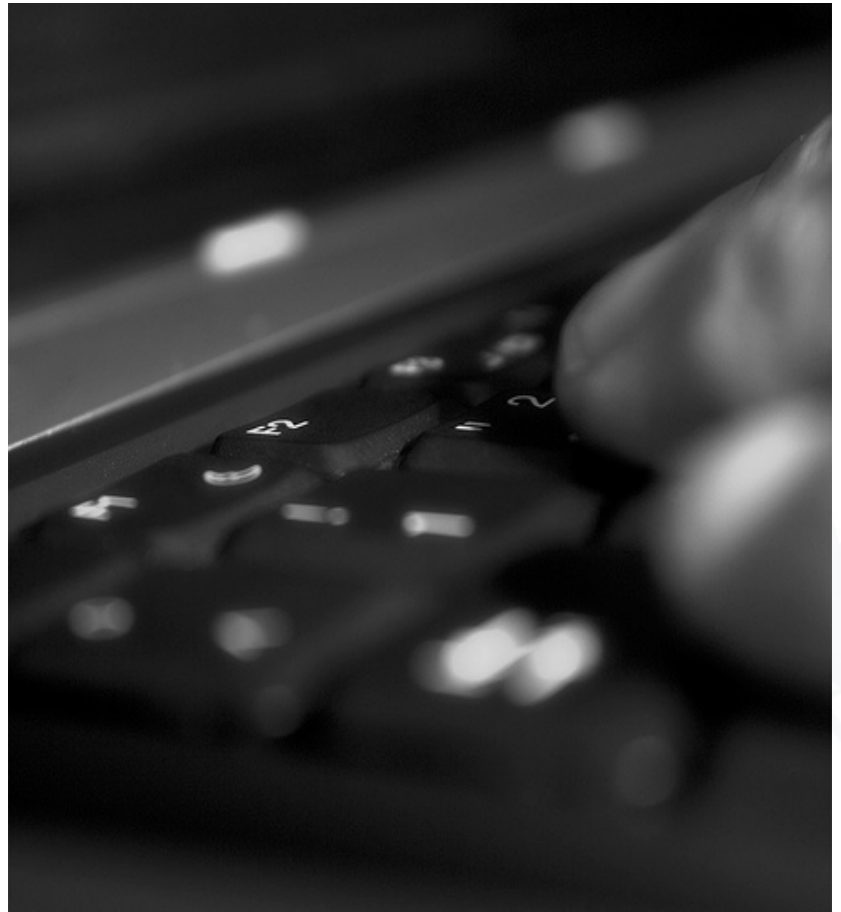


Lecture 1 Business Informatics 2 (PWIN)

Introduction & Course Organisation

WS 2015/2016

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



Jenser (Flickr.com)

- Introduction of the Chair
- Course Organisation
- Scope and Outline of the Course
- Introduction to Information & Communication Systems

Business Informatics @ Goethe University Frankfurt

E-Finance Prof. Dr. Peter Gomber	Business Informatics (Informatics) Prof. Dr. Mirjam Minor	Information Systems Engineering Prof. Dr. Roland Holten
Business Education (associated) Prof. Dr. Gerhard Minnameier	Business Informatics	Business Education (associated) Prof. Dr. Eveline Wuttke
Information Systems & Information Management Prof. Dr. Wolfgang König	Business Informatics & Microeconomics Prof. Dr. Lukas Wiewiorra	Mobile Business & Multilateral Security Prof. Dr. Kai Rannenberg

Chair of Business Administration, especially Business Informatics, Mobile Business and Multilateral Security

Deutsche Telekom Chair of Mobile Business & Multilateral Security

Theodor-W.-Adorno-Platz 4
Campus Westend
RuW, 2nd Floor

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www.m-chair.de



Vita of Kai Rannenberg

Einbeck, Göttingen, Eystrup, Wolfsburg, ...
TU Berlin (Dipl.-Inform.)
Uni Freiburg (Dr. rer. pol.)

Dissertation on “**Kriterien und Zertifizierung mehrseitiger IT-Sicherheit**“
Standardization at ISO/IEC JTC 1/SC 27 and DIN NI-27

Kolleg “**Sicherheit in der Kommunikationstechnik**“
Gottlieb Daimler- and Karl Benz-Foundation

Multilateral Security:
“Empowering Users, Enabling Applications“, 1993 - 1999

Recent History
1999-09 till 2002-08
Microsoft Research Cambridge UK
www.research.microsoft.com
Responsible for “Personal Security Devices and Privacy Technologies“

2001-10 Call for this chair
2001-12 till 2002-07 Stand-in for the chair

Since 2002-07 Professor





Kai Rannenberg



Jetzabel
Serna-Olvera



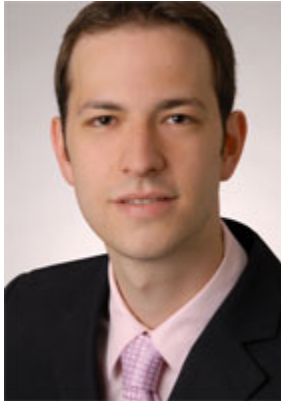
Sebastian
Pape



Shuzhe Yang



Lars Wolos



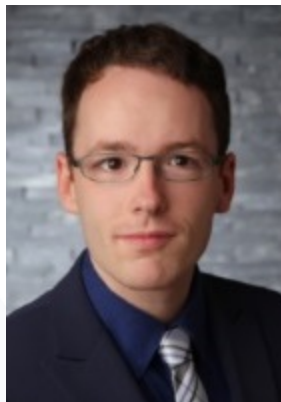
Marvin Hegen



Ahmad Sabouri



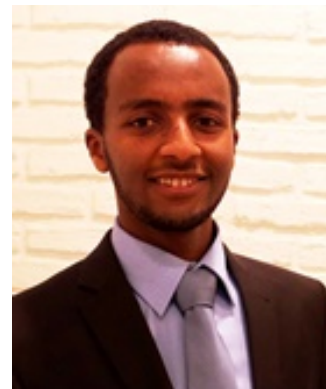
Fatbardh Veseli



Christopher
Schmitz



Welderufael
Tesfay



Ahmed Yesuf



Markus
Tschersich



Mike
Radmacher



Andreas
Albers



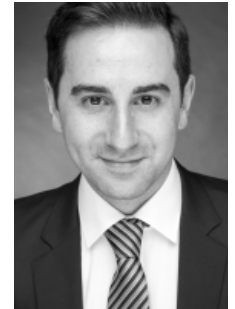
Stefan
Weiss



Christian
Kahl



André
Deuker



Gökhan Bal



Sascha
Koschinat



Andreas
Leicher



Tim
Schiller



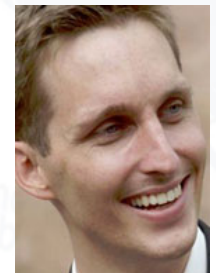
Niels
Johannsen



Thomas
Leiber



Christian
Weber



Stephan
Heim

Office:

Elvira Koch

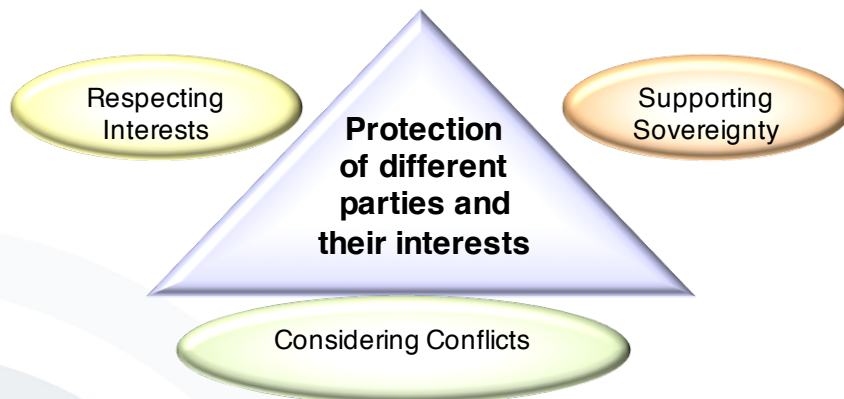
Email: elvira.koch@m-chair.de

Office Hours: Mo.-Fr. 10:00-14:00



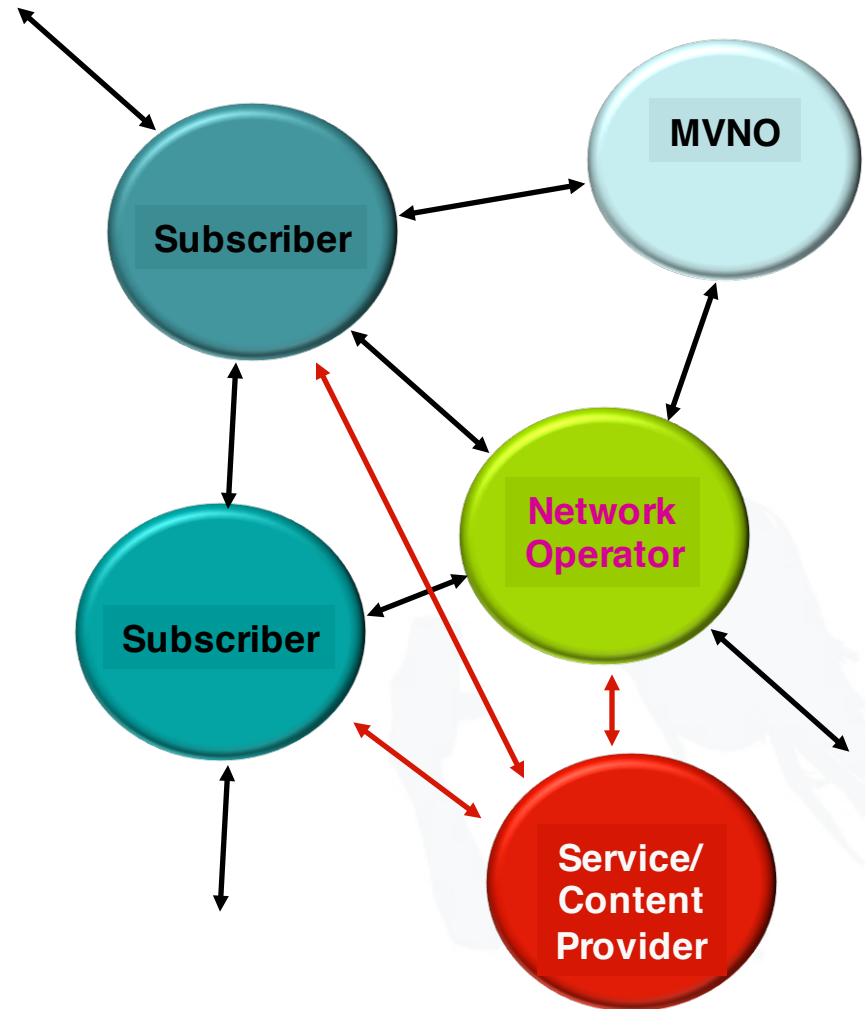
Different Parties with different Interests

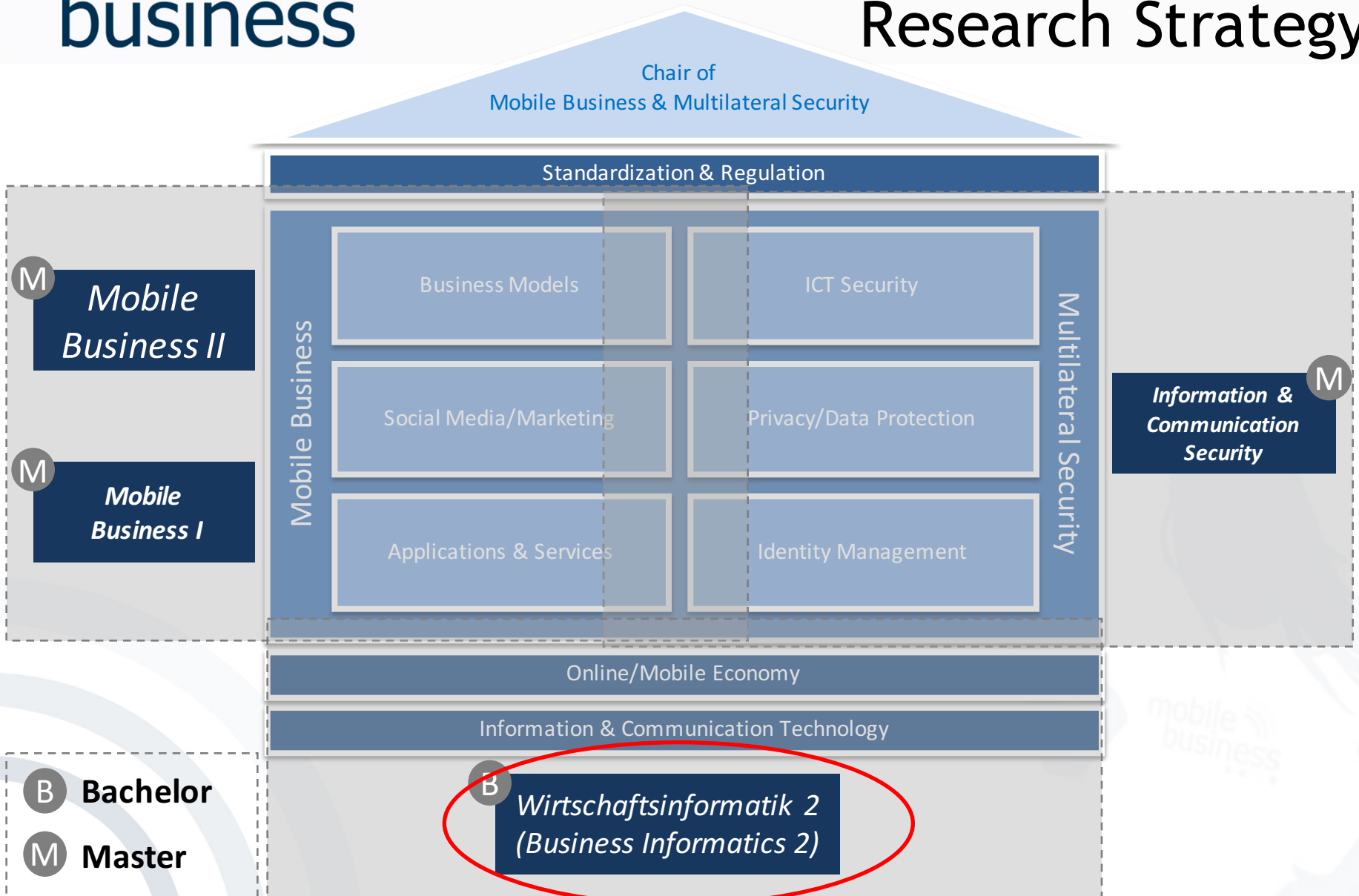
- Customers/Merchants
- Communication partners
- Citizens/Administration



... in a world of consortia

- more partners
- more complex relations





	WS 2015/2016	SS 2016
Bachelor	<i>Course</i> „Business Informatics 2 (PWIN)“	<i>Seminar</i> TBA
Master	<i>Course</i> Mobile Business I: „Technology, Markets, Platforms, and Business Models“ Information and Communication Security <i>Seminar</i> Privacy and Identity Management - What do the users perceive? <i>Projectseminar</i> Security, privacy and trust in emerging technologies	<i>Course</i> Mobile Business II: „Business Models in the digital, mobile Economy“ Information and Communication Security Privacy vs. Data: Business Models in the digital, mobile Economy

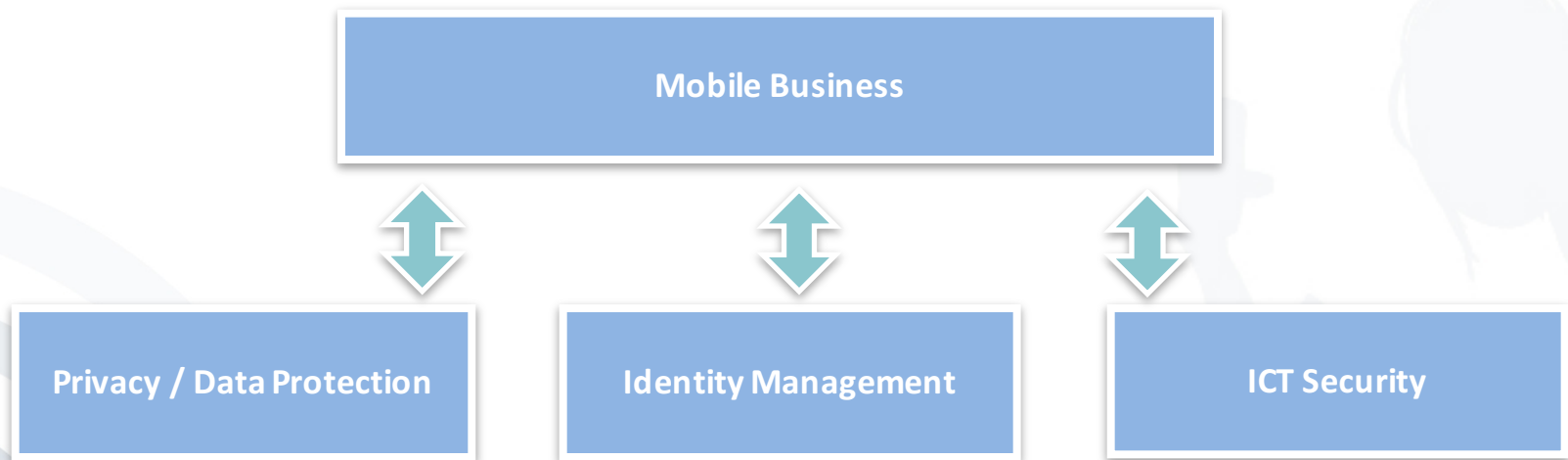
- Master of Science in Betriebswirtschaftslehre

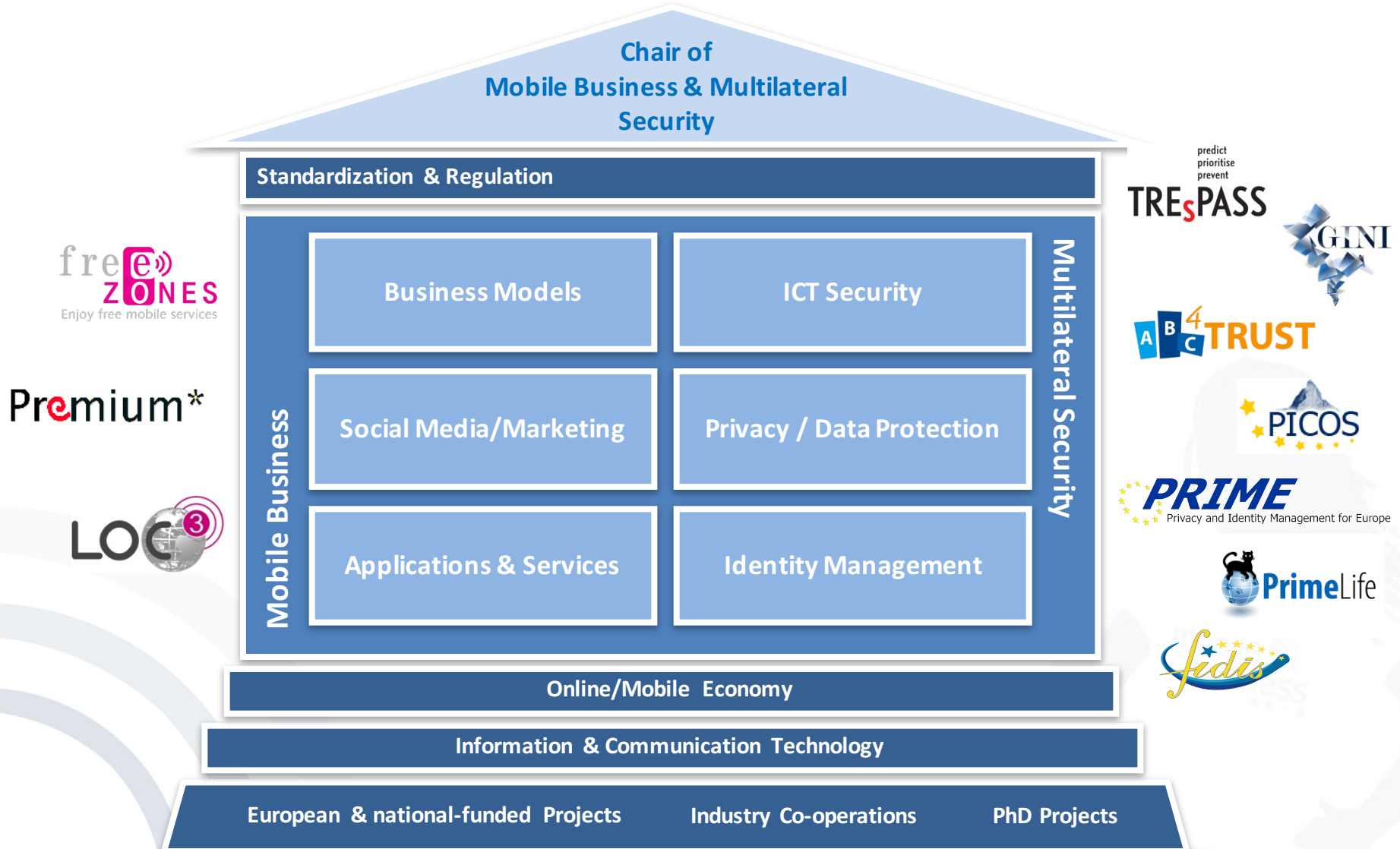
<http://www.wiwi.uni-frankfurt.de/?id=96>

- Master in Wirtschaftsinformatik

<http://www.informatik.uni-frankfurt.de/index.php/de/studierende-studiengaenge/studierende-studiengaenge-master-wirtschaftsinformatik.html>

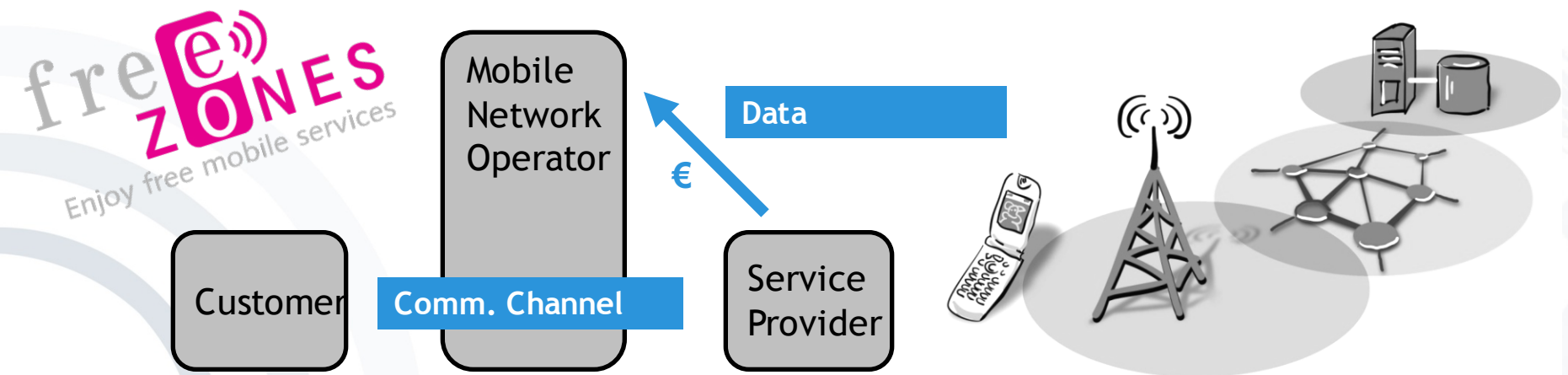
Advancing *Mobile Business* while enabling individuals to be in control of their personal data by providing *Identity Management*, *Privacy Protection*, and *ICT Security* within the Digital Economy





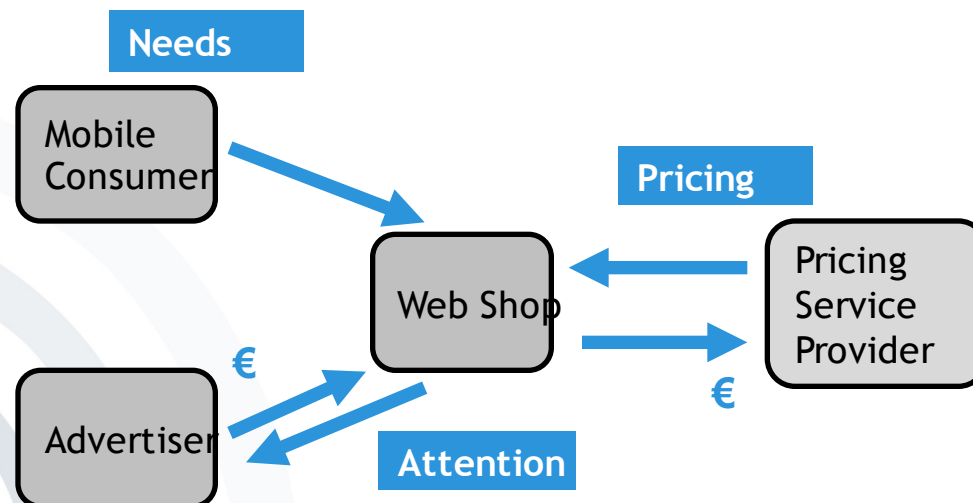
- **Potential:** Mobile network operators have a customer relation with most of the German population!
- **Offering:** Mobile network operators are providing service providers with a communication channel to potential customers.
- **Motivation:** Service providers gain higher, mobile initiated revenues in their business.
- **Objective:** Eliminating data costs for customers while making them marketing costs for service providers.

Premium*

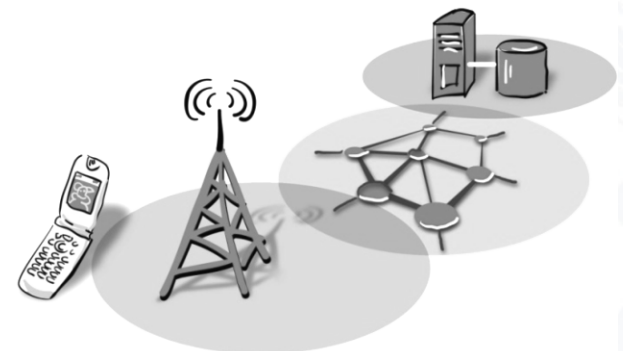


Research on Pricing Mechanisms for Context-sensitive Mobile Consumer Contacts offered to Mobile Advertisers

- Design of dynamic, interactive pricing mechanism to address the unique characteristics of Context-sensitive Mobile Consumer Contacts
- Development of an Evaluation Tool for Advertisers in order to determine the value of mobile consumers in their current usage situation
- Implementation of Pricing Service Platform for the webservice-based provision of Pricing Mechanisms to SMEs (e.g. Online Webshops)

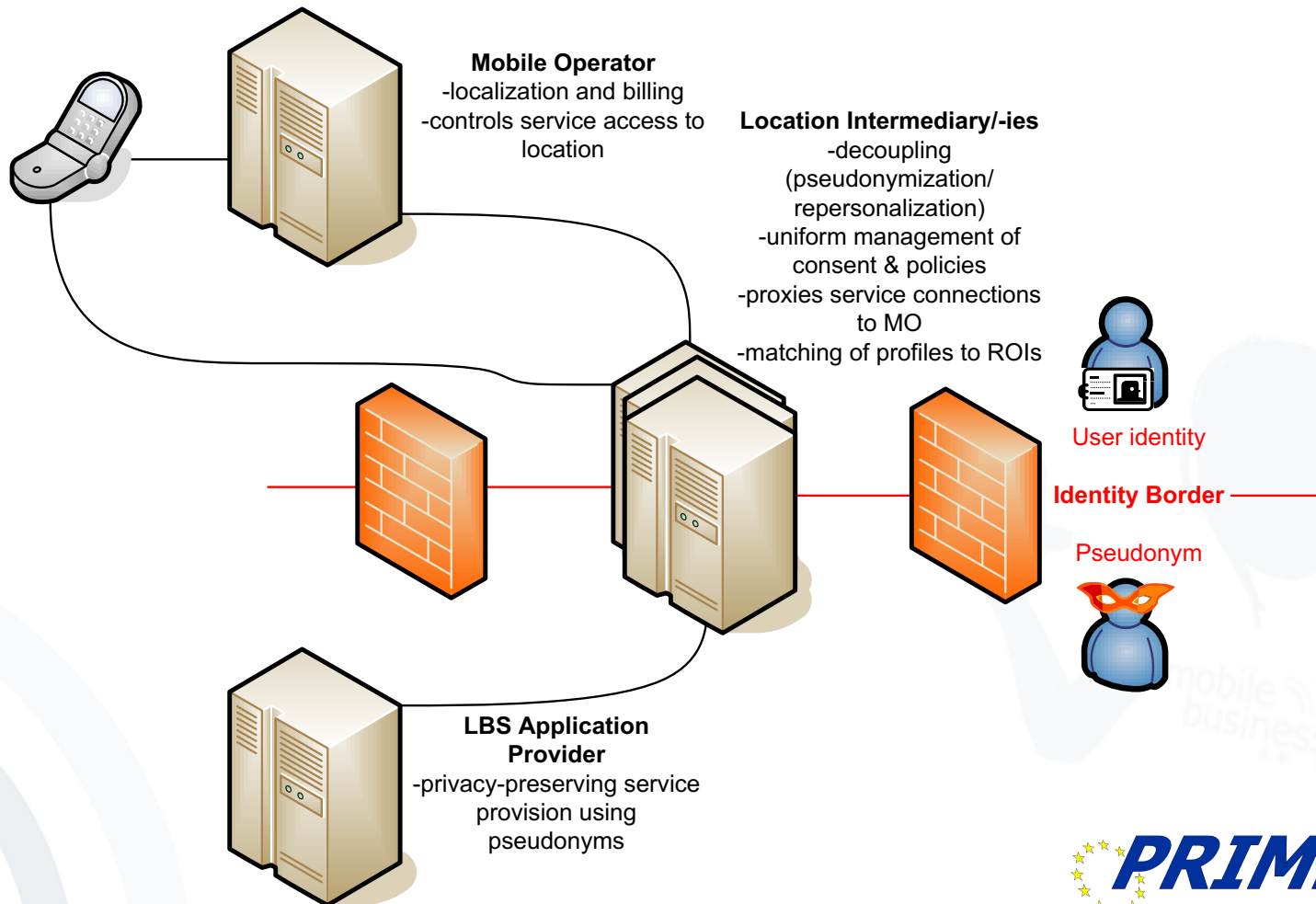


Premium|Services



- Enhance privacy for typical LBS
 - Pharmacy search (“pull”)
 - Pollen warning (“push”)
- Address wide user range by making only few requirements on the existing infrastructure
 - Simple WAP mobile phone (Version 1), Java phone (Version 2)
- Several challenges
 - Privacy problems
 - Regulation, e.g. of the handling of personal information (and mobile services in general)
 - Business constraints
 - Easy integration into existing infrastructure
 - Applicability to a wide range of business models
 - Adaptability for different market structures

Architecture Overview



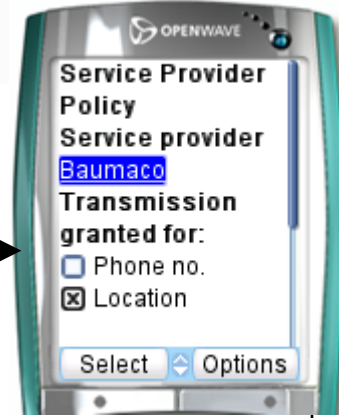
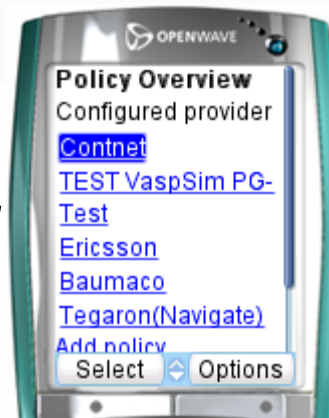
- Transfer into regular service



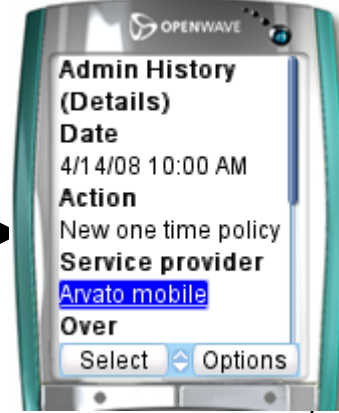
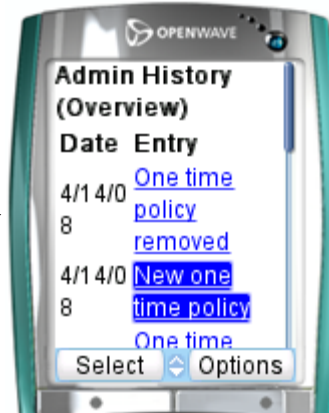
[T-Zones/Web'n'Walk]



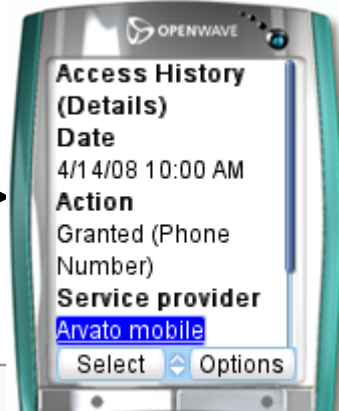
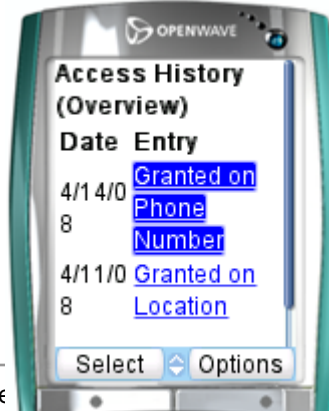
Policy
admin



Admin
history



Access
history





- PICOS - „Privacy and Identity Management for Community Services“
- EU FP 7 Challenge “Secure, dependable and trusted Infrastructures”
- Planned for 3 years from 2008-02 (extended till 2011-06): Summit event at IFIP Sec 2011 Lucerne
- Project budget: € 6 Mio, EC grant: € 4 Mio
- Balanced mixture of industrial and academic partners



Main questions:

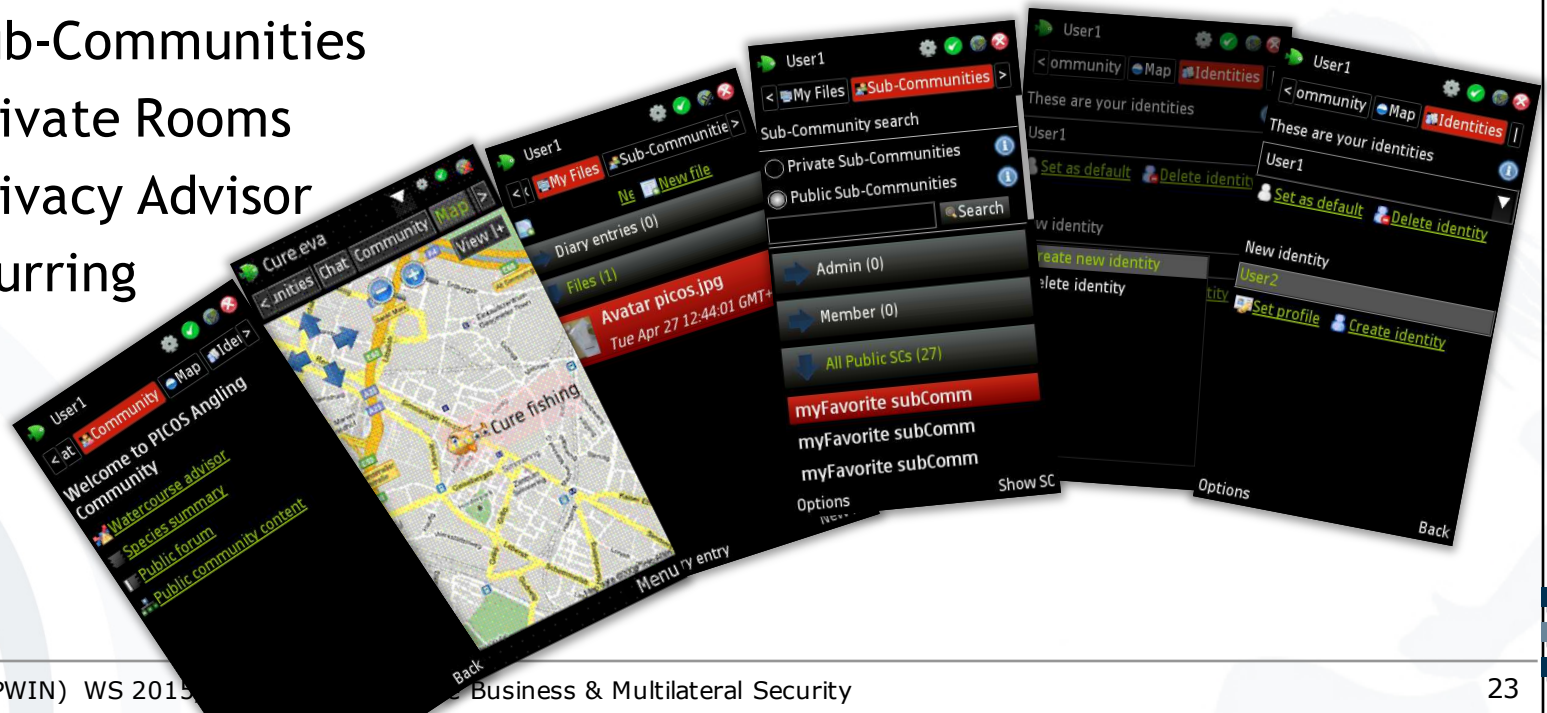
- ❖ What are the trust, privacy and identity issues in new context-rich mobile communication services, especially community-supporting services?
- ❖ How can information flows and privacy requirements be balanced in complex distributed service architectures)?
- ❖ How can these issues be solved in an acceptable, trust-worthy, open, scalable, manner?
- ❖ Which supporting services and infrastructures do the stakeholders need?

Expected results:

- ❖ A set of interdisciplinary requirements for trustworthy, privacy-friendly community transactions.
- ❖ A platform prototype that demonstrates the provision of state-of-the-art privacy and trust technology to community applications.
- ❖ User-centric trials that validate its applicability.

The Angler Community Prototype

- Prototypical implementation for trials
- Advanced privacy and identity management features optimized for mobile communities
 - Partial Identities
 - Sub-Communities
 - Private Rooms
 - Privacy Advisor
 - Blurring



- **The challenge: “Identity” is changing**
 - IT puts more HighTech on ID cards.
 - Profiles may make the „traditional“ ID concept obsolete.
 - New IDs and ID management systems are coming up (e.g. GSM).
 - Europe (the EU) consider joint ID and ID management systems.
- **Vision and Facts**
 - Europe will develop a **deeper understanding of** how appropriate **identification and Identity management** can progress the way **to a fairer European information society**
 - **Network of Excellence** in EU Framework Programme 6 (2004-04-01 - 2009-06-30)
 - **24 partners from academia, industry, governmental organisations** including INSEAD, LSE, IBM, Microsoft EMIC, ICPP
 - More at: www.fidis.net
- **Selected M-Chair Contributions**
 - **Coordination of the whole network (administrative, presentation, etc.)**
 - What makes an **identity mobile based on the FIDIS identity concept?**
 - State of the art of **mobile identity management technologies**
 - **Standardisation (Liaison with ISO/IEC JTC 1/SC 27/WG 5)**



PrimeLife (Completed in 2011)

- EU FP7 Challenge “Secure, dependable and trusted Infrastructures”
- Integrated Project
- Planned for 3 years from 2008-03 (extended till 2011-06): Summit event at IFIP Sec 2011 Lucerne
- EC contribution : ~€ 10 Mio
- Partners
 - IBM, Microsoft, SAP, Giesecke & Devrient, W3C, and more...



Giesecke & Devrient
security at work.



- Providing Privacy *throughout Life*: PrimeLife!
 - ... digital footprints left over lifetime
 - ... in emerging Internet applications
 - ... user-centric and configurable
 - Making Privacy Real: PrimeLife!
 - Making results of PRIME (FP6) and PrimeLife widely usable and deployed
 - Cooperating with other projects for transferring PRIME and PrimeLife technologies and concepts
 - Advancing State-of-the-Art in Technology supporting Privacy and Identity Management
 - Mechanisms, HCI, Policies, Infrastructure
- ... Building on results and expertise of PRIME



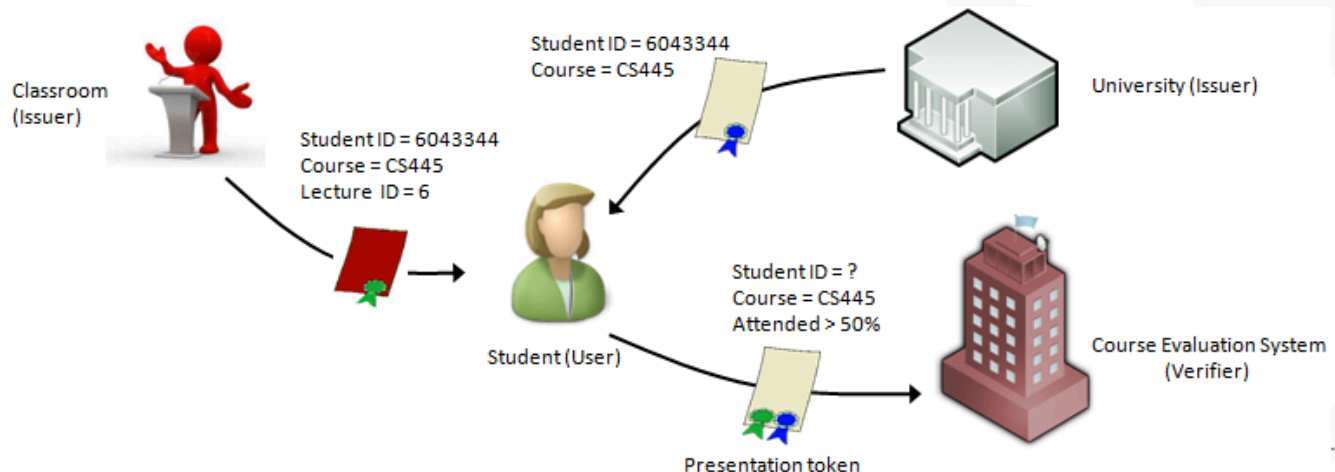
ABC4Trust (Completed in 2015)

Overview and goals

- Attribute-based Credentials for Trust (ABC4Trust)
- Nov. 2010 - Feb. 2015
- Objectives:
 - Abstraction of concepts of privacy-ABCs & unification of features
 - A common unified architecture
 - Independent from the specific technologies
 - Enabling the federation of privacy-ABC Systems based on different technologies
 - Enabling interoperability between different privacy-ABC technologies
- Avoid lock-in into one specific system
- Raise trust in privacy-ABC technologies



- 1st Pilot - Privacy in Online Evaluation and Feedback Systems
 - Deployment: Patras University, Greece
 - Scenario: Students evaluate anonymously the courses they attended
- 2nd Pilot - Privacy in social communication fora
 - Deployment: Söderhamn Secondary School, Sweden
 - Scenario: Pupils communicate using pseudonyms on the school communication system
- Benefits of Privacy-ABCs
 - Privacy-ABCs are by default untraceable (no user-tracking)
 - Enable minimal disclosure (user reveals only the necessary information)
 - User can chose to stay anonymous or generate (unlimited number of) pseudonyms
 - Advanced security (no sharing of credentials, device-binding for extra protection)



Reference implementation
with ABC functionality

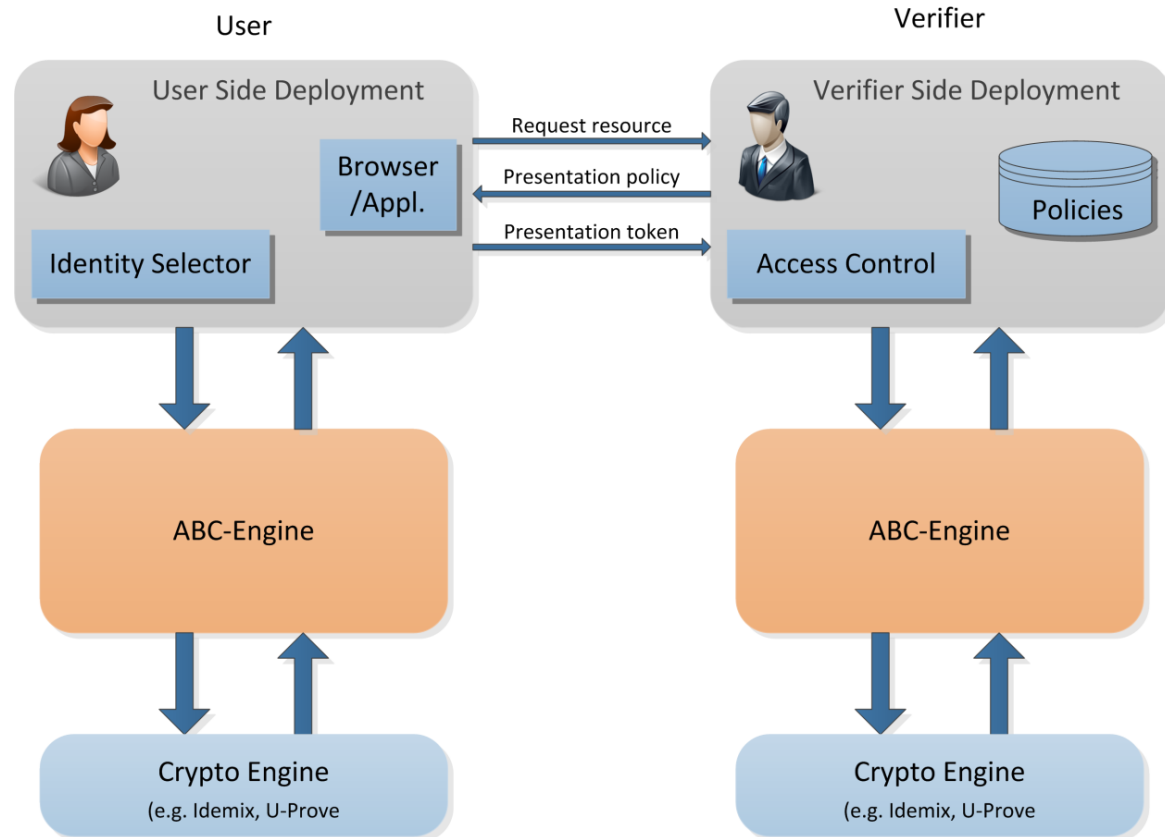
- coded in the ABC-Engine,
- exposed to the application layer as web-services,
- as open source.

For developers

- Easier application development
- Cryptographic operations are abstracted away from.

For users

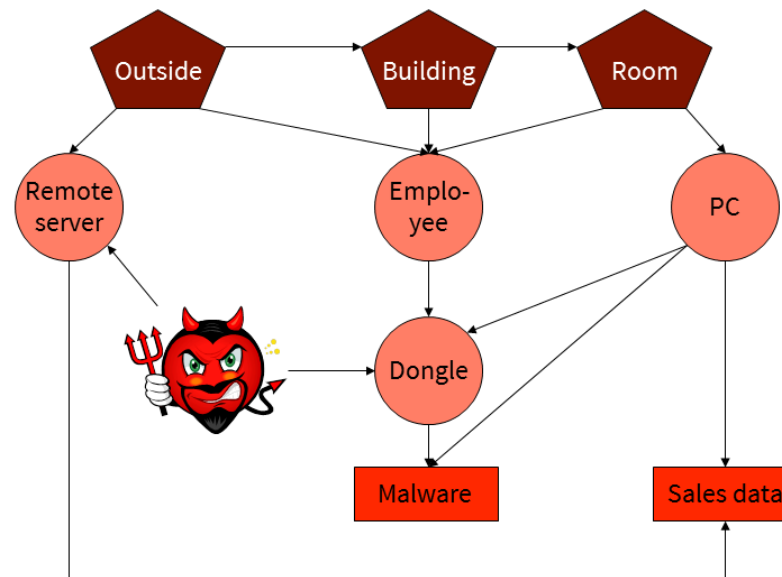
- Only need to install a browser plug-in



- There is a constant increase of costs due to cyber attacks (hacking, industrial espionage, exploitation of loopholes).
- How to combine technical sciences, social sciences and state-of-the-art industry processes and tools to
 - predict complex attack scenarios spanning digital, physical, and social engineering aspects,
 - enable informed decisions on security investments,
 - reduce security incidents, and
 - increase resilience?



- Project aims
 - tool support for investments into cyber security controls
 - models and processes to analyse and visualize possible attacks
 - an attack navigator to systematically predict, prioritise, and prevent complex attacks

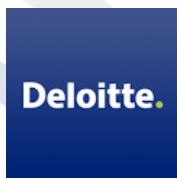
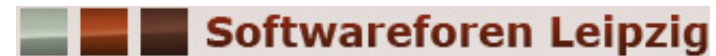


- **Aim:** Protection of communication networks of small and medium sized energy providers.
- **Focus:** Balance between security and usability. Enable non-experts to detect and overview security risks.
- **Research I:** Development of security metrics and corresponding measuring methods.
- **Research II:** Creation of a cross-organisational knowledge-database for small and medium sized energy providers to improve availability and integrity of critical infrastructures against attackers.



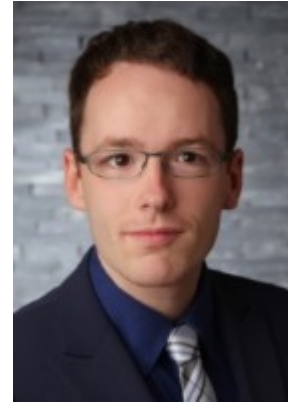
- Multilateral Security, Privacy, and Identity Management in
 - IT Security Evaluation
 - Criteria (IS 15408, Common Criteria)
 - Certification
 - Standardisation (in ISO/IEC JTC 1/SC 27)
 - WG 3: IT Security Evaluation Criteria
 - WG 5: Identity Management and Privacy Technologies
- Standardisation and regulation (EU ENISA Management Board, ...)

Partners of the Chair



and many more ...

- Introduction of the Chair
- Course Organisation
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- Introduction to Information & Communication Systems



Christopher Schmitz, M.Sc.

(christopher.schmitz@m-chair.de)



Shuzhe Yang, M.Sc.

(shuzhe.yang@m-chair.de)

E-Mail contact: win@m-chair.de

■ Course Slides

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

■ Online News

- News about the course (e.g. room changes, announcements, etc.)
- Available via website of Chair, RSS feed or e-Mail newsletter. For subscription, log onto www.m-chair.de

The screenshot displays the website of the T-Mobile Chair of Mobile Business & Multilateral Security. The header includes the 'mobile business' logo, the T-Mobile logo, and the chair's name. A search bar and navigation links (Imprint, Privacy, Sitemap) are at the top right. A left sidebar contains a navigation menu: Home, News, Chair, Teaching, Research, Downloads, Events, Links, and Contact. The main content area is titled 'Lecture in SS 10 Wirtschaftsinformatik 2 (PWIN)' and includes tabs for Basis-Infos, Contents, Anmeldung, ECTS, and Gesamt. Under 'Allgemeine Informationen ausblenden', it lists the target group (Zielgruppe) as 'Zielgruppe ausblenden', the course description (Vorlesung + Übung: Bachelorstudium | Vertiefungsstudium BA | VertSt | V + Ü), the course code (Kursbezeichnung/ Kürzel) as 'PWIN (Bachelor)', the semester (Semester) as 'SS 10', and the lecturers (Dozenten/-innen) as 'Prof. Dr. Kai Rannenberg', 'Dipl.-Wirt.-Inf. Stephan Heim', and 'Dipl.-Ing. (FH), MBA Christian Weber'. It also states 'Zeit und Ort: Zeit und Ort werden noch bekannt gegeben.' Below this, under 'Erweiterte Informationen ausblenden', it shows the first event date: 'Erste Veranstaltung: 13.04.2010'. On the right, there is a 'Services' section with social media icons and a 'Latest News' section with several bullet points about upcoming events, exams, and social media links.

- Exercises
 - Presentation and discussion of exercise results
 - Addressing of open questions from the lectures
 - Preparation for final written exam
- „Mentorium“
 - Preparation, presentation and discussion of exercises in smaller groups of students
- All materials are going to be made available on the website of the Chair in advance and should be prepared by the students.

- Duration: 90 minutes
- 6 Credit points
- Date of written exam is going to be posted on the examination office's website
- Exam language: German
- All lecture and exercise content is relevant unless it is explicitly excluded
- Previous written exams can be found at www.m-chair.de

- Acceptance of verified achievements of universities or universities of applied sciences and arts (located in Germany or foreign countries) is possible.
- Achievements from schools generally rejected:
 - Apprenticeships of grammar schools, secondary schools, technical colleges, etc.
 - Apprenticeships of vocational schools

Equivalence of prior Academic Achievements to this course

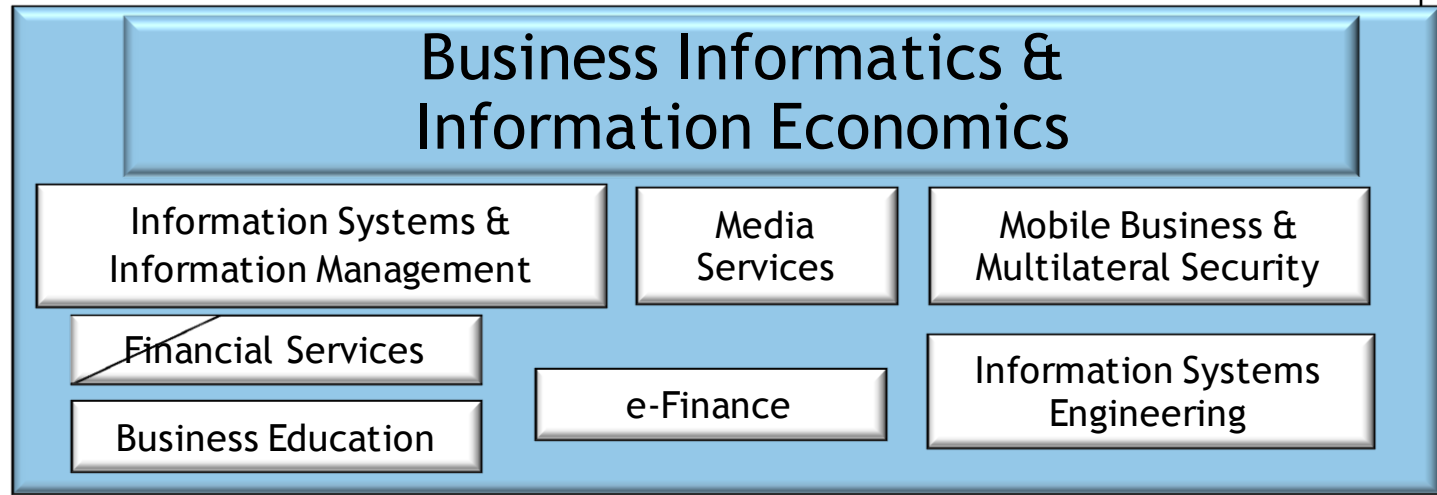
- Acceptance will be granted if it is verified that at least 75% of the contents of this course (incl. exercises) was covered and studied at a former university.
- In addition, the weekly number of hours of the course at the former university must be higher or equal to the hours of this course (2L+1E) in order to be accepted .
- The application documents have to consist of an outline of the passed course from the former university, a corresponding certificate and a table of the contents, which shows the overlap with this course (***structured by the outline of this course!***).



www.enzyklopaedie-der-wirtschaftsinformatik.de

- Introduction of the Chair
- Course Organisation
- Scope and Outline of the Course
- Introduction to Information & Communication Systems

Focus Phase

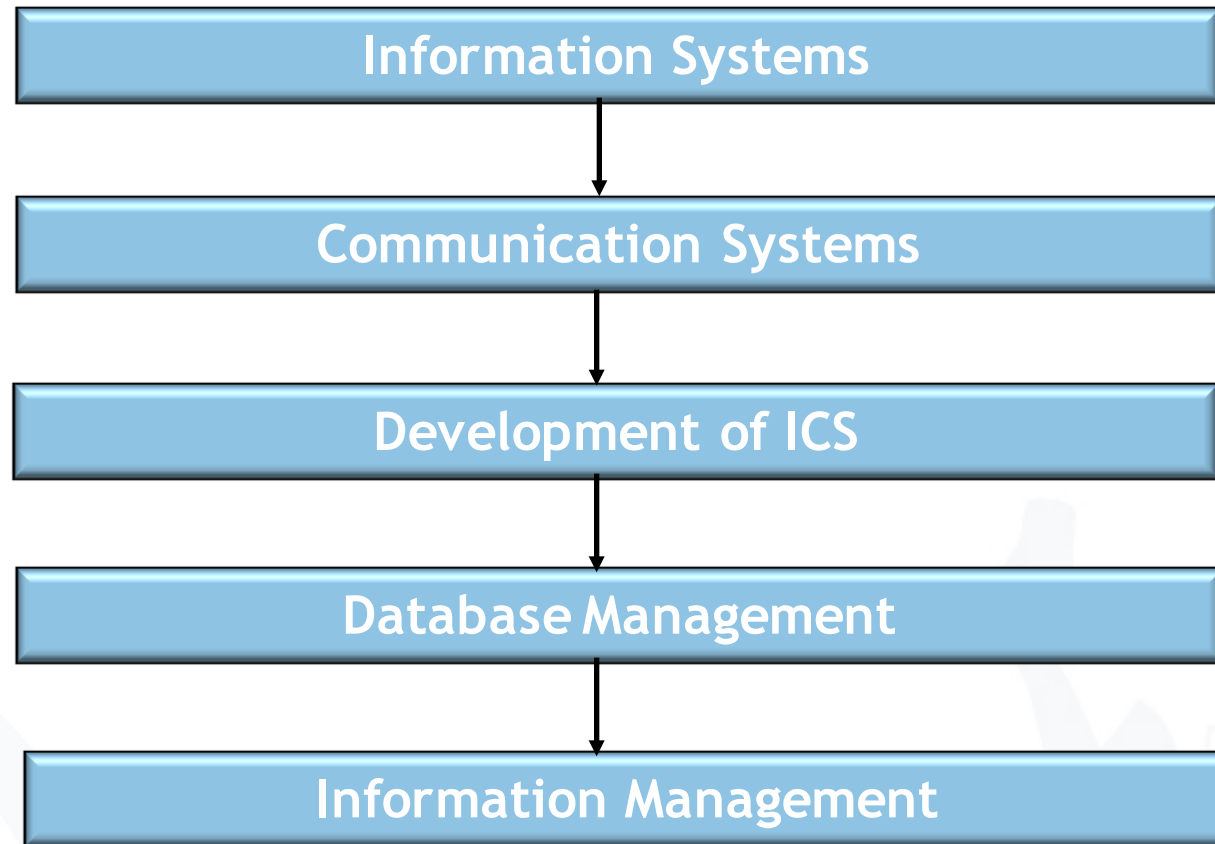


Advanced Phase



Orientation Phase





Information Systems

Purpose of and Research on Information Systems

Enterprise Modelling

Architectures of Information Systems

Mobile Information Systems

Communication Systems

Introduction to layer-based Communications

Fixed Networks

Wireless Networks

After NSA-gate the Internet will
not be what it used to be

Firefox

The US government has betrayed the int... +

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the guardian

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News Sport Comment Culture Business Money Life & style Travel Environment T

Comment is free


The US government has betrayed the internet. We need to take it back

The NSA has undermined a fundamental social contract. We engineers built the internet – and now we have to fix it

- Explaining the latest NSA revelations – Q&A



Bruce Schneier
The Guardian, Thursday 5 September 2013 20.04 BST
[Jump to comments \(720\)](#)



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Share 454

Email



Article history

World news

NSA · United States · Surveillance · The NSA files · US national security

Technology

[Schneier 2013]

Development of ICS

Management of IT-Projects

Software Engineering

Object Orientation & UML

Markup Languages

Database Management

Databases

SQL

Information Management

Business Process Reengineering

Business Process Modeling

Tuesday, 13.10.2015	10:00 – 12:00	Lecture	HZ 4
Tuesday, 20.10.2015	08:30 – 10:00		
	10:00 – 12:00		
Tuesday, 27.10.2015	10:00 – 12:00	Exercise 1	
Tuesday, 03.11.2015	08:30 – 10:00	Lecture	SH 5.101
	10:00 – 12:00		
	16:00 – 18:00	Mentorium	
Thursday, 05.11.2015	10:00 – 12:00		
	12:00 – 14:00		
Tuesday, 10.11.2015	10:00 – 12:00	Guest Lecture: Dr. André Deuker, KfW	HZ 4
Tuesday, 17.11.2015	08:30 – 10:00	Exercise 2	
	10:00 – 12:00	Lecture	
	16:00 – 18:00	Mentorium	SH 5.101
Thursday, 19.11.2015	10:00 – 12:00		
	12:00 – 14:00		
Tuesday, 24.11.2015	10:00 – 12:00	Lecture	HZ 4
Tuesday, 01.12.2015	08:30 – 10:00	Exercise 3	
	10:00 – 12:00	Lecture	
	16:00 – 18:00	Mentorium	Cas 823
Thursday, 03.12.2015	10:00 – 12:00		SH 0.106
	12:00 – 14:00		

Tuesday, 08.12.2015	10:00 – 12:00	Exercise 4	HZ 4
Tuesday, 15.12.2015	08:30 – 10:00	Lecture	
	10:00 – 12:00		
	16:00 – 18:00	Mentorium	SH 5.101
Thursday, 17.12.2015	10:00 – 12:00		
	12:00 – 14:00		
Tuesday, 12.01.2016	10:00 – 12:00	Lecture	HZ 4
Tuesday, 19.01.2016	08:30 – 10:00	Exercise 5	
	10:00 – 12:00	Gastvortrag: Dr. Andreas Albers, Deutsche Telekom	
Tuesday, 26.01.2016	10:00 – 12:00	Lecture	HZ 4
	16:00 – 18:00	Mentorium	SH 0.106
Thursday, 28.01.2016	10:00 – 12:00		SH 5.101
	12:00 – 14:00		
Tuesday, 02.02.2016	08:30 – 10:00	Lecture	HZ 4
	10:00 – 12:00	Exercise 6	
	16:00 – 18:00	Mentorium	Cas 823
Thursday, 04.02.2016	10:00 – 12:00		SH 0.106
	12:00 – 14:00		
Tuesday, 09.02.2016	10:00 – 12:00	Lecture	HZ4

- Introduction of the Chair
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What is an 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.”

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



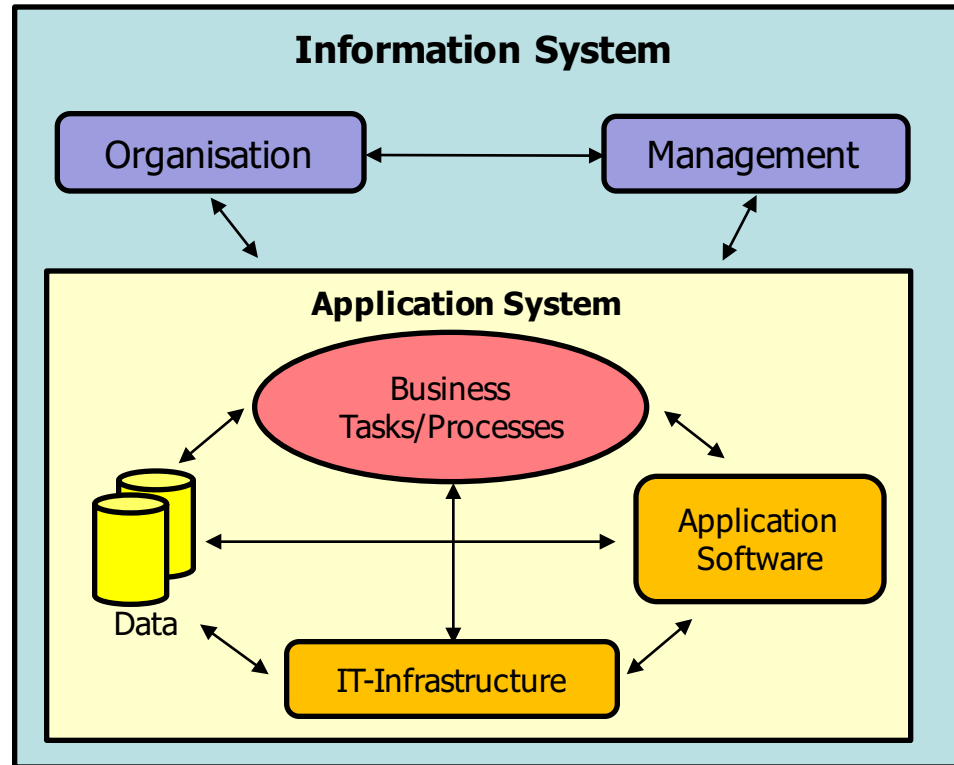
- **Information System (IS):**

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

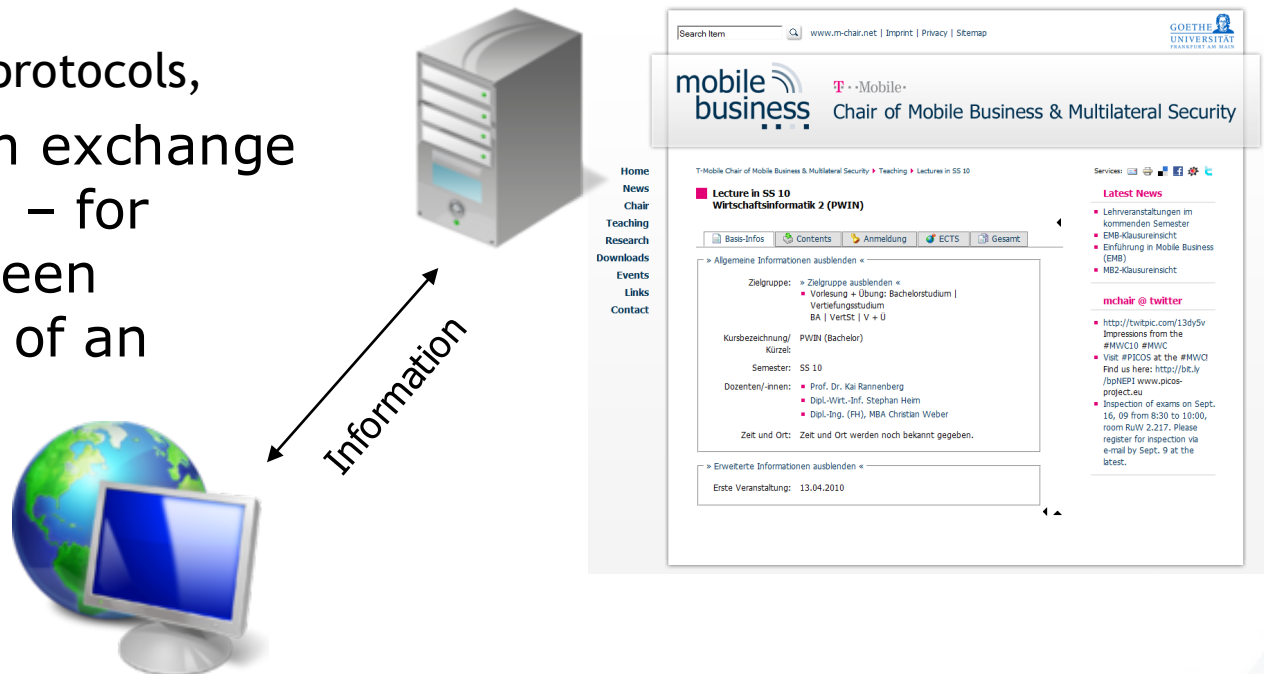
- **Application System (AS):**

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.

Source: Laudon, K.C., Laudon, J.P., Schoder, D. (2010), p. 18.



- A communication system is a collection of to each other compatible
 - Hardware (terminals, physical network components),
 - Software (operation systems, network protocols, application systems), and
 - Transmission protocols,
 which allow an exchange of information – for example between different sites of an enterprise.



- Information Systems (organisational orientation)
 - Designed for an specific operational area of responsibility
 - Considers organisational and basic personal requirements
 - Supports decision making, coordination, controlling and monitoring in enterprises, but even more aids managers and employees to analyse problems, understand complex business cases and develop new products.

- Communication Systems (technical orientation)
 - Physical networking
 - Transmission media
 - Hardware and software



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