Privacy vs. Data: Business Models in the digital, mobile Economy

Lecture 13
Research on Privacy, Identity and Mobile Business

SS 2017

Dr. Andreas Albers

Agenda

- Business Informatics / Information Systems Research
- ICT Research in Europe
- Prior and Current Research at M-Chair
- Future Research Directions

What is an Information System?

"*A set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization.*“

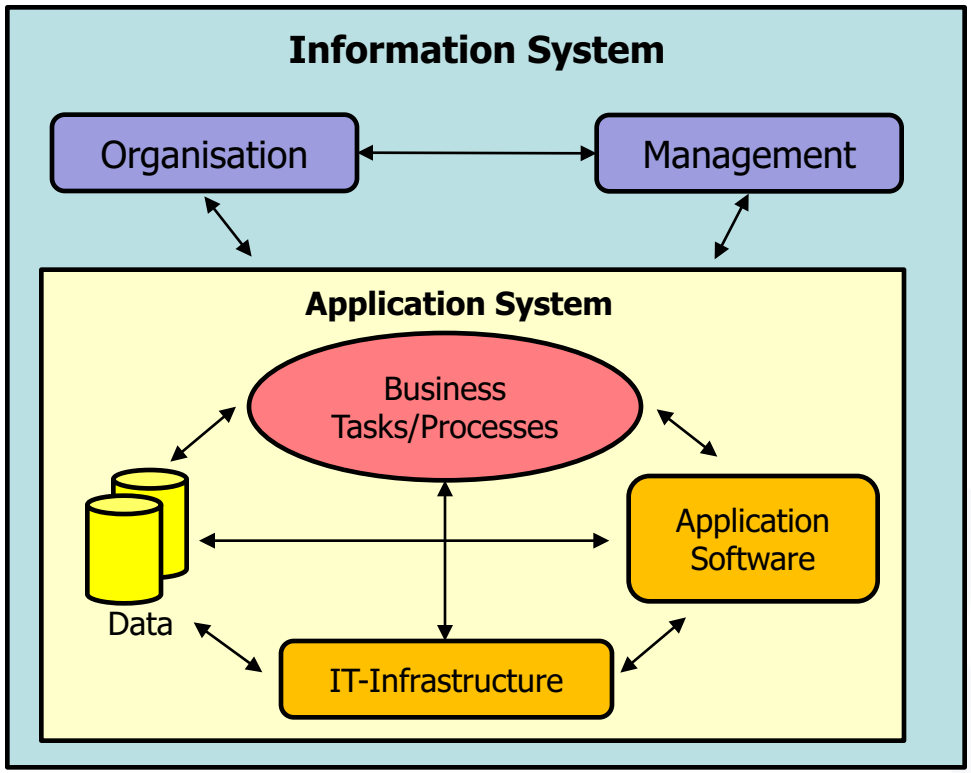
Source: Laudon, Laudon (2010)

Information System and Application System

- **Information System (IS):**
  A system which was build 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.

Information System Structure and Components

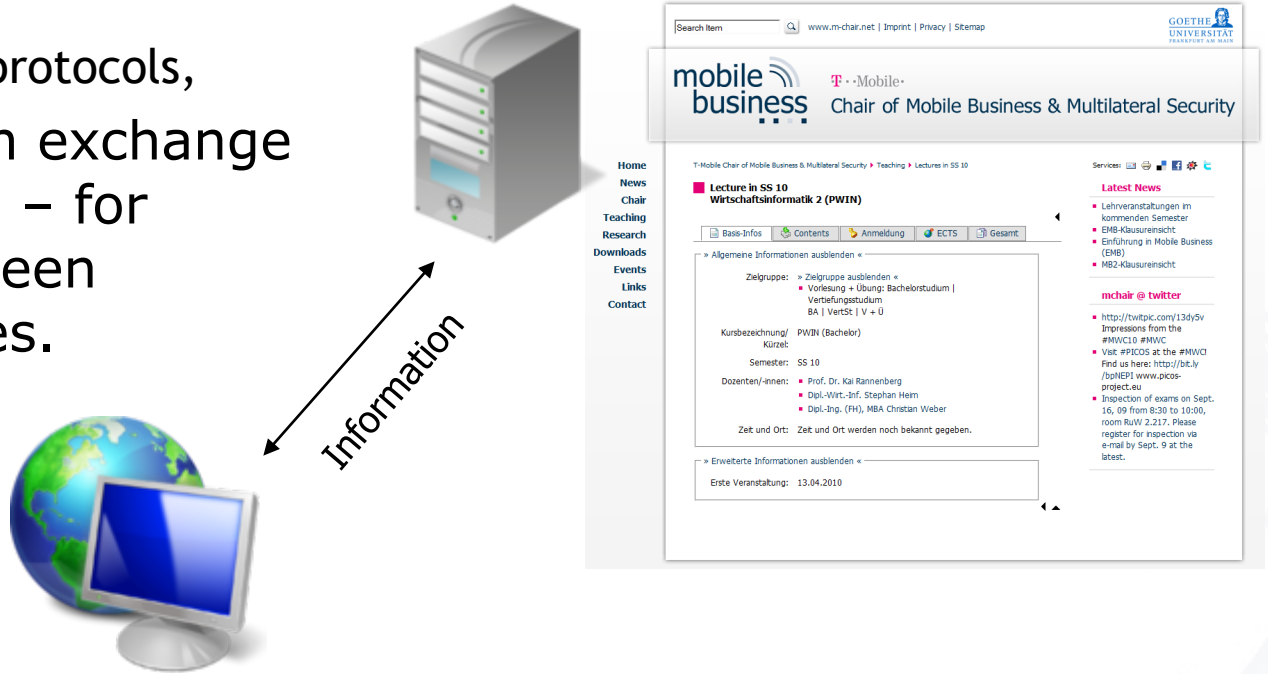


Source: Laudon, K.C., Laudon, J.P., Schoder, D. (2010)

Communication Systems

- 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 enterprise sites.



Interplay of Information and Communication Systems

- 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

Research Objectives of Business Informatics

Generation of improved knowledge about …

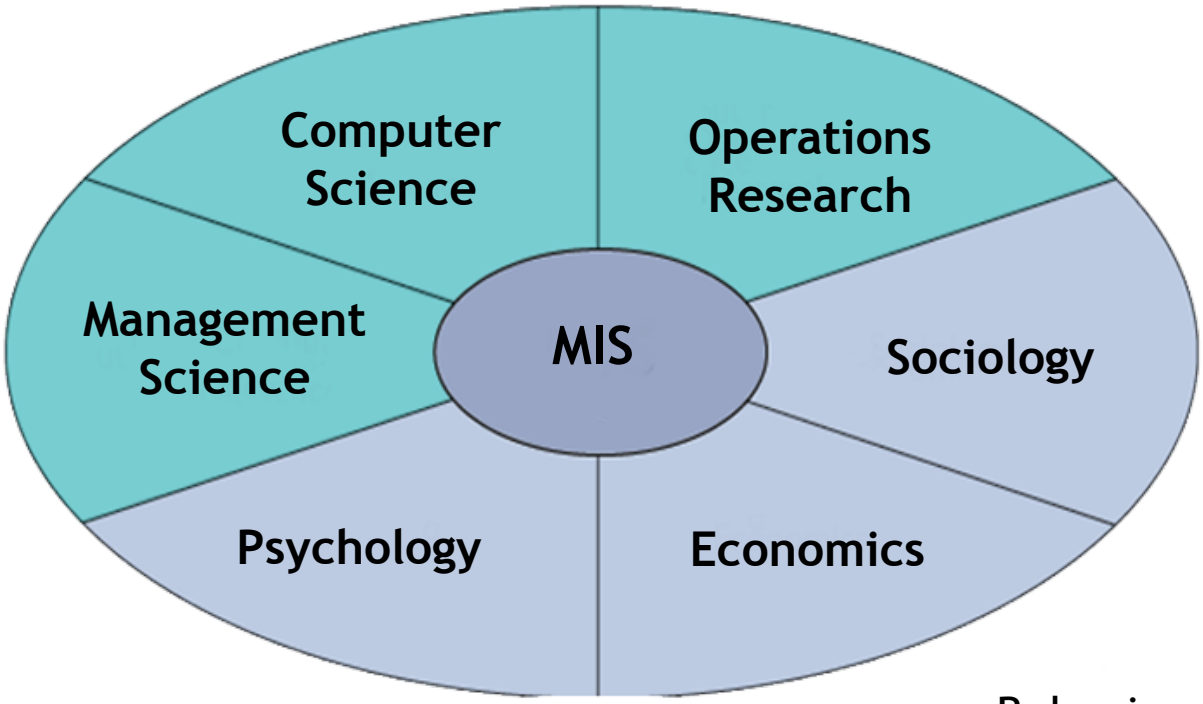
- Controlling the complexity of Information and Communication Systems
- Network and virtual markets
- User-Machine-Interfaces
- Information and Knowledge Management
- Architecture of Information Systems

(Results taken from a Delphi study in 1999; Determination of central research objectives in the business informatics field within the next three and ten years)

Source: Laudon, Laudon, Schoder (2010)

IS Research Areas

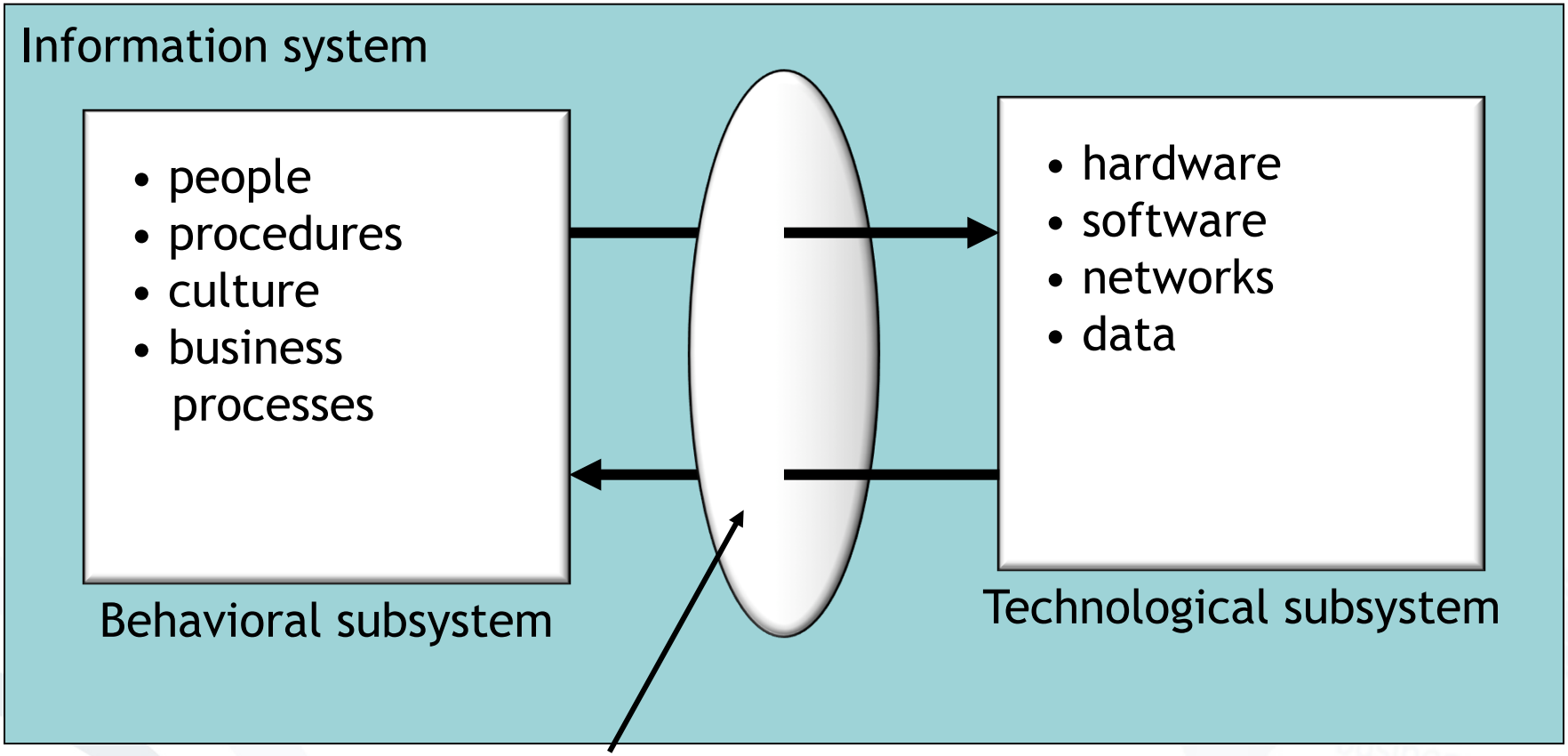
Technical Approaches



Behavioral Approaches

Source: Laudon, Laudon (2005)

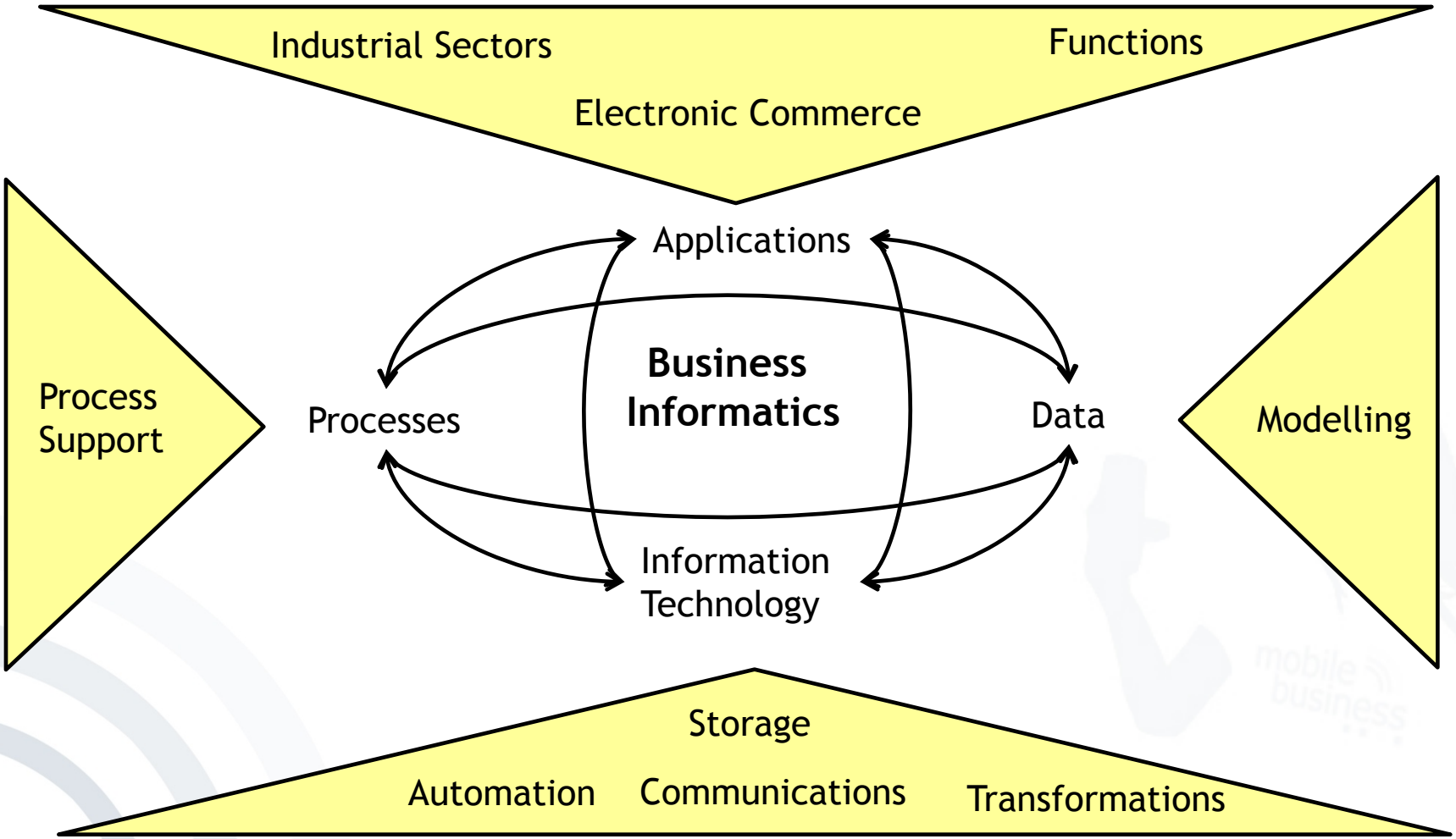
"Systems thinking" in IS Research



The emergent interactions between the behavioral subsystem and the technological subsystem

Source: Lee (2000)

Areas of Business Informatics



Source: Laudon, Laudon, Schoder (2006)

Business Informatics Objectives

	Knowledge Objective	Design Objective
Methodological Assignment	Comprehension of methods and techniques of information systems design	Development of methods and techniques of information systems design
Content & functional- driven Assignment	Comprehension of information systems and their application fields	Provision of IS reference models for enterprises and industries

Source: Becker et al. (2001), S. 11; Laudon, Laudon, Schoder (2006), p. 45

Agenda

- Business Informatics / Information Systems Research
- ICT Research in Europe
- Prior and Current Research at M-Chair
- Future Research Directions
- One more thing …

EU Commission: Digital Single Market Strategy

- *„A Digital Single Market (DSM) is one in which the free movement of persons, services and capital is ensured and where the individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence.“*

- The Digital Single Market strategy, adopted on the 6 May 2015, includes 16 initiatives to be delivered by the end of 2016.

- Internet
  https://ec.europa.eu/digital-single-market/en/digital-single-market,
  (last access 2016-04-15).

DSM Key Pillars

- **Access**

  Better access for consumers and businesses to digital goods and services across Europe;Opening up access to content

  - Rules to make cross-border e-commerce easier
  - Enforcing consumers rules
  - More efficient and affordable parcel delivery
  - Ending unjustified geo-blocking
  - Launching an antitrust competition inquiry into e-commerce
  - A modern, more European copyright framework
  - A review of the Satellite and Cable Directive
  - Reducing VAT burdens

DSM Key Pillars

- **Environment**

  The Digital Single Market aims to create the right environment and conditions for digital networks and services to flourish by providing high-speed, secure and trustworthy infrastructures and services supported by the right regulatory conditions.

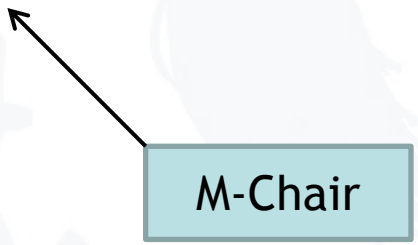
  - Overhaul of the telecom rules
  - Review the audiovisual media framework for the 21st century
  - Comprehensively analyse the role of online platforms
  - Reinforcing trust and security in digital services and in the handling of personal data
  - Propose a partnership with industry on cybersecurity

DSM Key Pillars

- Economy & Society

  The Digital Single Market Strategy will maximise the growth potential of the European Digital Economy and of its society, so that every European can enjoy its full benefit.

  - Propose a European free flow of data initiative
  - Define priorities for standards and interoperability
  - Support an inclusive digital society



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ABC4Trust

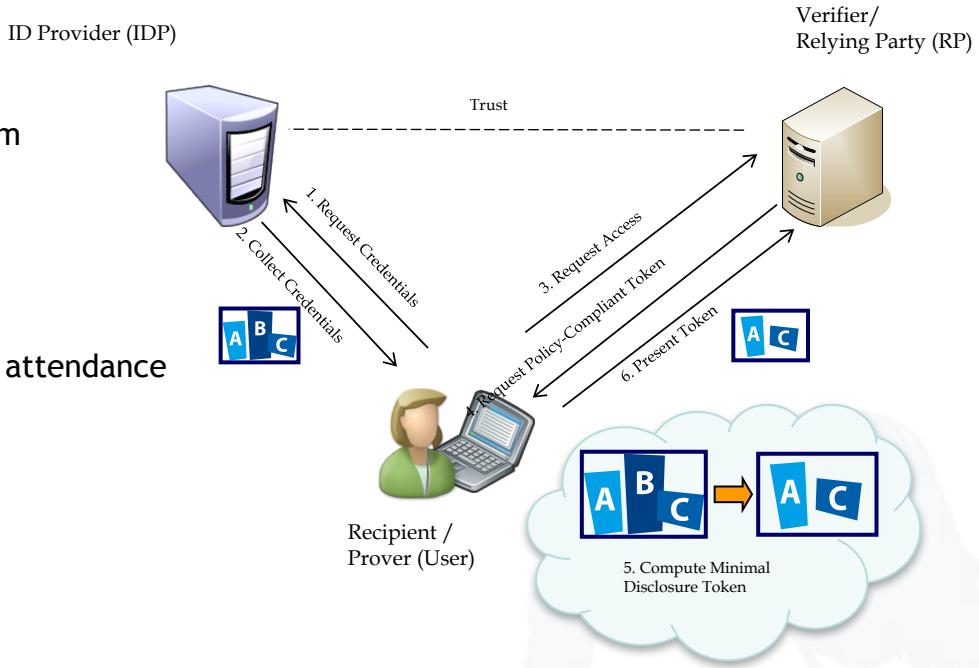
Concept and project objective(s)

- Address federation and interchangeability of technologies that support trustworthy yet privacy-preserving Attribute-based Credentials
- Define a common, unified architecture for ABC systems
- Provide an open reference implementations of the selected ABC systems and deploy them in actual production
- Support trustworthiness of eID deployments in Europe and enhance privacy protection techniques related to their deployment in practice.

ABC4Trust Consortium

Project Pilots

- ✧ Swedish Secondary School:
  - ➢ Privacy preserving communication platform
- ✧ University of Patras, Greece
  - ➢ Electronic course rating while ensuring anonymity, single vote, and eligibility according to the number of attendance



Underlying Technologies

- ✧ Microsoft U-Prove
- ✧ IBM Identity Mixer

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ABC4TRUST

GINI-SA

Global Identity Networking of Individuals Support Action

Project main outputs:

- A roadmap that will identify new research and technology development areas with the aim of contributing to the research and development priorities of FP 8 and of the Competitiveness and Innovation Program (CIP).
- A White Paper that will identify the domains for policy intervention in terms of regulation, legal measures, technology policy and institutional reorganization at EU, national and regional levels that may be necessary in order to enable and support the emergence of an operator-driven infrastructure for user-centric Identity management in the context of the envisioned INDI ecosystem.

Project Facts:

Duration: 24 months

Start Date: 2010-06-01

Partners: International Organisation for Knowledge Economy and Enterprise Development (IKED), Sweden; Fraunhofer Institut für Software- und System Technik (ISST), Germany; The Katholieke Universiteit Leuven, Belgium; Technische Universität Graz, Austria; Goethe Universität Frankfurt am Main, Germany; Government to You, Greece; NorthID Ltd, Finland

GINI-SA

Global Identity Networking of Individuals Support Action

About:

GINI-SA project aims to investigate and set the foundations for the architectural, legal, regulatory requirements and the provisioning and privacy enhancing aspects of a framework of **user-centric identity management services**.

Project Vision:

Work towards the vision of a **Personal Identity Management environment,** where

- **individuals** will be able to **manage** their own **identity space** (Individual Digital Identity – INDI)
- **user-specific identity services** will be available in the INDI space with certain **privacy protection and privacy enhancement** provisions.

Privacy & Identity Management for Community Services (PICOS)

- Research on **mobile communities**
- How to improve **trust and privacy** in such communities?
- A set of interdisciplinary **requirements** for trustworthy, privacy-friendly community transactions
- Development of **concepts** to address the identified requirements

Privacy & Identity Management for Community Services (PICOS)

- Demonstrate the provision of state-of-the-art privacy and trust technology to community applications
- Develop **application prototypes** to demonstrate the use of PICOS concepts in practice

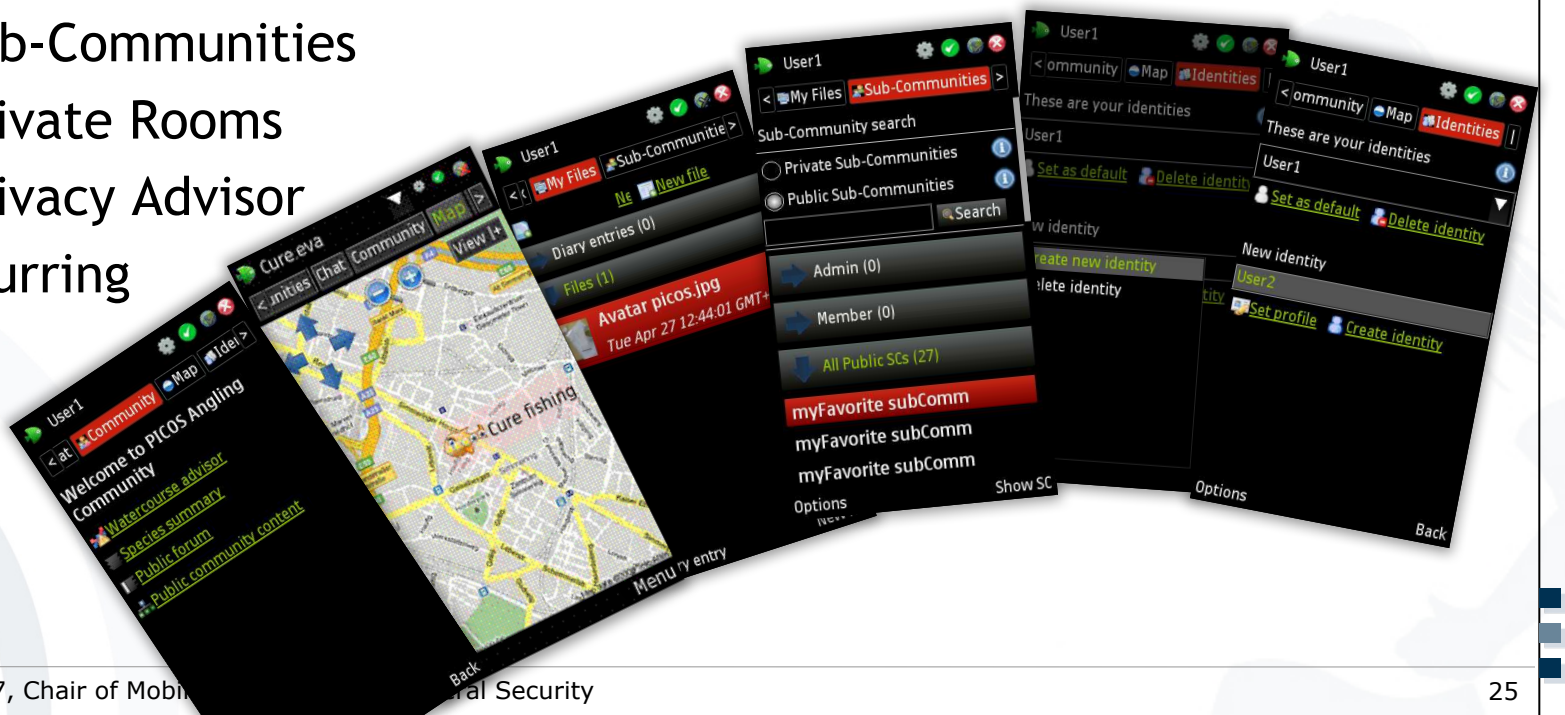
Exemplary Communities:

- Anglers
- Online Gamers
- Taxi Drivers

Implementing Privacy: PICOS prototype “AnglerApp”

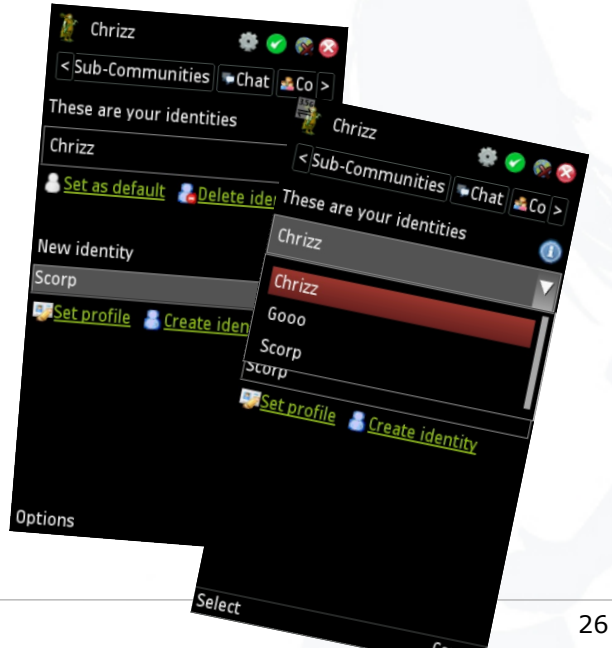
The Angler Community Prototype

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



Partial Identities

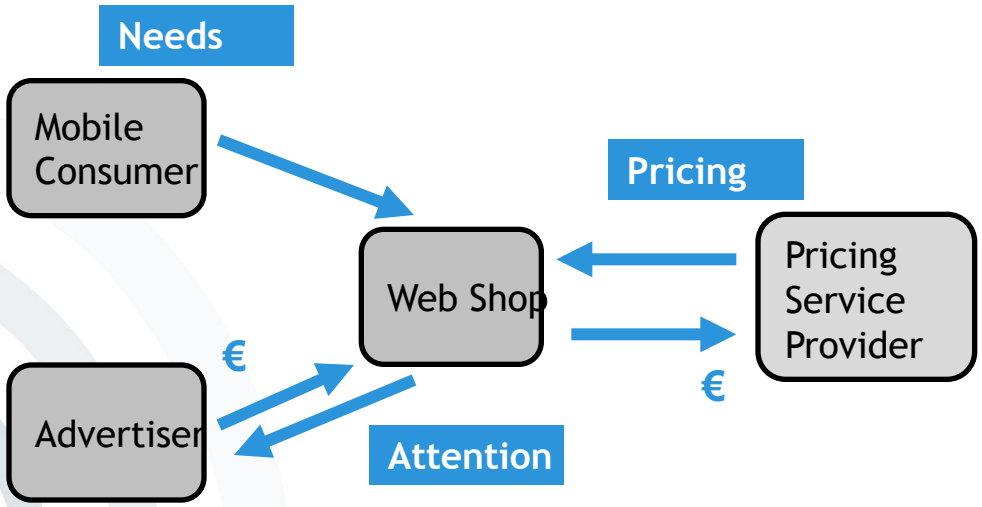
- Different Partial Identities for different **usage contexts**
  - e.g. for usage in different sub-communities to reflect various roles of users
- Limited set of personal information disclosed for each Partial Identity

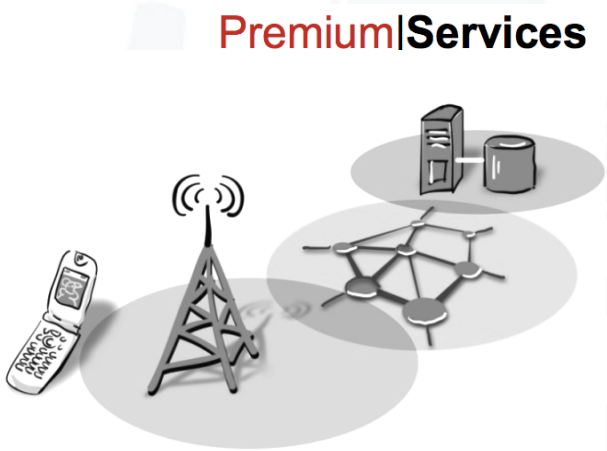


PREMIUM Services (PS) Project

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

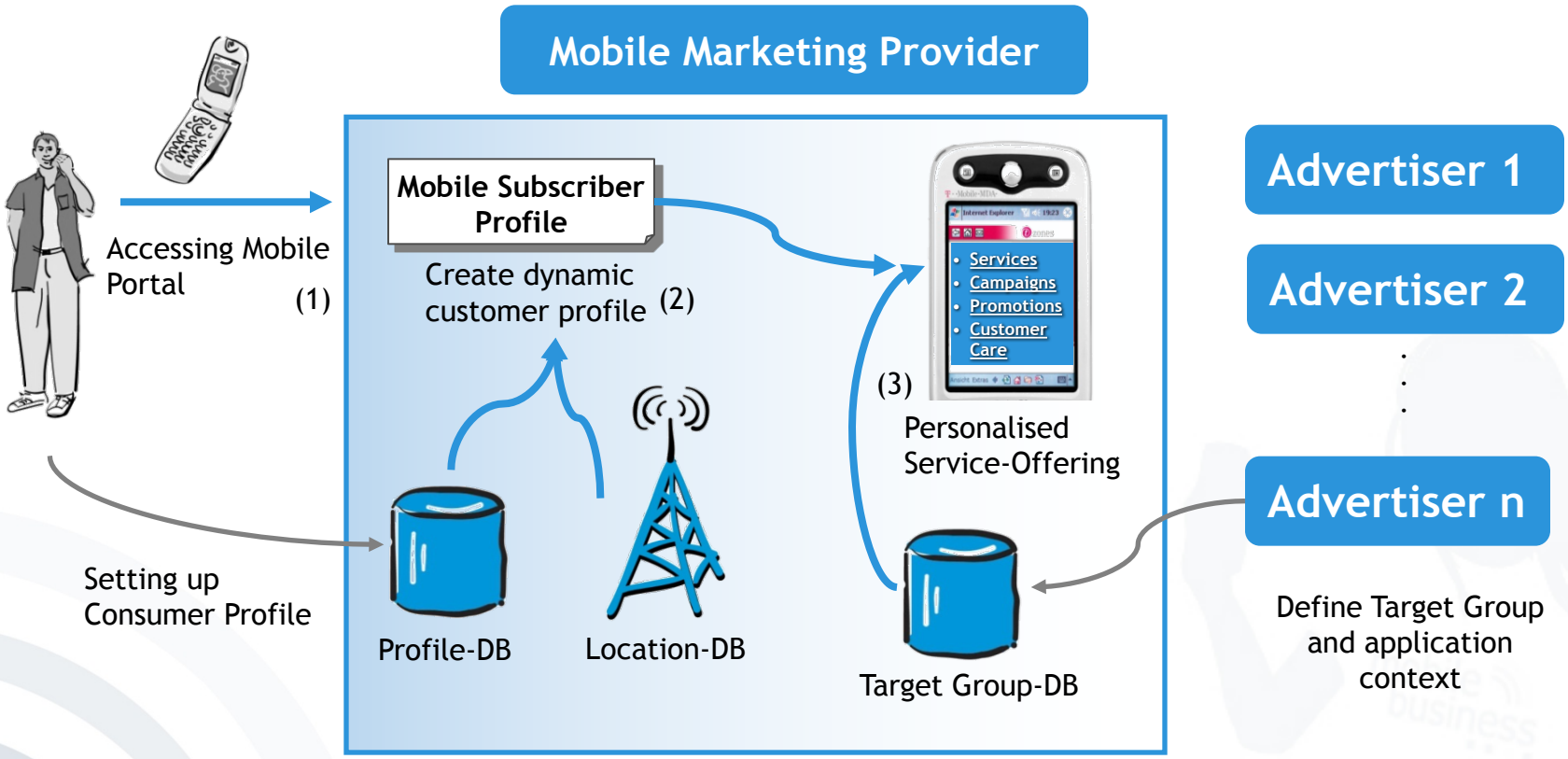
- Design of dynamic, interactive pricing mechanism to address the unique characteristics of Context-sensitive Mobile Consumer Contacts
- Development of an Evaluation Tool for Advertisers in order to determine the value of mobile consumers in their current usage situation
- Implementation of Pricing Service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





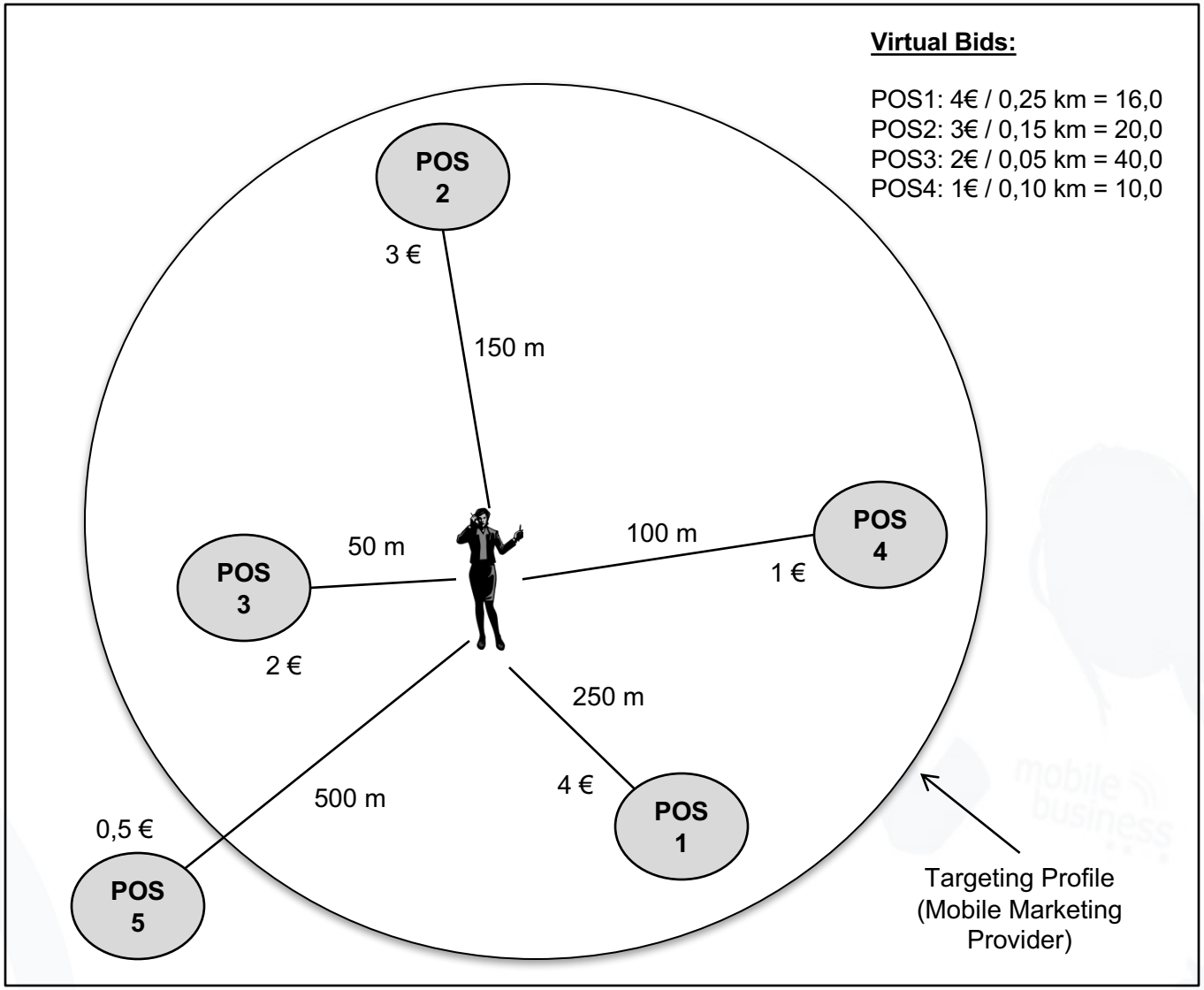
PS Application Scenario

Scenario: Restaurant Finder, returning only restaurants in close distance with appropriate opening hours and matching a user's general interest profile.



PS Application Scenario (2)

Pricing of Mobile Customer Contacts



Mobile User Management Interface

Profile Management

User: Andreas

Pseudonym Name: pantsoff

Phone #:

Gender: Male / Female

Year of Birth: 1975

General Interests: Books, Cars, Finance, Movies, Sports

Current Requests

Bagel, Burger, Pasta, Pizza, Steak

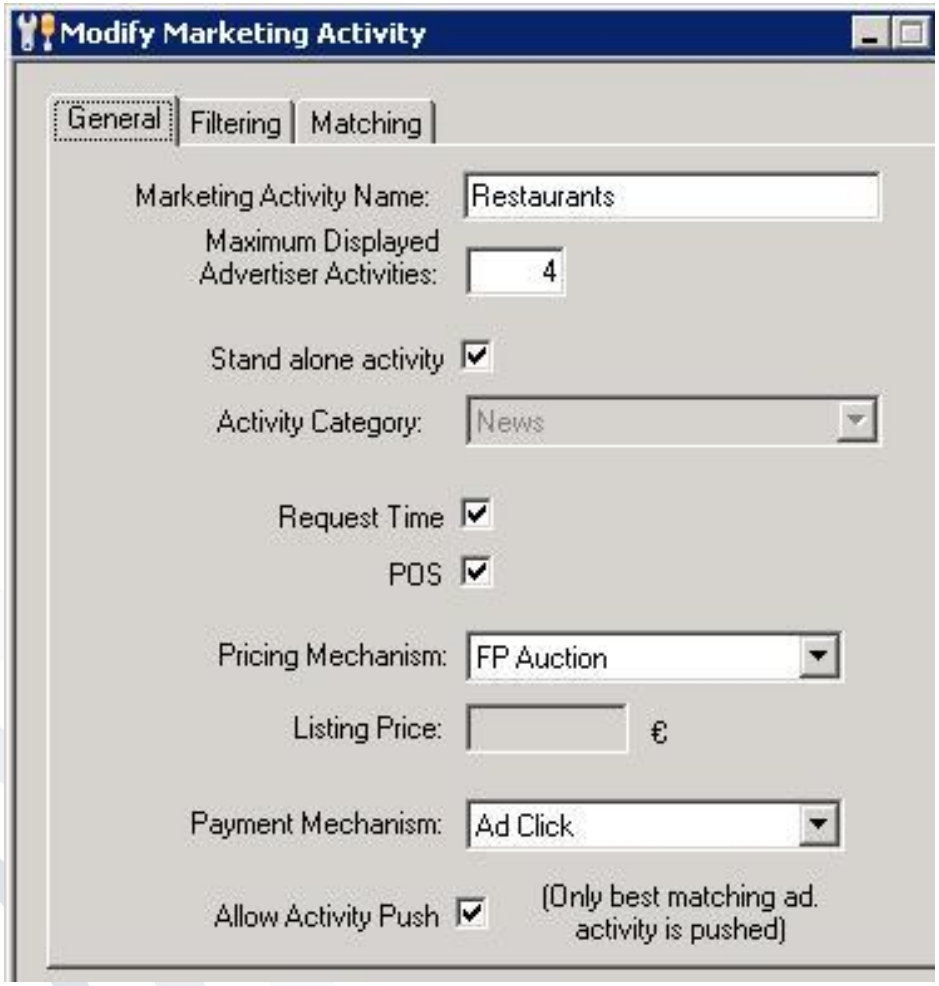
Privacy Settings

Allow Push Activities, Allow Localization, Allow Identification, Allow History, Profile Activated

OK Cancel

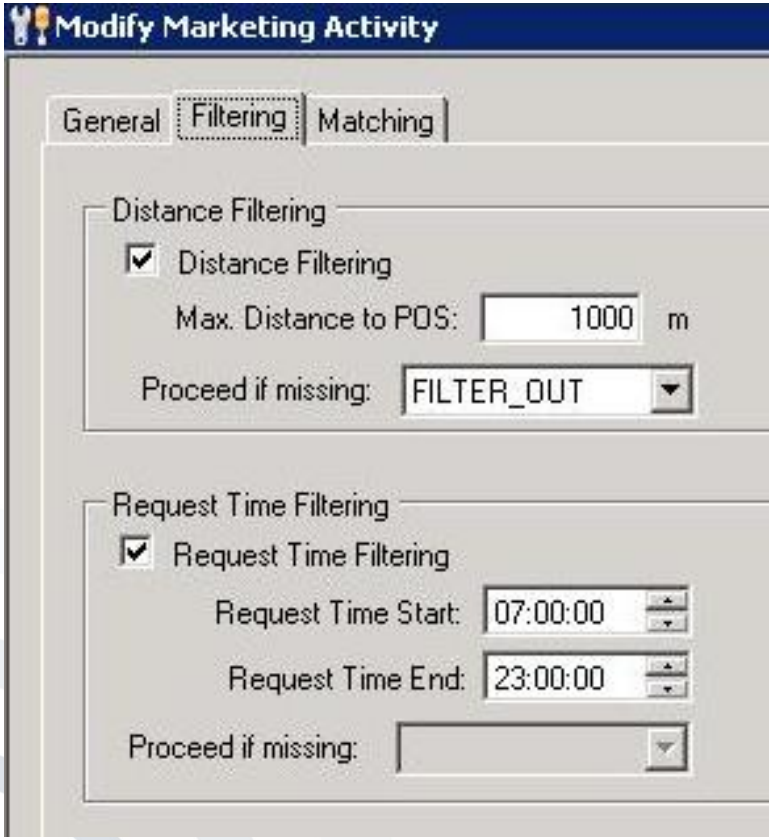
Mobile Marketing Provider Management Interface

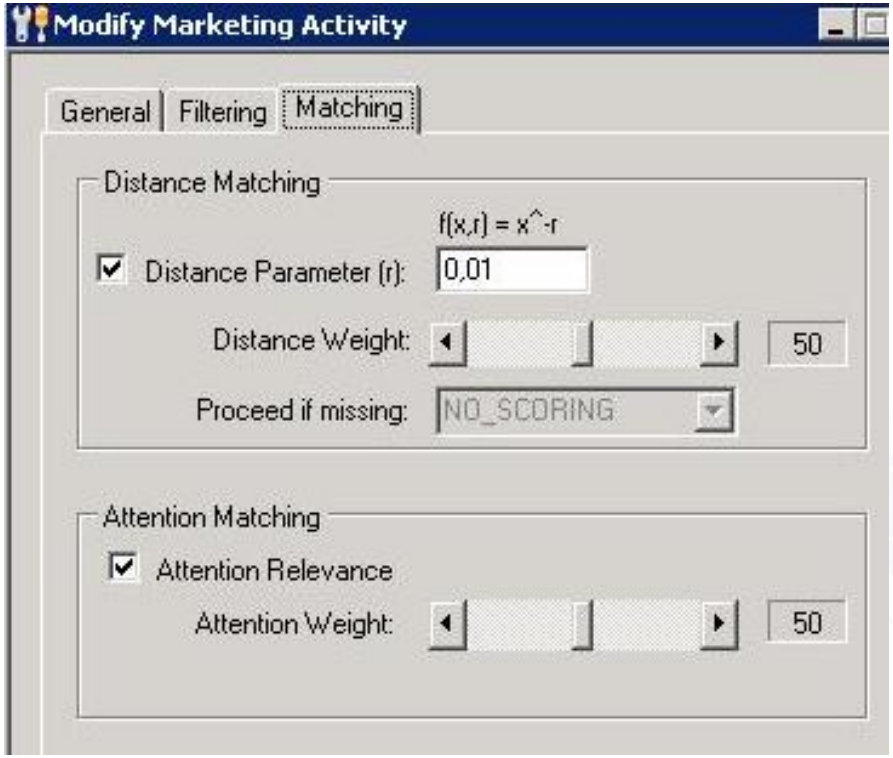
- Mobile Marketing Campaign Category Setup



Mobile Marketing Provider Management Interface

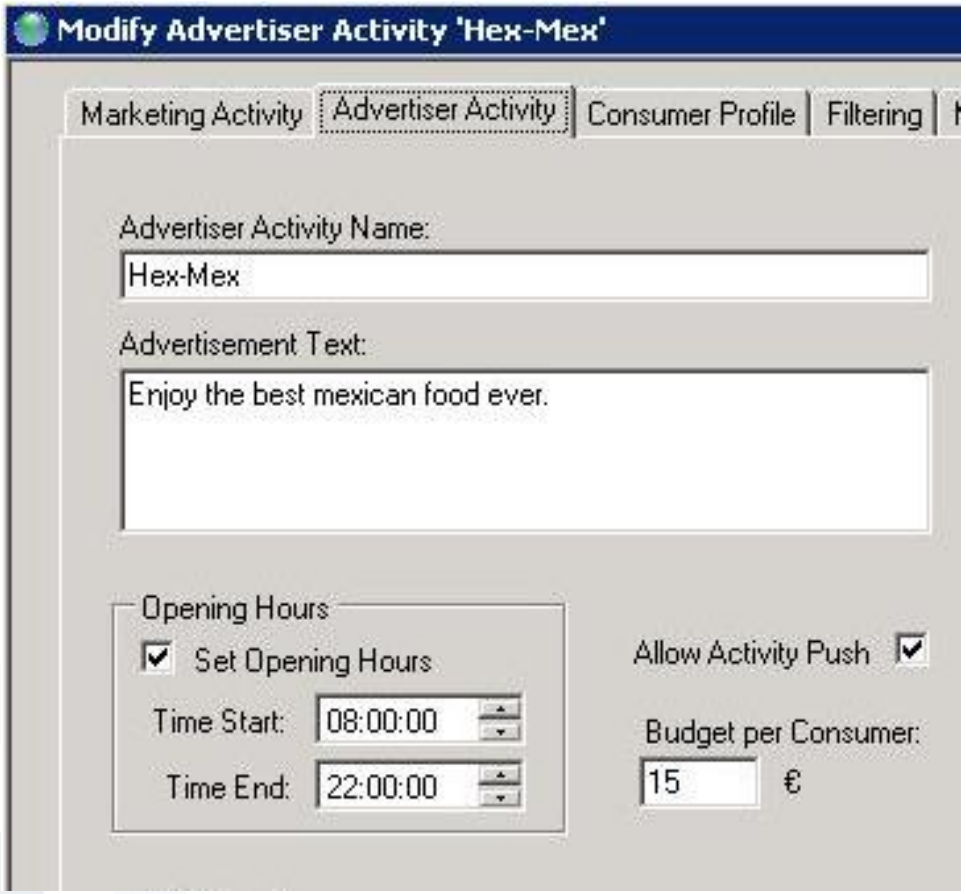
- Target Group and Auction Process Configuration





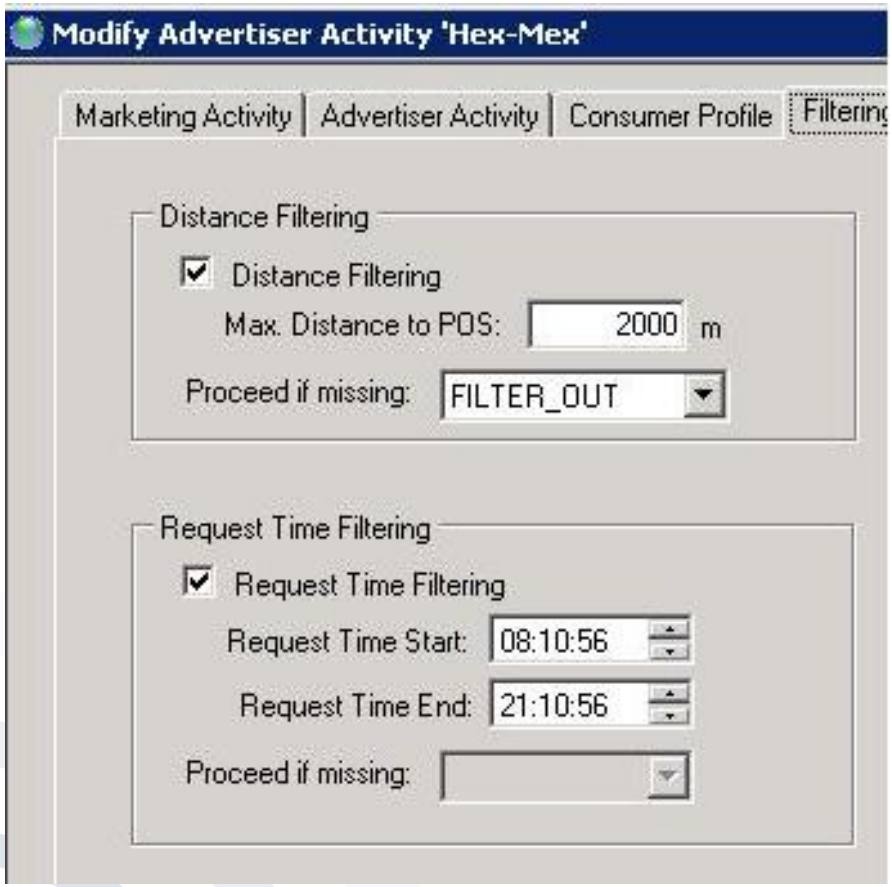
Mobile Advertiser Management Interface

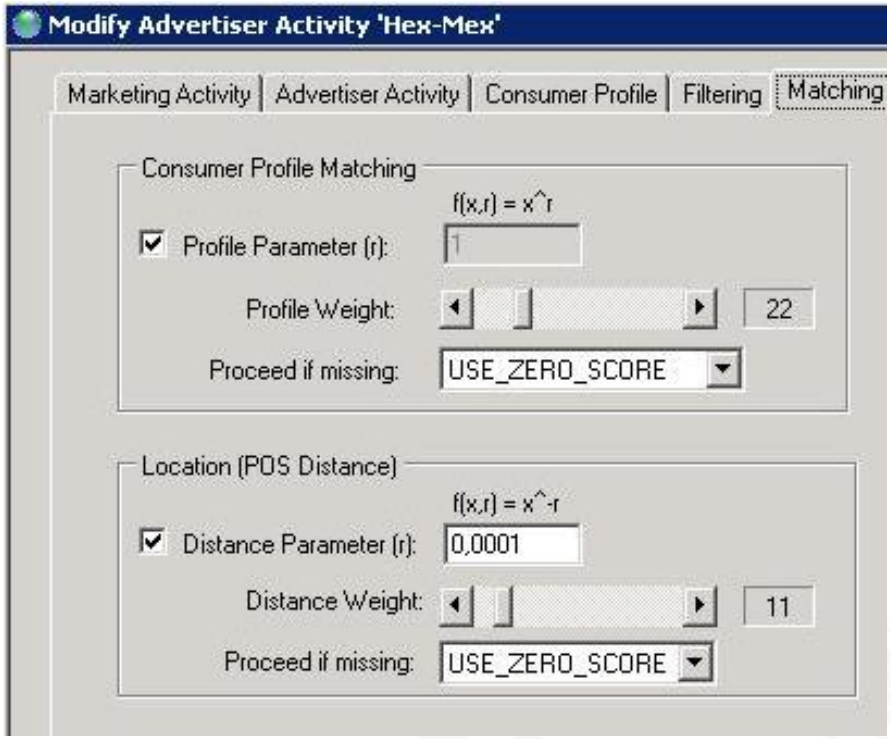
- Mobile Marketing Campaign Setup



Mobile Advertiser Management Interface

- Target Group and Auction Bidding Configuration





Mobile Portal Interface

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A (Possible) View on IdM, Privacy and Mobile Business

- Identity (Management)
  - is the digital clue between the building blocks of online / mobile businesses
  - of users is the fuel for online/mobile services and businesses, so enterprises in every digital ecosystem should aim at owning their own user base.

- Privacy …
  - … as fundamental building block for sustainable business
  - … benefits cannot be directly/immediately perceived by individuals
  - … protection lacks of incentives for enterprises and individuals
  - … regulation can only offer a basic protection

- Mobile Business / Devices / …
  - ….will most likely be at the centre of the future digital economy
  - … are permanent companions of individuals while storing their digital identities
  - Digital identities as enabler for access to all communication and information in the digital economy

(Future) Research/Development Directions

- Mobile Business
  - Major developments/business models often driven by the industry
    → Strong genuine incentive to innovate
  - So, many research efforts are solely dedicated towards understanding consumer behaviour and needs
- Identity Management
  - Identity Management as a Service in the Cloud
  - Continuous evolvement of Federated Identity Management
  - Standardisation of Identities and their Management
- Privacy
  - Research on tools/concepts to reduce the effort for users to protect their privacy (e.g. Facebook Privacy Advisor)
  - Research on how to establish privacy as a competitive edge for enterprises
  - Research on how to foster establishing Trust in the digital economy