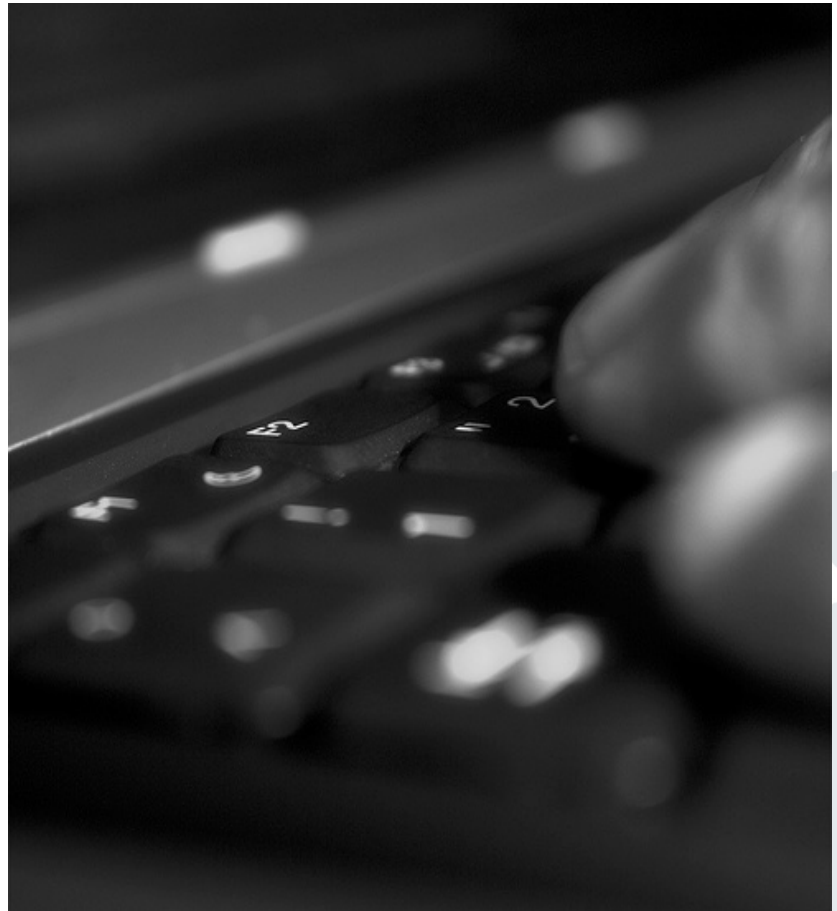


## Exercise 1 Business Informatics 2 (PWIN)

Information Systems  
SS 2019

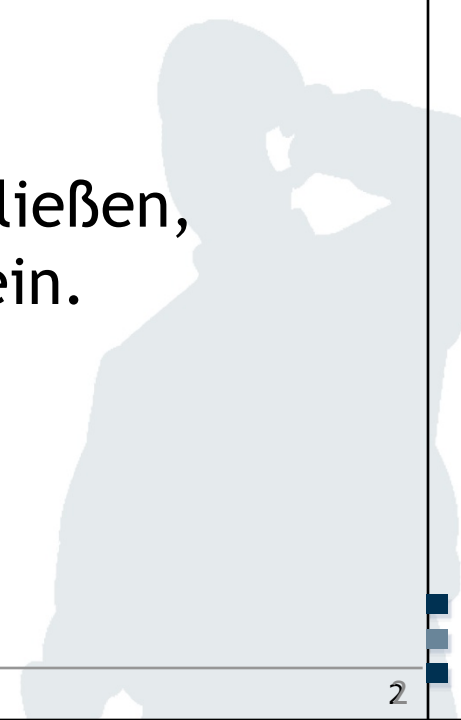
Prof. Dr. Kai Rannenberg  
[www.m-chair.de](http://www.m-chair.de)



Jenser (Flickr.com)

- Umfrage zum BMBF-Projekt Selbstdatenschutz im Online-Commerce (SIOC).
- Teilnehmer erhalten Fake-Daten mit denen sie sich in einem zugehörigen Demo-Shop anmelden und anonymisiert einkaufen.
- Alle Teilnehmer, die den Fragebogen abschließen, erhalten einen 10€ Amazon Einkaufsgutschein.
- Anmeldung unter:

***[m-chair.de/survey](https://m-chair.de/survey)***





Christopher Schmitz  
M.Sc.

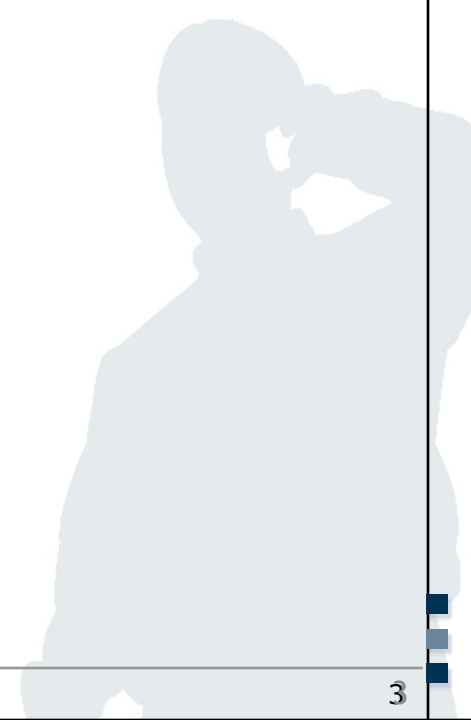
**Please write to:  
[win2@m-chair.de](mailto:win2@m-chair.de)**



Ann-Kristin Lieberknecht  
M.Sc.



Frédéric Tronnier  
M.Sc.



- Course Slides
  - Slides of the course can be downloaded from the website of the Chair at [www.m-chair.de](http://www.m-chair.de)
- Solutions to Exercises will be uploaded as well as “Lösungshinweise” for the Mentorium
- Online News
  - News about the course (e.g. room changes, announcements, etc.)
  - Available via website of Chair, RSS feed or Twitter

www.m-chair.de | twitter @mchair | Imprint | Sitemap




## Chair of Mobile Business & Multilateral Security

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### ■ Wirtschaftsinformatik II (PWIN)

#### ■ Basic Information

**Type of Lecture:** Lecture  
**Course:** Bachelor  
**Hours/Week:** 3  
**Credit Points:** 6  
**Language:** German  
**Term:** Summer 2019  
**Lecturers:**

- Prof. Dr. Kai Rannenberg
- Christopher Schmitz M.Sc.
- Ann-Kristin Lieberknecht MSc.

**Email:** [win2@m-chair.de](mailto:win2@m-chair.de)

**Content of the Course**

**Description:** Basierend auf der Vorlesung "Wirtschaftsinformatik 1" (OWIN) vermittelt dieser Kurs die Grundlagen von Informations- und Kommunikationssystemen (IuK-Systeme) und behandelt u.a. deren Entwicklung und Einführung in Unternehmen. Die Veranstaltung lässt sich grob in folgende vier Teile gliedern:  
 Im ersten Teil werden Bedeutung und Charakteristika von IuK-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 IuK-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.

#### Latest News

- MOB1 Exam Review
- Evaluation for MOB1 will happen on the 15th of January, 2019
- Next INKO course on Monday
- INKO guest lecture replaced by an exercise
- The deadline for Post-doctoral job application is extended

#### Quick Links

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

#### mchair @ twitter

twitter: @mchair

| Woche | Datum          | Zeit            | Raum     | Veranstaltung | Thema/Bemerkung                                      |
|-------|----------------|-----------------|----------|---------------|--|
| KW 42 | Di, 15.10.2019 | 08:00 bis 10:00 | HZ 4     | Vorlesung     | Informationssysteme I                                |
|       | Di, 15.10.2019 | 10:00 bis 12:00 | HZ 4     | Vorlesung     | Informationssysteme I                                |
| KW 43 | Di, 22.10.2019 | 10:00 bis 12:00 | HZ 4     | Übung         | VL1, VL2   |
|       | Di, 22.10.2019 | 14:00 bis 16:00 | H5       | Mentor        |  |
|       | Do, 24.10.2019 | 10:00 bis 12:00 | SH 1.106 |               |  |
|       | Do, 24.10.2019 | 14:00 bis 16:00 | HZ 4     | Mentor        |  |
| KW 44 | Di, 29.10.2019 | 08:00 bis 10:00 | HZ 4     | Vorl          | uren   |
|       | Di, 29.10.2019 | 10:00 bis 12:00 | HZ 4     | Vorl          |  |
| KW 45 | Di, 05.11.2019 | 10:00 bis 12:00 | HZ 4     | Übu           |  |
|       | Di, 05.11.2019 | 14:00 bis 16:00 | H5       | Mentor        |  |
|       | Do, 07.11.2019 | 10:00 bis 12:00 | SH 1.106 | Mentorium     |  |
|       | Do, 07.11.2019 | 14:00 bis 16:00 | HZ 4     | Mentorium     |  |
| KW 46 | Di, 12.11.2019 | 10:00 bis 12:00 | HZ 4     | Gastvorlesung | Tbd  |
| KW 47 | Di, 19.11.2019 | 10:00 bis 12:00 | HZ 4     | Gastvorlesung | Tbd  |
| KW 48 | Di, 26.11.2019 | 08:00 bis 10:00 | HZ 4     | Vorlesung     | Kommunikationssysteme I - Schichtenbasierte K.       |
|       | Di, 26.11.2019 | 10:00 bis 12:00 | HZ 4     | Vorlesung     | Kommunikationssysteme II - Kabelgeb. U. drahtlose K. |
| KW 49 | Di, 03.12.2019 | 10:00 bis 12:00 | HZ 4     | Übung         | VL5, VL6   |
|       | Di, 03.12.2019 | 14:00 bis 16:00 | SH 2.109 | Mentorium     |  |
|       | Do, 5.12.2019  | 10:00 bis 12:00 | SH 1.106 | Mentorium     |  |
|       | Do, 5.12.2019  | 14:00 bis 16:00 | HZ4      | Mentorium     |  |

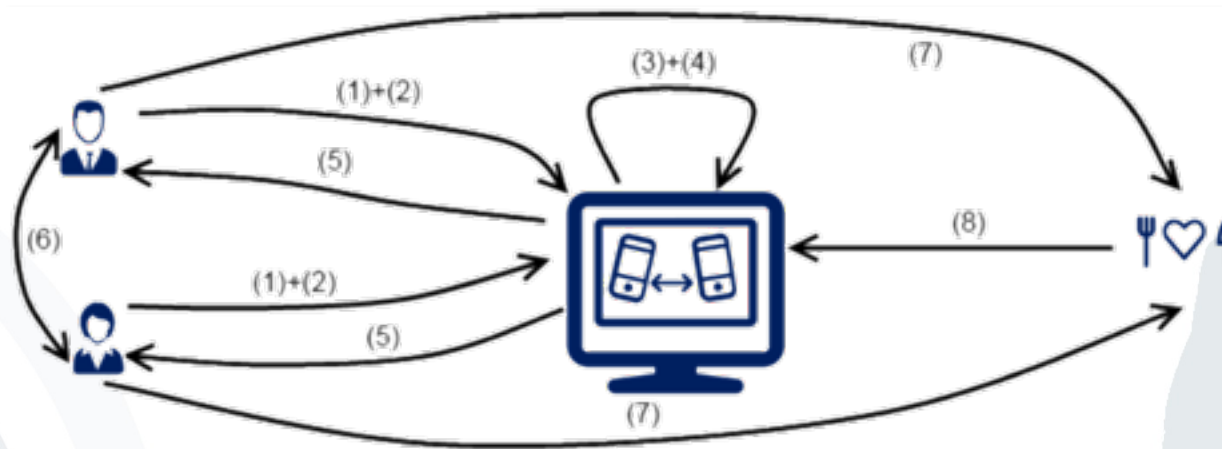
Hörsaaltrakt Bockenheim  
Gräfstraße 50-54  
2.OG

| Woche | Datum          | Zeit            | Raum     | Veranstaltung | Thema/Bemerkung  |
|-------|----------------|-----------------|----------|---------------|--|
| KW 50 | Di, 10.12.2019 | 08:00 bis 10:00 | HZ 4     | Vorlesung     | Management von IT Projekten                            |
|       | Di, 10.12.2019 | 10:00 bis 12:00 | HZ 4     | Vorlesung     | Entwicklung von IS I - Software Engineering            |
| KW 51 | Di, 17.12.2019 | 10:00 bis 12:00 | HZ 4     | Übung         | VL7, VL8   |
|       | Di, 17.12.2019 | 14:00 bis 16:00 | SH 2.109 | Mentorium     |  |
|       | Do, 19.12.2019 | 10:00 bis 12:00 | SH 1.106 | Mentorium     |  |
|       | Do, 19.12.2019 | 14:00 bis 16:00 | HZ4      | Mentorium     |  |
| KW 3  | Di, 14.01.2020 | 10:00 bis 12:00 | HZ 4     | Vorlesung     | Entwicklung von IS II - Objektorientierung & UML       |
| KW 4  | Di, 21.01.2020 | 08:00 bis 10:00 | HZ 4     | Vorlesung     | Entwicklung von IS III - Markup Languages<br>VL9, VL10 |
|       | Di, 21.01.2020 | 10:00 bis 12:00 | HZ4      | Übung         |  |
|       | Di, 21.01.2020 | 14:00 bis 16:00 | SH 2.109 | Mentorium     |  |
|       | Do, 23.01.2020 | 10:00 bis 12:00 | H5       | Mentorium     |  |
|       | Do, 23.01.2020 | 14:00 bis 16:00 | SH 0.109 | Mentorium     |  |
| KW 5  | Di, 28.01.2020 | 10:00 bis 12:00 | HZ 4     | Vorlesung     | Datenbankansatz & Datenorientierte Modellierung        |
| KW 6  | Di, 04.02.2020 | 08:00 bis 10:00 | HZ 4     | Vorlesung     | SQL<br>VL11, VL12                                      |
|       | Di, 04.02.2020 | 10:00 bis 12:00 | HZ 4     | Übung         |  |
|       | Di, 04.02.2020 | 14:00 bis 16:00 | SH 2.109 | Mentorium     |  |
|       | Do, 06.02.2020 | 10:00 bis 12:00 | H5       | Mentorium     |  |
|       | Do, 06.02.2020 | 14:00 bis 16:00 | SH 0.109 | Mentorium     |  |
| KW 7  | Di, 11.02.2020 | 10:00 bis 12:00 | HZ 4     | Vorlesung     | Q&A  |

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

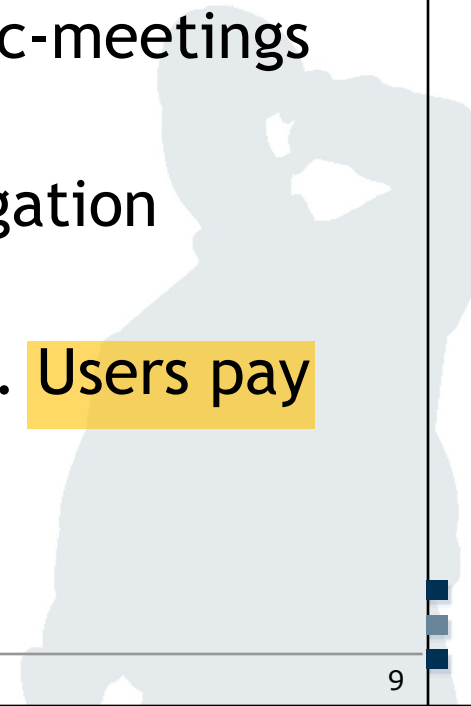


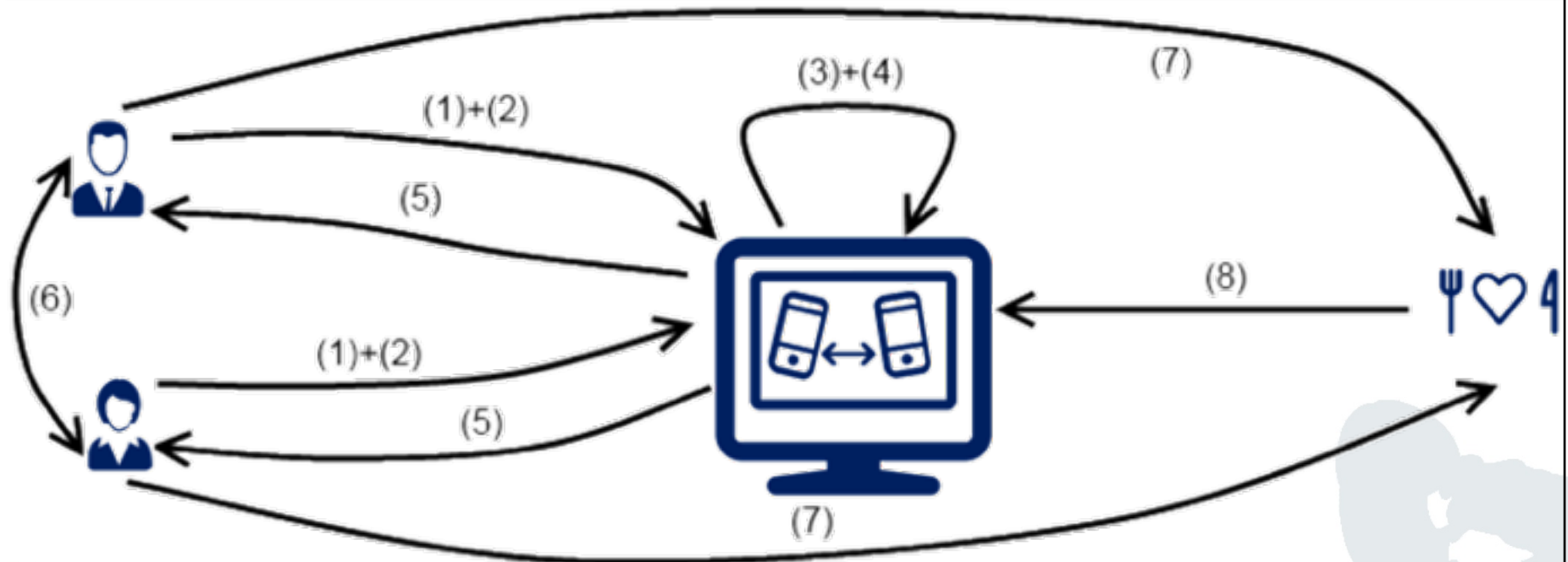
- Foundation for all six exercise sessions
- Fictitious mobile dating platform which takes advantage of the unique features of mobile communication



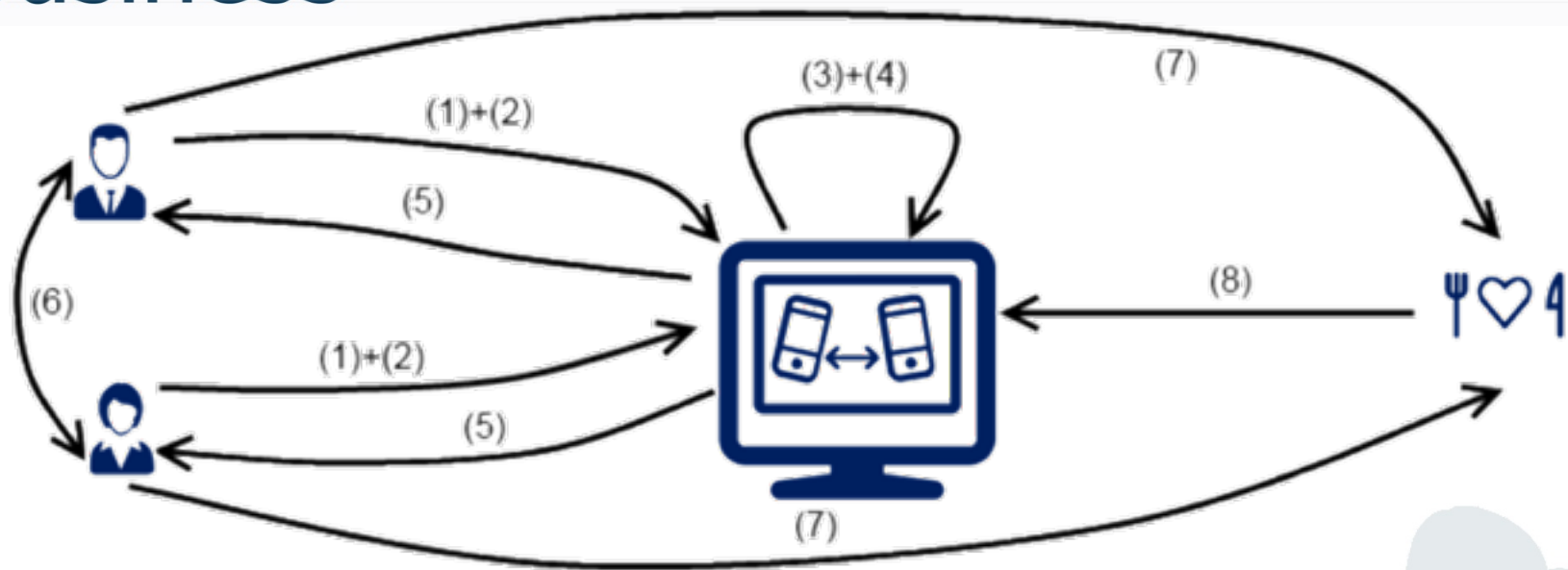


- Users have personal profiles (e.g. comprised of gender, age, personal interests, etc.)
- Pseudonyms available for user-to-user communication
- Users have their own contact list with calendar to maintain their dates
- Location-based push notifications for ad-hoc-meetings (matching based on profile information)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



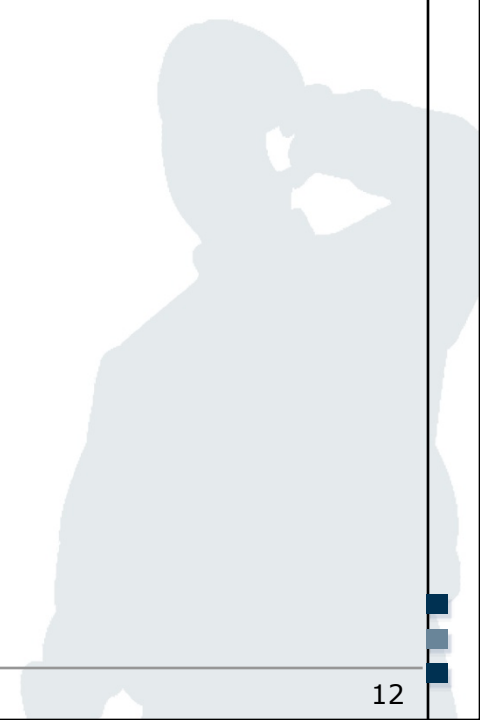


- 1) Users register and submit personal profile information. InstaMatch certifies the information.
- 2) Users access and activate the InstaMatch on their mobile device
- 3) InstaMatch searches for other users in their close proximity
- 4) InstaMatch matches personal profiles of users in close proximity



- 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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  - Exercise 4: Media disruptions



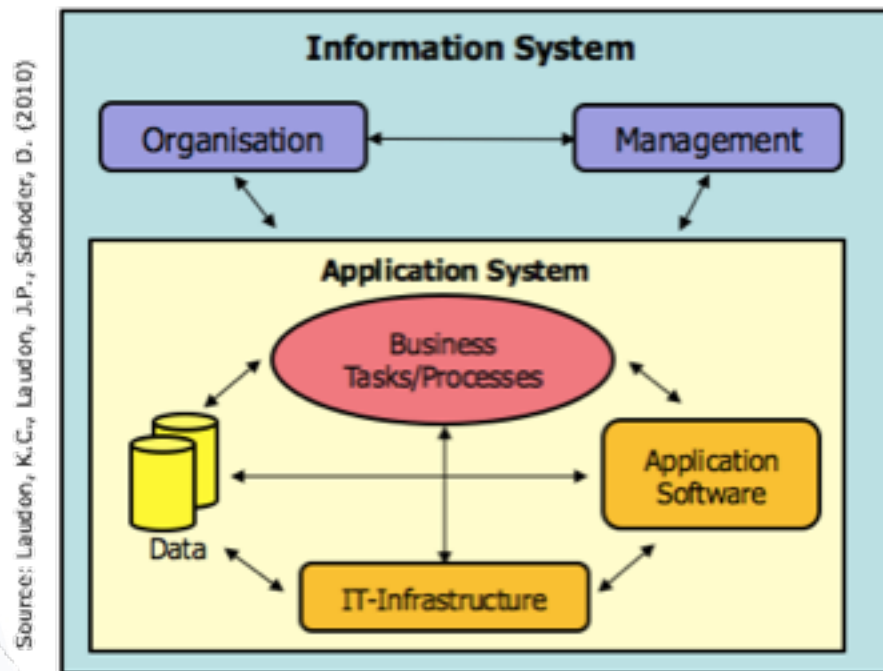
- a) Describe the difference between an Information System and an Application System
- b) Name the components of a Hardware System, Software System, Application System and Information System



- a) Describe the difference between an Information System and an Application System



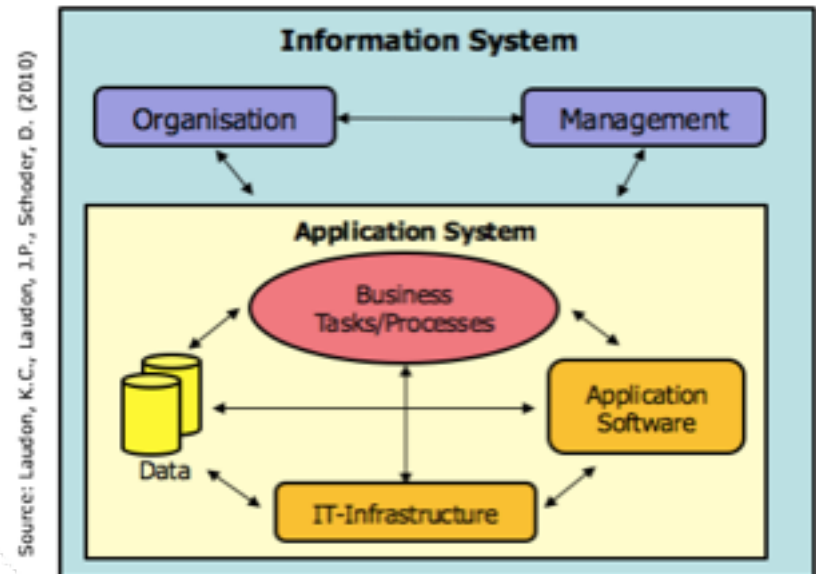
- **Application System (AS):**  
A system, which consists of business tasks and processes it supports, the underlying IT-infrastructure, the application software and the data it required in order to accomplish its objectives.



## Exercise 1: AS vs. IS

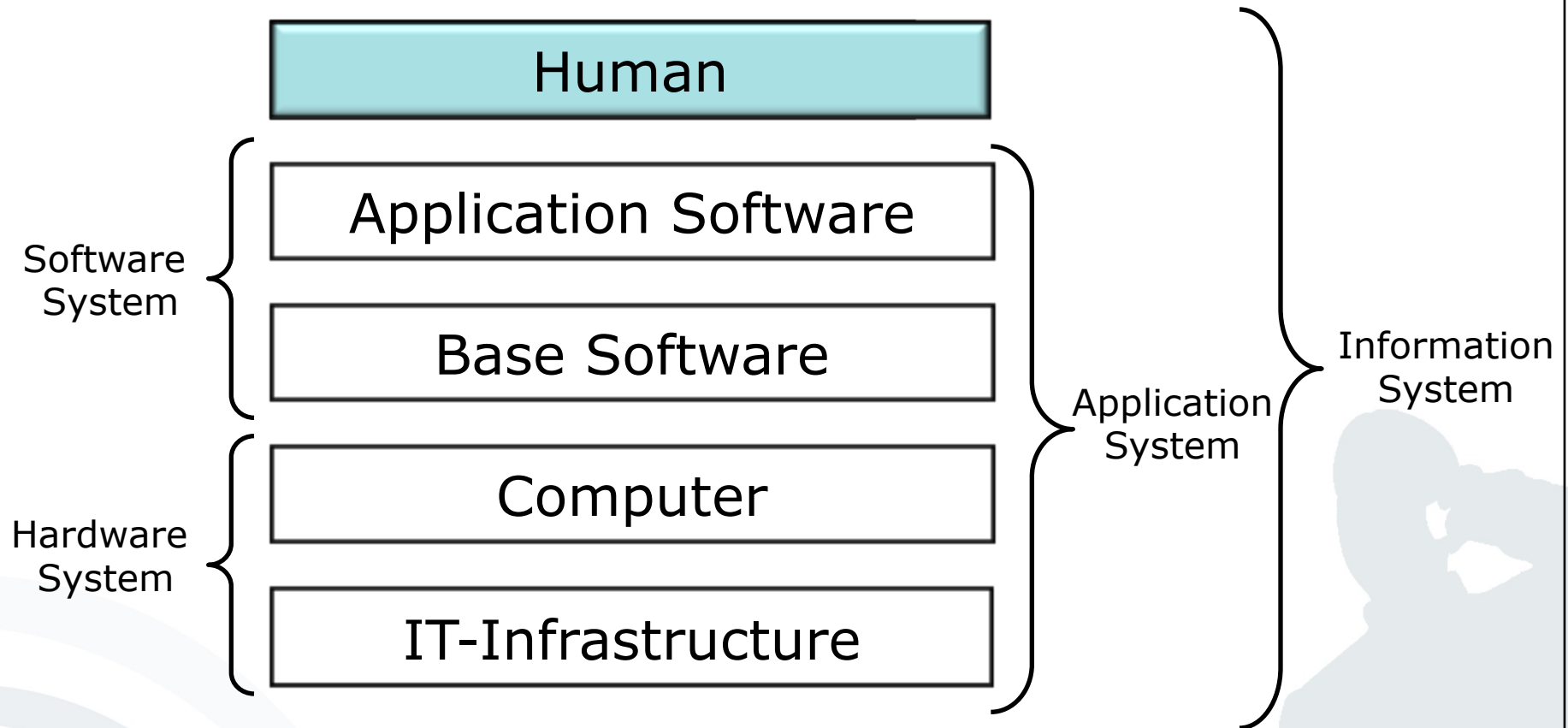
- Information System (IS):

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.





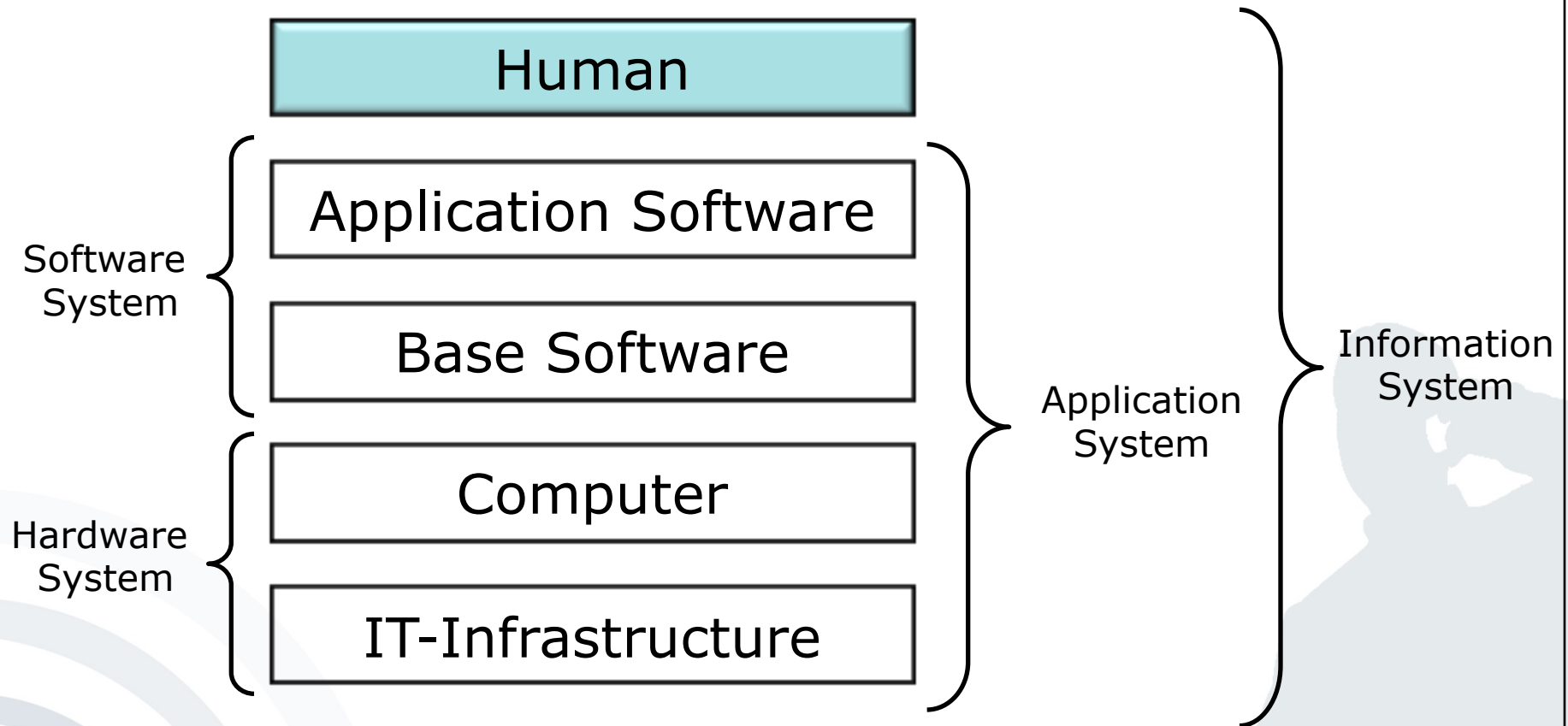
# Exercise 1: AS vs. IS



Source: Teubner (1999)

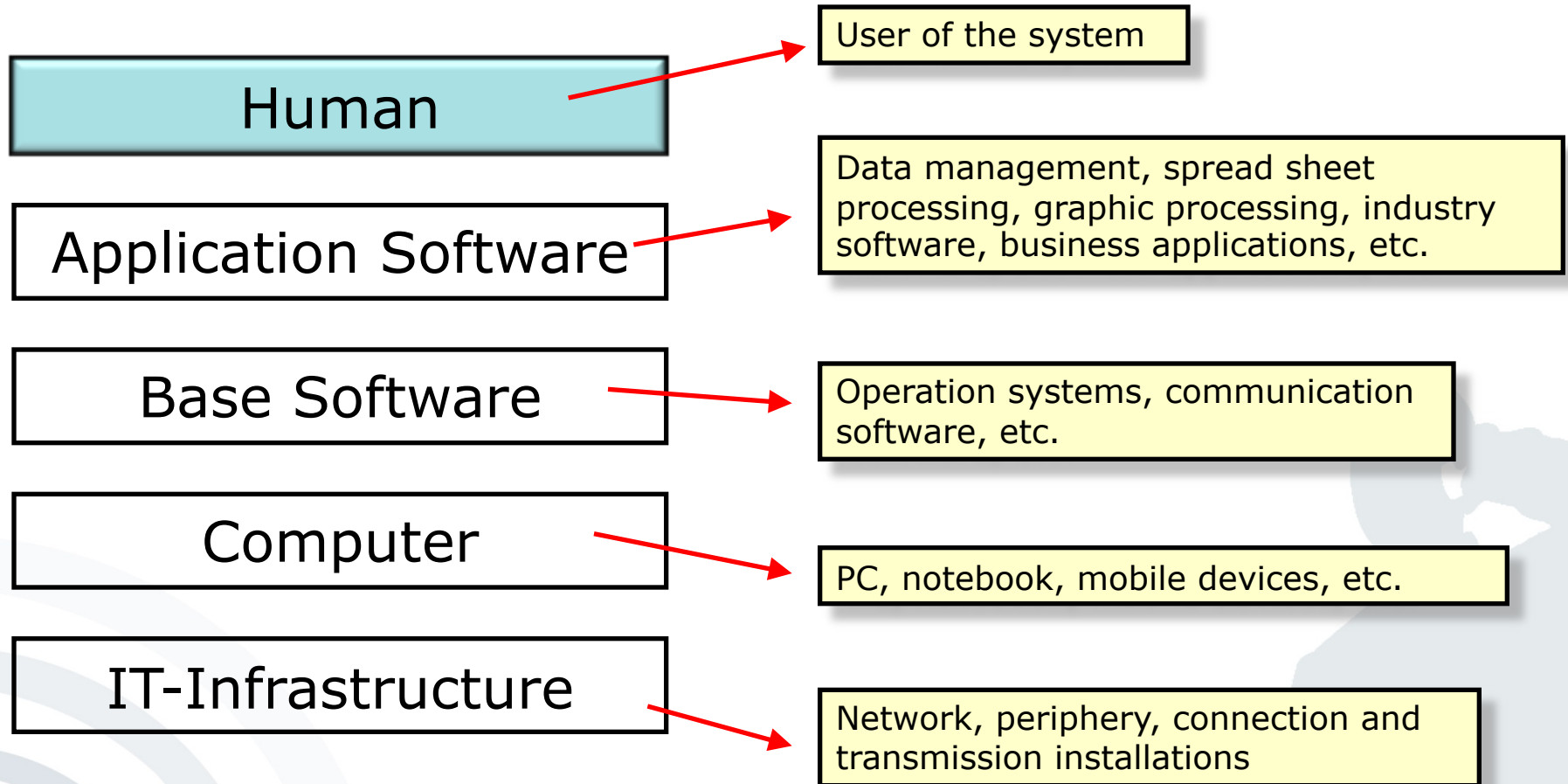
b) Name the components of a Hardware System, Software System, Application System and Information System.





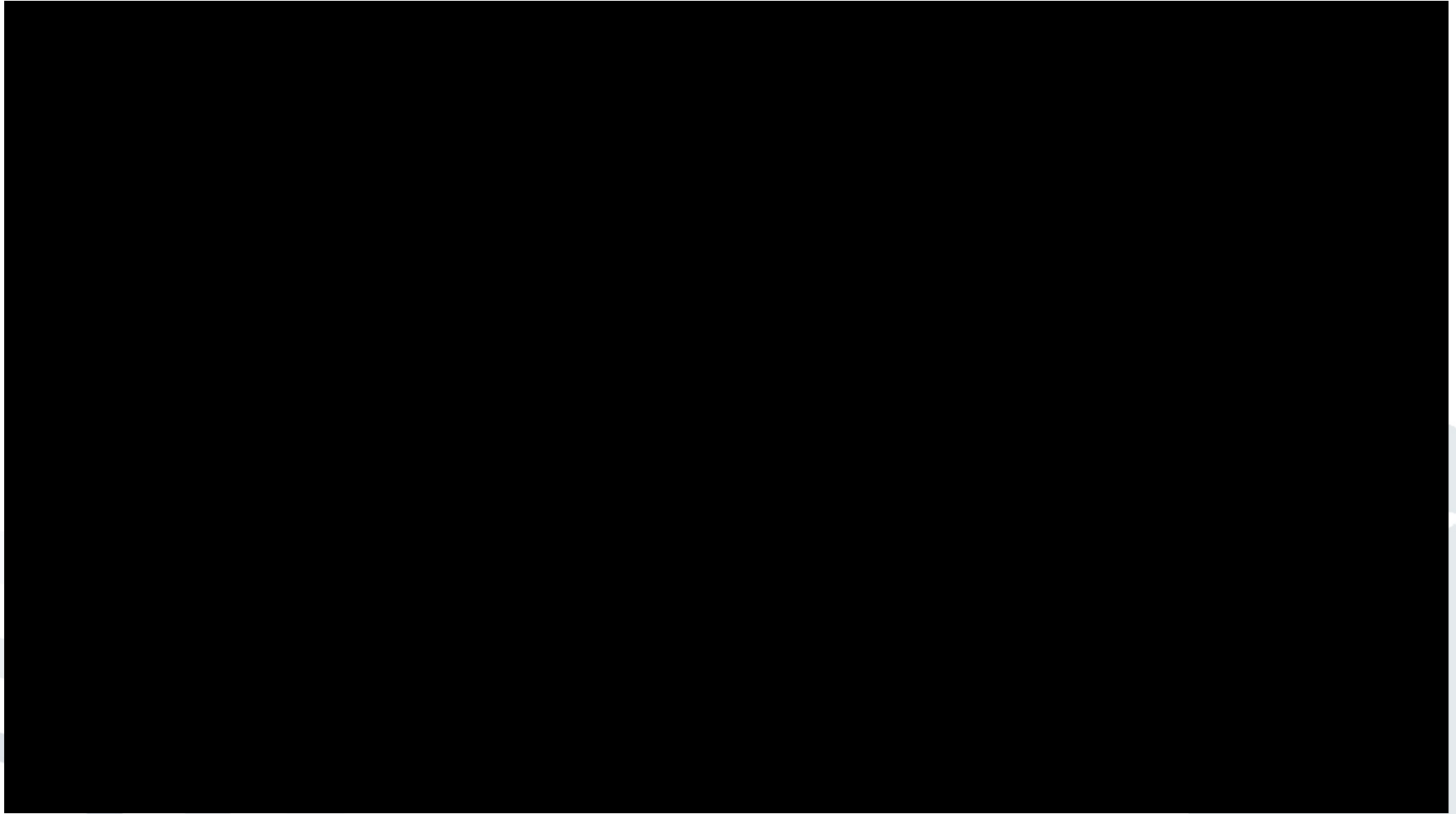
Source: Teubner (1999)

# Exercise 1: AS vs. IS



Source: Teubner (1999)

## Exercise 1: AS vs. IS



<https://www.youtube.com/watch?v=xnyFYiK2rSY>

- Application scenario
- Exercise I
  - Exercise 1: Application System vs. Information System
  - Exercise 2: Modelling
  - Exercise 3: Enterprise Modelling
  - Exercise 4: Media disruptions



- a) What is a model? Give an example in relation to InstaMatch.
- 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 InstaMatch.
- c) What are meta models? Give an example in relation to InstaMatch.

a) What is a model? Give an example in relation to InstaMatch.



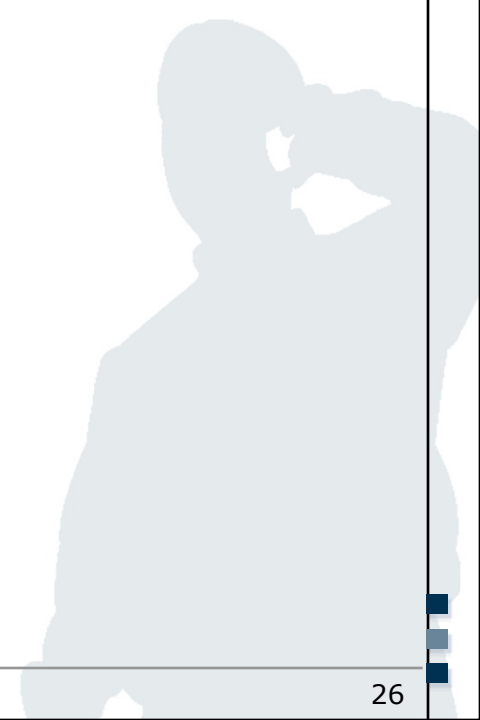


## Exercise 2: Models

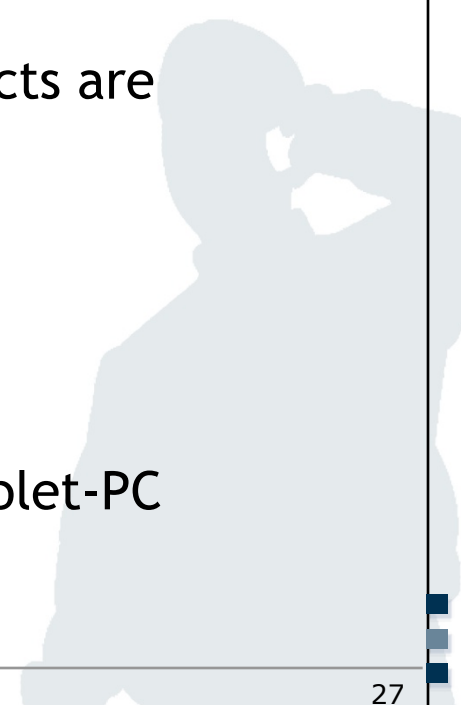
- A model is a **representation of a the real** world with the following properties
  - **Representation:** A model is always representation of natural or artificial objects, which themselves can be models.
  - **Abstraction:** Models are typically an excerpt of reality.
  - **Pragmatism:** The contents of a model are relativized through the following questions: For whom? Why? For what?
  
- *Example for InstaMatch:*
  - Real person vs. personality profil



- 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 InstaMatch.

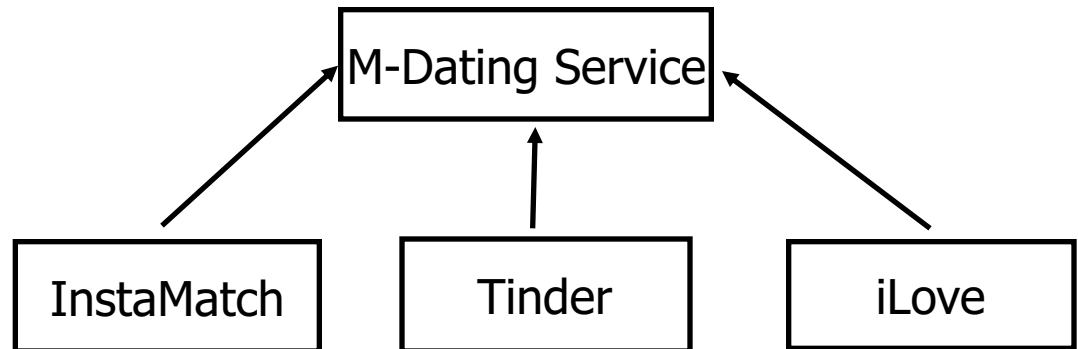


- Models are used for the purpose of **simplification and complexity reduction**
- Abstracting mechanisms in this regard are:
  - **Aggregation** (vs. Disaggregation): Different objects are combined to a new object.
  - **Generalisation** (vs. Specialisation): Similar objects are abstracted to become a new high-level object.
- InstaMatch Examples
  - **Aggregation**: Location, Gender, Age, Interests  
→ Matching algorithm
  - **Generalisation**: Mobile Phone, Smart Phone, Tablet-PC  
→ Mobile Devices

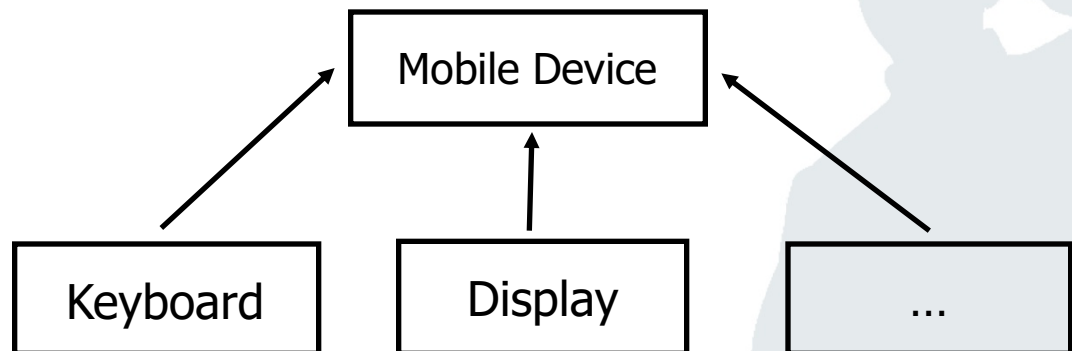


## Exercise 2: Modelling

- Generalisation



- Aggregation



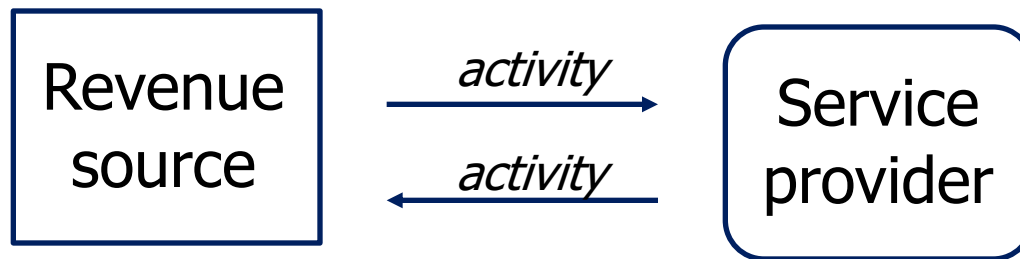
c) What are meta models? Give an example in relation to InstaMatch.



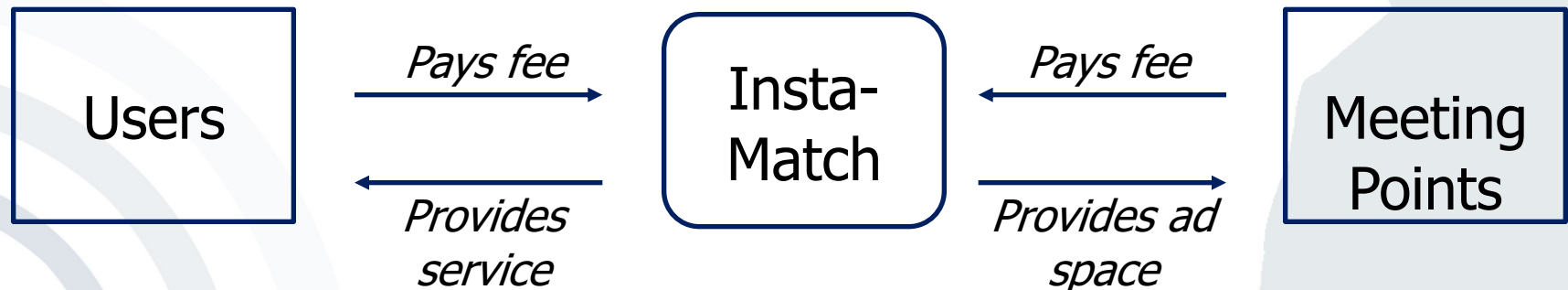
- The “language” for the definition of a model system is provided by a meta-model.



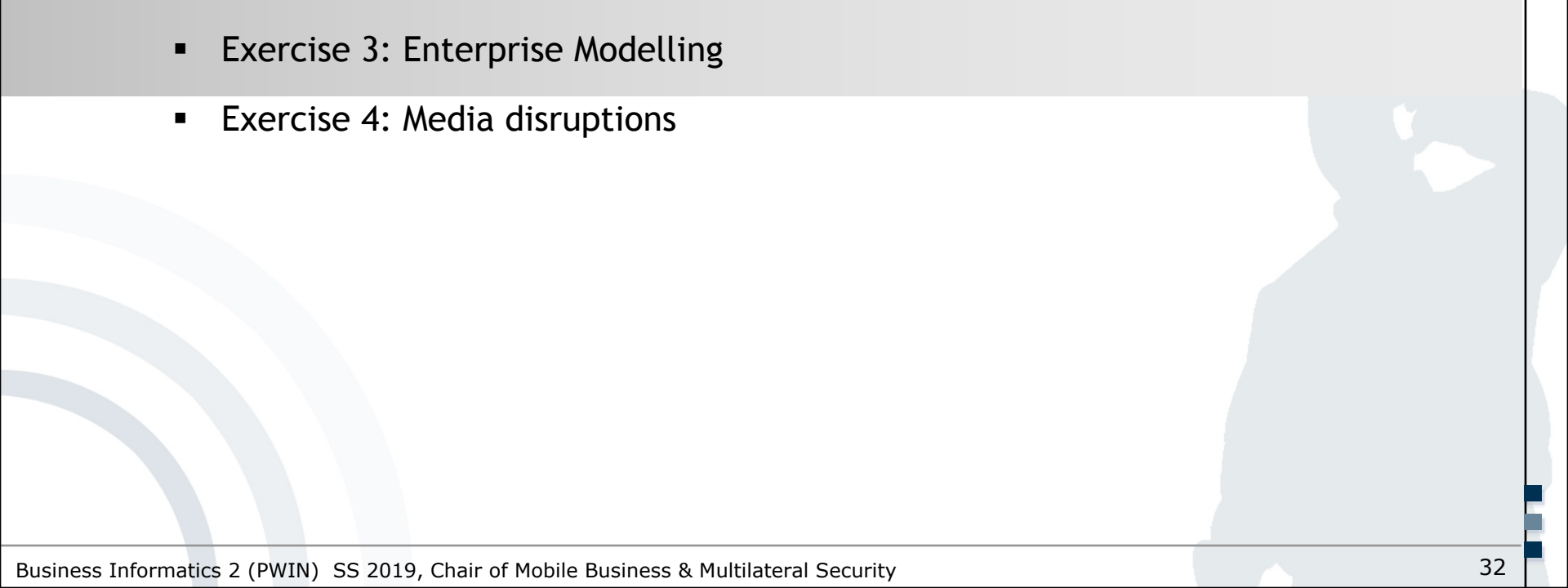
- Meta Modell



- Modell for myPlace



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- Enterprise Modelling

- Enterprise modelling is the abstract representation, description and definition of the structure, processes, information and resources of an identifiable business, government body, or other large organization.

(Source: Leondes and Frymuth Jackson 1992)

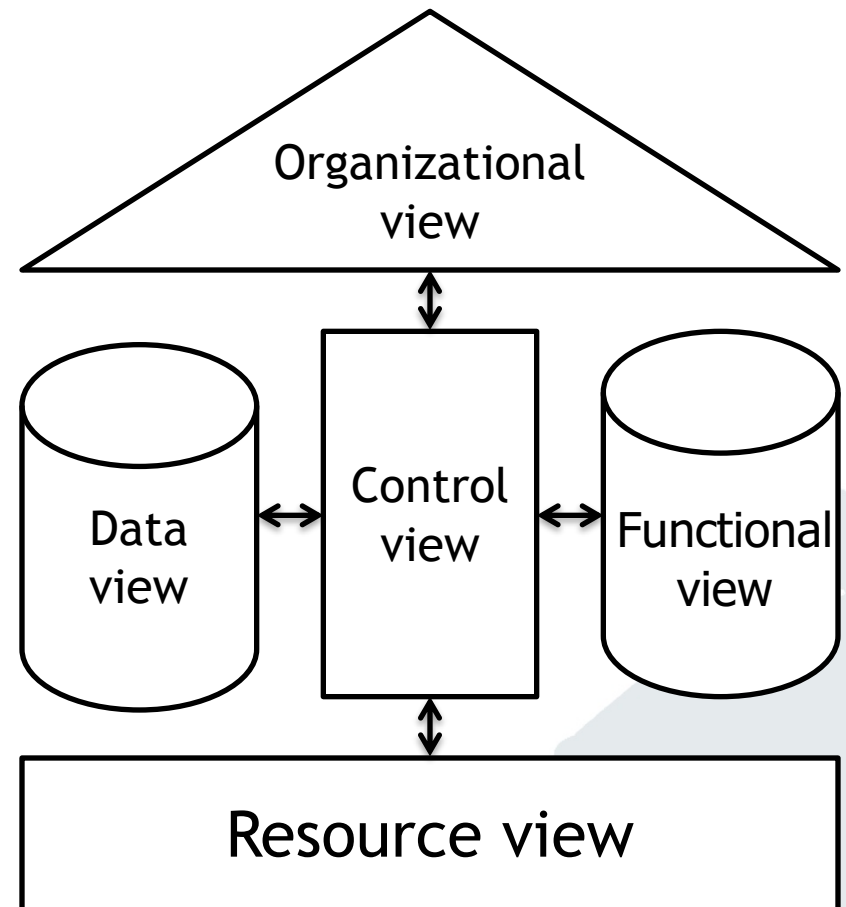
- Enterprise Model

- An enterprise model is a representation of the structure, activities, processes, information, resources, people, behaviour, goals, and constraints of a business, government, or other enterprises.

(Source: F.B. Vernadat 1997)

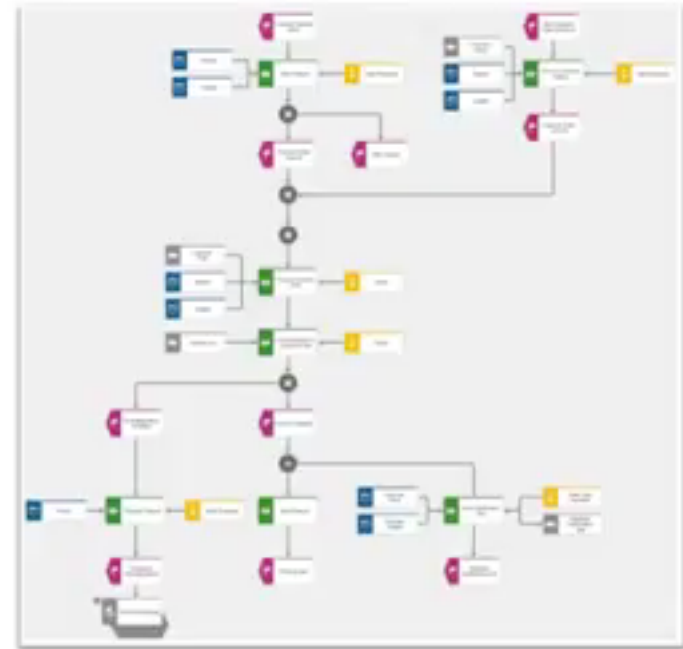
# Exercise 4: Enterprise Modelling

- **Organisational View**
  - Resources of company's organisational structure (humans, machines, hardware, etc.)
  - Organisational Chart
- **Functional View**
  - All processes generating output as well as their relation to each other
  - Function Tree
- **Data View**
  - All events generating data (e.g. documents, e-mails, etc.)
  - Entity-Relationship Model
- **Control View**
  - Integration of all other views into a logic process
  - Event-driven Process Chains
- **Resource View**
  - Services, Products and Financial Assets
  - Product Tree





• Business Process Models provide the following benefits:



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

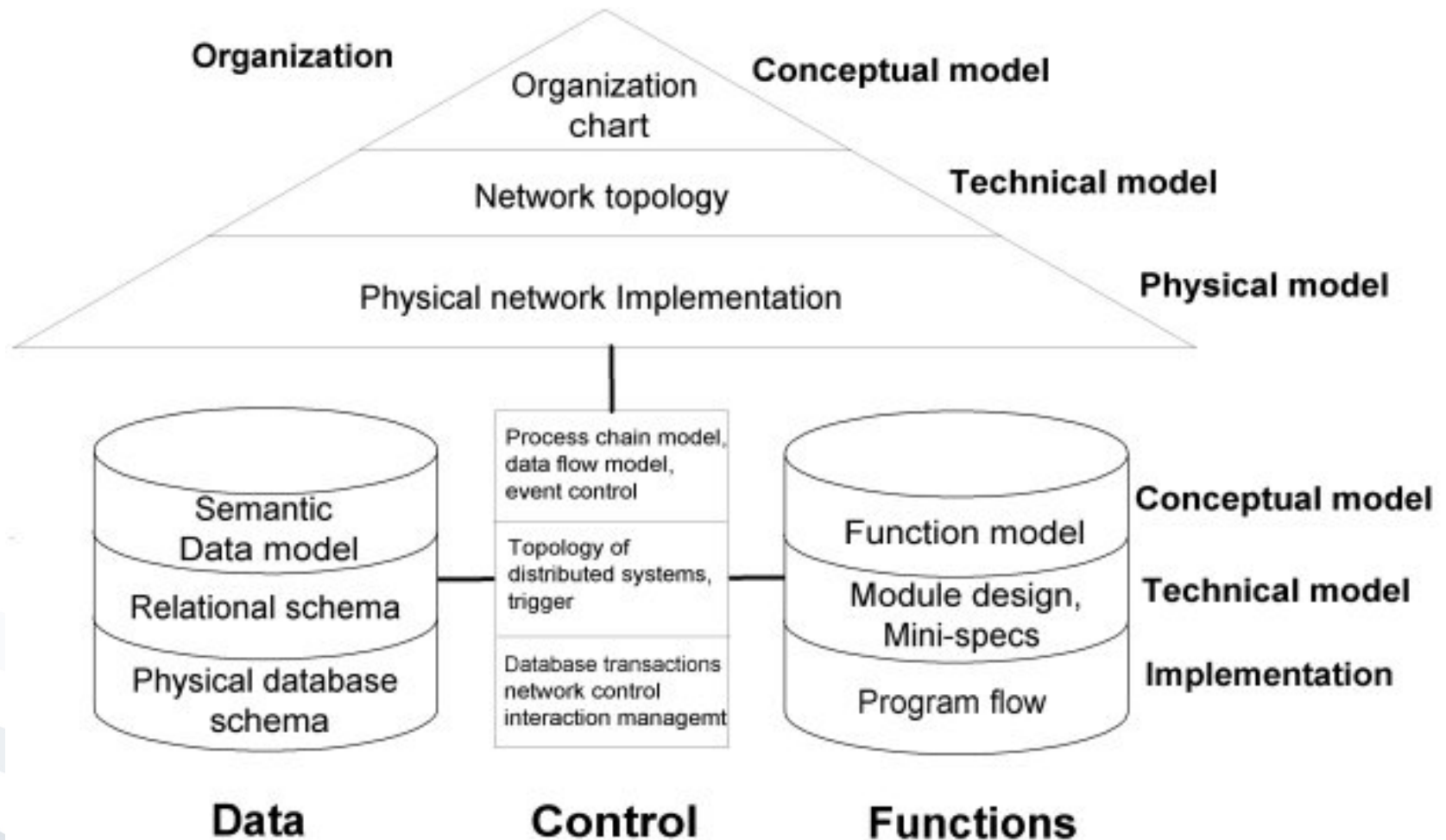
## Exercise 3: Enterprise Modelling

- a) Explain why ARIS models differentiate between the three abstraction layers *conceptual model*, *technical model*, and *implementation*. What target group (e.g. project manager, developer, etc.) does each layer specifically address?
- b) Develop a high-level Enterprise Model of the InstaMatch using the ARIS approach.

## Exercise 3: Enterprise Modelling

- a) Explain why ARIS models differentiate between the three abstraction layers *conceptual model*, *technical model*, and *implementation*. What target group (e.g. project manager, developer, etc.) does each layer specifically address?

# Exercise 3: Enterprise Modelling



## ARIS Architecture

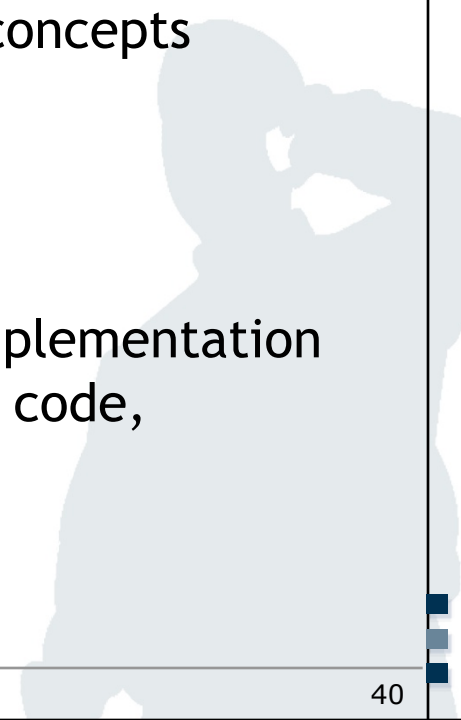
## Exercise 3: Enterprise Modelling

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



# Exercise 3: Enterprise Modelling

- **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



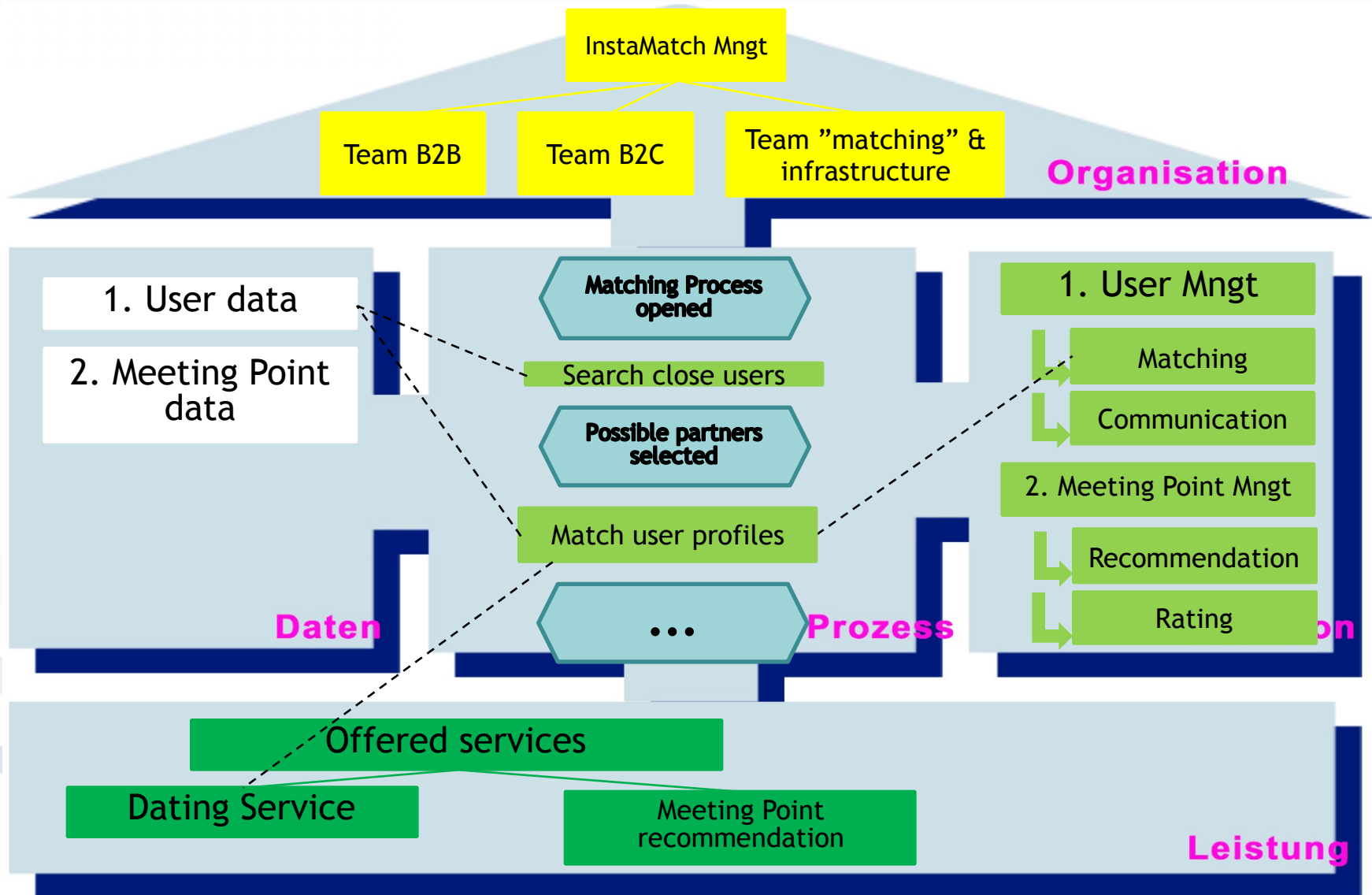


## Exercise 3: Enterprise Modelling

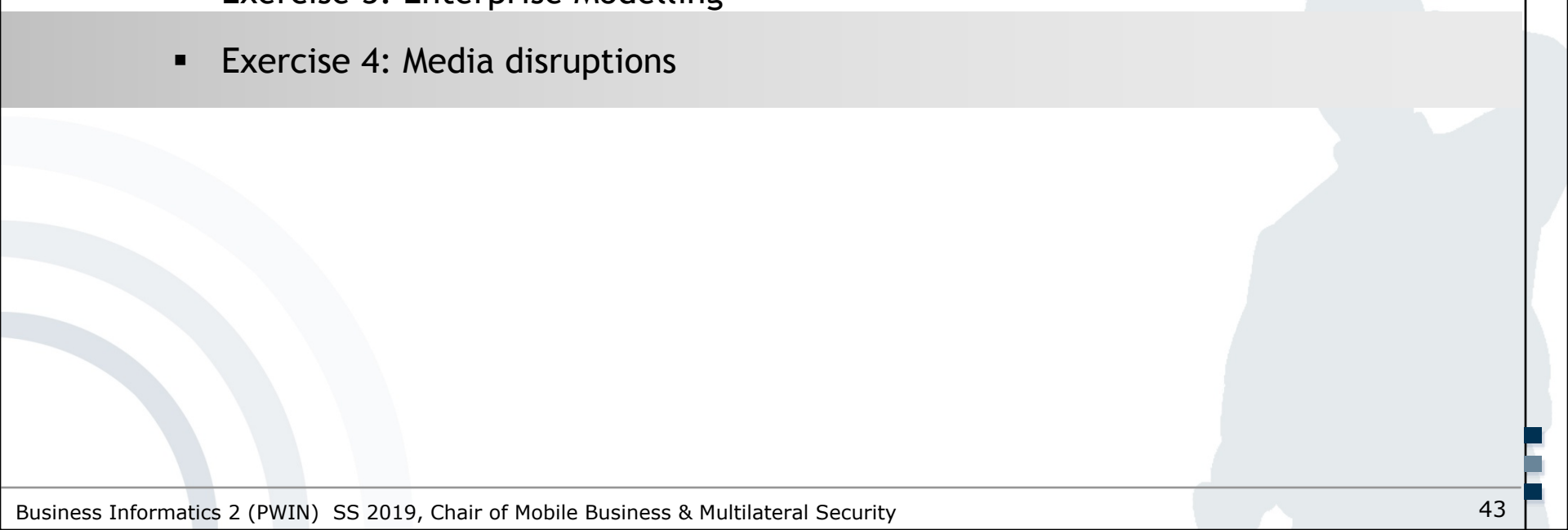
b) Develop a high-level Enterprise Model of the InstaMatch using the ARIS approach.



# Exercise 4: Enterprise Modelling

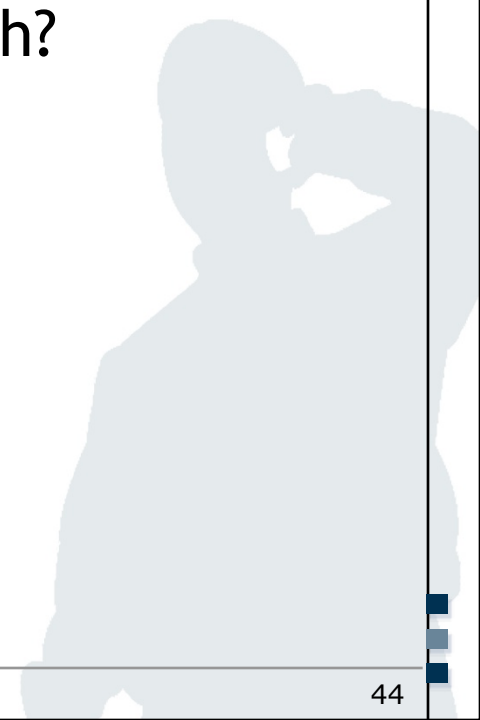


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## Exercise 4: Media Disruptions

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



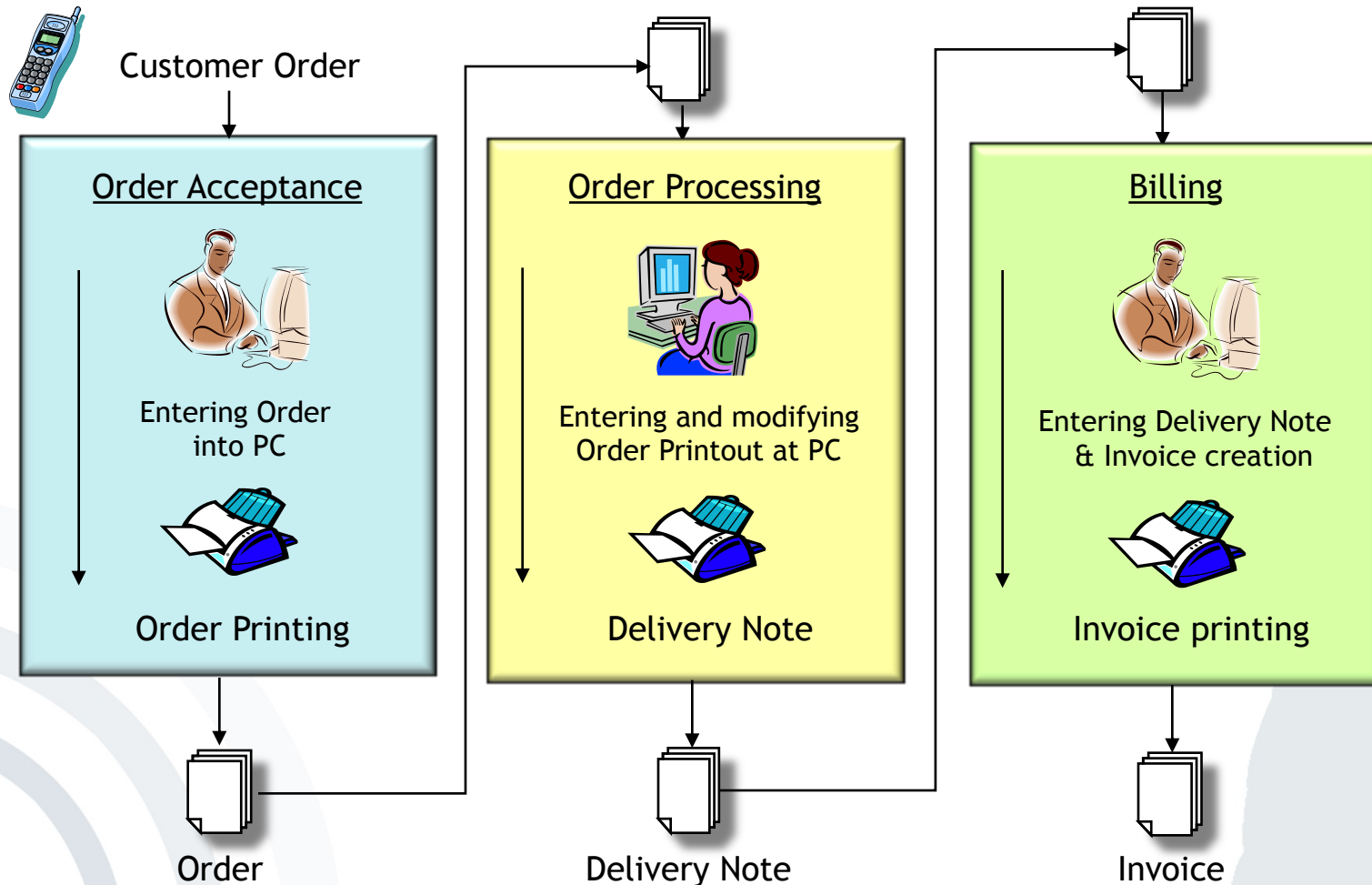
## Exercise 4: Media Disruptions

- 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 4: Media Disruptions

## 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



## Exercise 4: Media Disruptions

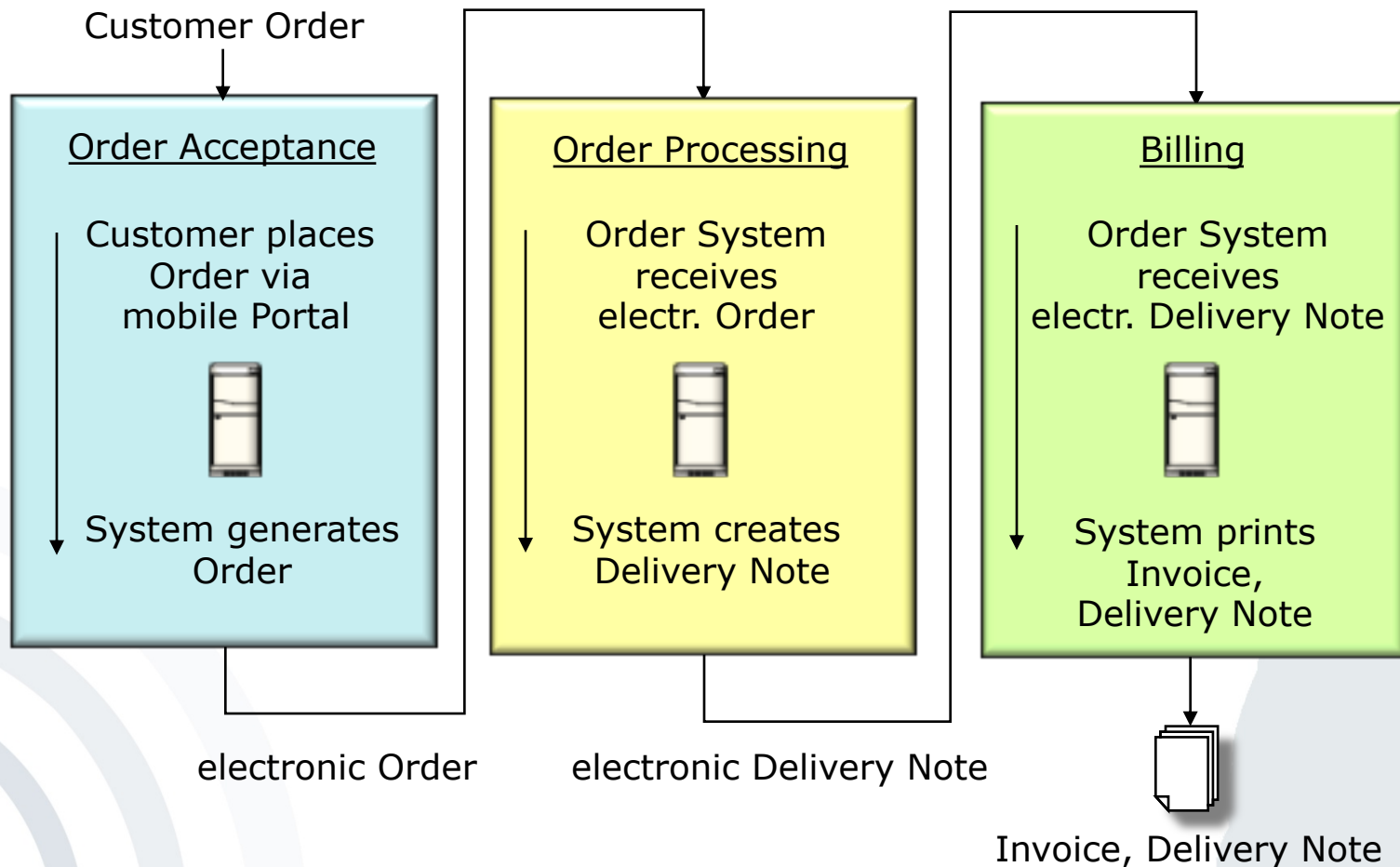
b) How can media disruptions be rectified? What challenges can emerge during this approach?





# Exercise 4: Media Disruptions

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



**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

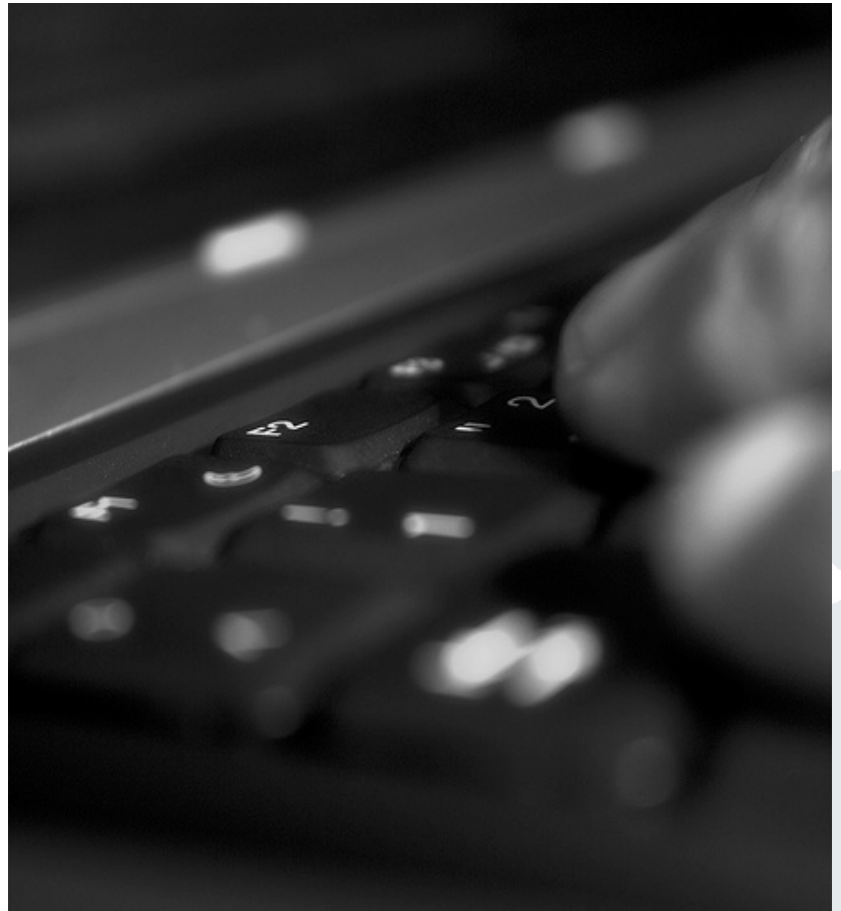
**Further challenges**

- 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)