ENTERPRISE INFORMATION SYSTEMS

- ERP- Enterprise Resource Planning - Part 2
- Logistics
- Sales
- SCM - Supply Chain Management

ERP – Enterprise Resource Planning

Literature:

- SODOMKA, Petr, Klčová, Hana. *Information systems in entrepreneurial practice*. 2nd edition (segments 42 and 43) 2. Brno: Computer Press, 2010. ISBN 978-80- 251-2878-7. Pages 287 - 356.
- GÁLA, Libor, Jan POUR and Zuzana ŠEDIVÁ. Business informatics. 2nd edition (segments 42 and 43) 2. Prague: Grada, 2009. ISBN 978-80-247-2615-1. Page 170.
- BASL, Josef and Roman BLAŽÍČEK. Enterprise information systems: the enterprise in the information society. In *Management in the information society*. 2nd edition Prague: Grada, 2012. Management in the information society. ISBN 978-80-247-4307-3. Pages 77 - 86.
- TVRDÍKOVÁ, Milena. Application of information technologies in corporate management: tools for improvement of the quality of the information systems. In *Management in the information society*. 1st Ed. Prague: Grada, 2008. ISBN 978-80-247-2728-8. Pages 87 - 94.

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Area of Logistics Management

The logistics process ensures the distribution of resources in time, controls the effectiveness of the material flows, warehousing of products and the related services to achieve customer satisfaction. Sodomka 2010.

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Area of Logistics Management

- Purchase logistics - consists in the procurement of materials, semi-finished products, commercial goods or services in order to implement the production, sale or provision of services. It includes the order cycle, transportation, inventory maintenance, inventory management and is closely linked to accounting, invoicing, work flows and documents.
- Sales logistics - consists in the sale of goods, material, semi-finished products, services for the purpose of earning a profit. It includes the order cycle, transportation, inventory maintenance, inventory management and is closely linked to accounting, invoicing, work flows and documents.

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SCM (Supply Chain Management) - supplier chain management is a set of tools and processes, which are used to optimise management and maximise the efficiency of the operation of all elements of the whole supply chain with regard to the final customer. SCM is a specific example of the mutual interlinking of suppliers and customers on the basis of the information and communication technologies. Through exchange of information, the partners in the chain can co-operate, share information, plan and co-ordinate the overall procedure in such a manner as to increase the agility of the whole chain. Basl 2008.

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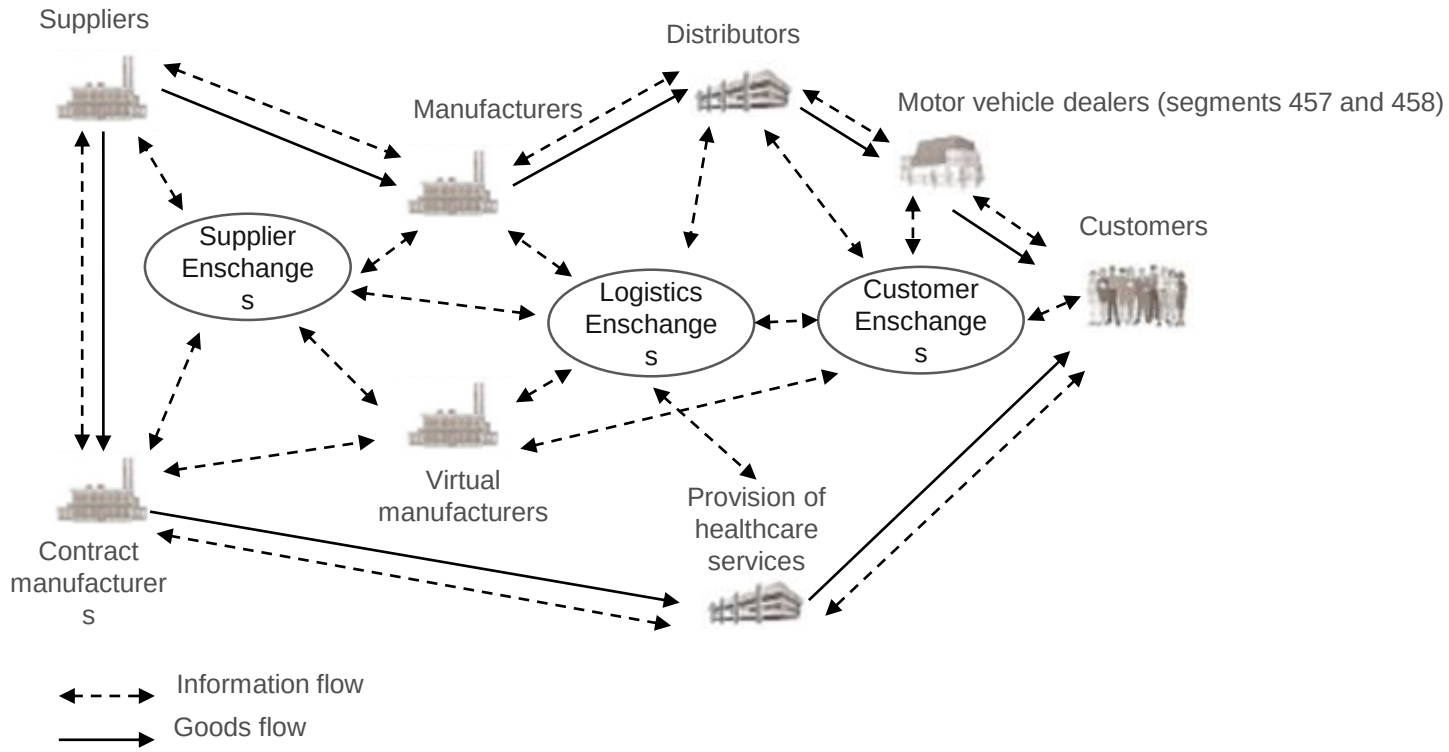

Source: Basl p. 78

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SCM (Supply Chain Management) - is a system consisting of the business processes of all organisations, which are directly or indirectly involved in the satisfaction of customer requirements. Sodomka 2010.

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Purchase of goods and material:

- Enquiry cycle
- Order cycle
- Purchase price lists
- Catalogues
- Delivery reminders
- Transfer of the order to the receiving note
- Supplier quality assessment

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Purchase of goods and material:

- Supplier master data
- Ordering addresses, delivery addresses
- Delivery conditions
- Costs related to the purchase - calculation formula, budget according to the quantity or price
- Distribution of the ancillary costs in the inventory on the basis of inventory turnover

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Purchase of goods and material:

- Material master data of the goods/material
- Minimum stocks, maximum stocks
- Calculation of the optimal stocks
- Minimum order quantity in relation to the supplier
- Ancillary acquisition costs according to supplier
- Coding of the goods according to the supplier’s catalogue

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Purchase of goods and material:

- Stock receipt card
- Accounting of the stock receipt card
- Pairing of the stock receipt card and the invoice received
- Evidence of invoices received
- Evidence of quality inspection
- Sales spreadsheets

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Warehousing:

- Goods or material card
- Conversions of units of measure
- Inventory
- Calculation of the average prices
- FIFO, LIFO - automated FIFO, manual FIFO

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Warehousing:

- Sets
- Bills of material
- Batches
- Serial numbers
- Colours and sizes
- Warehouse overviews
- Disposition list –> Disposition quantity = physical quantity + ordered quantity - reserved quantity

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Sales:

- Buyer master data
- Statutory addresses, delivery addresses, mailing addresses, invoicing addresses
- Delivery conditions
- Terms of payment
- Buyers’ catalogue numbers
- Credit limits
- Sales reports

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Sales:

- Orders, framework orders
- Delivery notes
- Invoicing, proforma invoices, final invoices, tax documents to the payment received
- Selling price lists, special buyer prices, rebates, discounts
- Transfer of data to the accounts
- Consumer taxes

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Sales:

- Electronic invoicing - ISDOC, EDI communication
- Dispatch, warehouse issue notes
- Evaluation of the business representatives, commission systems
- Bonus system
- Sales statistics
- Packaging material ledger
- Recurrent invoicing

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Sales of POS - cash-register systems:

- Touch-screen option
- Printing of vouchers
- Goods including photographs
- Link to the banks
- EAN/ UPC - universal product code
- Voucher administration
- Daily closing statement
- Statistics - frequency, sales, evaluation of sellers

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Processes in the supply chain:

- We view the processes in the chain as a series of cycles, each of which functions at the interface between two successive levels of the chain
- The processes in the chain are divided according to whether they are realised on the pull or push principle. Processes activated by a customer order - pull. Processes activated by an expected order - push.

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Series of cycles in the supply chain:

- Order cycle - between the customer and retailer
- Replenishment cycle - between the retailer and the distributor
- Manufacturing cycle - between the producer and the distributor
- Delivery cycle - between the producer and the supplier

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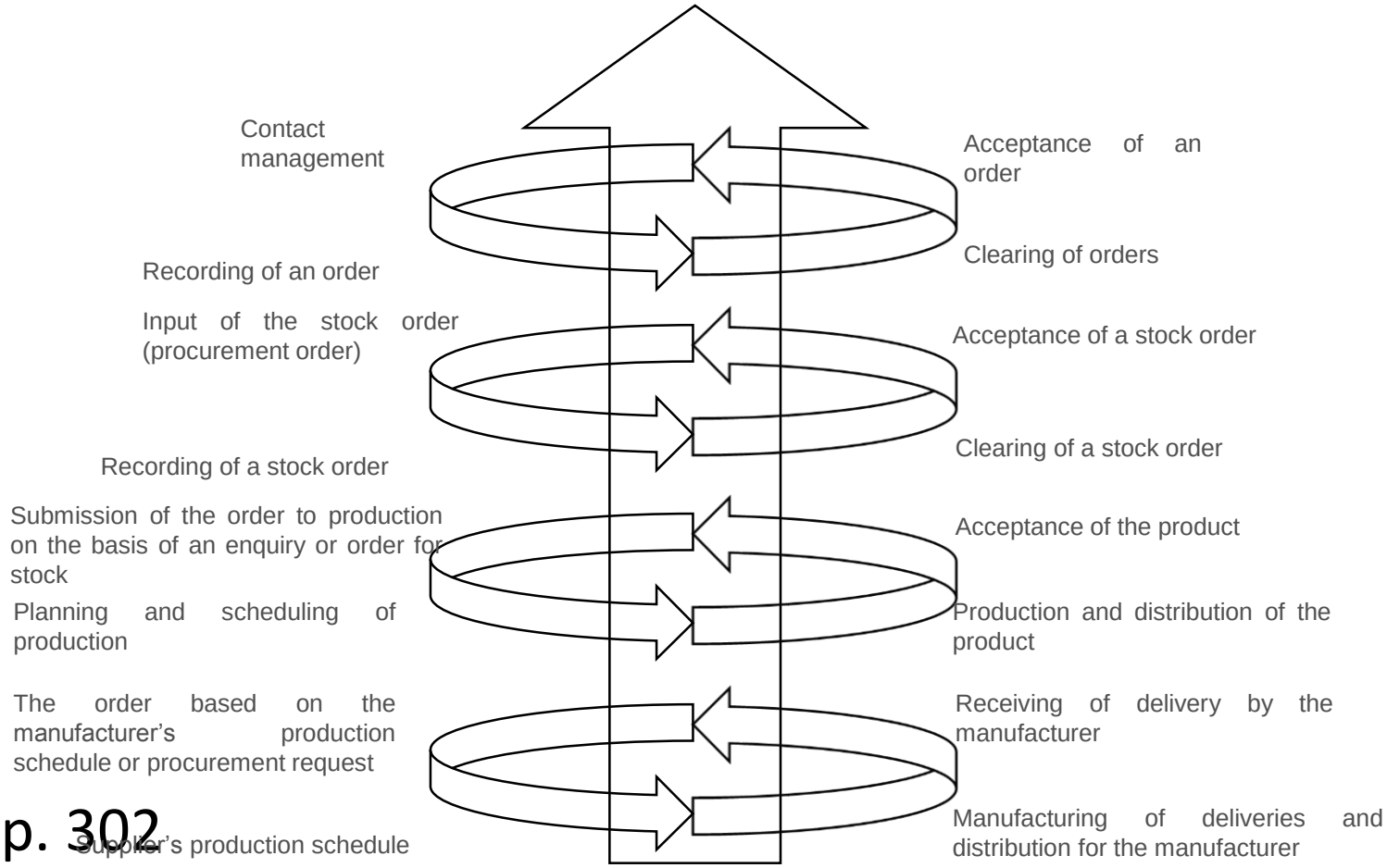

Source: Sodomka p. 302

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Supply Chain Management Principles:

- CRP (Continuous Replenishment Planning) - system for maintenance of the customer’s stock levels by the supplier
- VMI (Vendor Managed lnventory) - where the vendor assumes full responsibility for the agreed inventory level in the buyer’s warehouse.

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Supply Chain Management Principles:

- ECR (Efficient Customer Response) - effective response to customer requirements. Allows the communication and cooperation of the vendor with the manufacturer with the objective to respond effectively to the customer's requirements and cut the costs in the supply chain.
- CPFR (Collaborative Planning, Forecasting and Replenishment) - joint planning and forecasting in the supply chain. Increase of the integration that supports the existing practices, visualisation of product placement in the entire chain on the basis of shared information

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Functionality of current applications in SCM

- The customer’s share of the resulting product configuration
- Permanent information to the customer about the status of his order
- Reduction of the probability of delay or incomplete deliveries
- Solution of unexpected situations
- Procurement operations automation options
- Planning of requirements in the chain on the basis of historical data with regard to the overall opportunities for procurement
- Analyses

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Modern communication technology in Logistics and SCM:

- EDI - Electronic Data Interexchange - exchange of structural documents between two organisations
- EDIFACT - Electronic Data Interchange for Administration, Commerce and Transport - international data transmission standard. It is a general interdisciplinary standard.
- EAN - European Article Number - Bar-Codes
- RFID - Radio Frequency Identification - electronic identification of inventories by radio frequency signal

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European Article Number

- The code may have 8, 12, 13 or 14 characters (EAN-8, EAN-12, EAN-13 and EAN-14), the last digit is always the control digit (modulo 10). EAN-13 is the most commonly used code, which comprises:
- The Prefix, which determines the special code type (for instance, 0978 for ISBN) or the supplier's country (not necessarily the country of origin of the goods), for the Czech Republic it is 859, for Slovakia 858, Germany 400-440, etc. These prefixes are allocated by GS1 with headquarters in Brussels.
- Producer's number allocated by the national agency
- Product serial number determined by the producer.
- A shortened EAN-8 that does not contain a prefix is used only fo goods

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- Code 39 allows coding with 43 ASCII characters: capital letters (A–Z), numerals (0–9), space and special characters (* - $ % . / +). Every character is coded using 9 elements (5 lines and 4 spaces, always 3 are wide and 6 are narrow *(this is the source of the designation 3of9 or 3/9 and usually only 39)*). The characters are mutually separated by narrow spacing. The word starts and ends in the special character * (start/stop).
- CODE 128 can code 128 characters (lower half of the ASCII) - as one of few, it is capable of differentiating and maintaining the size of the letters in the code. It has three character sets (A, B and C), which are used to set one of the special characters at the beginning of the code and between which it is possible to switch during definition of the code. Source: Wikipedia

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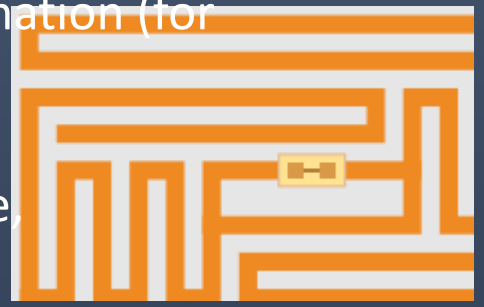
RFID - Radio Frequency Identification, is a further generation of identifiers designed (not only) for identification of the goods, which builds on the bar-code system. Just like the bar-codes, it is also used for contactless communication at a short distance. Source: Wikipedia

Passive - the sensor periodically transmits electromagnetic impulses to the surroundings. If a passive RFID chip comes within range, it uses the received energy to charge its own power supply condenser and transmits a response. The passive chip is capable of transmitting either one number (electronic product code - EPC), which is assigned during its production, or also has an additional read/write memory for additional information (for instance, in the case of the electronic wallet).
They are used, for instance, in the following applications:
To identify the objects (goods) as the successor of the bar-code,
To control the access of persons to closed objects,
To make cashless payments in the form of an electronic wallet.



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QR Code - resource for automated data collection. The abbreviation originates from the English words “Quick Response”, so it is the quick response code. The QR code is capable of coding a far larger volume of data than the classic EAN bar-code. The specifications of the **QR codes** from June 2000 are according to ISO 18004. The standard was amended in 2006.[1] The codes are designated for computer processing and use a large number of techniques that prevent interpretation errors. The code becomes illegible only after removal or soiling of a large part of the code. The algorithms for recognition of the code are also capable of reading codes that have been turned or have inverted colours; the code does not require high colour contrast. The codes are defined in 40 size versions (from 1 to 40). The code version *v* consists of a square grid of points of sizes $17 + 4 \cdot v$. The code consists of several information layers, which are used for various purposes and different algorithms are used. Source: wikipedia.

Content type	Number of characters
digits	7,089
letters and digits	4,296
8-bit data	2,953
Kanji	1,817

QR code version 8 containing html links