Structure of the Unit

- Manufacturing Resource Planning (MRPII)
- Enterprise Resource Planning (ERP)
- Supply Chain Management (SCM)
- E-Business

MRPII – Manufacturing Resource Planning

- Includes requires workstation time, employees, and other resources.
- Capacity restrictions are included in the planning process.
Production Planning Problems

1. In which order should a stack of pending orders be produced?
2. Should pending orders be split into batches?
3. If there is choice in the sequencing of tasks, which is the ideal sequence?

Forward Scheduling

Goal: Determine earliest availability date if production run is started today

Backward Scheduling

Goal: Determine latest production start for a given delivery date

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Enterprise-wide Planning Scope

- Due to the complexity and degree of interdependencies, local planning scope is inefficient. Examples:
  - ordering the same part for each order individually
  - ordering a part that is already on stock in another department
  - blocking one scarce workstation with an unimportant order
- Enterprise-wide planning will result in better decision-making regarding inventory, procurement, production, and scheduling.

But:
- This requires a consistent representation of all data in the enterprise.

Process Integration

cf. Wigand et al. (2003), p. 80
The Idea of Enterprise Resource Planning (ERP)

- Planning of the usage of resources from the perspective of the overall enterprise.
- Capital, machinery, parts, human resources,…
- Usually on the basis of ERP software

ERP: One Integrated Planning System

- One database and data model across the enterprise
  - e.g. human resource data and staffing data for production planning come from the same database
- Consolidated and harmonized planning on all levels
- Best Practise Process Library

mySAP Business Suite

- Industry Best Practices
- Adaptive Operations
- Extensible with xApps

Advantages of ERP

- Eliminates costly, inflexible legacy systems
- Improved technology infrastructure
- Improved work processes
- Increased data access for decision making

The Hidden Costs of ERP Deployment

- Training
- Integration and testing
- Customization
- Data conversion
- Data analysis
- Consultants ad infinitum
- Replacing your best and brightest
- Implementation teams can never stop
- Waiting for ROI
- Post-ERP depression

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Supply Chain
Each Basic Supply-Chain is a “Chain” of Source, Make, and Deliver Execution Processes:

- Plan
- Source
- Make
- Deliver
- Customer and Supplier

Each interaction of two execution processes (Source & Make & Deliver) is a “link” in the supply chain:
- Execution processes transitions or transport materials and products.
- Each process is a customer of the previous process and a supplier to the next.
- Planning processes manage the customer-supplier links
- Planning processes don’t “balance” the supply chain
- Every link requires an assurance of an input process quantity

Cf. SCOR

The General Challenge of Supply Chains:
Aligning development, production, marketing, and sales

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Aligning development, production, marketing, and sales

The Competition of Supply Chains:
The competitiveness is determined by the overall performance of all partners in the chain

The Bullwhip Effect
Forrester (1961): Industrial Dynamics

The Bullwhip Effect
Forrester (1961): Industrial Dynamics

The Bullwhip Effect
The Beer Game


Supply Chains Management: Methods and IT Structures for aligning development, production, marketing, and sales

[http://www.heppnetz.de/teaching/gwi/](http://www.heppnetz.de/teaching/gwi/)

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What is E-Business?

Any form of business operations between any two parties using digital communication over open networks, especially the Internet.

cf. e.g. Thome/Schinzer/Hepp (2005)

Electronic Business

- Business-to-consumer (B2C)
- Business-to-business (B2B)
- Consumer-to-consumer (C2C)
- Government-to-citizen (G2C)
  – aka e-government

Cf. Thome/Schinzer/Hepp (2005)
Very Basic Infrastructure

- Web Server
- Data Base
- Back End Systems
- $$$

Why is E-Business so popular?

- Reach
- Common Infrastructure
  - As soon as one is connected to the Internet, one can use all online services
- Speed and Asynchronous communication
- High degree of automation
- Ease-of-use, richness (e.g. images)
From “Make” to “Buy”

  - Computer-based trade processes reduce the transaction costs and trigger a shift towards the usage of markets.
- Transaction cost: The cost of using the market mechanism (Coase 1937)

Reduced Transaction Costs – Increased Market Volume

- eBay:
  - Active Users: 34.1 million
  - Gross Merchandise Sales (GMS): $5.6 billion in Q2-03
- Walmart Inc.:
  - $62.1 billion in Q2-03

Assignment for Next Week

- WI1, pp. 771-835; IBIS, pp. 197-222
- Review the slides

WI1 = Hansen/Neumann: Wirtschaftsinformatik 1; WI2 = Hansen/Neumann: Wirtschaftsinformatik 2; IBIS = Wigand et al: Introduction to Business Information Systems.

Thank you!

The slides and additional materials will be available at http://www.heppnetz.de/teaching/gwi/

E-Business: Delivery of Tangible Goods

Cf. Stair / Reynolds
Reach

Make Your Customers Part of Your Business

Thank you!

The slides and additional materials will be available at

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