

Lecture 7

Mobile Surveillance, Data Protection, and Identity Management

Mobile Business II (SS 2009)

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- Governmental agencies more and more enforce surveillance of communication (“Me too” -Approach).
- Privacy and Security of communication is essential to protect citizens from unlawful surveillance.
- Identity Management Systems help to protect the user from possible threats.

- Surveillance

- Legitimation and Types of Surveillance
- Public Agencies (“Bedarfsträger”) and their Control
- Legal Foundations
- Practice
- Conflicts

- Data Protection

- Terminology and Background
- Telecommunications Area
- Implementation

- Identity & Mobile Identity

- Identity Concepts
- Identity Management Systems
- Interdisciplinary Aspects of Mobility and Identity

Why “Surveillance”?

- Fight organised crime:
 - Investigation
 - Prevention
- Socio-political goals:
 - Protect democracy from extremists (e.g. surveillance of the NPD, Al-Qaida, etc.),
 - Keep up preparedness of the military services,
 - Protection from foreign intelligence services.



Bundeskriminalamt



Bundesnetzagentur

- Eavesdropping
- Storage and analysis of connection data
- Automated content analysis (BND)
- Identification of mobile phone users and eavesdropping (IMSI Catcher)
- Data retention
- Determination of the location of callers

We do not cover “bugging” or the manipulation of information technology for surveillance. These issues are regulated in Article 13 GG and §100 StPO.

Who is executing Surveillance?

- Eavesdropping is performed by so called public agencies (“Bedarfsträger”), e.g.:
 - Police
 - Intelligence services (e.g. Federal Intelligence Service (Bundesnachrichtendienst – BND))
 - Federal Office for the Protection of the Constitution (Bundesamt für Verfassungsschutz – BfV)
 - Via Europol as administrative assistance for foreign authorities
- There is no total trust into this agencies foreseen.
- ➔ Therefore, control of the surveyors is part of the system
- ➔ However, it is not trivial due to the secret nature of the agencies’ tasks.

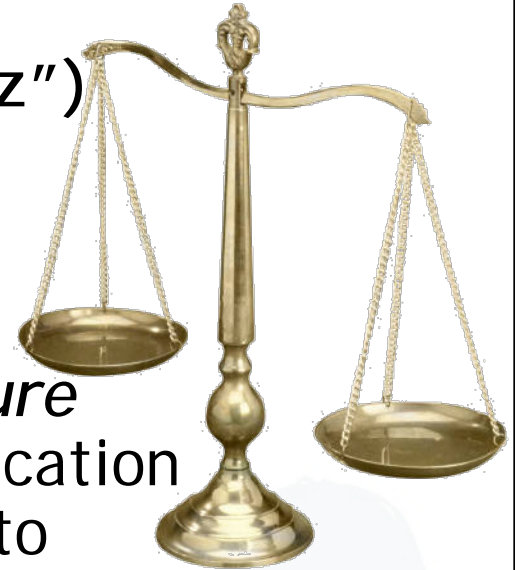
- **Public agencies** (“Bedarfsträger”) are under the control of a ministry.
- The **parliamentary control commission** („Geheimdienstausschuss“) reviews the actions of the intelligence services.
- The **Federal Commissioner for Data Protection** represents the citizen's interests.
- When investigating according to the code of criminal procedure (StPO - Strafprozess-Ordnung) §100:
 - The **obligation to inform** the surveyed person by the public agencies is regulated in §101 StPO.
 - **Notification within 6 months** - exceptions may apply.

- The Federal Office for the Protection of the Constitution is controlled by:
 - The **minister of the interior** responsible towards the parliament,
 - The **parliament** itself,
 - The **Federal Commissioner for Data Protection** or the **Commissioner for Data Protection** of the states (“Länder”).
- This control is not executed in public!
 - **Problem:** Lack of transparency
 - **Example:** Incidents with regard to the surveillance of the NPD (e.g. “V-Mann Affäre”)

Distinction between 2 types:

- Investigation
 - Federal prosecutor and judge approve requests.
 - Federal Network Agency ("*Bundesnetzagentur*") acquires connection data.
- "Danger ahead" principle (special urgency)
 - In cases of special urgency, the investigator can refer to the "danger ahead" ("*periculum in mora*") principle.
 - The officer-in-charge (security administrator) at the company (provider) decides, cooperates, and notifies authorities.

- **Article 10 *Constitution* (“Grundgesetz”)**
 - Privacy of correspondence, posts and telecommunications
- **§100 of the *Code of Criminal Procedure* (StPO) defines in which cases communication surveillance is allowed and how it has to be conducted.**
 - Comprehensive framework with rules and regulations.
 - Measures have to be approved by the prosecutor and the judge, otherwise they cannot be used in court.
 - The *Telecommunications Traffic Surveillance Ordinance* (TKÜV) regulates the general process.

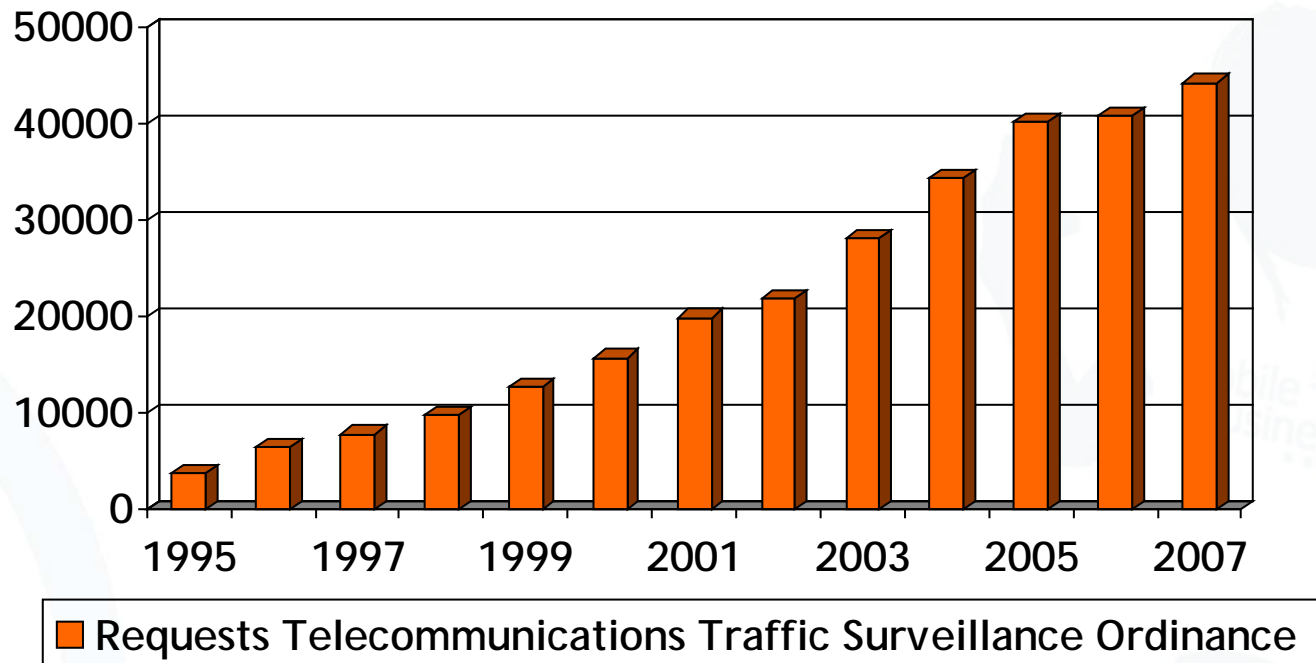


- **Telecommunications Traffic Surveillance Ordinance (TKÜV)**
 - Reference to §110 and §111 TKG
 - Affects telecommunication providers that offer network access to the public (TKG §110 (6))
 - Affected:
 - Every Internet provider (also including universities and other public bodies offering network access)
 - Hotels/hospitals that offer phone services to their guests/patients

- **Federal Intelligence Service Law
(BND-Gesetz – BNDG)**
 - The Federal Intelligence Service (BND) collects and analyses information of foreign countries, which are of interest with regard to foreign and national security affairs.
 - The BND is authorised to use the means of the Federal Office for the Protection of the Constitution (BfV), if these are necessary to fulfil their duties.
 - This includes, for example, the methodical interception of foreign phone calls.
 - The BND has to follow the statutes of the Federal Data Protection Act (BDSG).

- **Foreign Trade and Payments Law (AWG) – Control of Exports**
 - For the control of the violation of export controls and for their penalisation: §39 AWG restricts the secrecy of telecommunications.
 - Public agency: *Customs Criminological Office*
 - Controlled by the public attorney's office
- **International Treaties**
 - Treaties such as the “European Mutual Assistance” for Europol extends the public agencies (“Bedarfsträger”) by administrative assistance to European agencies.
 - Data protection and surveillance become an international topic.

- Compared to 1995, the requests have increased by nearly 1000%, for 2007 an increase of 10% compared to the previous year could be observed.
- However, there is no evidence that there is an increased success-rate of the investigators.



Due to the diffusion of mobile phones,
investigators have new problems:

- Phone number is not linkable to a person's location.
- Relation between a person and a mobile phone is not fixed.
- ➔ Therefore public agencies try to get quick access to the circumstances and content of the communication.

Solution: "IMSI-Catcher" by Rohde & Schwarz

“IMSI-Catcher” by Rohde & Schwarz simulates a strong base station, causing all mobile phones in the network of the respective operator to connect to this simulated base station.

- ➔ The person to be observed can be identified via the IMSI of the SIM, which can be queried at the mobile operators' databases (if the operator is in a cooperating country).
- ➔ Interception of the communication

■ Problems

- ...with the constitution due to the rerouting of phones of persons that are not being observed.
- ...due to technical interferences between the IMSI catcher and normal base stations

IMSI-Catcher: Functionality

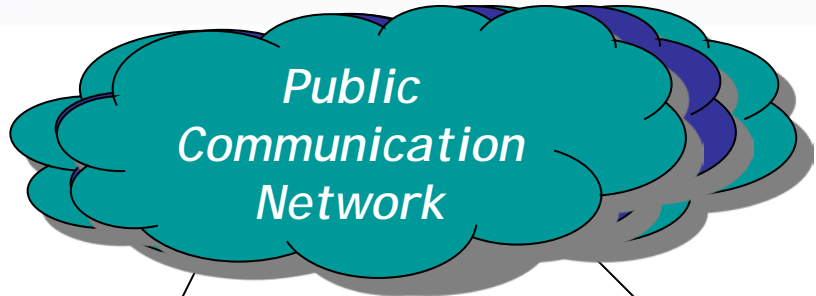
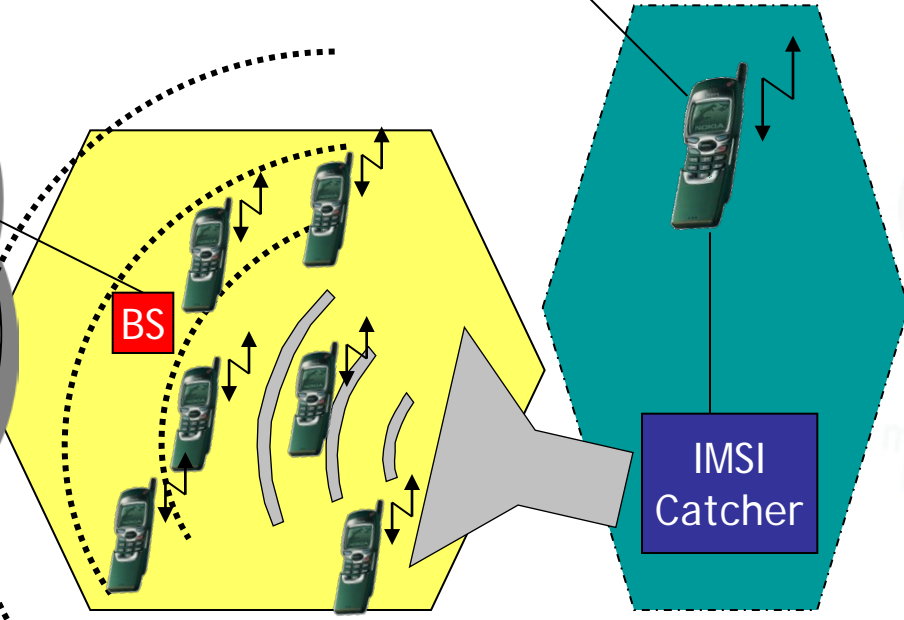
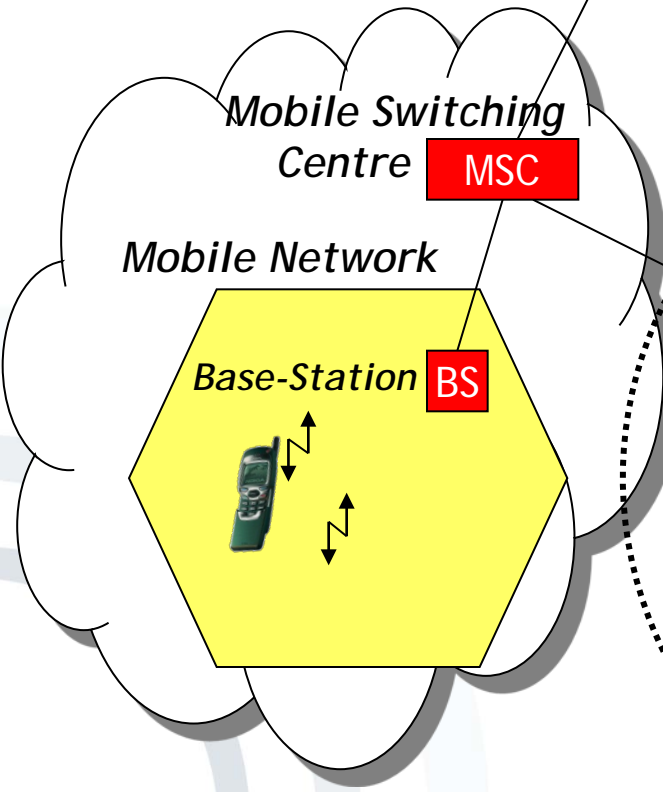


Bild: IMSI-Catcher (Quelle: Verfassungsschutz)



Take over of the connection and query of the IMSI by higher transmission power

IMSI-Catcher Surveillance & Eavesdrop System

IMSI Catcher

[LDIN98]

German newspaper:

“O2 berechnet Überwachten das Abhören”

// Bei der Überwachung von mutmaßlichen Extremisten und Straftätern durch Polizei und Geheimdienste hat es einen peinlichen Fehler gegeben. Die Verdächtigen konnten auf der Telefonrechnung für ihr Handy erkennen, dass sie abgehört wurden. //

München - Die Betroffenen hätten wegen einer technischen Panne kürzlich eine Rechnung des Telefonanbieters O2 bekommen, in der Verbindungen zu einer unbekanntem Mailbox aufgelistet waren, berichtet die "Süddeutsche Zeitung" unter Berufung auf Sicherheitskreise. Rund 50 Personen seien die Kosten für gegen sie gerichtete Abhöraktionen in Rechnung gestellt worden.

[...]

Nach Angaben der Zeitung werden derzeit in Deutschland fast 20.000 Telefonanschlüsse von der Polizei und den Geheimdiensten abgehört. Besonders nach den Terroranschlägen vom 11. September 2001 in den USA habe die Zahl zugenommen.

- The security administrator is the mediator between the company's and the customers' interests and the government's interests:
 - Responsibility for the security of the infrastructure
 - Contact person and in charge of dealing with surveillance requests in the case of urgency ("danger ahead")
 - Conflict between potential "breach of the secrecy of telecommunications" and "the obstruction of investigations"

Connection-queries search account databases

- Example: „All calls to phone number n at the point of time t “ searches the complete account database (due to data protection data is stored as „*a calls n at time t*“).
- ➔ *Results in tremendous costs for the servers and the database licences.*

The interception of phone-calls causes costs:

- Provision of online access
- Purchasing of cryptography hardware (Elcrodat) and maintenance personnel with security clearance
- 24h-availability of the infrastructure

- Since 1997, the Federal Network Agency demands:
 - Buyers of a Prepaid-SIM have to identify themselves by showing an official photo identification.
 - The ID number of the identification document has to be stored in an adequate way by the provider.
 - Name and address according to the proof of identity, the related number as well as other identification credentials for telecommunications have to be transferred to the directory immediately (§90(1) TKG).
 - The telecommunication services may only be activated, once the identification process is finalised.

- Providers took legal actions:
 - Won at first instance.
 - Lost at second instance.
 - Won at third instance.
 - ➔ Finally, the law was changed.

Urteil: Anonyme Prepaid-Handys erlaubt - Golem.de - Microsoft Internet Explorer

Datei Bearbeiten Ansicht Favoriten Extras ?

Zurück Zurück Suchen Favoriten Medien

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Stellenmarkt

IT-Systembetreuer/in
ALTANA Pharma
Oranienburg GmbH,
Oranienburg

Unternehmen/Märkte 23.10.2003, 09:49

Urteil: Anonyme Prepaid-Handys erlaubt

Keine Verpflichtung zur Erhebung von Kundendaten

Das Bundesverwaltungsgericht in Leipzig hat darüber entschieden (BVerwG 6 C 23.02 - Urteil vom 22. Oktober 2003), dass Anbieter von Mobilfunkleistungen, die diese Leistungen auf der Grundlage so genannter Prepaid-Produkte anbieten, nicht verpflichtet sind, personenbezogene Daten ihrer Kunden zu erheben und nach Überprüfung in eine Kundendatei einzustellen.

Da der Kunde auf bei Prepaid-Handys für den Erhalt der Mobilfunkdienstleistungen in Vorleistung tritt, ist für das Telekommunikationsdienstleistungsunternehmen - anders als bei Standardverträgen - die Erhebung und Verarbeitung personenbezogener Daten der Kunden für die Begründung und Abwicklung des Vertragsverhältnisses eigentlich nicht erforderlich.

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- Revision of the providers (especially Vodafone) at the Federal Administrative Court Leipzig
- Decision on the 22nd of October 2003
- Guideline:

// Die **Pflicht** der Anbieter von Telekommunikationsdiensten, im öffentlichen Strafverfolgungs- und Sicherheitsinteresse Kundendateien zu führen und in diese bestimmte, dem automatisierten Abruf durch die Regulierungsbehörde für Telekommunikation und Post unterliegende Daten aufzunehmen, **betrifft nur diejenigen Daten ihrer Kunden**, die sie zuvor nach Maßgabe des für die Vertragsabwicklung **Erforderlichen in zulässiger Weise erhoben** haben.

Die Anbieter sind **nicht darüber hinaus zur Erhebung** der einschlägigen Daten bei den Kunden **verpflichtet**.

- Increased information surveillance not in proportion with the investigations' success rate? [AIDK03]
- Storage for 80 days (also of all Internet connections) opens potential for abuse.
 - Federal Assembly (Bundesrat) wants to establish a 6 months storage of all traffic-data (decision of 19th of December 2003).
- Prepaid-SIM registration is required by the legislator.
- Ineffectiveness of these measures due to foreign anonymous prepaid cards?
- In future: Who controls and surveys the location data?

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- **Definition:**

Measures for the protection of stored and transferred personal data against manipulation or misuse; Federal Data Protection Act in place since 1978 (second version in 1990).

- Originally for the protection of the citizen against governmental institutions.
- Businesses are regulated with regard to special aspects (telecommunications, medicine) of data protection
- Increased need for regulation due to the use of information technology (data warehouses, globalisation of information processing)

- **Data minimisation:**
The service should be offered with a minimum of needed data.
- **Information of data subject:**
The person, whose data is being stored, should know what has been stored.
- **Acceptance not without consent:**
The data subject is to be asked in advance.

- **Data protection** is the protection against adverse or unasked usage of data from the personal sphere of a person.
- **Privacy**, on the other side, is the right “to be left alone”, e.g. to be unobserved or to be anonymous.

[WaBr1890]

- **Why ensuring the rights of freedom?**
 - Right of informational self-determination as a fundamental human right, derived from the Constitution (Grundgesetz) - “Volkszählungsurteil” (BVG83)
 - Protection against too extensive governmental control

Germany: Federally organised data protection

- Responsibility in Germany:
Federal Commissioner for Data Protection and Freedom of Information (BfDI)
- Each state in Germany has its “Länder” Data Protection Commissioner.
 - Specialisation on certain fields, e.g. in Schleswig-Holstein (ICPP) on Privacy in the Internet
- **Additionally:**
Data protection commissioners within governmental administration and within companies

Telecommunications Act (TKG) (1997, amended in 2004)

- §91 extends data protection to all professional providers of tele-communication services, incl. company telephone systems, hotels, Internet, etc.
- TKG also includes the Telecommunications *Data Protection Ordinance (TDSV)* and implements the statutes of *Directive 95/46/EG*
- TKÜV regulates the surveillance of the Internet, accordingly the data protection in the Internet!
- Regulates
 - storage of data,
 - creation of invoices,
 - foreign usage of personal data
 - ➔ Demands data minimisation when storing data.

Telecommunications Act (TKG) (1997, amended in 2004)

- Explicit consent by the user of processing personal data as well as the right to withdrawal.
- *Services*: Regulates call forwarding, caller ID, storage of mailboxes.
- *Utilisation*: Regulations for directory-assistance services, phone books und directories.
- Defines *monetary fines* up to 500.000 €. The Federal Network Agency (Bundesnetzagentur) is authorised to control the data protection.

Teleservices Data Protection Act (TDDSG)

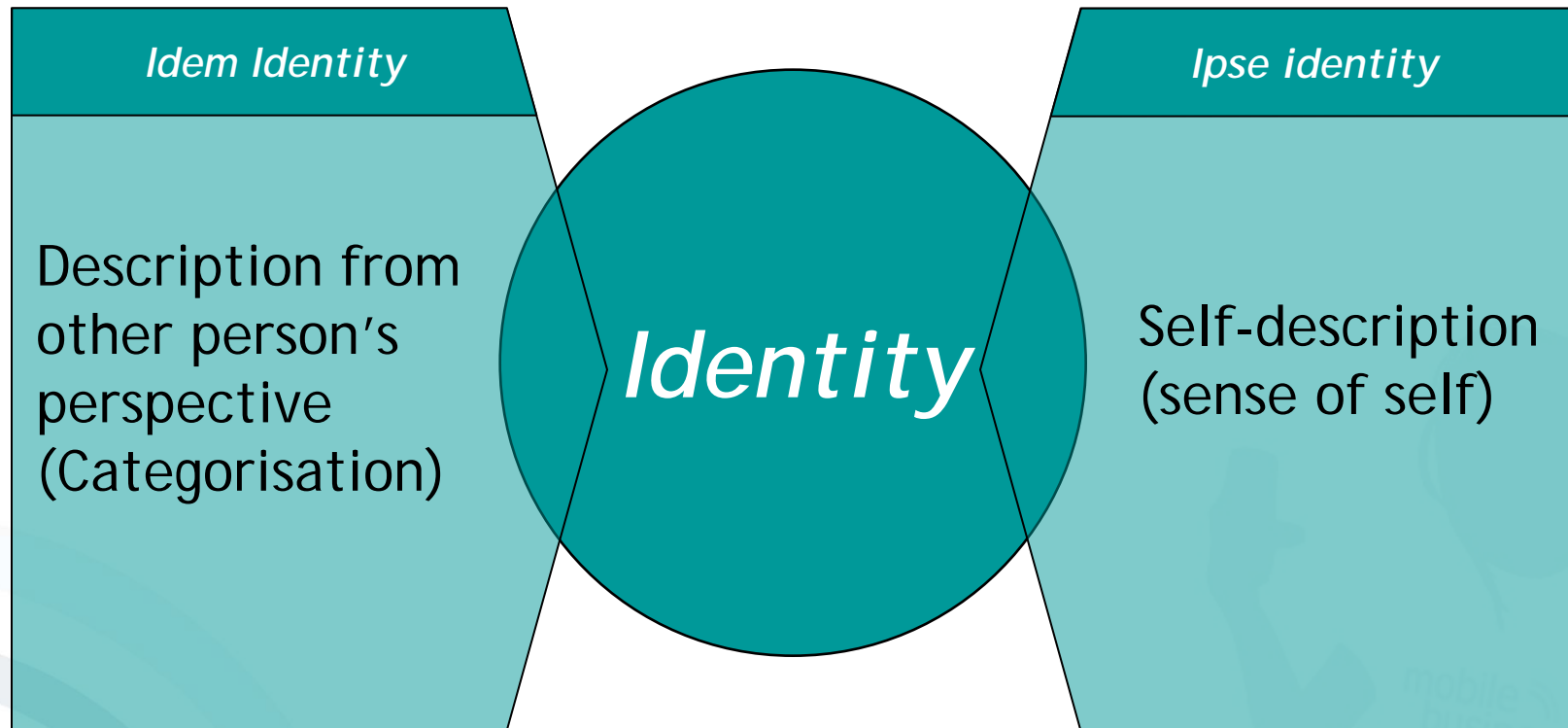
- Principles
 - Formal allowance or consent of the teleservice user are prerequisites for the acquisition, the processing, and the usage of personal data.
 - Provider should acquire, process, and use no or only a limited amount of personal data.
 - The consent can also be declared electronically.
- Responsibilities of the provider
 - The user of a teleservice must be notified about the processing of his/her data.
 - Usage and payment of the teleservice must be offered anonymously, as far as they are technically possible and reasonable.
 - User profiles are allowed only when pseudonyms are being used.
- Right of access to personal data by the user

- Users want to keep their personal data under their control.
- Service providers want to use the customers' data for commercial purposes (e.g. customer profiles).
- The legislator demands:
 - Data protection on the one hand,
 - Surveillance and retention of data on the other hand.
 - Conflicts between expectations and regulations often arise.



Regulation is "alive" and constantly demands new decisions.

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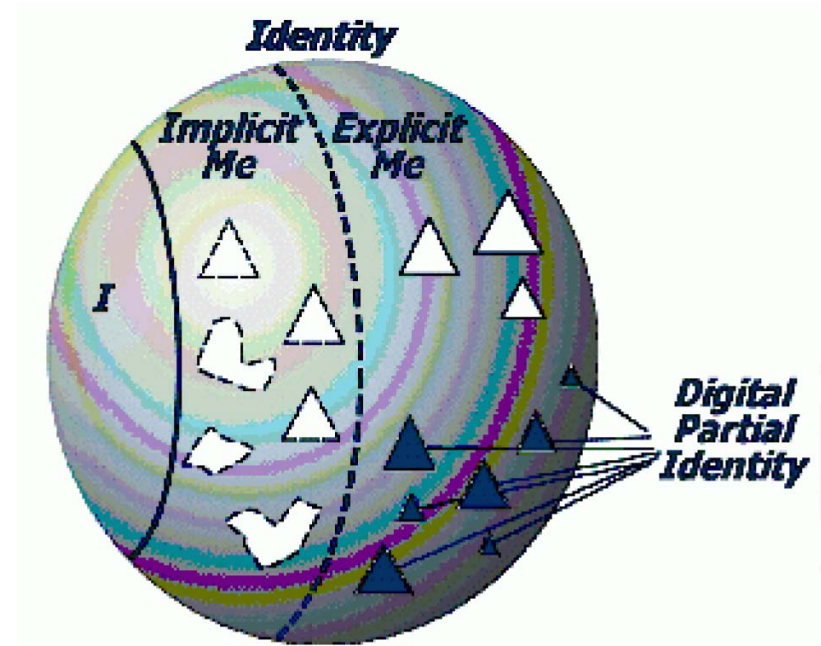
- **Mental identity** (ipse, I)
 - Researched by social/psychological sciences
 - Dynamically changing configuration reflecting, and shaped by, interactions between an individual and its environment
 - Private and endless task to go deeply in ones' own description:
 - "Only I can be responsible for acts done by me."
 - "I remain myself by being faithful to my promises."

[BoBe01]

- **Procedural identity** (idem, Me)
 - Used by technical/administrative sciences
 - Collection of formalized characteristics, which enable identification and authentication necessary for social and economic relations, as well as dealings with the authorities.
 - E.g., a person's name, marital status, date of birth, height, colour of skin or eyes, number of children, nationality, educational and professional qualifications, etc.
 - The choice of these characteristics may depend on the context, i.e. controlling authority, functional needs, etc.

The procedural identity (**Me**) can be further differentiated

- **The I**
the indeterminate first person perspective
- **Implicit Me**
how a person perceives her-/himself
- **Explicit Me**
how this person is perceived and represented



- *Tier 1 (T1)*: True ('My') identity
- *Tier 2 (T2)*: Assigned ('Our') identity
- *Tier 3 (T3)*: Abstracted ('Their') identity
- The different tiers can be distinguished by the factor 'control': ***Who controls the identity?***

- *A Tier 1 (true - 'My') identity is my true and personal digital identity and is owned and controlled entirely by me, for my sole benefit.*
- *T1 identities are both timeless & unconditional.*

- A Tier 2 (assigned - 'Our') identity refers to our digital identities that are assigned to us by corporations (e.g. our 'customer accounts').
 - *Our* job title (assigned to us by our employer)
 - *Our* cell phone number (assigned to us by our mobile phone operator)
 - *Our* United Mileage Plus number (assigned to us by United Airlines)
 - *Our* social security number (assigned to us by the Government)
 - *Our* credit card number (assigned to us by our credit card companies)

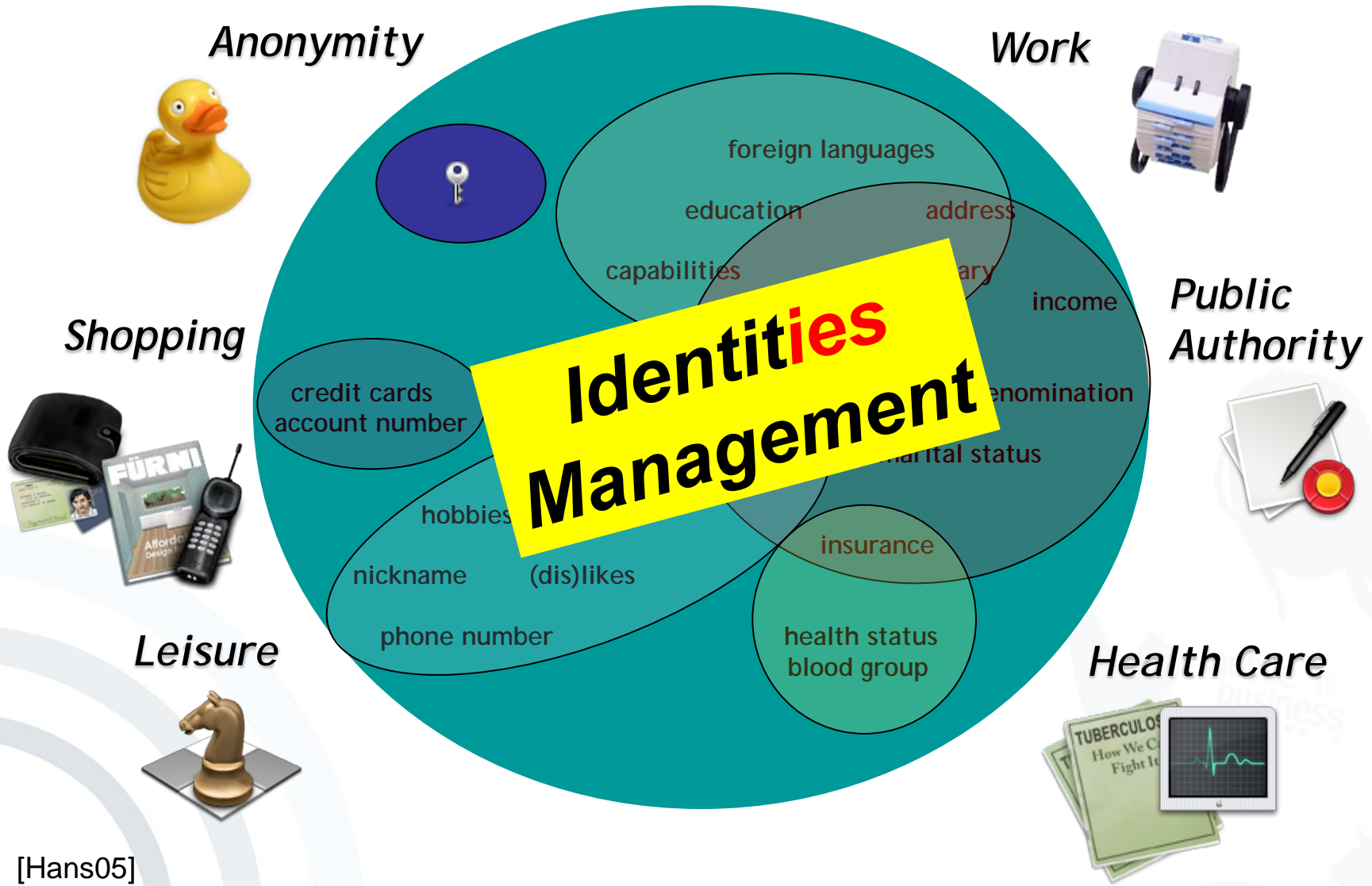
- A Tier 3 (abstracted - 'Their') identity is an abstracted identity in that it identifies us through our demographics and other reputation like attributes, but does not need to do so in a 1:1 manner.
 - T3 identities speak to the way in which companies aggregate us into different marketing buckets for the purposes of advertising or communicating with us.
 - E.g., we're either a 'frequent buyer' or a 'one time customer' etc.
 - T3's are typically based upon our behaviour in our interactions with business.
 - The entire CRM market caters to T3 identities.

- ***Identity:***
The characteristics (attributes) representing an acting entity
- ***Partial identity:***
A subset of the characteristics of an identity

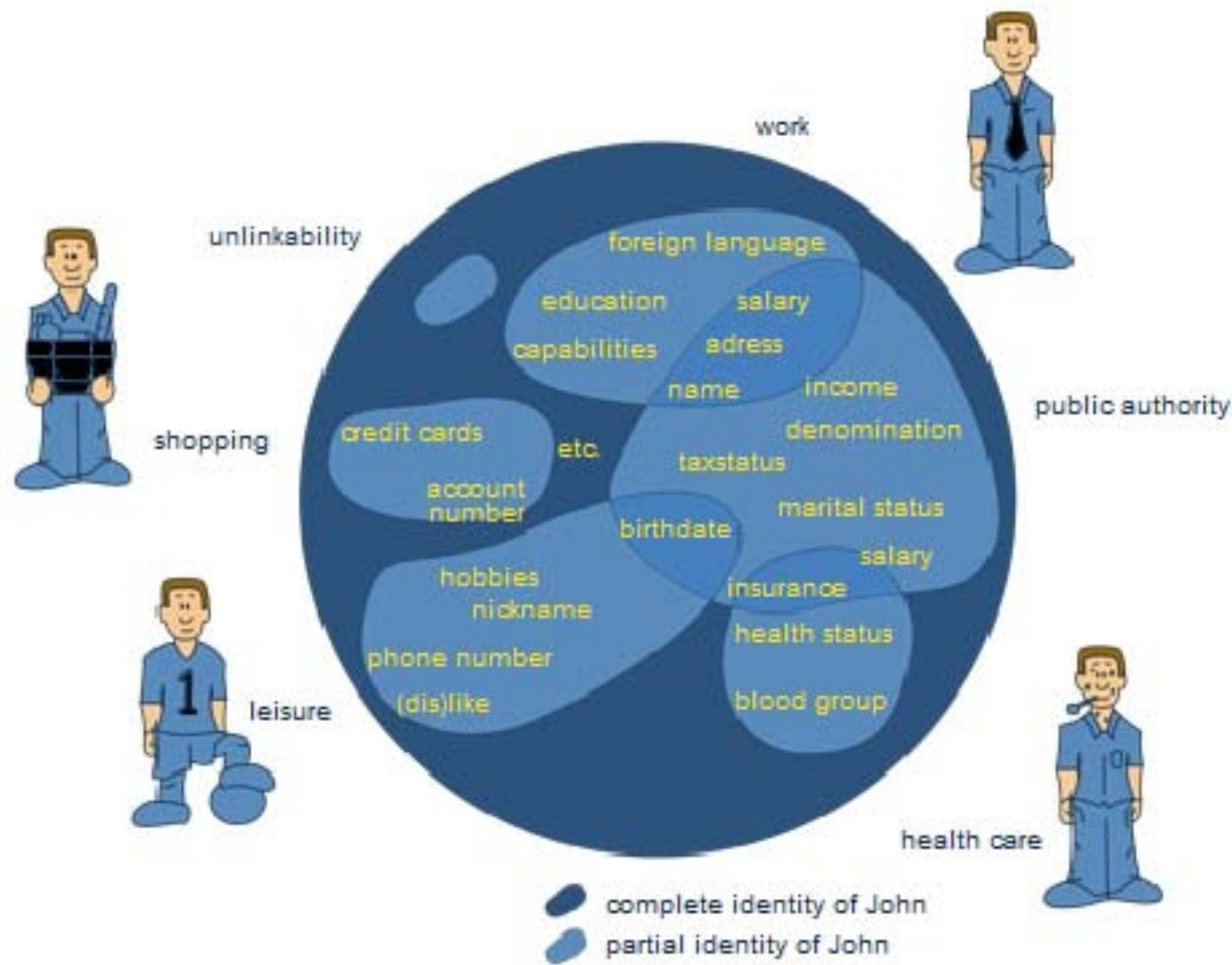
Why are partial identities important ?

- Different partial identities are assigned to and abstracted from an entity.
- The identity of an entity consists of partial identities distributed over different partners of the entity.

[BaMe05]



Identity Concepts: Partial Identities Illustrated | 2



- What makes an identity mobile?
 - Location data / Context of the user
 - Temporal aspect
 - ➔ mobile identities change during their lifetime.
- Partial identities for different aspects
 - Private life?
 - Business life?
- *Working definition:*
Mobile identities are (partial) Idem identities that are extended by location information.

[Roye06]

- A concept that links a “token/device” from the *digital/syntactical world* to an object in the *real/semantical world*



- Accompanied by a set of **properties and attributes**

Interests

Position

Age

Income

Identity Management (IdM) is often used as a *buzz word* that can have many meanings such as:

- The management of accounts for employees, customers or citizens. These accounts contain those parts of an identity relevant for an organization (attributes, access rights, roles, ...) → Trend towards federations between organizations
- The collection and analysis of data about individuals allowing for the extraction of useful knowledge on these individuals (profiling): → E.g., for marketing or law enforcement purposes
- The possibility of an individual to manage its procedural identities with different organizations (partial identities) and in this way allowing → To build a 'healthy' virtual socio-psychological identity.

- Identity Management Systems (IdMS) are tools that support Identity Management activities.
- We distinguish
 1. Pure IMS main objective is support of identity management functionality, e.g. MS Passport, Liberty, Shibboleth, PingID, password managers, form fillers
 2. Systems/applications with another core functionality, but basing on some identity management functionality, e.g. GSM, PGP, eBay
 3. Systems/applications independent from identity management functionality, with some identity management functionality as add-on, e.g., HTML browsers, chat clients

[BaMe05]

- Provisioning, Enrolling, Choosing
- Binding with Attributes
- Certifying
- Changing
- Unbinding of Attributes
- Deleting
- ...?



Type 1



Type 2



Type 3



Account Management:

assigned identity
(= Tier 2)

Profiling:

derived identity
abstracted identity
(= Tier 3)

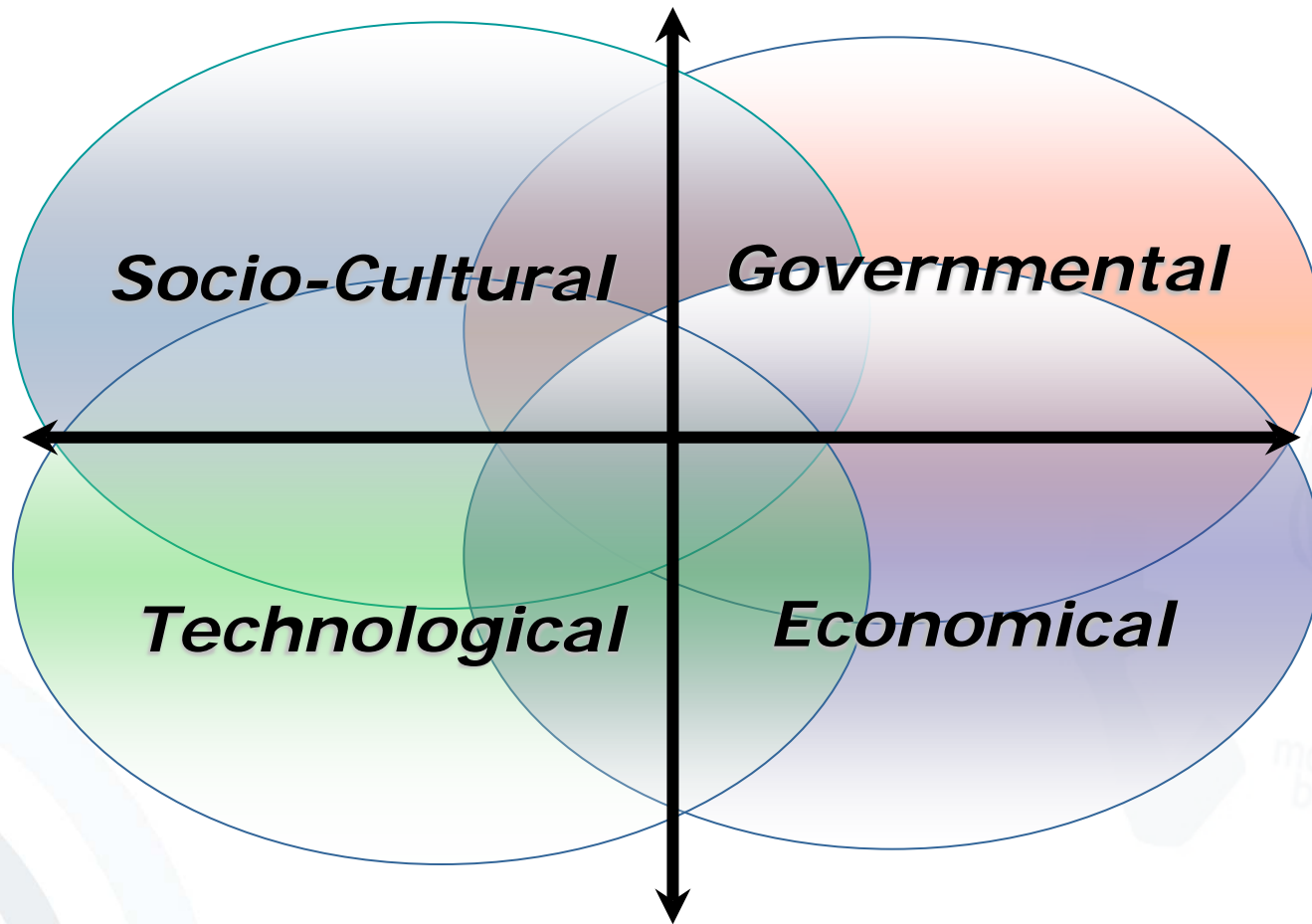
Management of
own identities:
chosen identity
(= Tier1)

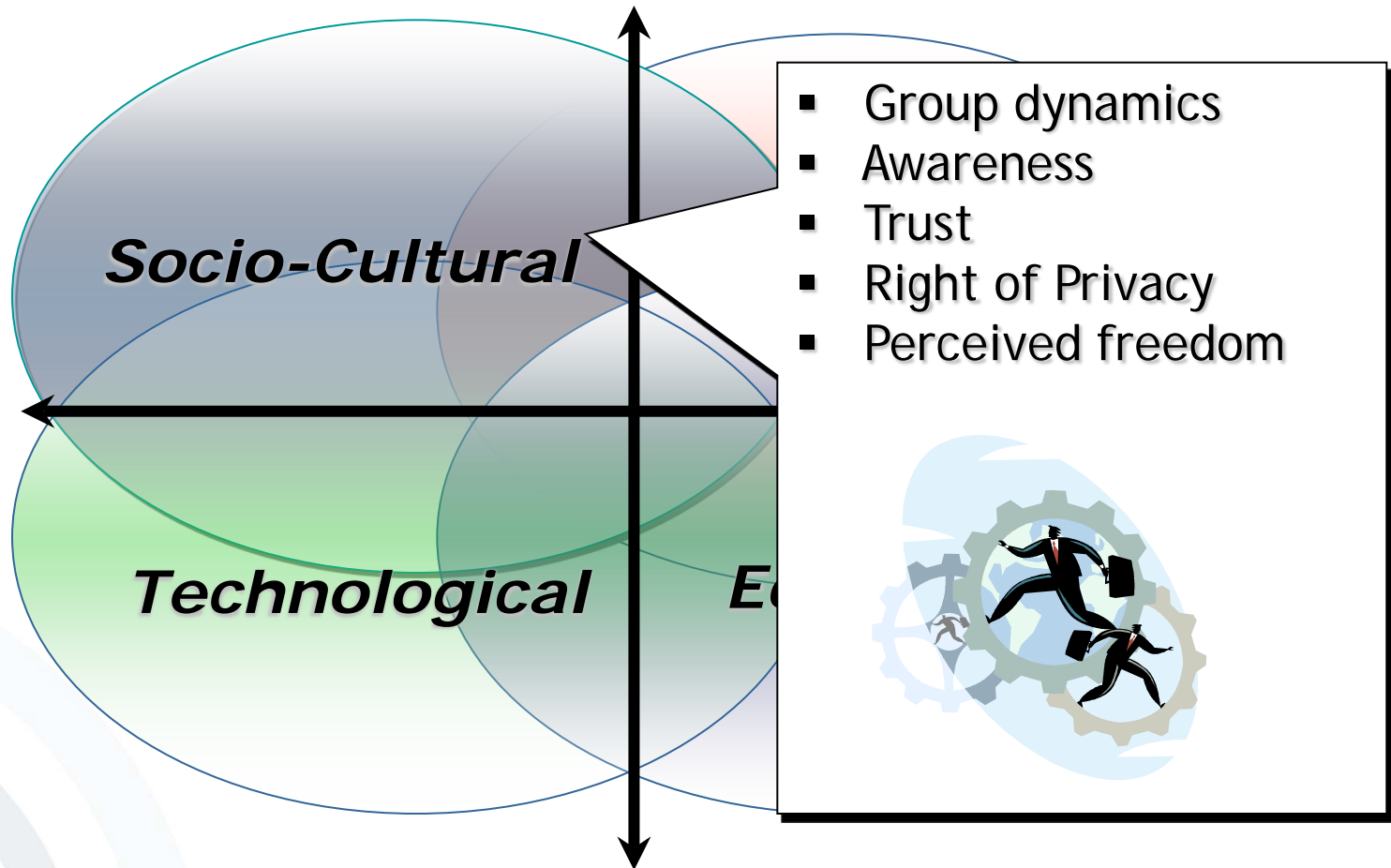
by organisation

by organisation

by user himself
supported by
service providers

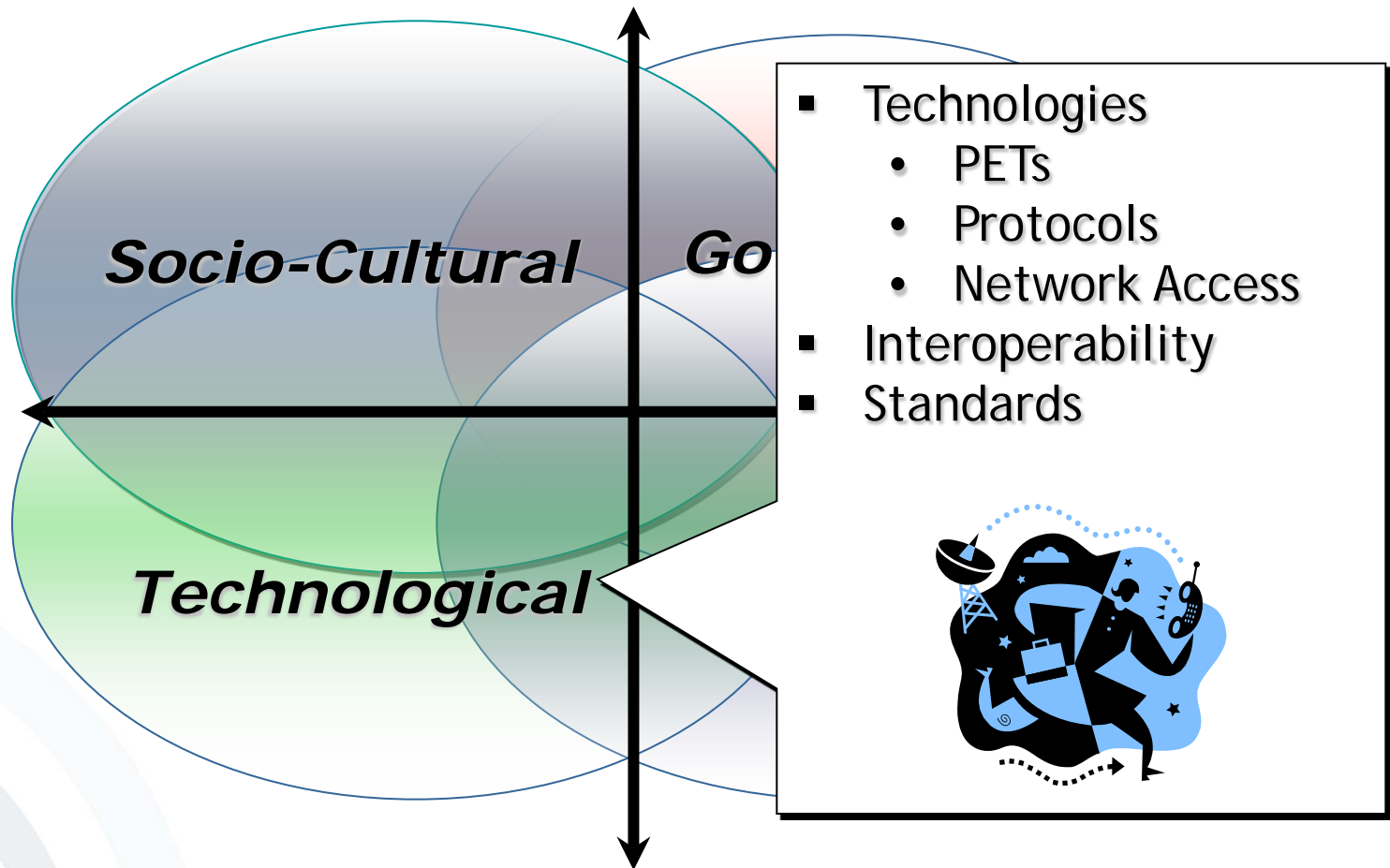
➔ There are hybrid systems
that combine characteristics





- *Concepts being observed*
 - *Idem-Identity*, categorisation
 - *Ipse-Identity*, sense of self
- Analysis of conceptual and sociological issues of the impact of idem-identification on ipse-identity, in the case of mobile devices; e.g.:
 - How someone establishes communication using mobile devices, and
 - how we/others perceive ourselves/us.

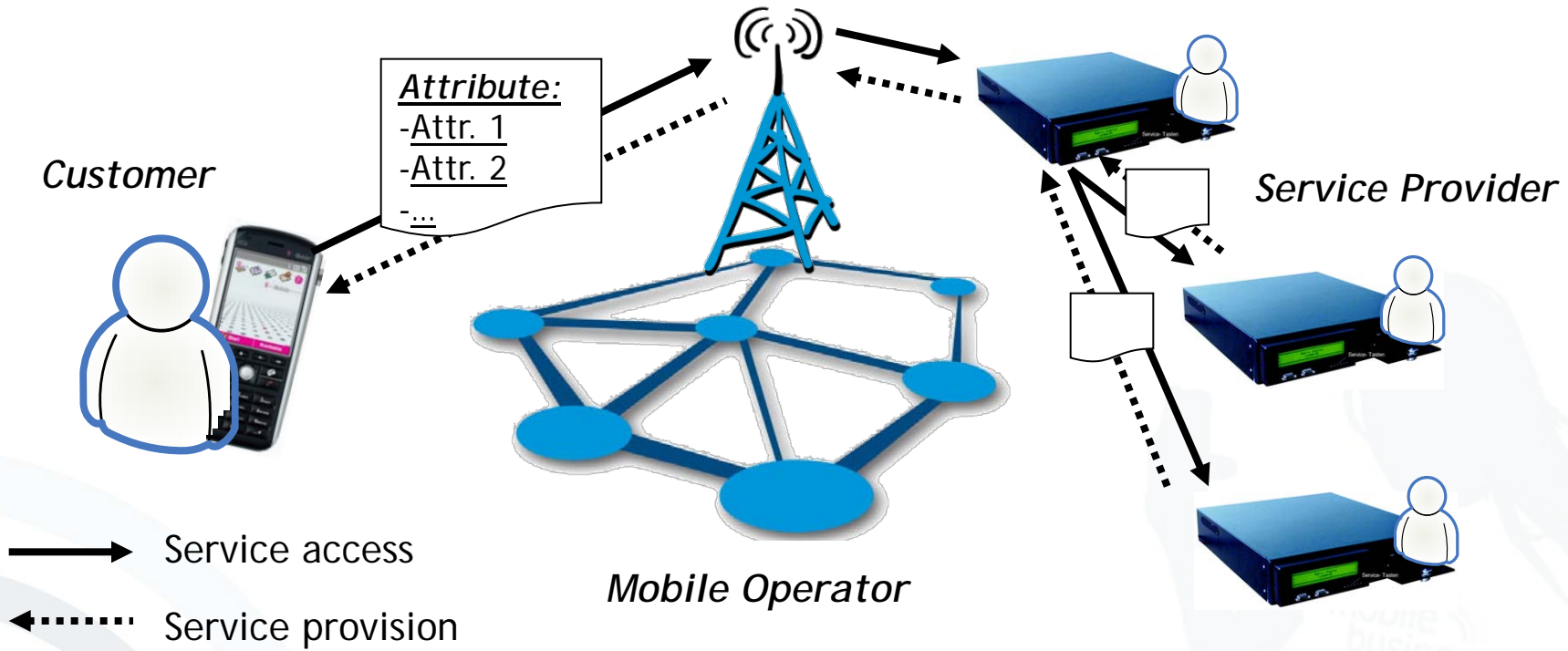
Interdisciplinary Aspects Dimension: Technological

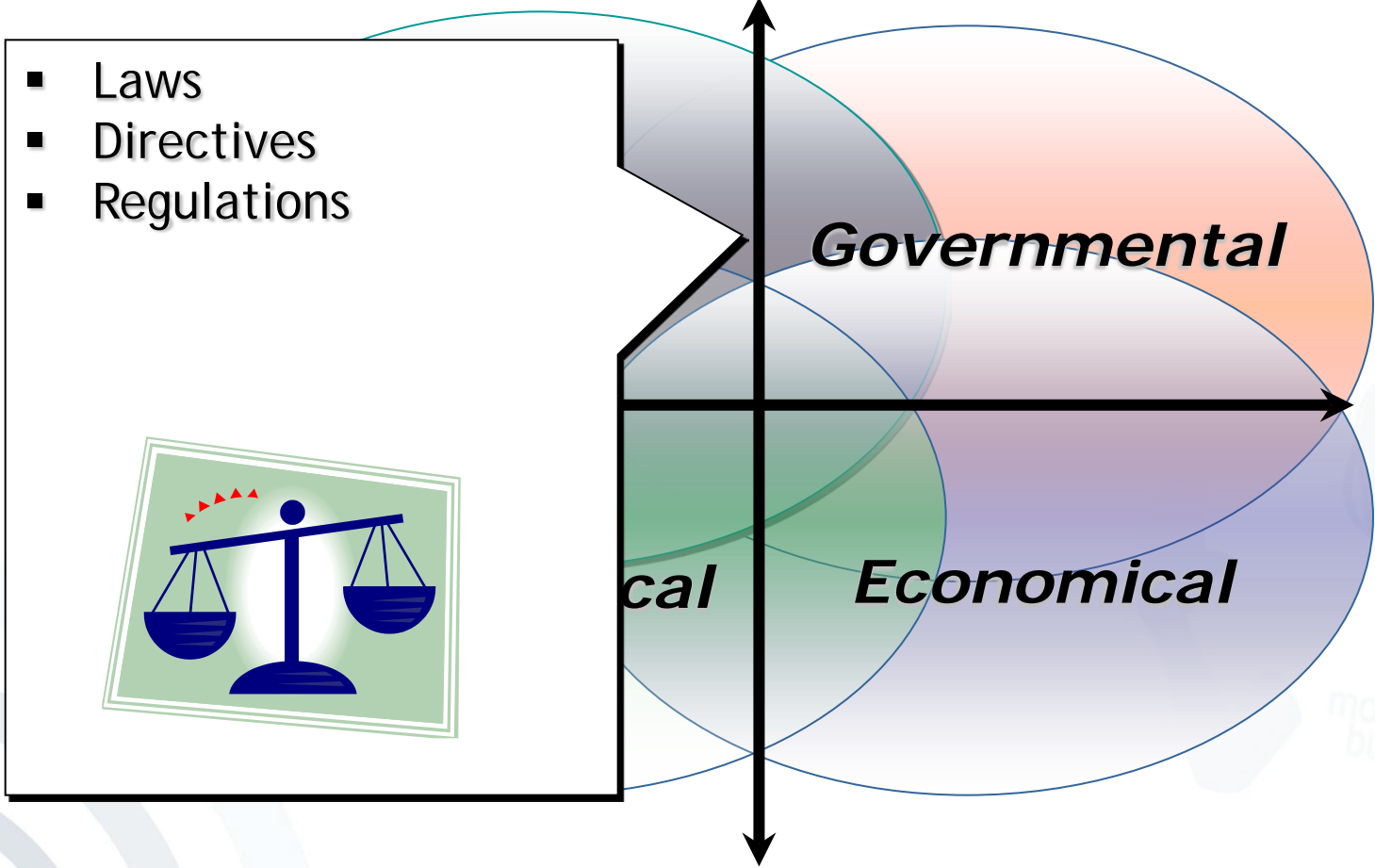


- Management of identities through the use of mobile devices
 - Management of social interactions in life, rather than Management of mobility
- Management of Mobile Identities
 - Usage of location data

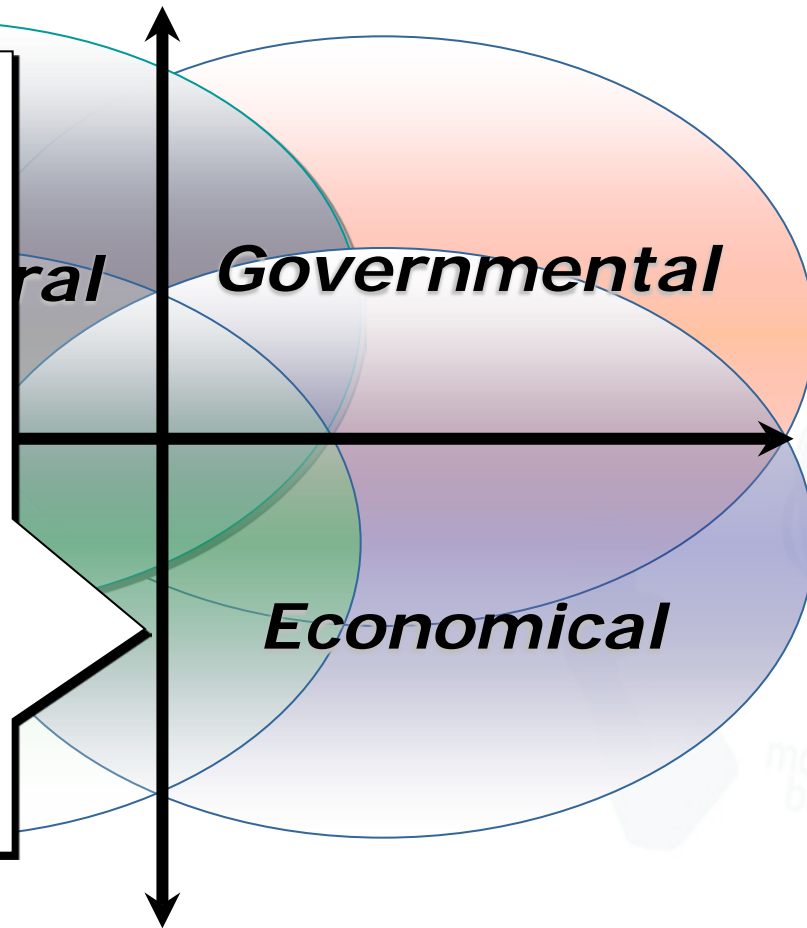
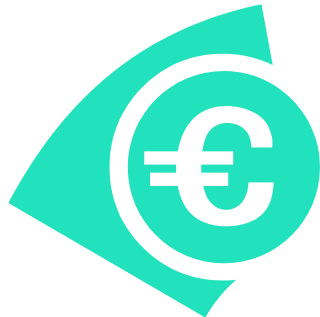


Transfer of Attributes





- Costs and Benefits
- Technology Diffusion
- Return on Investment
- Business Value of IT
- Price of Convenience
- Technology Acceptance
- Business Models



- General success factors:
 - Locality principle
 - Reciprocity principle
 - Principle of understanding
- Protecting the privacy of a user:
 - User controlled linkage of personal data
 - Data minimisation
 - Awareness of data being disclosed
 - Sufficient usability towards the user

- [AIDK03] Albrecht, H.-J., Dorsch, C. and Krüpe, C. (2003) Rechtswirklichkeit und Effizienz der Überwachung der Telekommunikation, <http://www.bmj.bund.de/files/-/134/Abschlussbericht.pdf>, accessed 2008-04-08.
- [BaMe05] Bauer, M. and Meints, M. (eds.) (2005) Deliverable D3.1: Structured Overview on Prototypes and Concepts of Identity Management Systems, <http://www.fidis.net/resources/deliverables/hightechid/#c1787>, accessed 2008-04-08.
- [BfDI] Der Bundesbeauftragte für den Datenschutz und die Informationsfreiheit; www.bfdi.bund.de, accessed 2008-04-08.
- [BfDI04] Der Bundesbeauftragte für den Datenschutz und die Informationsfreiheit (2004): BfD-Info 5 - Datenschutz in der Telekommunikation, <http://www.soliserv.de/dateien/BfD-INFO-5-01.pdf>, accessed 2008-04-08.
- [BInBDI 2002] Der Berliner Beauftragte für Datenschutz und Informationsfreiheit: Bewertung des IMSI-Catchers aus Sicht der T-Mobil, in: Anlagenband ("Dokumente zu Datenschutz und Informationsfreiheit 2001") zum Bericht des Berliner Beauftragten für Datenschutz und Informationsfreiheit zum 31. 12. 2001, www.datenschutz-berlin.de/jahresbe/01/anl/11d9.htm, accessed 2007-06-01.
- [BNA09] Bundesnetzagentur, Jahresbericht 2008, <http://www.bundesnetzagentur.de/media/archive/15901.pdf>, accessed 2009-04-20
- [BNDG07] BND-Gesetz vom 20. Dezember 1990 (BGBl. I S. 2954, 2979), zuletzt geändert durch Artikel 4 u. 10 Abs. 3 des Gesetzes vom 5. Januar 2007 (BGBl. I S. 2); www.gesetze-im-internet.de/bndg/BJNR029790990.html, accessed 2008-04-08.
- [BoBe01] Bogdanowicz, M. and Beslay, L.: Cyber-Security and the Future of Identity, IPTS Report 57, 2001, www.jrc.es/home/report/english/articles/vol57/ICT4E576.htm, accessed 2008-04-08.
- [Bundesrat] www.bundesrat.de
- [BVG83] Bundesverfassungsgericht: Entscheidung BVerfGE 65, 1 - Volkszählung; Urteil des Ersten Senats vom 15.12.1983 auf die mündliche Verhandlung vom 18. und 19. Oktober 1983 - 1 BvR 209, 269, 362, 420, 440, 484/83 in den Verfahren über die Verfassungsbeschwerden, www.datenschutz-berlin.de/gesetze/sonstige/volksz.htm, accessed 2007-03-02.

- [BVwG03] Bundesverwaltungsgericht Entscheidung BVerwG 6 C 23.02, 2003, www.bundesverwaltungsgericht.de/enid/d90753334a813794b15cc66003046de0,0976e07365617263685f646973706c6179436f6e7461696e6572092d0933353031/8o.html, accessed 2008-04-08.
- [CCCB07] Chaos Computer Club Berlin (2007) Telekommunikationsüberwachung, <http://berlin.ccc.de/wiki/Telekommunikations%C3%BCberwachung>, accessed 2008-04-08.
- [Dura03] Durand, A.: Three Phases of Identity Infrastructure Adoption, 2003, [http://discuss.andredurand.com/stories/storyReader\\$343](http://discuss.andredurand.com/stories/storyReader$343), accessed 2008-04-08.
- [Fox02] Fox, D.: Der IMSI-Catcher, *Datenschutz und Datensicherheit (DuD)*, (26:4), pp. 212 - 216, 2002, www.datenschutz-und-datensicherheit.de/jhrg26/imsicatcher-fox-2002.pdf, accessed 2008-04-08.
- [Hans05] Hansen, M.: PRIME & FIDIS: European Projects on Identity and Identity Management, 2005, www.digimagine.de/Hansen-Idmanage-20050308-print.ppt, accessed 2007-03-02.
- [LDIN98] Der Bayerische Landesbeauftragte für den Datenschutz (1998). Aufbau des IMSI-Catchers, www.datenschutz-bayern.de/technik/orient/imsi.html, accessed 2008-04-08.
- [PRIME - General Public Tutorial] <https://www.prime-project.eu/tutorials/gpto/>
- [RoRa06] Royer, D. and Rannenber, K.: Mobilität, mobile Technologie und Identität, *Datenschutz und Datensicherheit (DuD)*, (30:9), pp. 571 - 575, 2006.
- [Roye06] Royer, D. (ed.): FIDIS Deliverable D11.1, 2006, www.fidis.net/resources/deliverables/mobility-and-identity/#c1793, accessed 2008-04-08.
- [SPOL02] SPIEGEL ONLINE: Überwachungs-Panne: Verdächtige hatten Abhörkosten auf Handy-Rechnung, 2002-10-30 (20:09), www.spiegel.de/panorama/0,1518,220595,00.html, accessed 2008-04-08.
- [StPO] Strafprozessordnung, www.gesetze-im-internet.de/stpo/index.html, accessed 2008-04-08.
- [ULD] Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein, www.datenschutzzentrum.de, accessed 2008-04-08.
- [WaBr1890] Warren, Samuel D. and Brandeis, Louis D. (1890) The Right to Privacy, *Harvard Law Review*, (4:5), www.lawrence.edu/fac/boardmaw/Privacy_brand_warr2.html, accessed 2008-04-08.