Information Systems 2

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Course on Information Systems 2, summer term 2012
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1. What are Information Systems?

2. Course Outline

3. Organizational stuff

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J.C. Penney

The company J.C. Penney sells shirts through a network of local warehouses.

Formerly, it replenished sold items by stocking:

- Each warehouse stocks shirts for up to 3 month.

- Warehouses are supplied from regional storehouses that stock shirts for up to 6 months.

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J.C. Penney

Nowadays, replenishing works completely different:

- At checkout each transaction is reported electronically to TAL Apparel Ltd. in Hongkong.

- TAL produces a new shirt like the one just bought and ships it directly to the local warehouse.

- TAL's application system uses the demand on different shirts in the past to predict the number of shirts needed in each store.

- TAL assigns article numbers and bar codes for easy identification of different shirts.

- TAL offers information about which shirts have been sent, when, and where they are right now.

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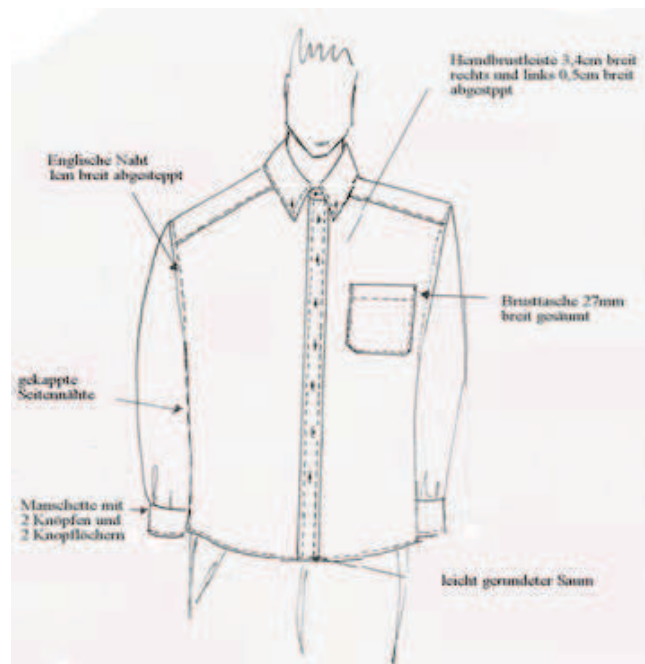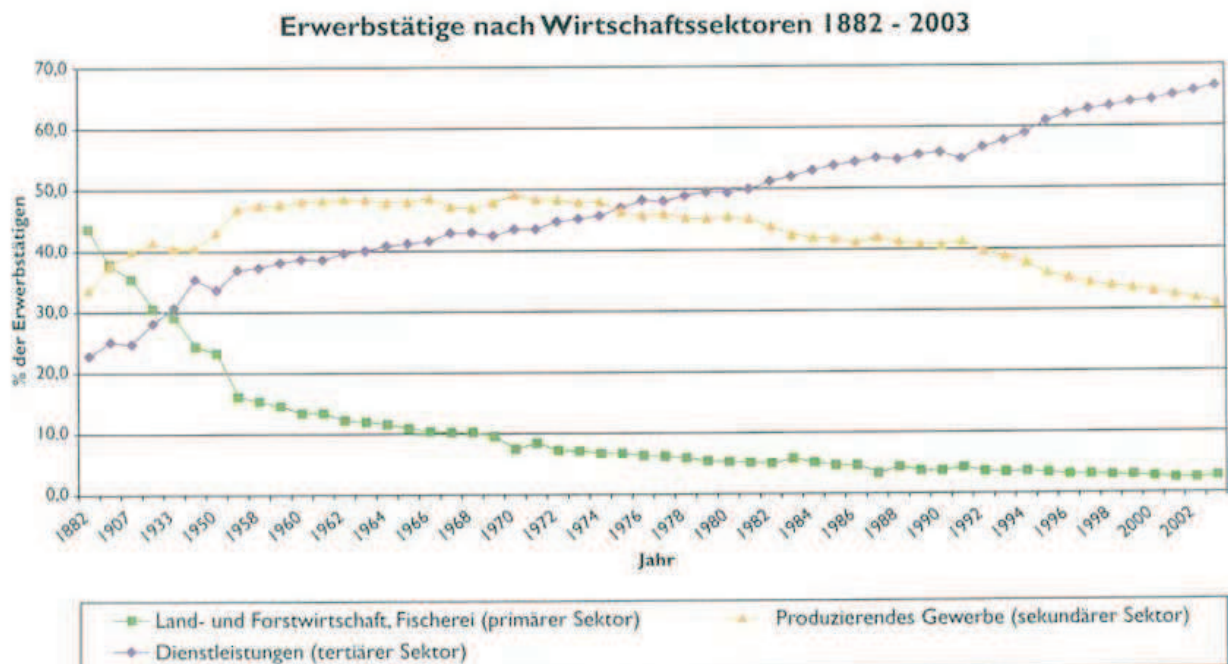2/23

J.C. Penney

The new method for replenishing has side effects, e.g., for development and testing of new shirts:

- TAL produces a lot of variants (colors, sizes, shapes, etc.) and sents them directly to the warehouses.

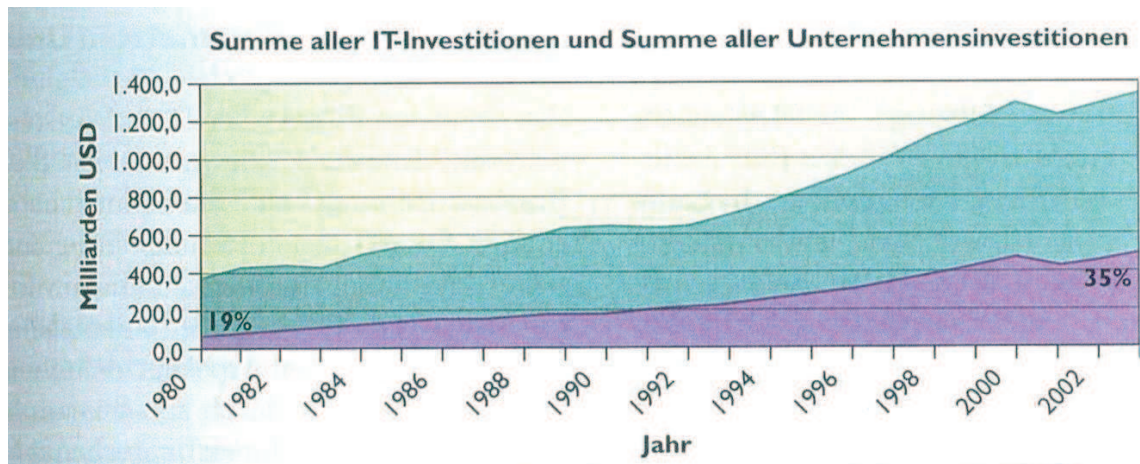- Penney can base their choices for new shirts on sales figures of the test shirts.

[LLS06]

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Information Technology in Business (1/2)

Erwerbstätige nach Wirtschaftssektoren 1882 - 2003

- Land- und Forstwirtschaft, Fischerei (primärer Sektor)
- Produzierendes Gewerbe (sekundärer Sektor)
- Dienstleistungen (tertiärer Sektor)

[LLS06]

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Information Technology in Business (2/2)

Summe aller IT-Investitionen und Summe aller Unternehmensinvestitionen

[LLS06]

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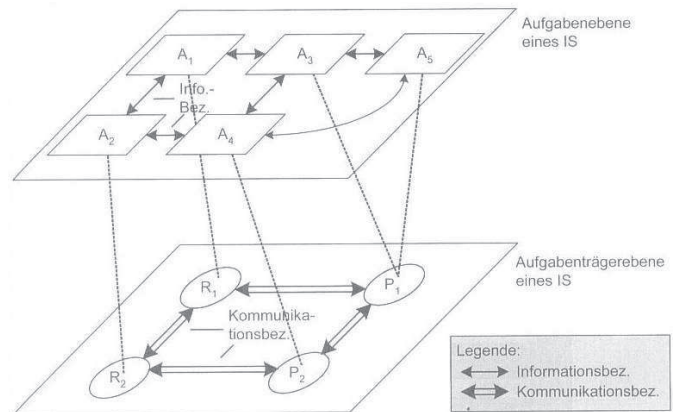Course on Information Systems 2, summer term 2012
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Information Systems

"Unter einem Informationssystem [wird]
ein System verstanden, das
Informationen verarbeitet, d.h., erfasst,
überträgt, transformiert, speichert und
bereitstellt"[FS06, p.

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Information Systems

"Unter einem Informationssystem [wird] ein System verstanden, das Informationen verarbeitet, d.h., erfasst, überträgt, transformiert, speichert und bereitstellt" [FS06, p. 1].

*

"A computer is a machine which manipulates data according to a list of instructions" [English Wikipedia, "Computer", 23.10.2007].

"Ein Computer, auch Rechner genannt, ist ein Apparat, der Informationen mit Hilfe einer programmierbaren Rechenvorschrift verarbeiten kann" [German Wikipedia, "Computer", 23.10.2007].

[FS06]

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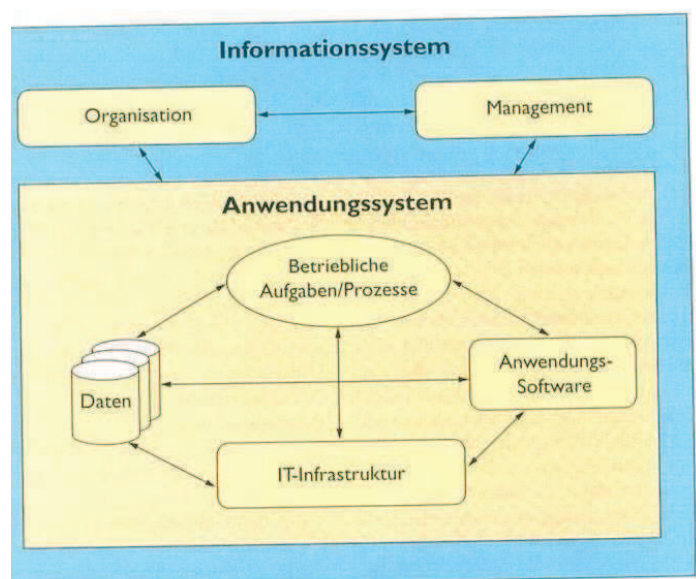## Application Systems vs. Information Systems

An **Application System** is a set of interoperating

- software programs,

- IT infrastructure and

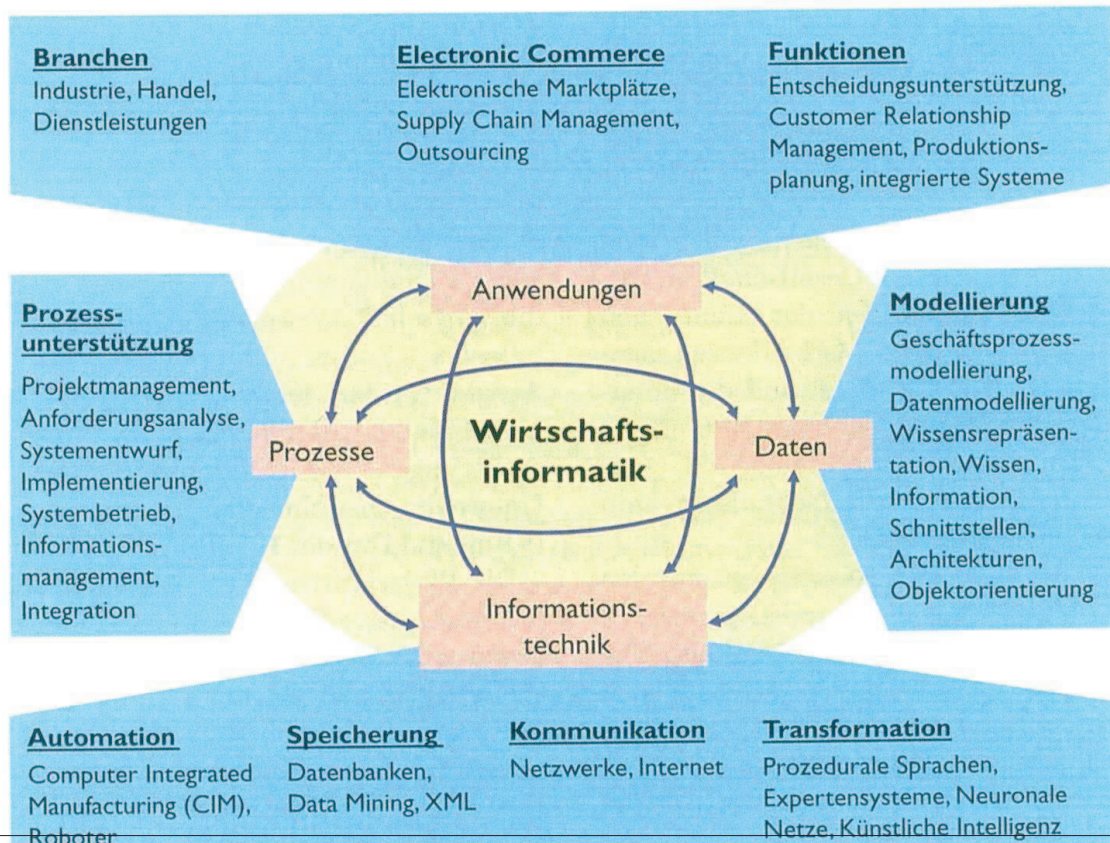- data

that supports a specific business domain.

An **Information System** is an application system plus its business context, i.e., the organisation, people, etc. that use the system.

Application systems are **technical systems**, information systems **socio-technical systems**.

[LLS06]

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Aspects of Business Information Systems [LLS06]

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Software usually not considered to be Part of an Information System

1. **office software**
   — but, companies started to collect all their documents in document warehouses and index them by knowledge bases.

2. **embedded software to operate a machine**
   — but, in many scenarios machines generate some output that may be of further interest and thus should be managed by an information system.

3. **educational software**
   — but, some modern educational software no longer is a monolithic isolated stand-alone piece of software, but connects learners and teachers through an online platform.

4. **entertainment software**

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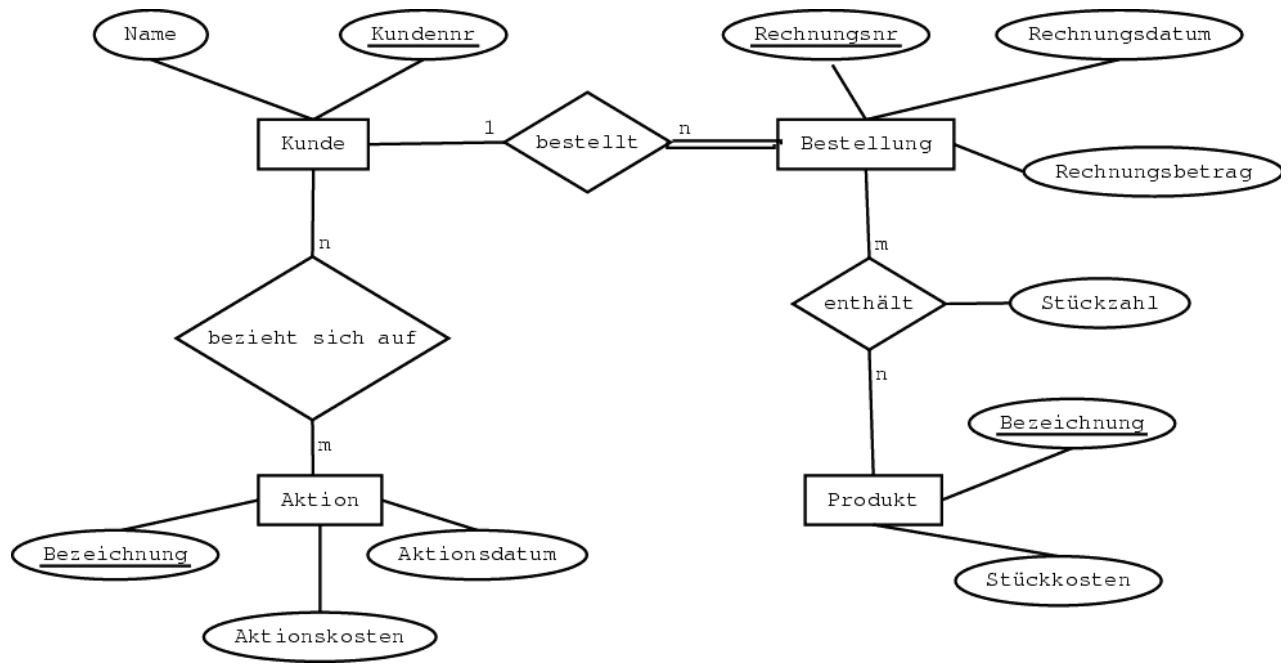9/23

Information Systems Program Contents — GI Recommendation [fI03]

1. **Basics:**
   subdisciplines; relation to business management; law; behavioral sciences; computer industry.

2. **Information and Communication Technology:**
   computer architecture; hardware, software, middleware and development platforms; networks; communication.

3. **Information Management:**
   information as agent of production; information supply; information networks; security; information system architectures.

4. **Business Information Systems / E-Commerce & E-Business:**
   information systems oriented at economics sectors; information systems oriented at

processes and functions; integration; electronic market places.

5. **Application System Development:**
   analysis, design, implementation, deployment; web-based systems; choice, customization and deployment of standard software; system integration.

6. **Data and Knowledge:**
   data models and data bases; data warehouse; knowledge representation and engineering.

7. **Disposition and Decision Support:**
   mathematical and statistical models and methods; operations research; artificial intelligence; methods of strategic management.

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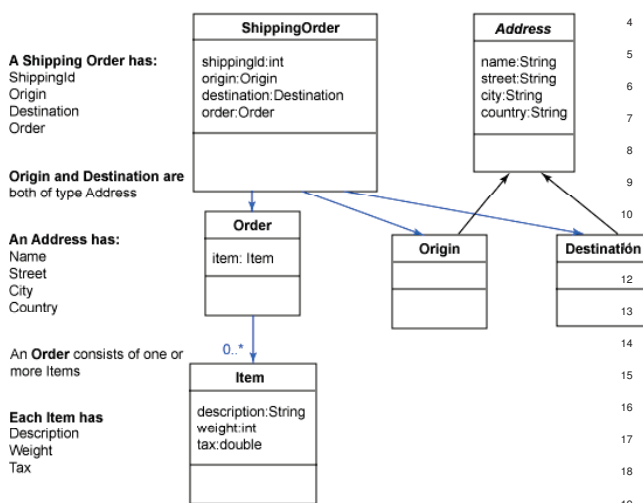# Modelling Information Systems / Databases

Modelling Information Systems / Extended Markup Language XML

BUSINESS CONCEPTS   UML DIAGRAM
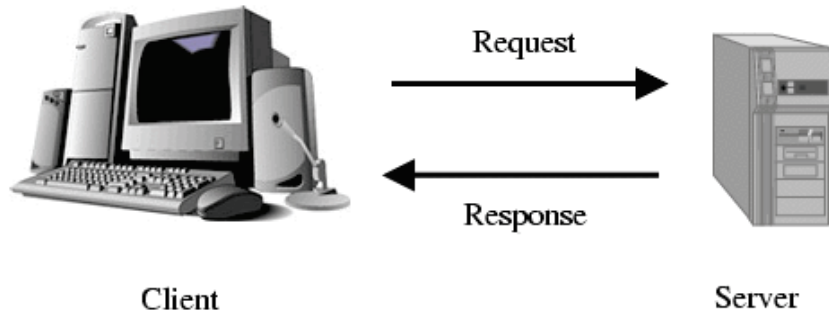


```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <shippingOrder xmlns:xsi="http://www.w3.org/2001/XMLSch
3   xsi:noNamespaceSchemaLocation="C:\schemas\ShippingO
4   <shippingId>09887</shippingId>
5   <origin>
6     <name>Ayesha Malik</name>
7     <street>100 Wall Street</street>
8     <city>New York</city>
9     <country>USA</country>
10  </origin>
11  <destination>
12    <name>Mai Madar</name>
13    <street>Liivalaia 33</street>
14    <city>Tallinn</city>
15    <country>Estonia</country>
16  </destination>
17  <order>
18    <item>
19      <description>Ten Strawberry Jam bottles</description>
20      <weight>3.141</weight>
21      <tax>7.60</tax>
22    </item>
23  </order>
24 </shippingOrder>
```
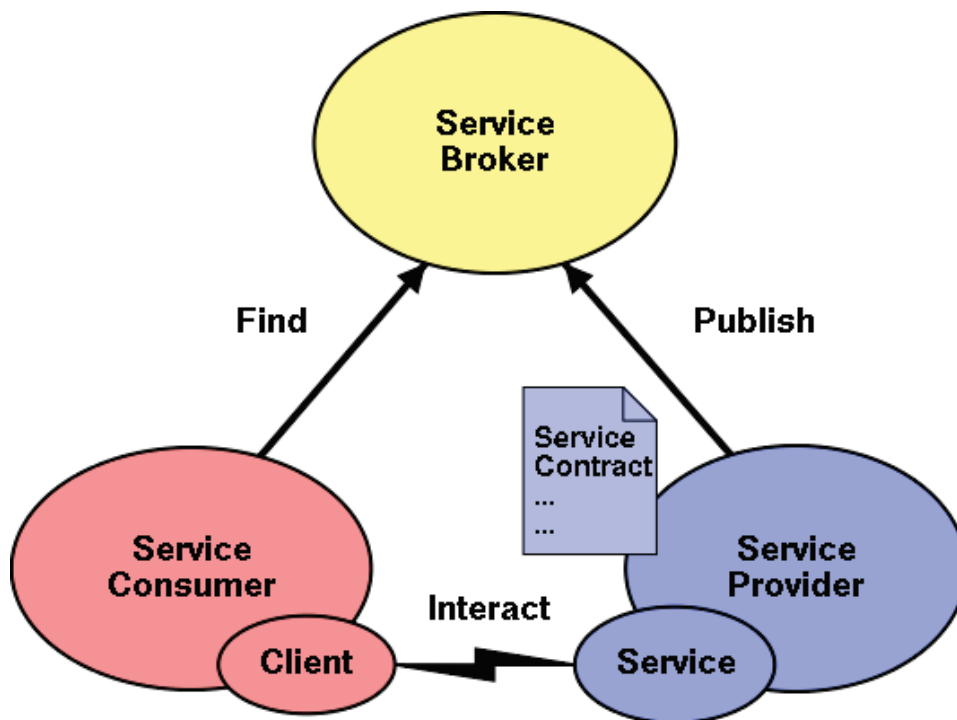
Distributed Information Systems / Remote Invocation

Distributed Information Systems / Web Services

Figure 11: Service oriented architecture [Haa03].

IT Management

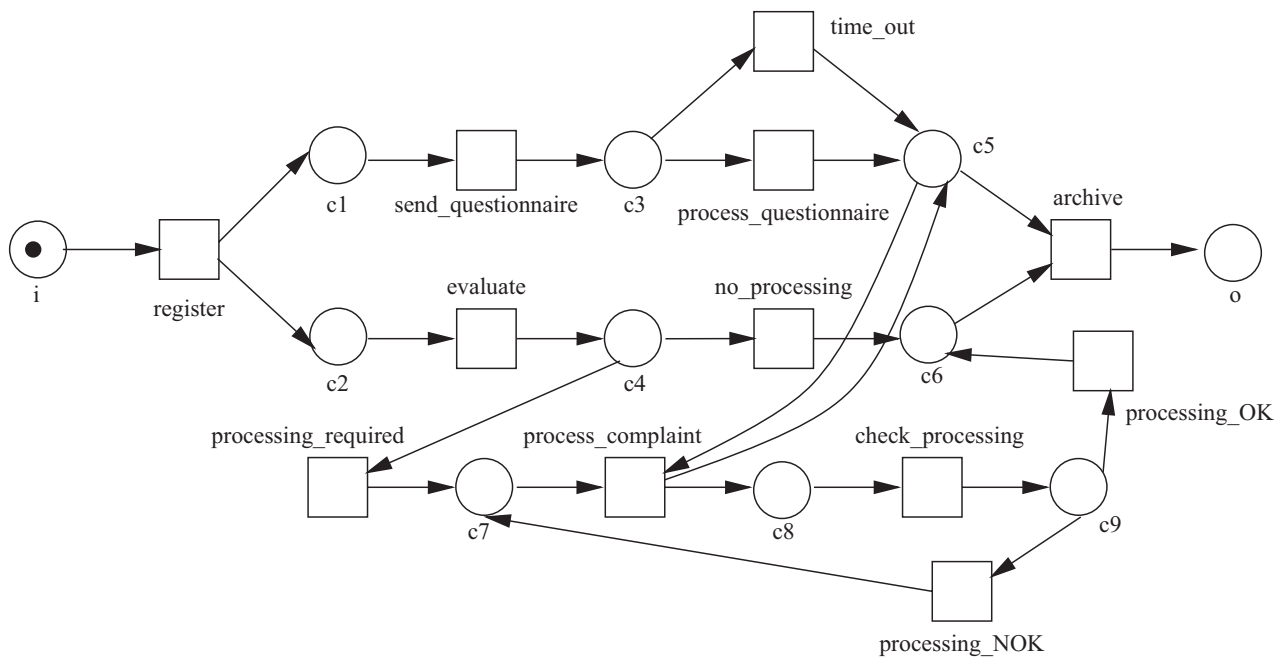- IT strategy

- IT organisation

- IT controlling

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Business Process Modelling / Process Modells

Figure 12: A workflow modeled as Petri net [vdA98].

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Business Process Modelling / Process Modelling Languages
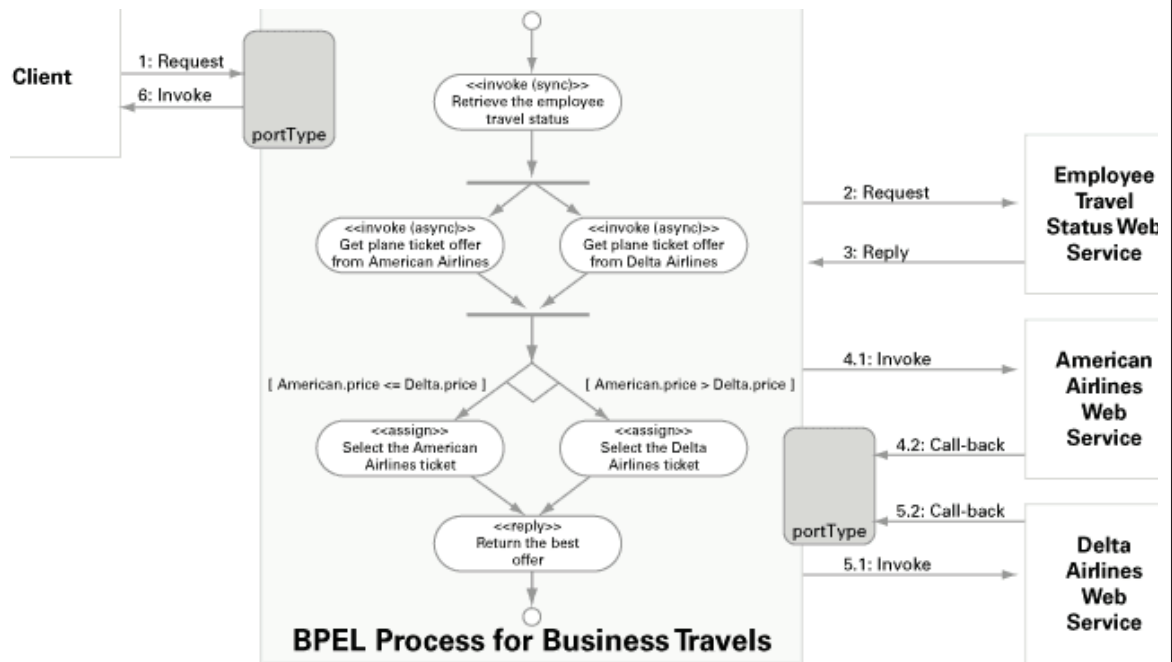
Figure 13: An example business process [Jurar].

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Knowledge Management & Semantic Web Technologies

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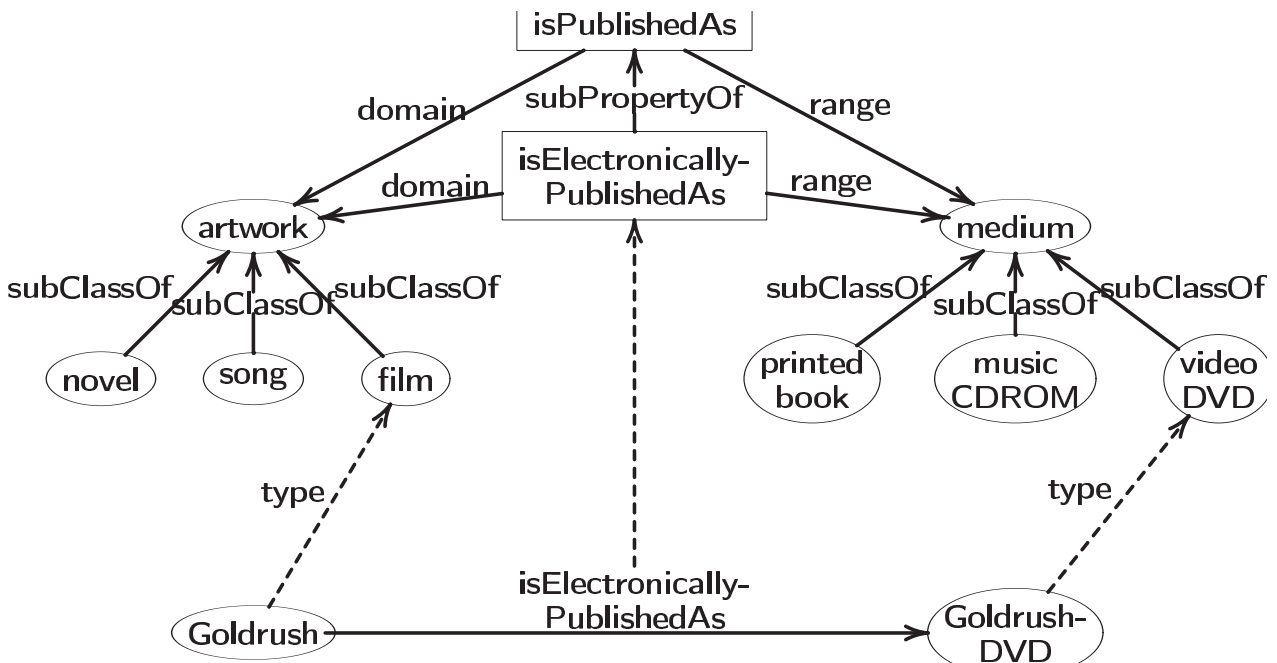
Business Intelligence & Data Mining
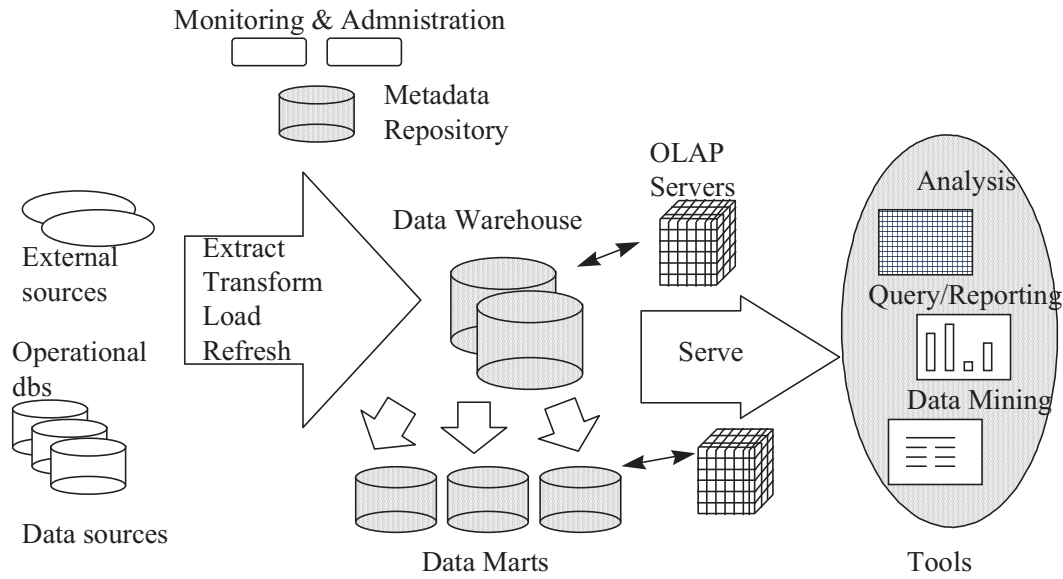
Figure 15: Data Warehouse-Architektur [CD97].

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E-Commerce & E-Business
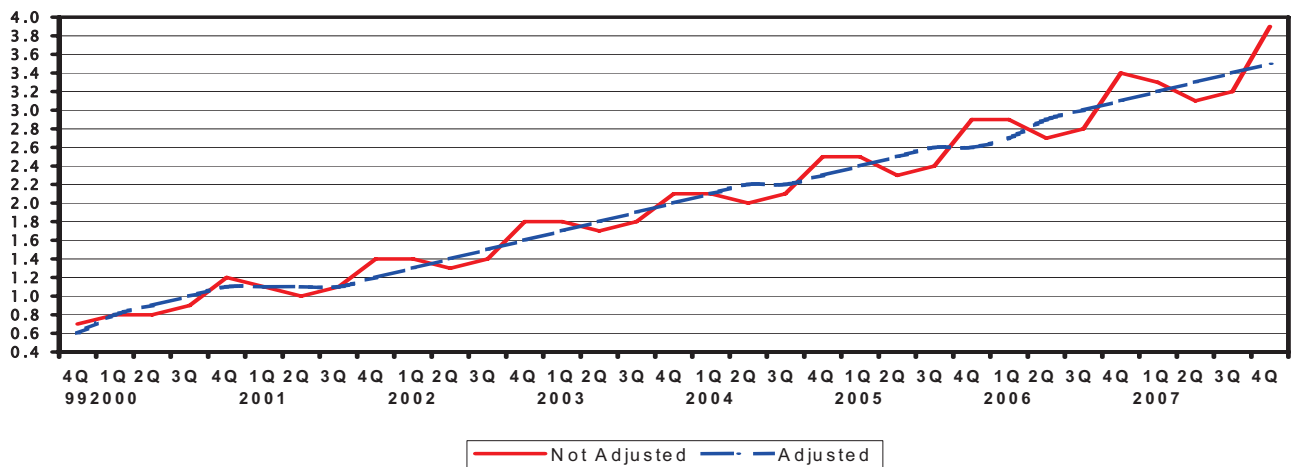
Figure 16: Quaterly Retail E-Commerce Sales (in percent of total retail sales) [SKK08].

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Exercises and tutorials

- There will be a weekly sheet with two exercises
  handed out **each Thursday** on the webpage.
  1st sheet will be handed out Thur. 19.4.

- Solutions to the exercises can be
  submitted until **next Wednesday 8 am** via email,
  1st sheet is due Wed. 25.4.

- Exercises will be corrected.

- Tutorials **each Wednesday 16–18**,
  1st tutorial at Wed. 18.4.

- Successful participation in the tutorial gives up to 10% bonus
  points for the exam.

Exam and credit points

- There will be a written exam at end of term
  (3h, 5 problems).

- The exam covers only this course (IS2),
  (In the past, it also covered IS1; this is a separate exam now.)

- The IS2 course gives 6 ECTS (2+2 SWS).
  - ECTS = European Credit Transfer System

  - 1 ECTS $\approx$ 30h workload (for the students)

  - 180h:

14 weeks	à 1.5 h lecture:	21 h
14 weeks	à 1.5 h tutorial:	21 h
	à 5 h solving exercises:	70 h
	à 4 h post preparation:	56 h
once 16h exam preparation:		16 h
total work load:		184 h

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Text books

- Kenneth C. Laudon, Jane P. Laudon, Detlef Schoder (^{2}2009):
  Wirtschaftsinformatik — Eine Einführung, Pearson Studium.

- Otto K. Ferstl, Elmar J. Sinz (^{6}2008):
  Grundlagen der Wirtschaftsinformatik, Oldenbourg.

- Franz Lehner, Stephan Wildner, Michael Scholz (^{2}2008):
  Wirtschaftsinformatik — Eine Einführung, Hanser.

Slides will be available online at the course webpage:

http://www.ismll.uni-hildesheim.de/lehre/is2-12s/

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