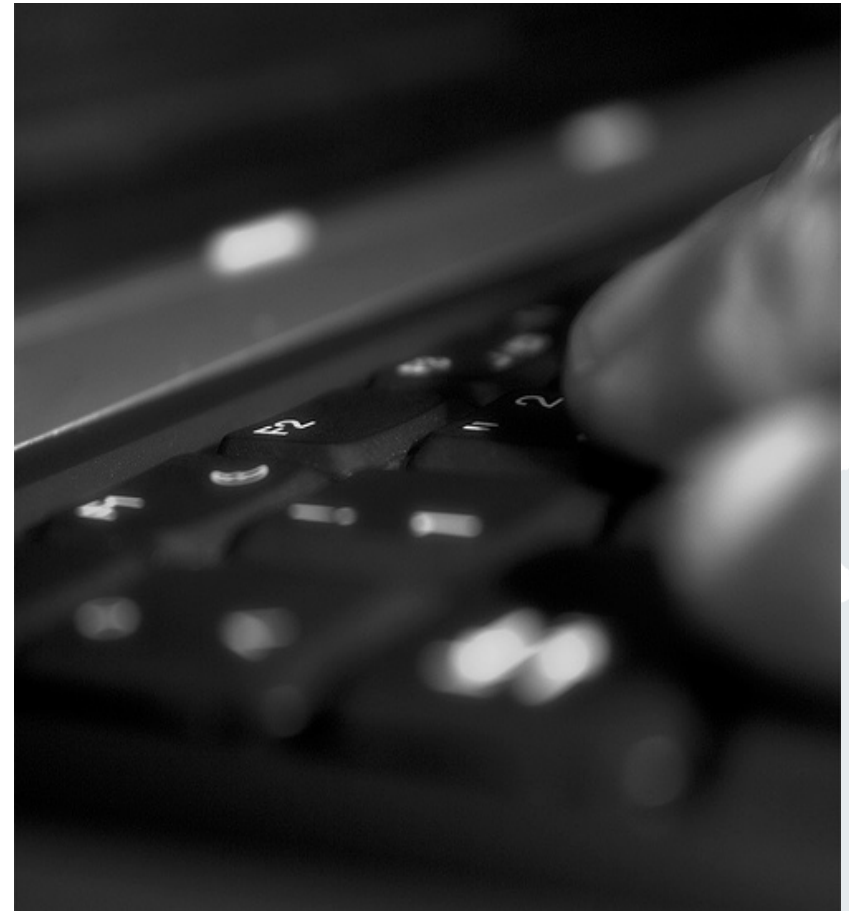


Exercise 1 Business Informatics 2 (PWIN)

Information Systems
SS 2021

Prof. Dr. Kai Rannenberg
www.m-chair.de



Jenser (Flickr.com)



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- **Course Slides**
 - Slides of the course can be downloaded from the website of the Chair at www.m-chair.de

- **Online News**
 - News about the course (e.g. room changes, announcements, etc.)
 - Available via website of Chair, RSS feed or Twitter



The screenshot shows the website for the Chair of Mobile Business & Multilateral Security. The page is titled "Wirtschaftsinformatik II (PWIN)" and provides basic information about the course. The left sidebar contains navigation links: Home, News, Team, Teaching, Chair, Research, Links, and Contact. The main content area includes a "Basic Information" section with details on the course type, duration, and lecturers. A "Content of the Course" section provides a detailed description of the course content, covering topics like information and communication systems, system architecture, and software development. The right sidebar features "Latest News" and "Quick Links" sections.

Basic Information

Type of Lectures:	Lectures
Course:	Bachelor
Hours/Week:	2
Credit Points:	6
Language:	German
Term:	Summer 2021
Lecturers:	<ul style="list-style-type: none"> • Prof. Dr. Kai-Inwon Kim • Peter Hees, M.Sc. • Frederic Trummer, M.Sc.
Email:	win2@m-chair.de

Content of the Course

Description: Basierend auf der Vorlesung "Wirtschaftsinformatik I" (WINI) vermittelt dieser Kurs die Grundlagen von Informations- und Kommunikationssystemen (IK-Systeme) und behandelt u.a. deren Entwicklung und Einführung in Unternehmen. Die Veranstaltung lässt sich groß in folgende vier Teile gliedern:

Im ersten Teil werden Bedeutung und Charakteristika von IK-Systemen in Unternehmen rekapituliert und eine kurze Einführung in die Unternehmensmodellierung gegeben.

Der zweite Teil geht mehr ins Detail und widmet sich der Architektur und Funktionalität von IK-Systemen. Es werden ferner die beiden miteinander verwandten Konzepte "Informationssysteme" (IS) und "Kommunikationssysteme" definiert und voneinander abgegrenzt. Dieser Abgrenzung folgend, werden IS-Architekturen und entsprechende IS-Modelle diskutiert und schichtenbasierte Kommunikation und Netzwerktechnologien für Kommunikationssysteme vorgestellt.

Der dritte Teil adressiert die Entwicklung von IK-Systemen und erläutert zunächst verschiedene Konzepte für das Management von IT-Projekten. Anschließend werden Vorgehensmodelle zur Softwareentwicklung vorgestellt. Da die Modellierung von IK-Systemen ein integraler Bestandteil solcher Vorgehensmodelle darstellt, werden ebenso verschiedene Modellierungssprachen (z.B. zur objektorientierten Modellierung) vermittelt. Als exemplarische Sprache zur Modell-Implementierung wird die Structured Query Language (SQL) behandelt - der für IK-Systeme wichtigsten Sprache für den Zugriff auf ihre Anwendungsdaten.

Latest News

- Job Advertisement: Student research assistants
- Chair of Mobile Business and Multilateral Security receives funding from the "Goethe-Corona-Fonds" of Goethe-University Frankfurt
- MCR2 exam review (SS21)
- MCR2 exam review (WS 19/20 and intake WS 19/20)
- Master seminar literature updated

Quick Links

- Courses
- Thesis
- FAQ (Teaching)
- Job Offers
- How to find us

m-chair @ twitter

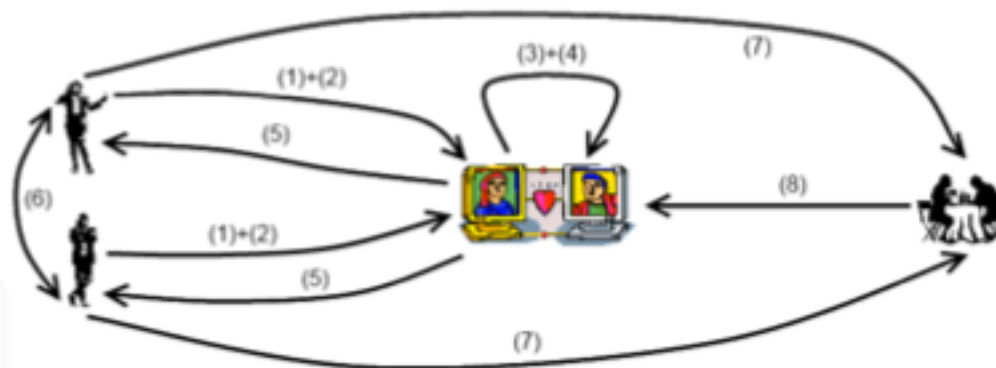
twitter: @mchair

Woche	Datum	Zeit	Veranstaltung	Serie/ Gruppe	Thema/Bemerkung
KW 15	Di, 13.04.2021	08:00 bis 10:00	Vorlesung	VL1	Informationssysteme I
	Di, 13.04.2021	10:00 bis 12:00	Vorlesung	VL2	Informationssysteme I
KW 16	Di, 20.04.2021	10:00 bis 12:00	Vorlesung	VL3	Informationssysteme II - Modelle und Architekturen
KW 17	Di, 27.04.2021	08:00 bis 10:00	Übung	Ü1	VL1, VL2
	Di, 27.04.2021	10:00 bis 12:00	Vorlesung	VL4	Informationssysteme III - Mobile Systeme
	Di, 27.04.2021	14:00 bis 16:00	Mentorium	M1	VL1, VL2
	Do, 29.04.2021	10:00 bis 12:00	Mentorium	M1	VL1, VL2
	Do, 29.04.2021	14:00 bis 16:00	Mentorium	M1	VL1, VL2
KW 18	Di, 04.05.2021	10:00 bis 12:00	Übung	Ü2	VL3, VL4
	Di, 04.05.2021	14:00 bis 16:00	Mentorium	M2	VL3, VL4
	Do, 06.05.2021	10:00 bis 12:00	Mentorium	M2	VL3, VL4
	Do, 06.05.2021	14:00 bis 16:00	Mentorium	M2	VL3, VL4
KW 19	Di, 11.05.2021	08:00 bis 10:00	Vorlesung	VL5	Kommunikationssysteme I - Schichtenbasierte K.
	Di, 11.05.2021	10:00 bis 12:00	Vorlesung	VL6	Kommunikationssysteme II - Kabelgeb. U. drahtlose K.
KW 20	Di, 18.05.2021	10:00 bis 12:00	Vorlesung	VL7	Management von IT Projekten
KW 21	Di, 25.05.2021	08:00 bis 10:00	Vorlesung	VL8	Entwicklung von IS I - Software Engineering
	Di, 25.05.2021	10:00 bis 12:00	Vorlesung	VL9	Entwicklung von IS II - Objektorientierung & UML
KW 22	Di, 01.06.2021	10:00 bis 12:00	Vorlesung	VL10	Entwicklung von IS III - Markup Languages
	Di, 01.06.2021	14:00 bis 16:00	Mentorium	M3	VL5, VL6
	Di, 03.06.2021	10:00 bis 12:00	Mentorium	M3	VL5, VL6
	Di, 03.06.2021	14:00 bis 16:00	Mentorium	M3	VL5, VL6

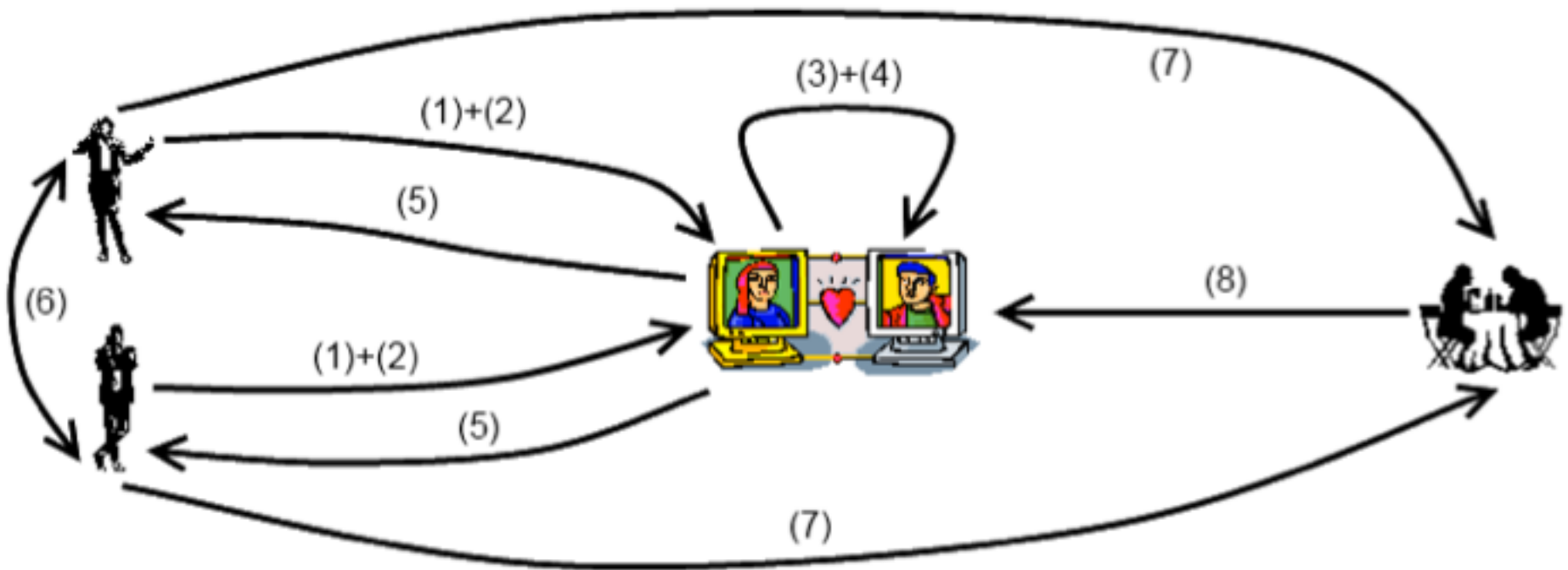
Woche	Datum	Zeit	Veranstaltung	Serie/ Gruppe	Thema/Bemerkung
KW 23	Di, 08.06.2021	08:00 bis 10:00	Übung	Ü3	VL5, VL6
	Di, 08.06.2021	10:00 bis 12:00	Gastvortrag	GV1	TBD
	Di, 08.06.2021	14:00 bis 16:00	Mentorium	M4	VL7, VL8
	Do, 10.06.2021	10:00 bis 12:00	Mentorium	M4	VL7, VL8
	Do, 10.06.2021	14:00 bis 16:00	Mentorium	M4	VL7, VL8
KW 24	Di, 15.06.2021	10:00 bis 12:00	Vorlesung	VL11	Datenbankansatz & Datenorientierte Modellierung
KW25	Di, 22.06.2021	08:00 bis 10:00	Gastvortrag	GV2	TBD
	Di, 22.06.2021	10:00 bis 12:00	Übung	Ü4	VL7, VL8
	Di, 22.06.2021	14:00 bis 16:00	Mentorium	M5	VL9, VL10
	Do, 24.06.2021	10:00 bis 12:00	Mentorium	M5	VL9, VL10
	Do, 24.06.2021	14:00 bis 16:00	Mentorium	M5	VL9, VL10
KW 26	Di, 29.06.2021	10:00 bis 12:00	Übung	Ü5	VL9, VL10
KW 27	Di, 06.07.2021	08:00 bis 10:00	Vorlesung	VL12	SQL
	Di, 06.07.2021	10:00 bis 12:00	Übung	Ü6	VL11, VL12
	Di, 06.07.2021	14:00 bis 16:00	Mentorium	M6	VL11, VL12
	Do, 08.07.2021	10:00 bis 12:00	Mentorium	M6	VL11, VL12
	Do, 08.07.2021	14:00 bis 16:00	Mentorium	M6	VL11, VL12
KW 28	Di, 13.07.2021	10:00 bis 12:00	Vorlesung	Q&A	Q&A

- Application scenario
- Exercise I
 - Exercise 1: Application System vs. Information System
 - Exercise 2: Modeling
 - Exercise 3: Media disruptions

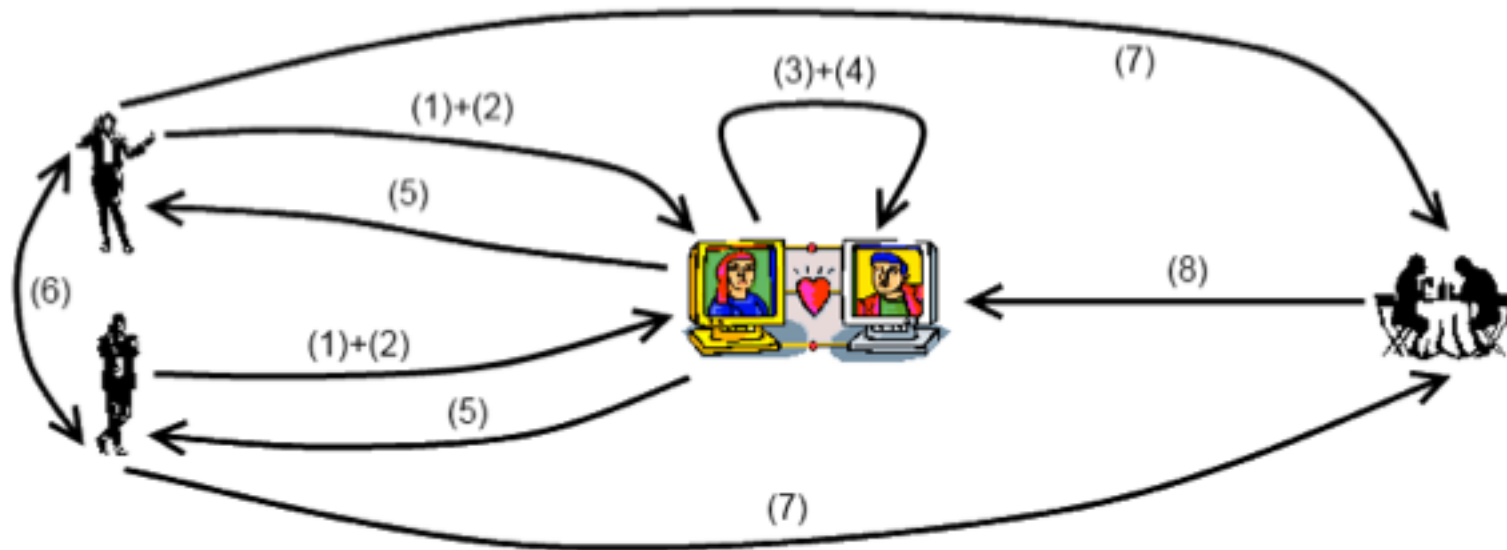
- Foundation for all six exercise sessions
- Fictitious mobile dating platform which takes advantage of the unique features of mobile communication



- Users have personal profiles (e.g. comprised of gender, age, personal interests, etc.)
- Pseudonyms available for user-to-user communication
- Users have their own contact list with journal and calendar to maintain their dates
- Certificated attributes for better matchmaking
- **Location-based push notifications** for ad-hoc-meetings (matching based on profile information)
- **Meeting Point recommendations** (incl. navigation directions)
- **Meeting points pay** for being recommended. **Users pay** for the service usage via their phone bill.

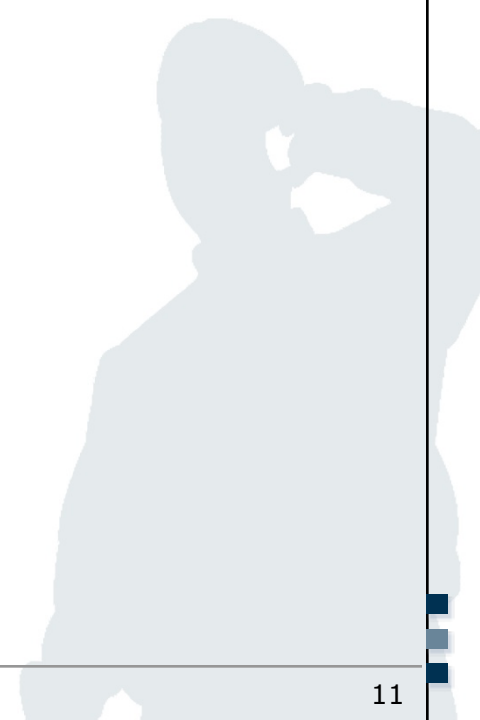


- 1) Users register and submit personal profile information. InstaMatch certifies the information.
- 2) Users access and activate the InstaMatch on their mobile device
- 3) InstaMatch searches for other users in their close proximity
- 4) InstaMatch matches personal profiles of users in close proximity



- 5) If there is a match, InstaMatch informs the corresponding users
- 6) InstaMatch enables a user communication via text messages, chat or voice
- 7) If users want to meet, a list of appropriate meeting points can be recommended to them
- 8) After the date, users are able to rate their meeting in order to improve their next matching process.

- Application scenario
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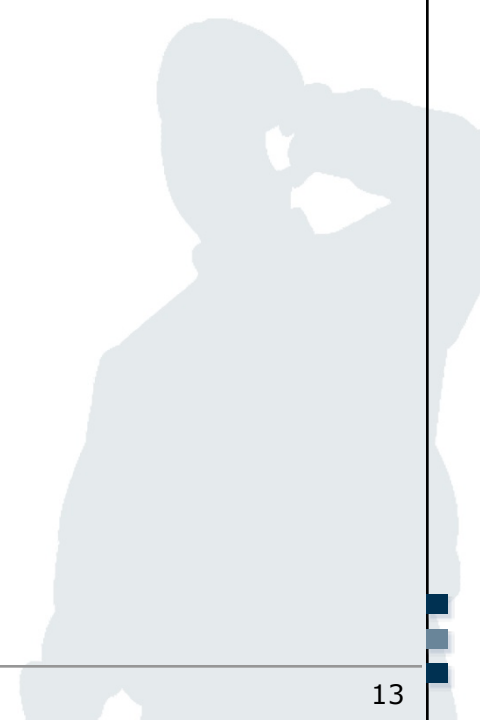
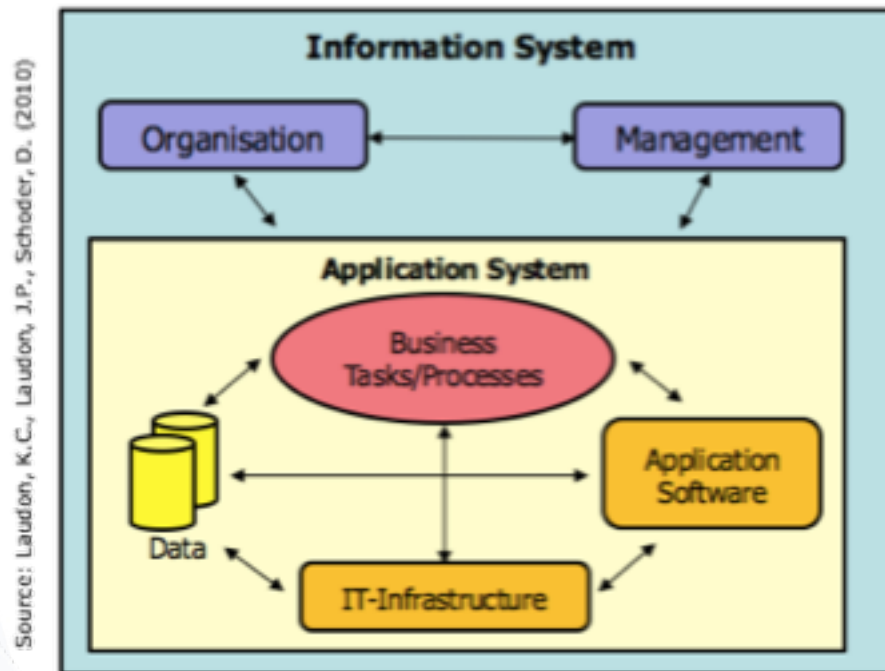


- a) Differentiate and **define** Application System (AS) and Information System (IS).

- Application System (AS):

A system, which consists of business tasks and processes it supports, the underlying IT-infrastructure, the application software and the data it required in order to accomplish its objectives.

Components



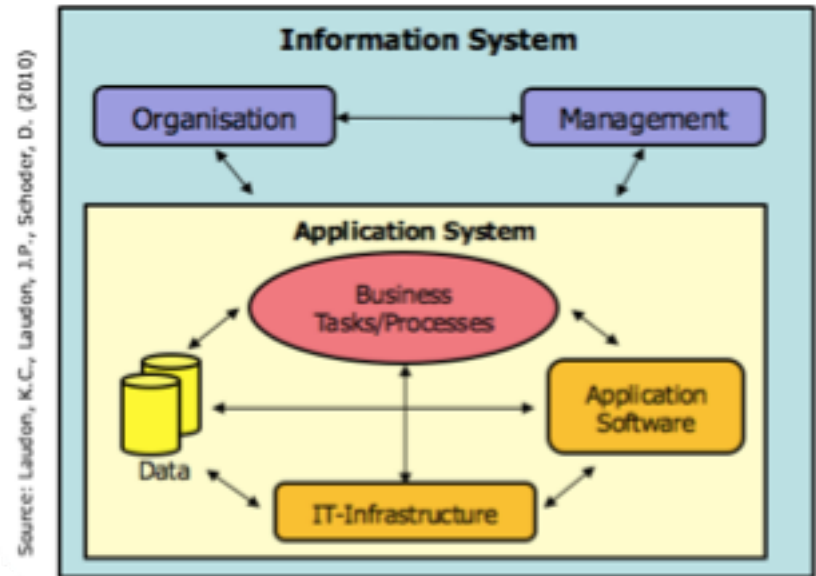
- Information System (IS):

Information system

“[...] a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordinating and control in an organization.”

Objectives

Source: Laudon, Laudon (2013), p. 35

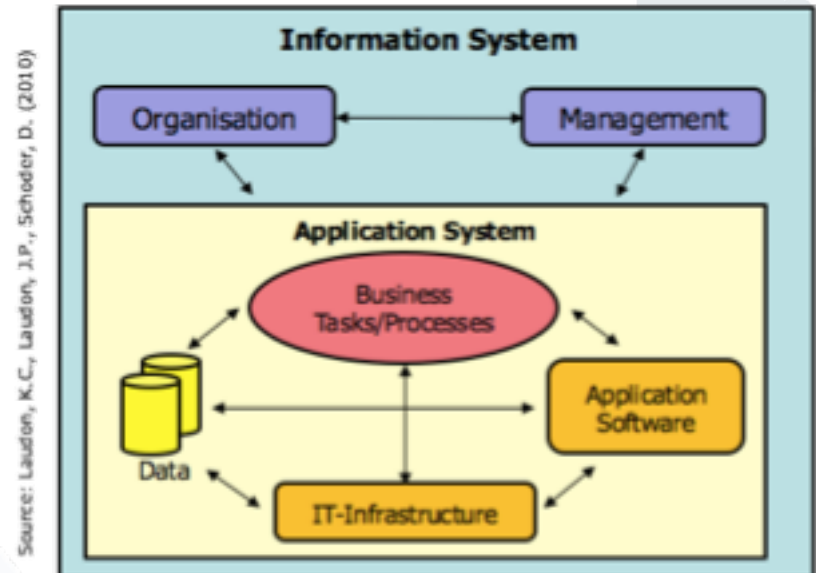


Exercise 1a: Solution

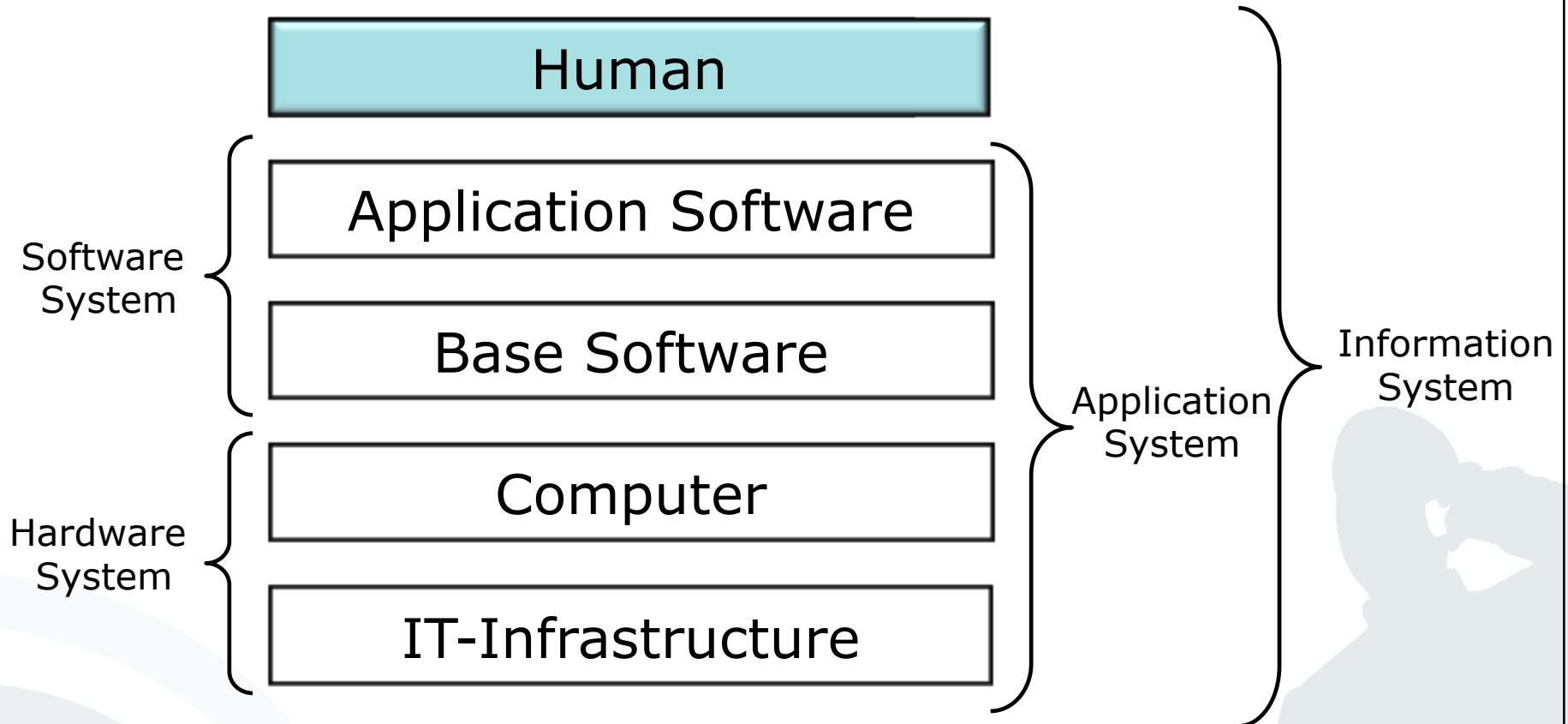
- Information System (IS):

A system which was built to be used in a part of an enterprise. It contains all relevant application systems and is embedded into the organisation and management of an enterprise.

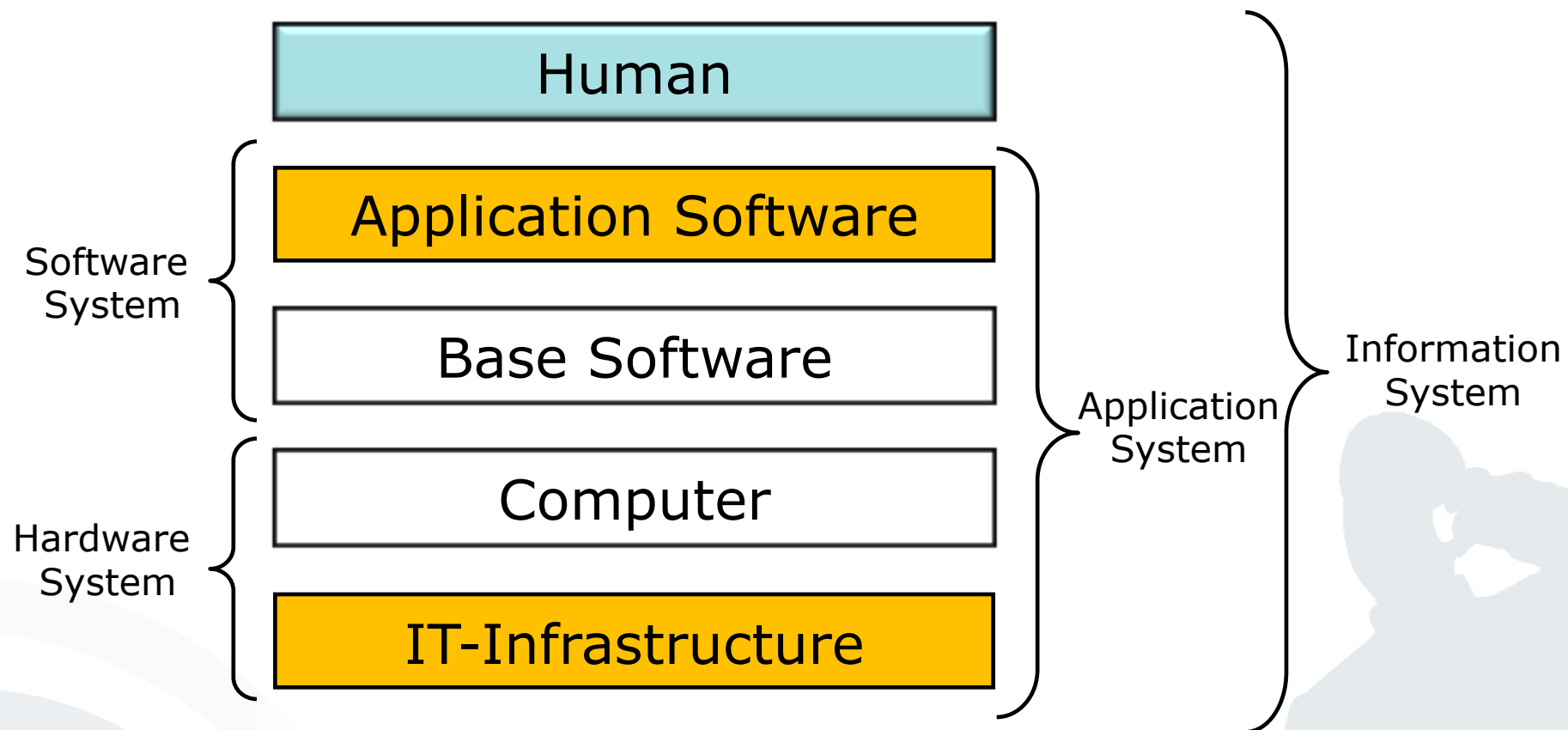
Context



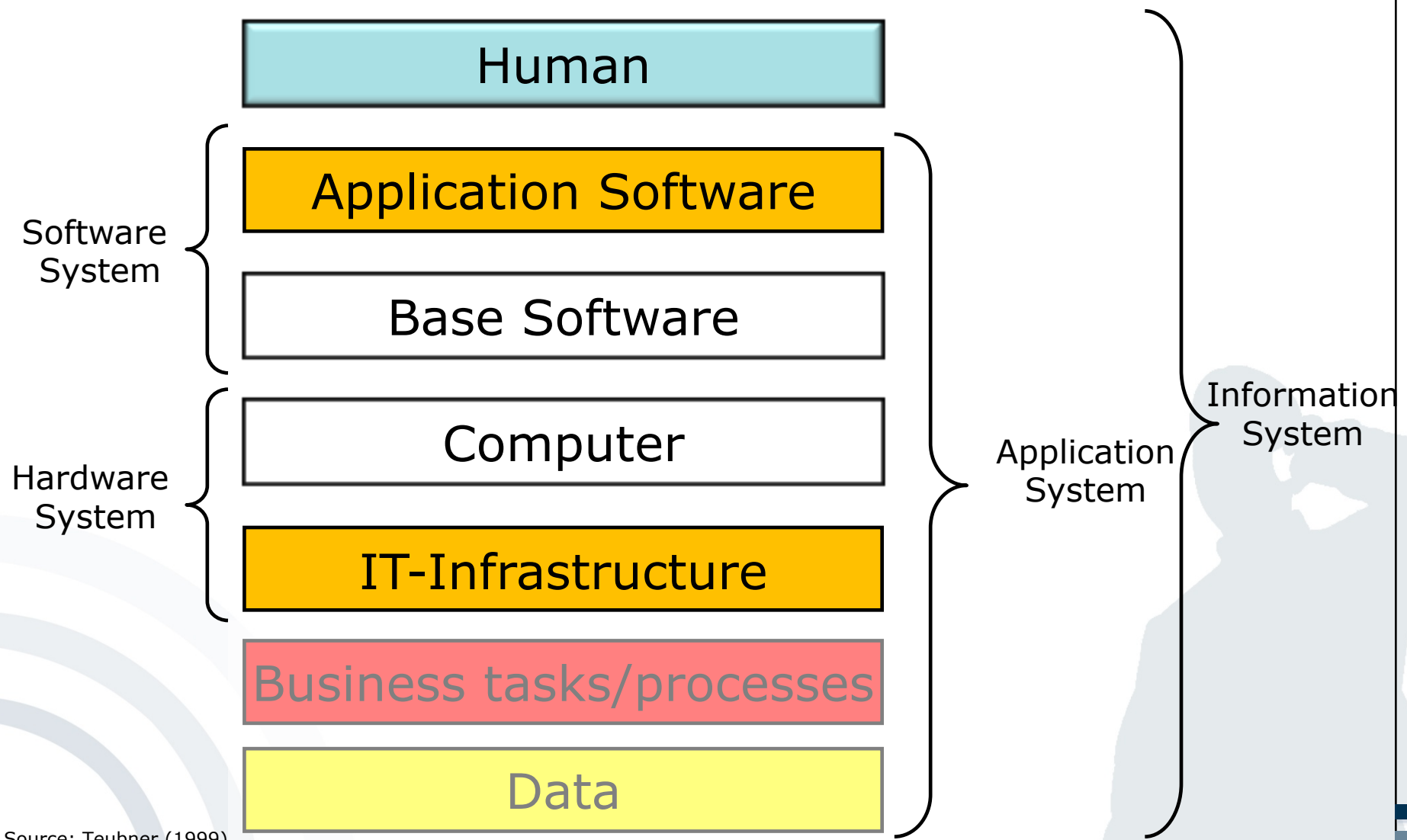
- a) Differentiate and define Application System (AS) and Information System (IS).



Source: Teubner (1999)

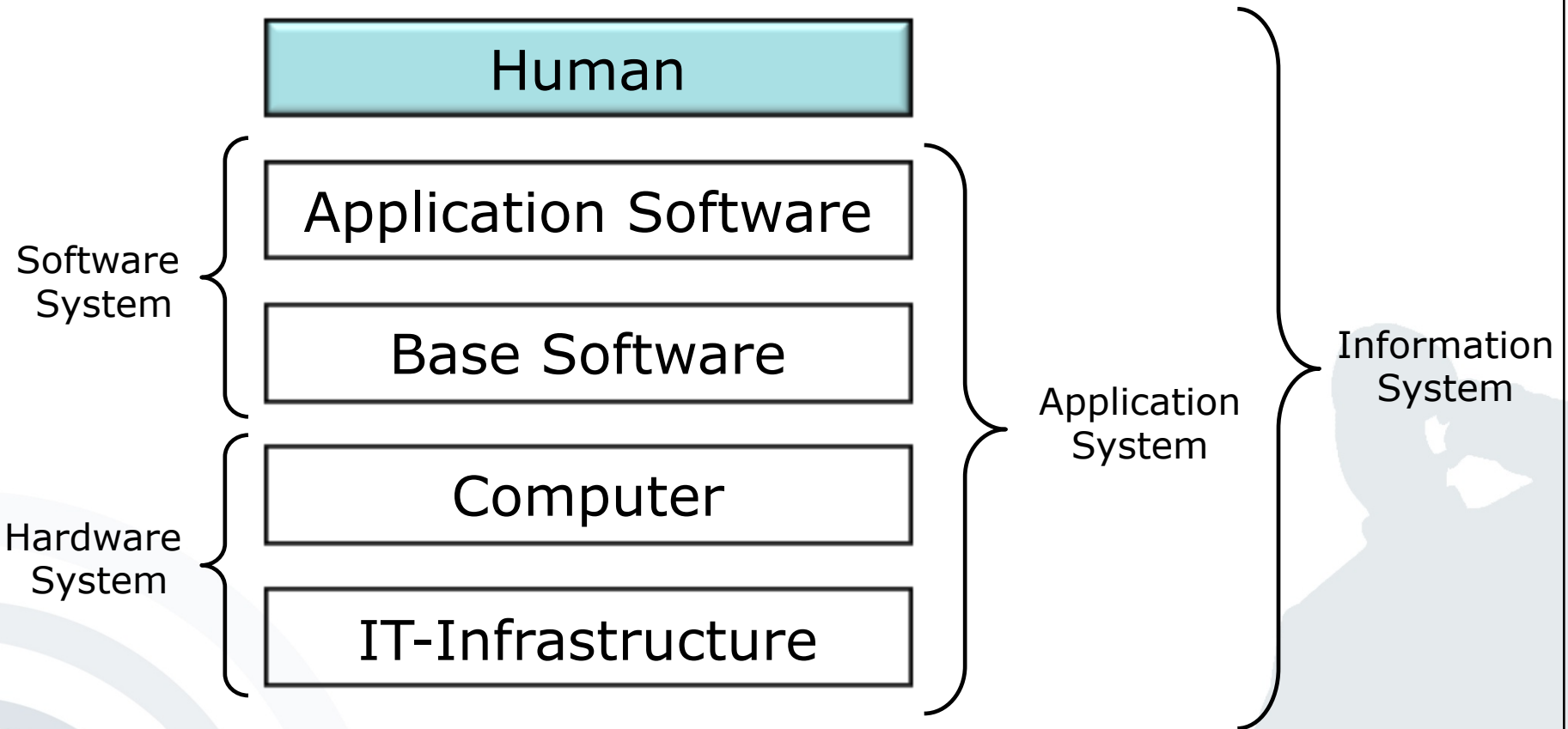


Source: Teubner (1999)



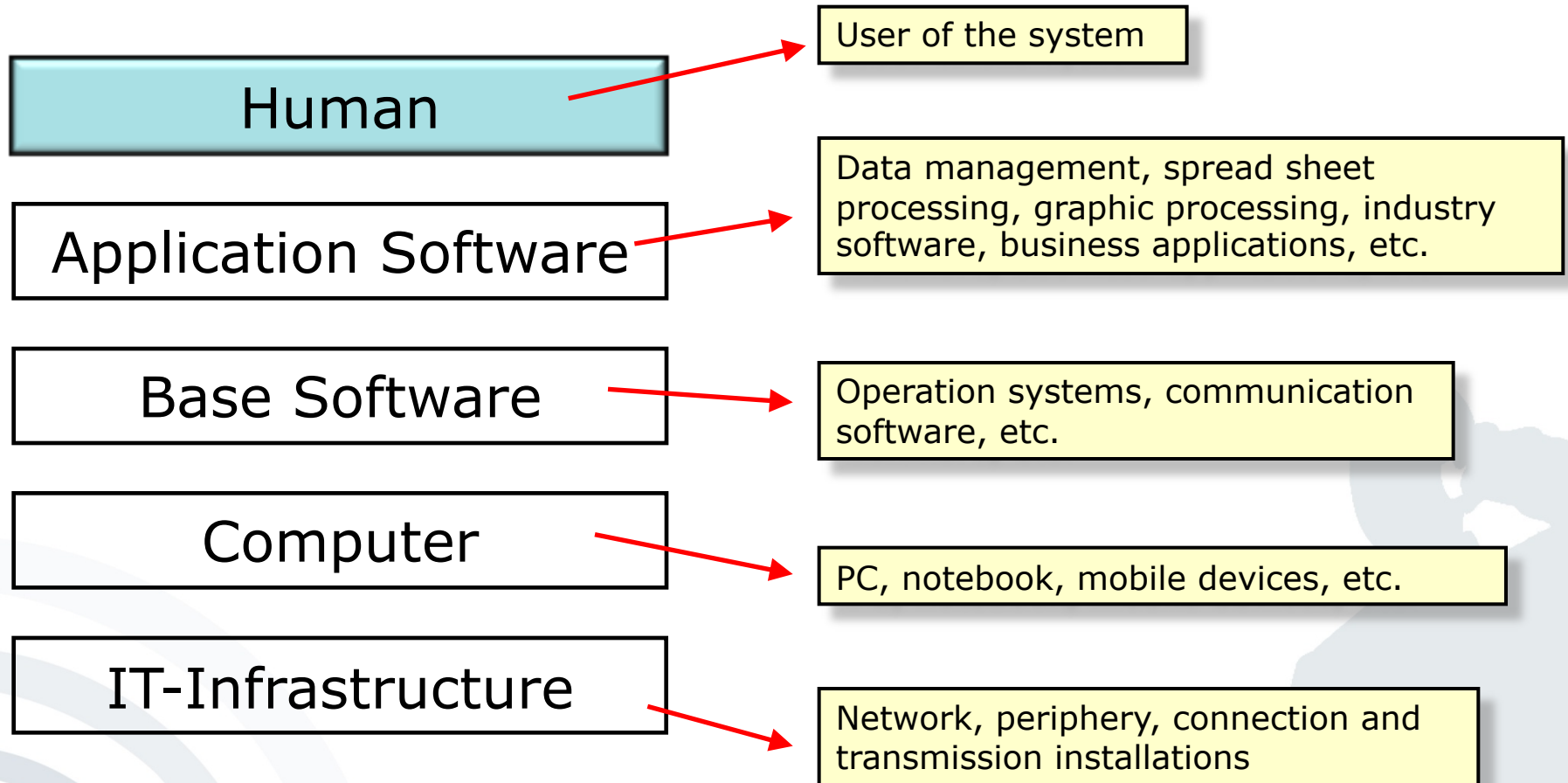
Source: Teubner (1999)

- b) Name the components of a Hardware System, Software System, Application System and Information System.



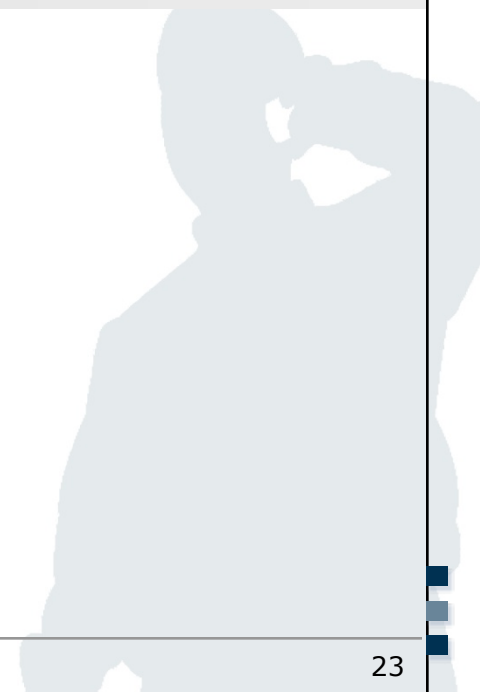
Source: Teubner (1999)

Exercise 1b: Solution



Source: Teubner (1999)

- Application scenario
- Exercise I
 - Exercise 1: Application System vs. Information System
 - Exercise 2: Modeling
 - Exercise 3: Media disruptions

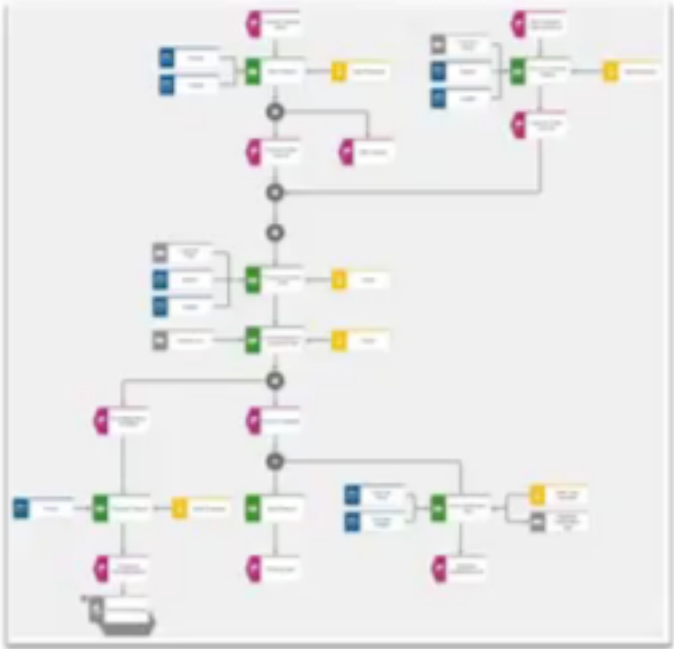


- a) Explain why Enterprise Modeling based on the ARIS concept differentiates between the three abstraction layers *conceptual model*, *technical model*, and *physical model* (Fachkonzept, DV-Konzept und Implementierung)? What target group (e.g. project manager, developer, etc.) does each layer specifically address?

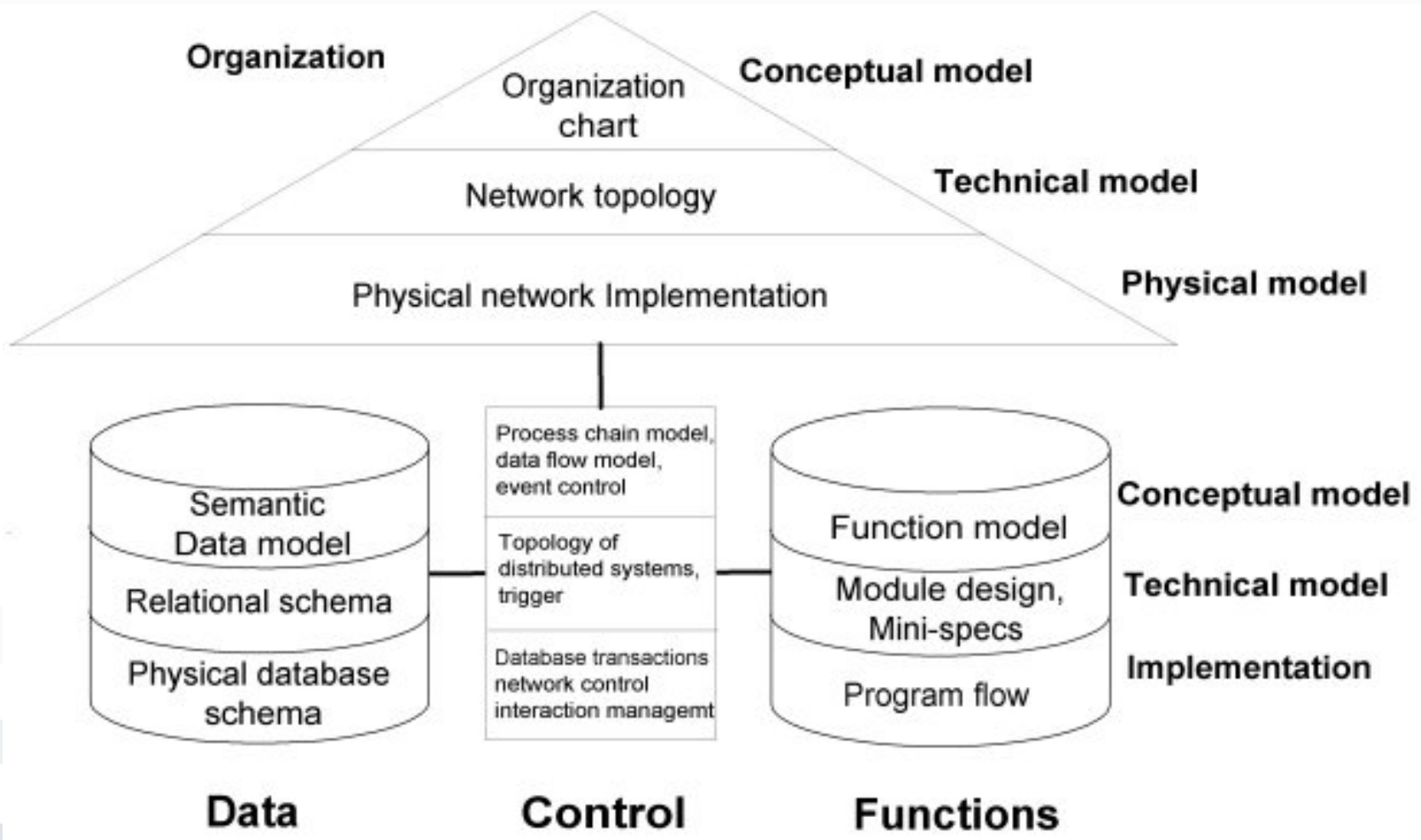
Exercise 2a: Background

CONFIANCE UNIVERSITY Business Process Modeling and Collaboration ARIS Connect
Value of Business Process Modeling

Business Process Models provide the following benefits:



<https://www.youtube.com/watch?v=TRJmLqE9c7E>



ARIS Architecture

- *Conceptual model, technical model and physical model* satisfy the need of different target groups for a different “views” on the same enterprise model.

- **Conceptional Model**
 - Describes processes independent from the implementation in an information system (e.g. via ERM or EPK)
 - Target group: Specialty departments
- **Technical Model**
 - Translation of business concepts into IS-related concepts (e.g. structure chart, topologies, relations, etc.)
 - Target group: Business Informatics specialists
- **Physical Model**
 - Specific/detailed description of a technical IS implementation based on the technical model (e.g. programming code, database systems)
 - Target group: Software Engineers

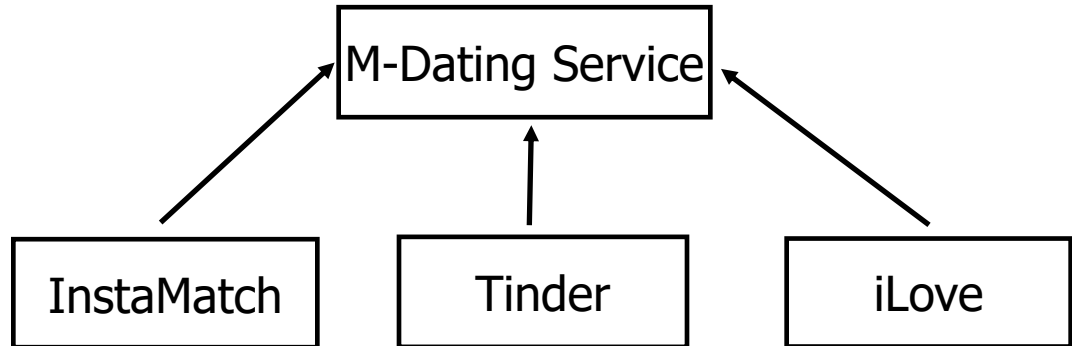
- b) Explain briefly the abstraction mechanisms “aggregation” and “generalisation” in the modelling context. In addition, give an example for each of the two mechanisms with regard to the InstaMatch service.

- Models are used for the purpose of **simplification and complexity reduction**
- Abstracting mechanisms in this regard are:
 - **Aggregation** (vs. Disaggregation): Different objects are combined to a new object.
 - **Generalisation** (vs. Specialisation): Similar objects are abstracted to become a new high-level object.

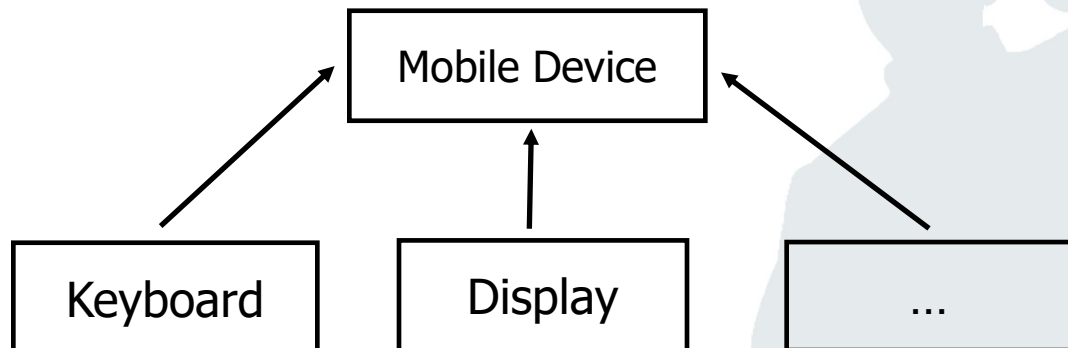
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- InstaMatch Examples
 - **Aggregation**: Location, Gender, Age, Interests
→ Matching algorithm
 - **Generalisation**: Mobile Phone, Smart Phone, Tablet-PC
→ Mobile Device

Exercise 2b: Further Examples

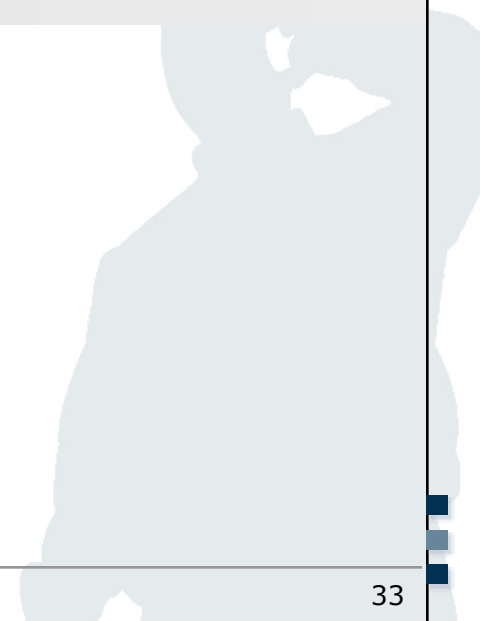
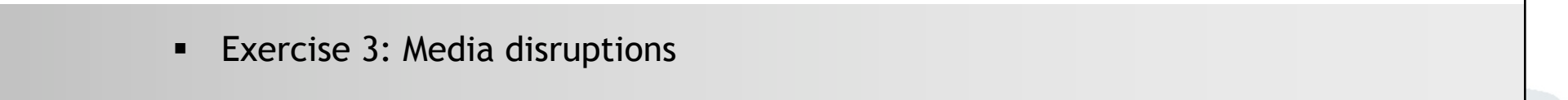
- Generalisation



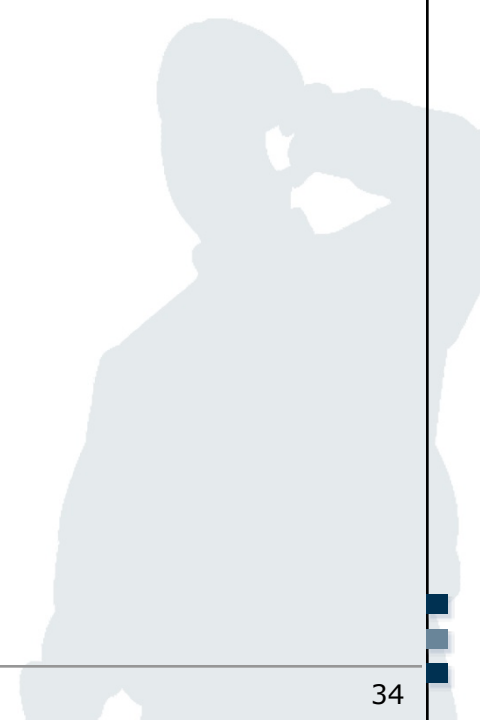
- Aggregation



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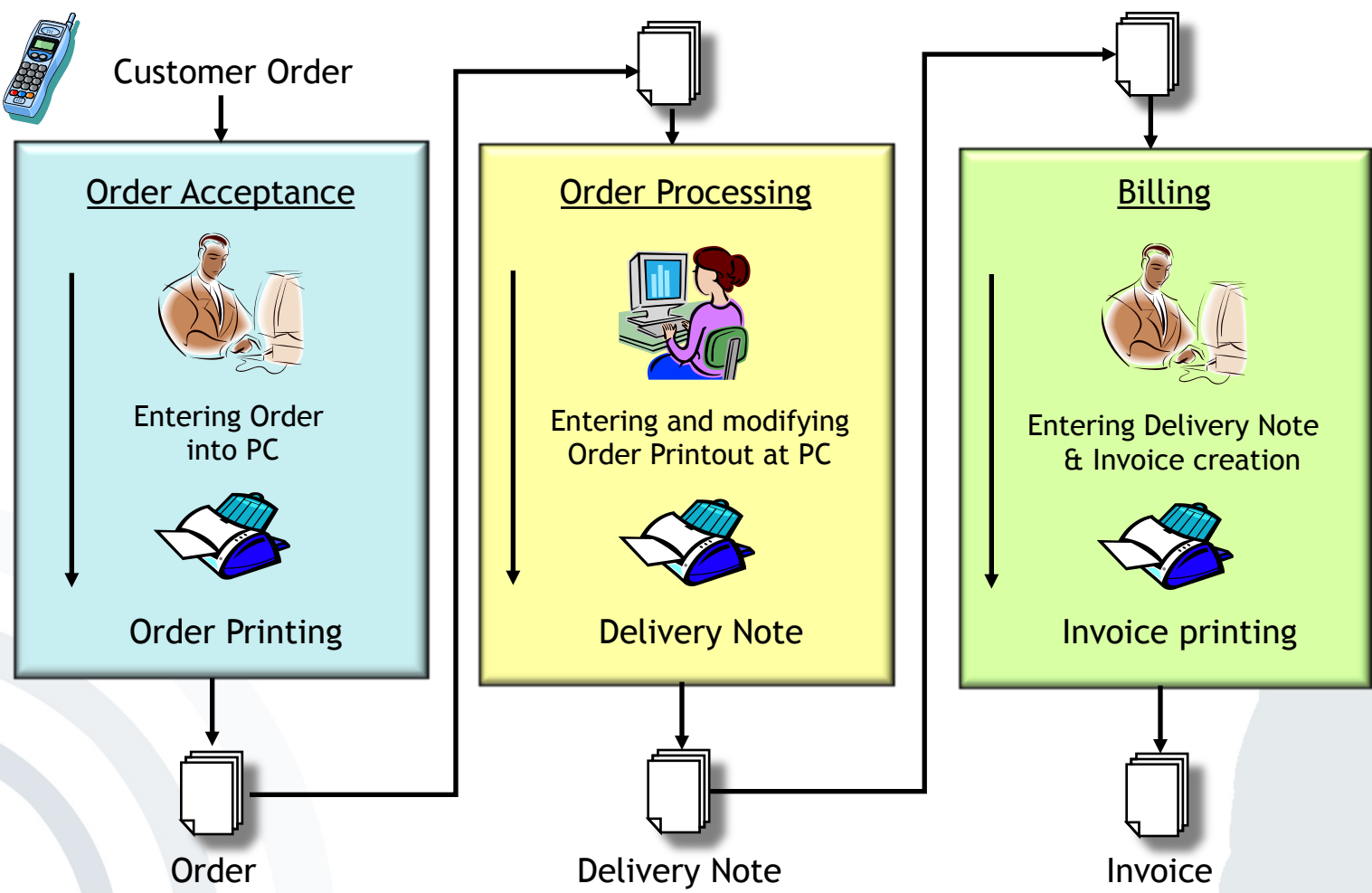


- a) What is the meaning of the term “media disruption” in the context of Information Systems? Name two consequences of media disruptions in Information Systems for an enterprise.



Exercise 3a: Solution

Business Process in an Enterprise (example): Isolated Information Systems



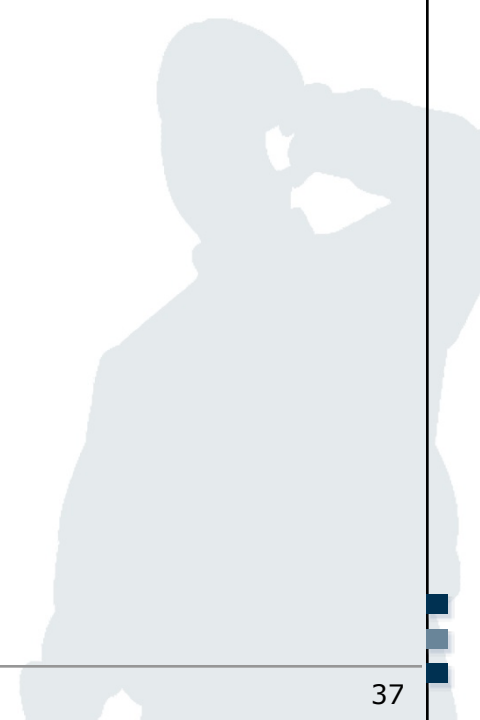
Source: Based on Schwickert, 2003

Problems of isolated Information Systems

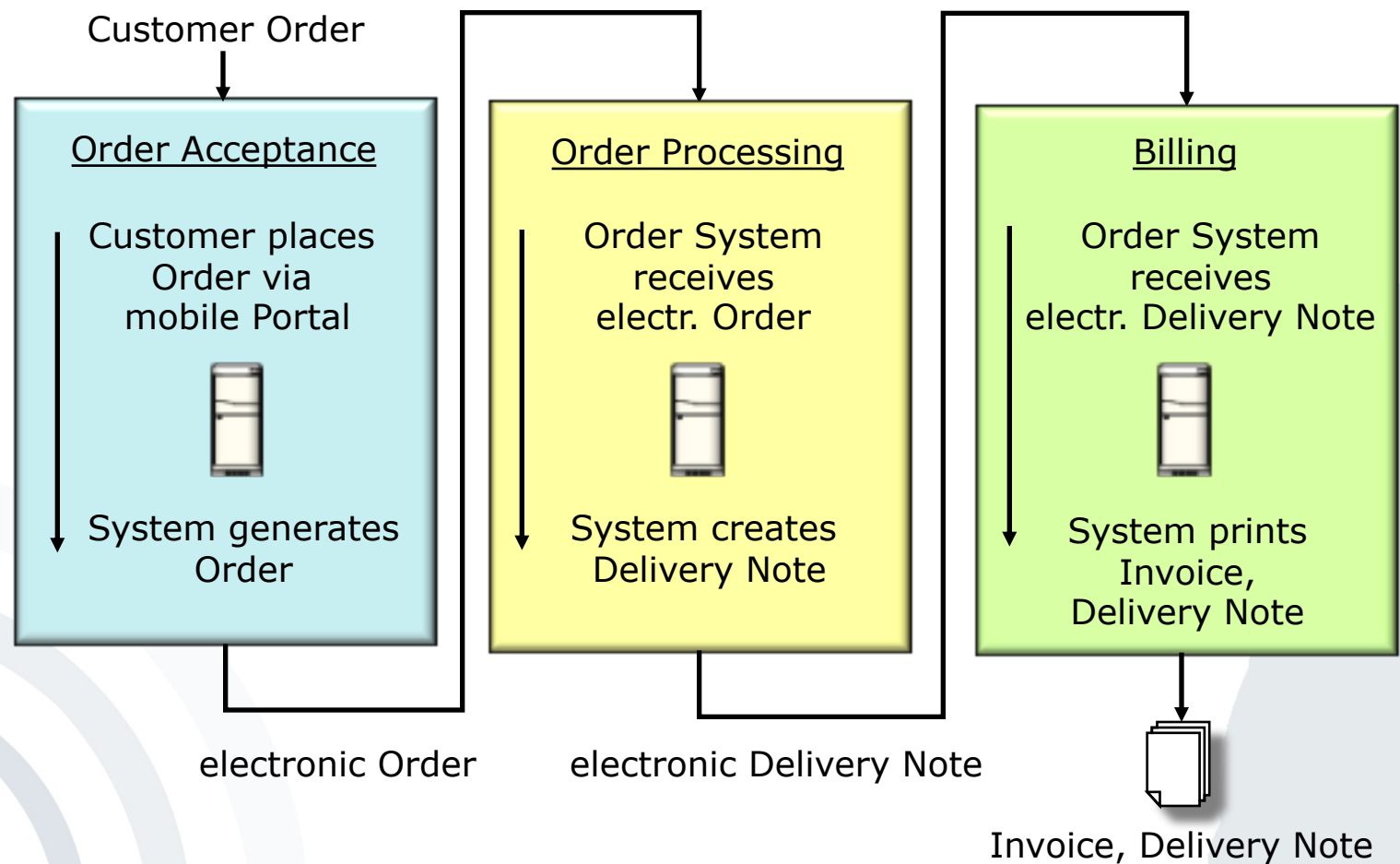
Media disruptions between Information Systems, i. e.

- Long processing times
- Error-prone
- Personnel-intensive
- Cost-intensive
- Inflexible (e.g. regarding order modifications)
- Difficult controlling because of lack of common data basis

b) How can media disruptions be rectified? What challenges can emerge during this approach?



Business Process in an Enterprise (example): Connected Information Systems



Source: Based on Schwickert, 2003

Main challenge to Connected Information Systems: Integration of different, often incompatible systems and components

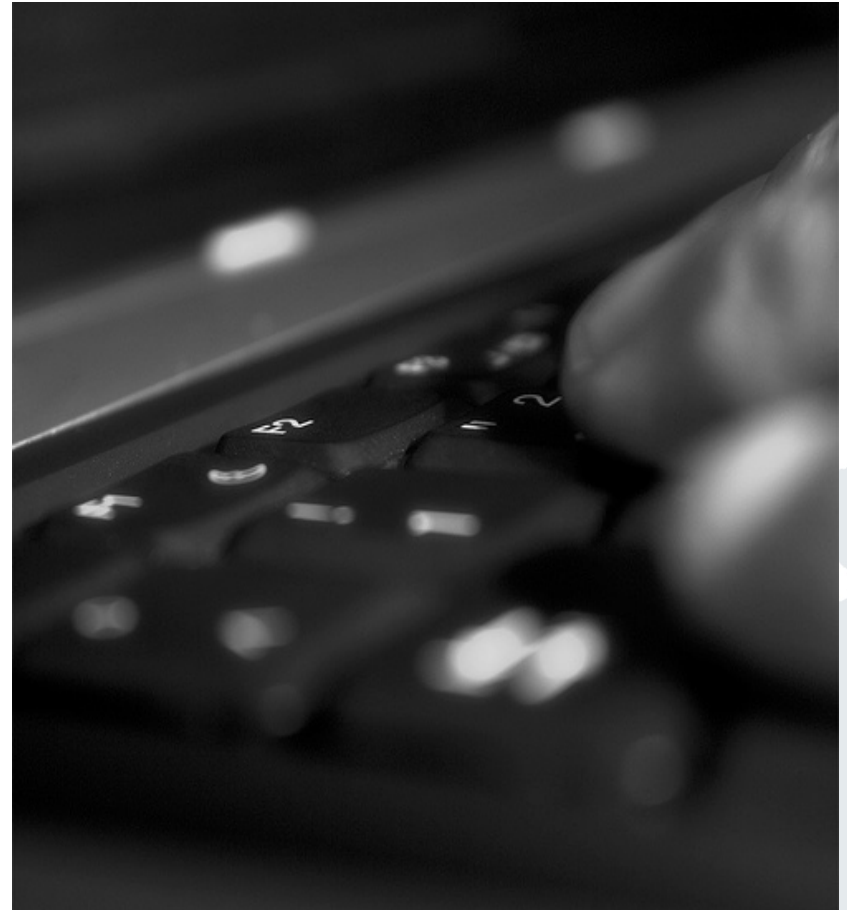
- Redundant data storage in existing IS
- Incompatible data formats in existing IS
- No existing communication interfaces of existing IS

Further challenges

- High switching costs to a new IS
- High complexity of integrated IS
- Potential resistance from extant system users

Exercise 1
Business Informatics 2 (PWIN)

Thank you!



Jenser (Flickr.com)