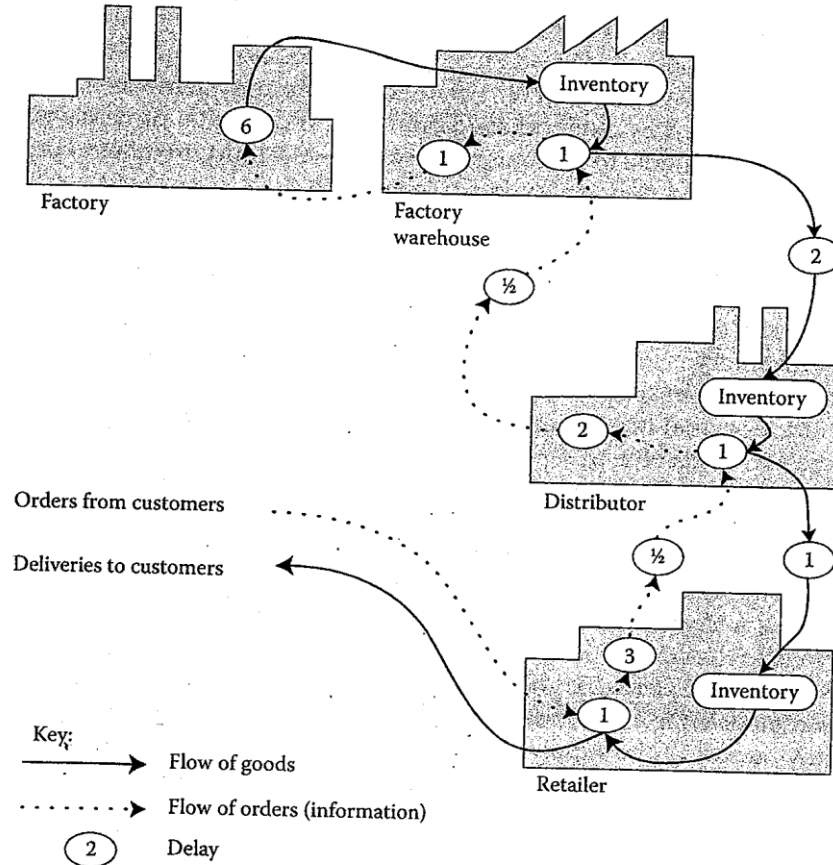


FIGURE 4.1
The Forrester supply chain.

Forrester Supply Chain:

- Simple four-level supply chain (consisting of factory, a warehouse, a distributor and a retailer).

Dynamic Supply Chain:

- Interaction between the flows of information, materials, orders, money, manpower, and capital equipment, and states.

Enterprise Resource Planning (ERP)

- Managing Material Inventory: ERP Systems
- Problem of data in ERP systems:
 - Disorganized, disparate and inaccessible data.
 - Human errors.
 - To clean data is costly and time-consuming.

Data in real time are needed!!



Industry 4.0 technology

Addressing materials inventory and data management challenges, keeping procurement in check and production running smoothly for supply chain efficiency.



Industry 4.0 and Internet of Thing (IOT)

- Technical Innovations:
 - Smart Devices: RFID, Cloud Computing, Artificial Intelligence, Advanced Robotics, and 3D Printing.
- Device Communication:
 - RFID, Wi-Fi, Cellular Networks, or other technologies to communicate with each other and cloud to become the Internet of Things.
- Cyber-connected Systems: To maximize efficiency with 4 common characteristics
 - Interoperability
 - Information Transparency
 - Technical Assistance
 - Decentralized Decisions





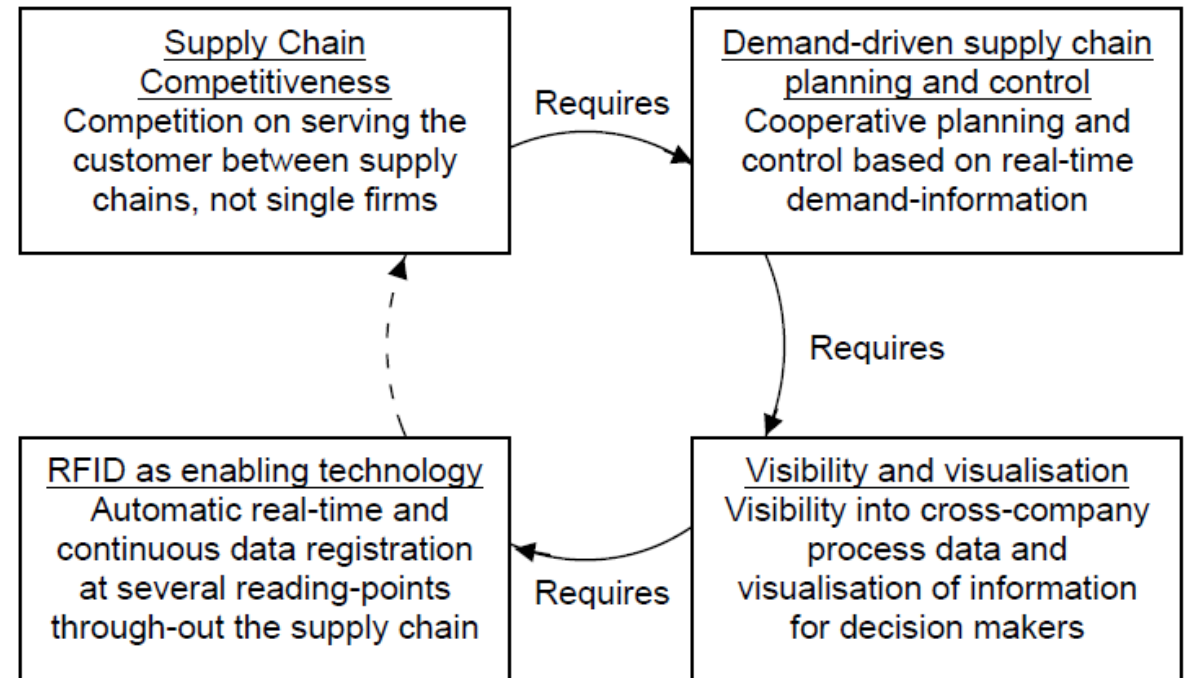
Agile Supply Chain and the AI Advantage

- When AI was applied in material inventory management:
 - Harmonizes Disparate Inventory Systems Data.
 - Integrate with ERP and disparate data sources from multiple systems or locations.
 - Controls Policy and Procedure for Proactive Material Management.
 - Presenting true quantities – across the enterprise and not in local silos – to prevent over-purchasing.
 - Predicts Inventory Needs for Continuous Improvement.
 - Optimizing inventory allocation and procurement needs.



Real-time Supply Chain Planning and Control -- RFID

- RFID – Access real-time information by automatic real-time and continuous data acquisition.



Reference: Real-time Supply Chain Planning and Control

– A Case Study from the Norwegian Food Industry

Heidi C. Dreyer¹, Ragnhild Bjartnes², Torbjørn Netland², Jan Ola Strandhagen¹

¹ Norwegian University of Science and Technology

² SINTEF Technology and Society

Real-time Supply Chain Planning and Control -- RFID



Figure 2: Smart Flow of Goods Supply Chain

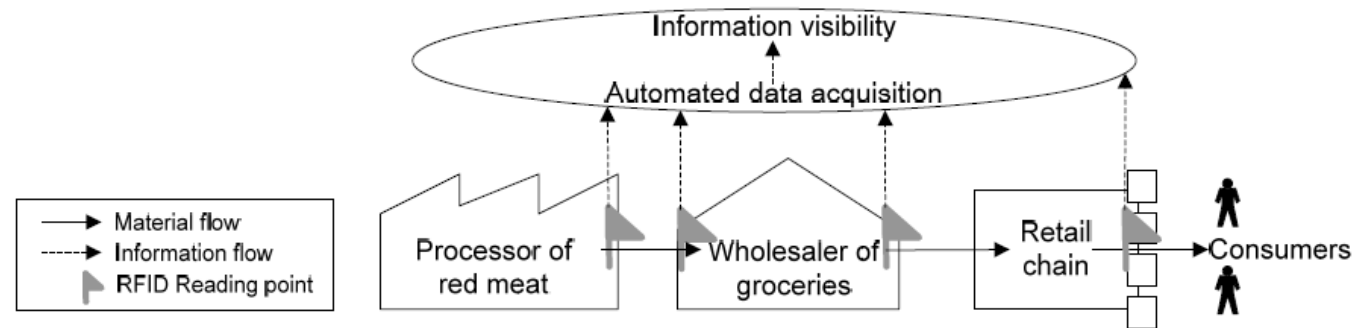


Figure 3: Supply Chain real-time control

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Full Inventory Transparency: BOSSARD (1)

- BOSSARD Proven Productivity Solution
 - Not only tracking internal inventory via RFID.
 - Providing end to end solution to connecting with suppliers
 - >> **Full Inventory Transparency**
 - Five Keys Advantages:
 - Visibility
 - Inventory Management
 - Supplier Relationships & Customer Service
 - Loss Management
 - Operational Efficiency
 - Able to integrate with existing ERP software



Full Inventory Transparency: BOSSARD (2)

- Three Specific Solutions:
 - Customer-specific Evaluation
 - Intelligent Systems
 - Bid Data Software Transparency

SmartBin



SmartBin Flex



SmartLabel



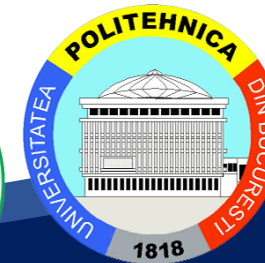


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Presentation 5 Feb 2020

Case Study of Inventory Management under the Concept of Industry 4.0



Curriculum Development
of Master's Degree Program in
Industrial Engineering for Thailand Sustainable Smart Industry



Key of Presentation

- **Comparison between classical system and Industry 4.0 system.**
- **Case Study**
- **Submit Paper Fri 31 Jan 2020**





To be Smart Production in Planning and Controlling

Discussion





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Thank You

Together We Will Make Our Education Stronger



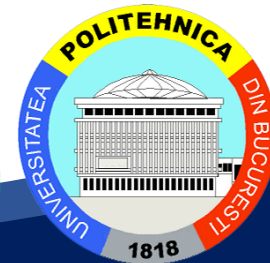
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