

Lecture No. 1

Introduction to Mobile Business II

Application Design, Applications,
Infrastructures, and Security

Mobile Business II (SS 2009)

Prof. Dr. Kai Rannenber

Chair of Mobile Business and Multilateral Security
Johann Wolfgang Goethe-Universität Frankfurt a. M.



- The Chair of M-Business and Multilateral Security
- Teaching and Research Agenda
- Introduction into Mobile Business – History of Mobile Business & Mobile Telecommunication Systems
- Outline of this Course

Department "Business Informatics" @ Goethe-University

<p>e-Finance</p> <p>Prof. Dr. Peter Gomber</p>	<p>Media Services</p> <p>PD Dr. Hans-Dieter Groffmann</p>	<p>Information Systems Engineering</p> <p>Prof. Dr. Roland Holten</p>
<p>Business Education (associated)</p> <p>Prof. Dr. Manfred Horlebein</p>	<p>Business Education (associated)</p> <p>Prof. Dr. Eveline Wuttke</p>	<p>Financial Services</p> <p>Prof. Dr. Clemens Jochum</p>
<p>Information Systems & Information Management</p> <p>Prof. Dr. Wolfgang König</p>	<p>Mobile Business & Multilateral Security</p> <p>Prof. Dr. Kai Rannenber</p>	<p>Wirtschaftsinformatik und Simulation (Informatics)</p> <p>Prof. Dr. Ingo J. Timm</p>

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

T-Mobile Chair of M-Business and Multilateral Security

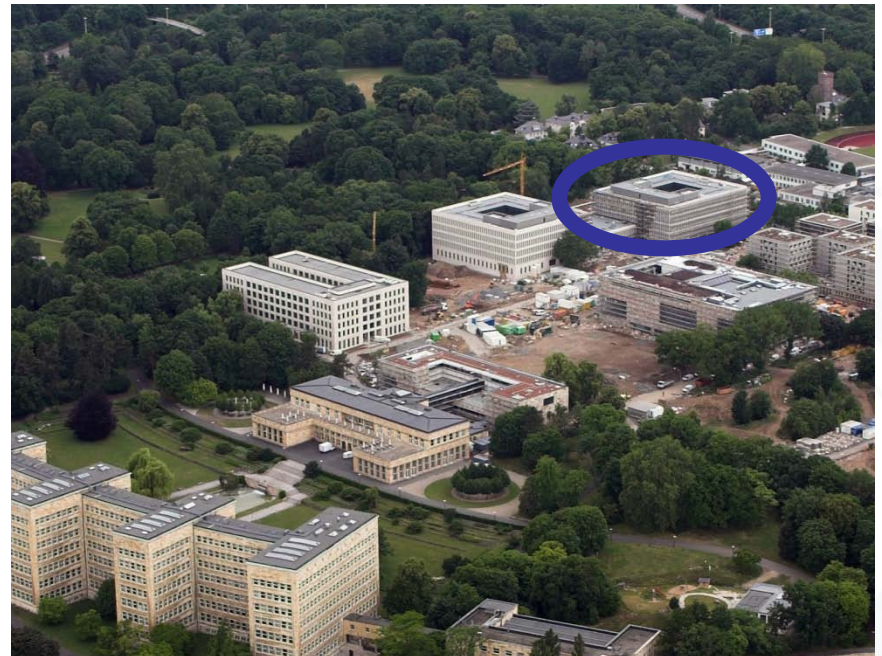
Grüneburgplatz 1
Campus Westend, RuW
2nd Floor

Phone: +49 69 798 34701

Fax: +49 69 798 35004

eMail: info@m-chair.net

www.m-chair.net





Kai Rannenberg



Andreas Albers



Mike Radmacher



Denis Royer



André Deuker



Christian Kahl



Katja Liesebach



Markus Tschersich



Sascha Koschinat



Christian Weber



Stefan Weiss



Evgenia Pisko



Tobias Scherner



Lars Janssen



Lothar Fritsch



Thomas Leiber



Falk Wagner

Office:

Elvira Koch

elvira.koch@m-chair.net

Office Hours:

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

www.m-chair.net



Vita of Kai Rannenberg

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

Dissertation "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 of Kai Rannenberg

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

Dipl.-Wirt.-Inf. Markus Tschersich

- Grüneburgplatz 1, room 2.224
- Phone: 069 - 798 34665
- markus.tschersich@m-chair.net



twitter.com/mchair

mb@m-chair.net

- The Chair of M-Business and Multilateral Security
- Teaching and Research Agenda
- Introduction into Mobile Business – History of Mobile Business & Mobile Telecommunication Systems
- Outline of this Course

	SS 09	WS 09/10	SS 10
Bachelor	<p><i>Lecture</i> „PWIN - Bachelor“</p>	<p><i>Vorlesung</i> „Einführung in Mobile Business“</p>	<p><i>Vorlesung</i> „PWIN - Bachelor“</p>
Master	<p><i>Vorlesung</i> „Mobile Business II: Platforms, Infrastructures, and Business Models“</p>	<p>Forschungs- semester</p>	<p><i>Vorlesung</i> „Mobile Business II: Platforms, Infrastructures, and Business Models“</p> <p>Seminar In Planung</p>
Diplom	<p><i>Seminar</i> „Business Communities im Spannungsfeld von Innovation und Forschung“</p> <p><i>Vorlesung</i> „Mobile Business II: Platforms, Infrastructures, and Business Models“</p>		<p><i>Vorlesung</i> „Mobile Business II: Platforms, Infrastructures, and Business Models“</p> <p>Seminar In Planung</p>

- Usage and trial of “Mobile Services & Devices”
- Experience “M-Business” life
- Experience security issues
- Compare with state of the discussion in research
- Feedback to designer and developers
- Influence future work environments

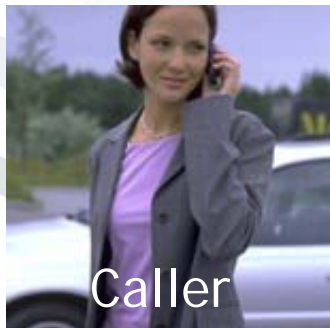


Experimental Seminar

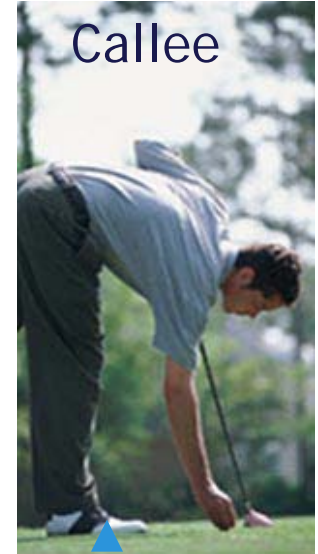
- **Multilateral Security**
 - Security, Trust and Privacy
 - Mobile Signatures
 - Personal Security Devices
- **Mobile Life, Work, and Business**
 - Location Based Services
 - Mobile Communities
- **M-Infrastructures**
 - Combination, Integration, Innovation
 - Standardisation, Regulation

The features

- User specified automatic call filtering
- Higher protection for caller and callee
- Range of possibilities to signalise urgency
- Range of reaction possibilities



Negotiation



Callee

- Extent of identification
- Urgency of the call
- Security requirements
 - authentication
 - confidentiality
 - non-repudiation




RMS Call

Who **Rannenberg, Katrin**

◆ My ID: **none**

◆ Subject: **Meeting?**



Urgency:

Normal High **Emergency**

Security Settings: View Details

◆ Confidentiality: **Important**

◆ Authentication **Don't care**

Cancel Call

Statement of urgency

“It is really urgent!”

Specification of a function

“I am your boss!”

Specification of a subject

“Let’s have a party tonight.”

Presentation of a voucher

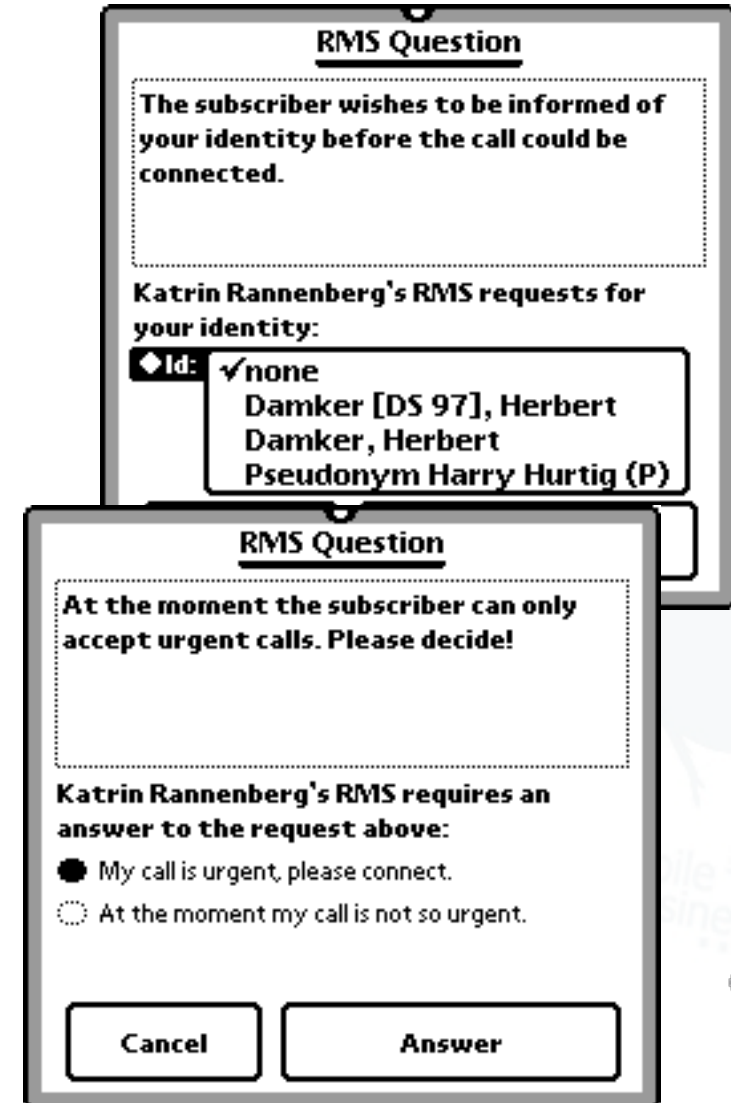
“I welcome you calling back.”

Provision of a reference

“My friends are your friends!”

Offering a surety

“Satisfaction guaranteed
or this money is yours!”



RMS Question

The subscriber wishes to be informed of your identity before the call could be connected.

Katrin Rannenberg's RMS requests for your identity:

◆ Id: none
Damker [DS 97], Herbert
Damker, Herbert
Pseudonym Harry Hurtig (P)

RMS Question

At the moment the subscriber can only accept urgent calls. Please decide!

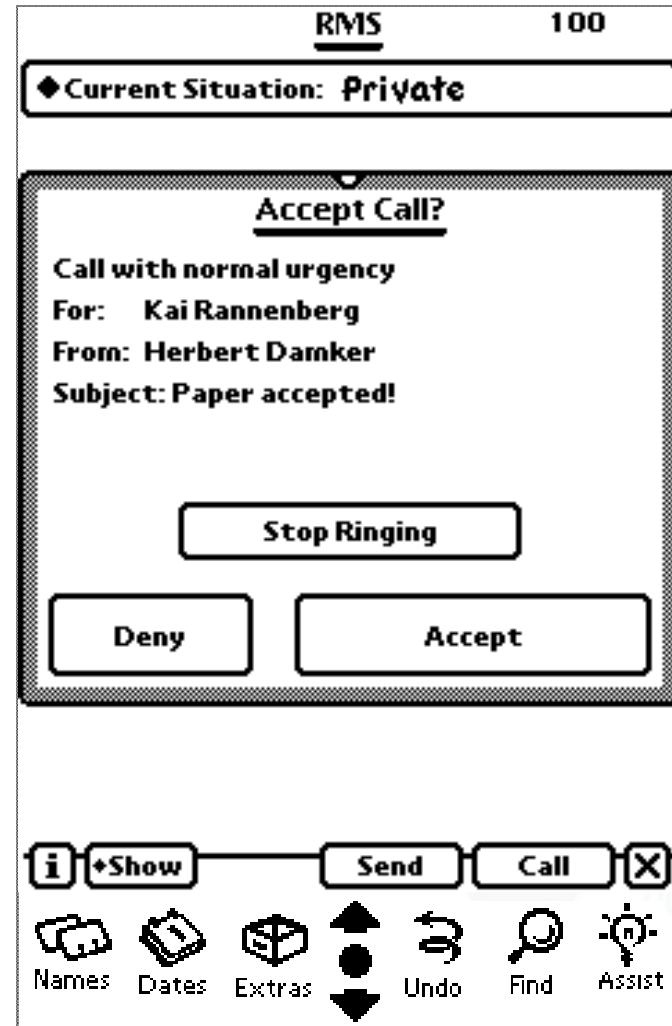
Katrin Rannenberg's RMS requires an answer to the request above:

My call is urgent, please connect.
 At the moment my call is not so urgent.

Cancel Answer



- Bell is ringing!
- Callee notified
- Callee can still decide to accept or deny the call



- Call not connected
- Caller gets information (configured by callee)
- Caller can leave a message or request a call back

RMS: Call denied

Unfortunately the subscriber can not accept the call at the moment.

Leave with Katrin Rannenberg:

Text message
 Request for callback (with voucher)
 No message

Cancel **OK**



Situations

Set of rules how to deal with an incoming call

Rules

Combination of features

Users can reconfigure initial rules and situations as they like.

Define Situation 'Meeting'

Emergency
-> connect

Callback voucher
-> connect

Caller in group Colleagues
-> let caller decide
Text: 'Request decision'

Else
-> deny
Text: 'Not available'

Define Rule

In the situation 'Meeting'
my RMS should for ...

all calls calls of class:
 business calls private calls

... and ...

no caller ID
 caller want to be anonymous
 callback voucher
 caller in group:
 caller is:
 every caller
 Emergency

... do the following:

connect
 deny
 divert to:
 require surety of \$10 and connect
 require subject and connect
 let caller decide
 require caller ID

Text to send: -



- **Fictitious**, but **realistic** cases
- **Real users:**
ca 40 doctors, nurses,
admin people, etc.
- 1 week **“Playtime”**
- 18 months **preparation
and analysis:**
workflow analysis
usability tests, script
writing, attack planning



- Reachability manager
- Negotiating security
- Identities and pseudonyms
- Signing device
- Medical information (patient records and knowledge base)
- Hospital communication

Overall results

- High benefit for everyday tasks
- Increasing awareness of security
- Integration of asynchronous messages very useful
- Manual filtering of calls often used

User demands

- Smaller device - RMS functionality in mobile phone
- Integration of full-flavour email
- Authentication also during a call

Many more *design hints*



Fun on Different Platforms: Example *SmartBlaster*



Compaq iPAQ



Laptop



Smartphone



MDA II

[www.Smartblaster.net]

- The Chair of M-Business and Multilateral Security
- Teaching and Research Agenda
- Introduction into Mobile Business – History of Mobile Business & Mobile Telecommunication Systems
- Outline of this Course

What is M-Business ?

- There are as many definitions as interested parties.
- “Ask again in 5 years at best, then we will have further information ...”
- A multitude of related notions:
E/C/V-Business, M-Commerce, M-...
- Hypes and myths
 - “M-Business is THE future!”
 - “M-Business is just a hype!”

We chose a definition that (hopefully) lets us do interesting things:

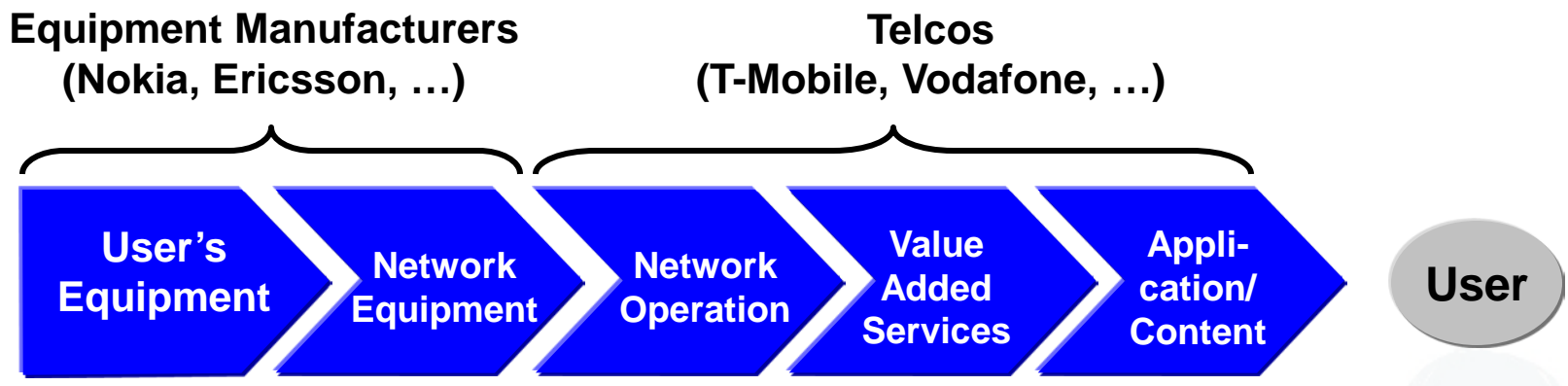
*“The usage of
mobile devices, infrastructure,
communication and interaction
for
mobile applications and
transactions.”*

- Workplaces and private life will change thoroughly through mobile technologies and services.
- This implies extraordinary challenges and chances.
- The development will be strongly affected by international factors.



GSM World

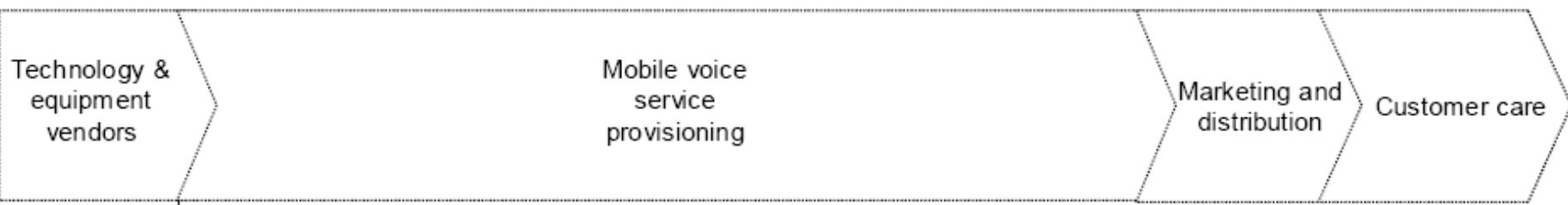
[Source: SAP]



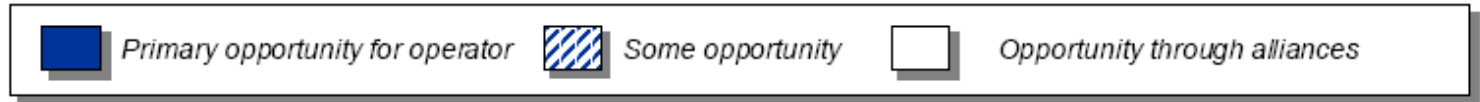
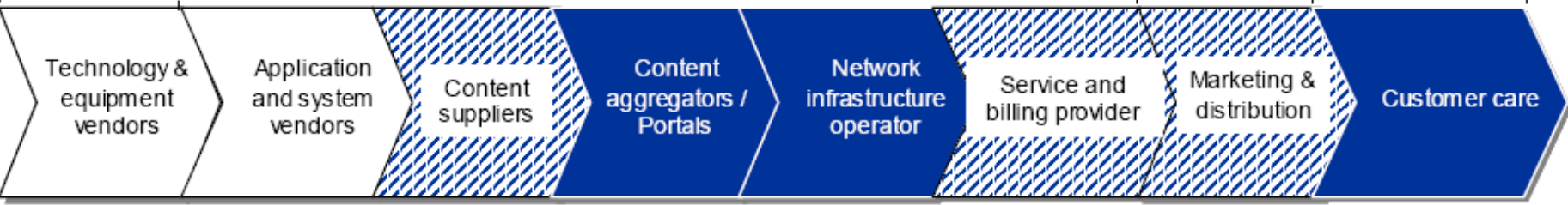
IT World

IBM, Siemens, ... MS, ... Dell, ... Cisco, ... T-Online, AOL, UUNET, ... MS, IBM, Sun, ... MS, SAP, T-Online, ...

TRADITIONAL VALUE CHAIN OF MOBILE SERVICE DELIVERY



EMERGING MOBILE OPERATOR VALUE CHAIN



What makes M-Business mobile?

- Customers?
 - Terminals?
 - Service provisioning?
 - Means of payment?
 - Possibilities of interaction?
 - Business Cases for T-Mobile (and others)?
- ⇒ One instrument for analysing are scenarios & visions.



- Not every country's scenario (e.g. health care) can simply be transferred to another country.



- M-Business does not only relate to mobile phones. Other platforms are important, too.



- Classification of videos
 - Videos are useful because they convey visions.
 - Visions have to be benchmarked by reality.
 - Which aspects of visions are reasonable / useful?
 - What is necessary for their realization?
 - Can a business model emerge from this?
 - For whom?



Illustrative Microsoft Video

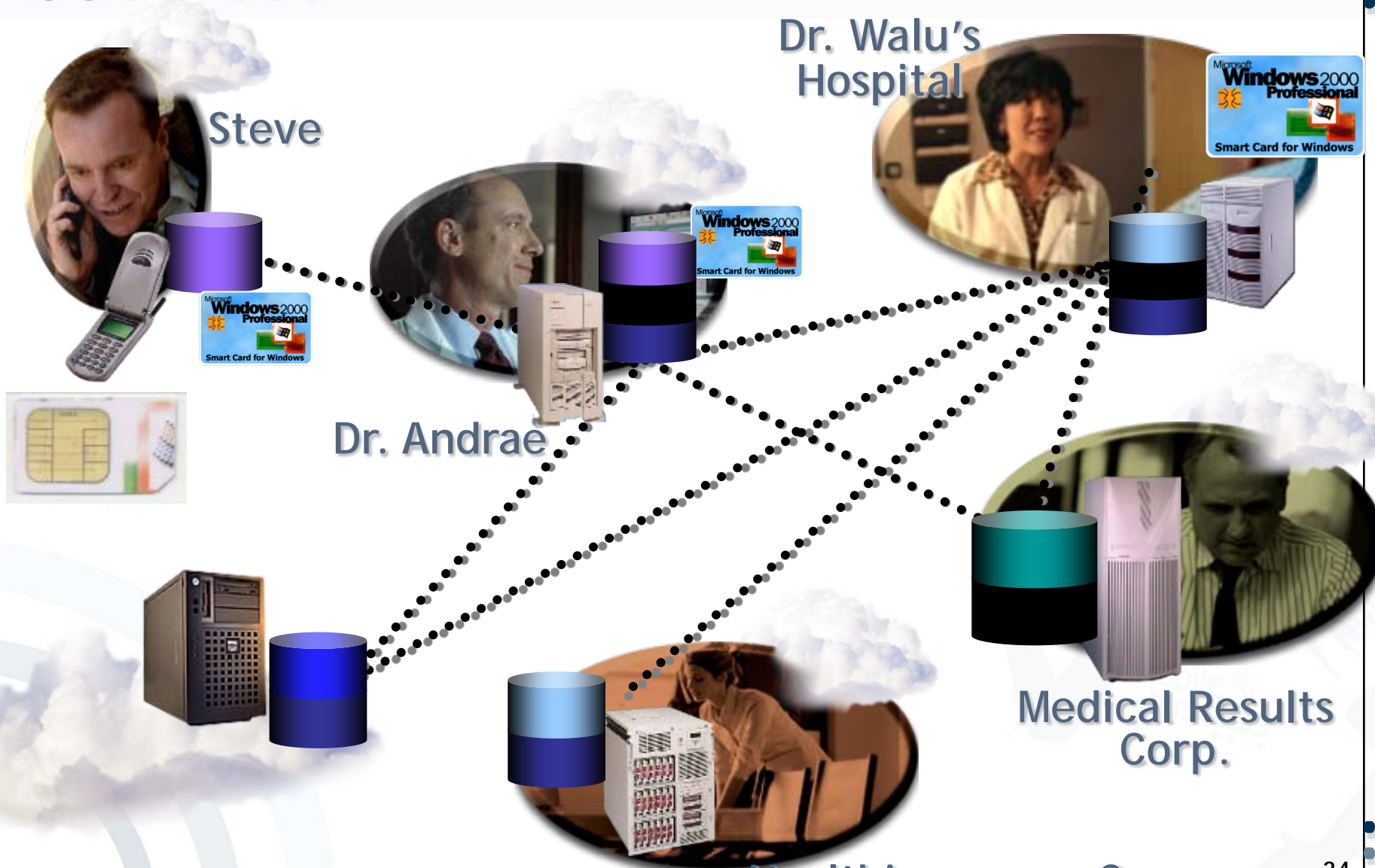


video

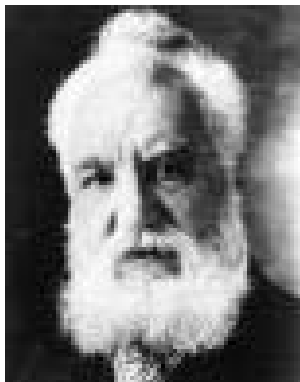
[Source: Microsoft]

mobile business

Parties Involved



[Source: Microsoft]



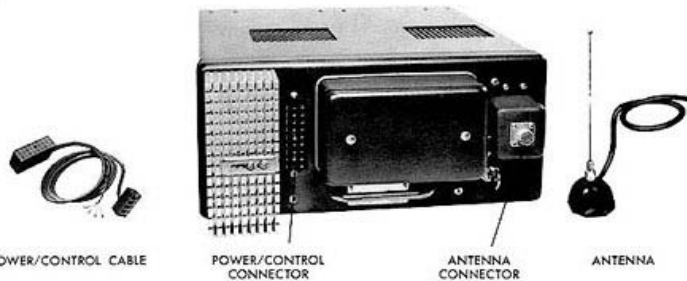
- February 14, 1876. Alexander Graham Bell, a Scotch deaf-mute teacher, patents his telephone (no. 174.465).
- June 17, 1946. AT&T and Southwestern Bell introduce MTS (mobile radio telephone service) in St. Louis, Missouri.



GE DTD/DTO Mobile Telephone
DIAL CONTROL UNIT



MANUAL CONTROL UNIT

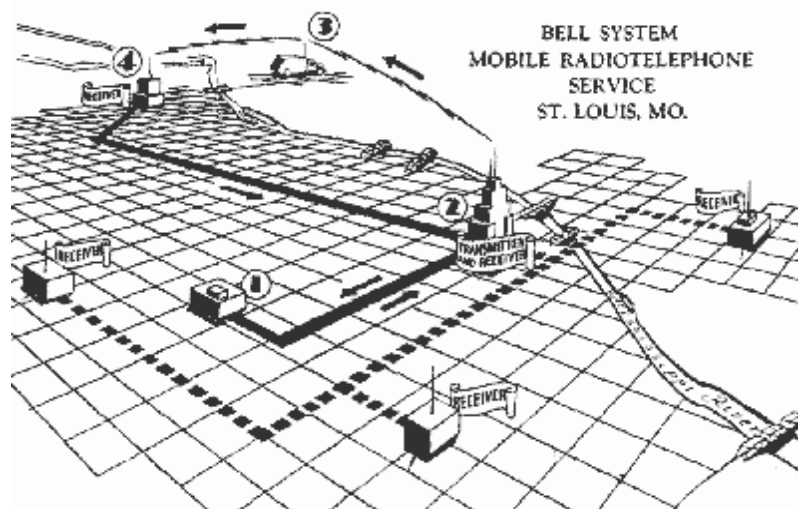


POWER/CONTROL CABLE

POWER/CONTROL CONNECTOR

ANTENNA CONNECTOR

ANTENNA



History of M-Business

- 1958 A-Net (till 1977)
- 1972 B-Net (till 1994)
- 1986 C-Net (till 2001)



History of M-Commerce

- 1981 NMT450 (Nordic Mobile Telephone).
Denmark, Sweden, Finland, Oman.

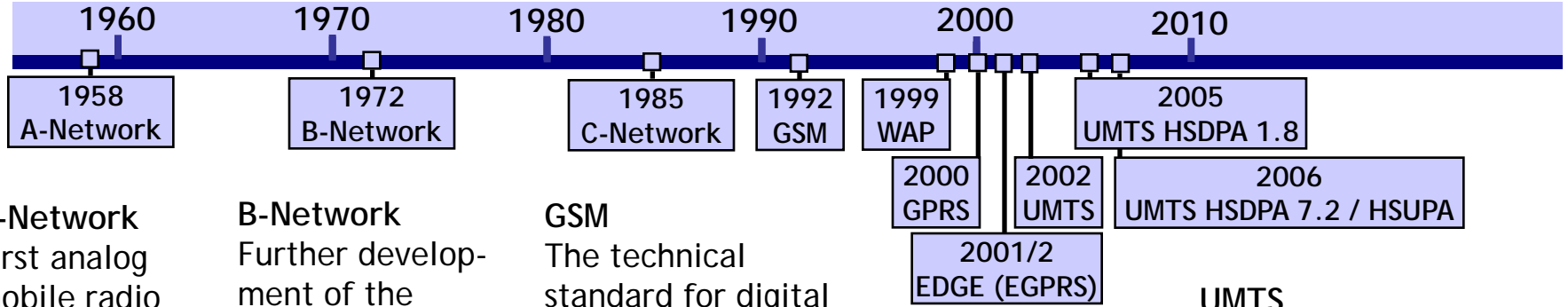


- First digital mobile radio network with high voice quality and reliability (roaming)
- Global diffusion in more than 190 countries with more than 1 billion users
- In February 2004 the first commercial mobile radio network (based on GSM) was launched in Iraq.
- GSM is the basis of data services like GPRS and EGDE.



- Third-generation (3G) mobile phone technology.
- Provides high data transfer rates for multimedia communication services.
- Germany's UMTS frequency licenses were sold by auction in 2000 for approx. 50bn €.
- Commercially available in Germany since 2004.
- UMTS is the basis of the data services HSDPA.





A-Network

First analog mobile radio system in Germany. Switching was done manually. Discontinued 1977.

B-Network

Further development of the A-Network. The caller who wanted to reach a mobile station had to know the other's location. Discontinued 1994.

C-Network

Analog, cellular mobile radio network of Deutsche Telekom. Discontinued 2000.

GSM

The technical standard for digital mobile radio networks in more than 100 countries. Includes data transfer services.

WAP

With special mobile phones certain contents are downloadable from the Internet.

GPRS & EDGE

Further development of the GSM standard. Data is transferred in packets. EDGE is an enhancement to GPRS and provides increased data transmission rates (3 to 4 times faster than GPRS)

UMTS

Third mobile radio standard and the successor of GSM for mobile multimedia incl. video and audio transmissions.

HSDPA / HSUPA

High-Speed Downlink Packet Access providing higher data down-link speeds of 1.8, 3.6, 7.2 and 14.4 Mbit/s and capacity whereas High-Speed Up-link Packet Access boosts up-link speed.

- The Chair of M-Business and Multilateral Security
- Teaching and Research Agenda
- Introduction into Mobile Business – History of Mobile Business & Mobile Telecommunication Systems
- Outline of this Course

- Interest ...
 - ... in new topics
 - ... in the interaction of technology, business, economy and society
 - ... in experiments

- Other Business Informatics lectures help but are not mandatory



Lectures and Exercises

15.04.2009	1 Einleitung	Lecture
22.04.2009	2 Design of Mobile Apps & Services: HCI Issues	Lecture
	3 Positioning Methods for Location-based Services	Lecture
29.04.2009	4 Appl. Domains I: LBS Bus. Models & Use Cases	Lecture
06.05.2009	5 Need Based Mobile Service Creation – Christian Lupp (codedifferent)	Guest lecture
	Exercise 1 – 5 Need Based Mobile Service Creation – Christian Lupp	Guest exercise
13.05.2009	Guest lecture – Dr. Nico Mohr, Dr. Ralf Kaumann, Michael Pachmajer (Accenture)	Guest lecture
20.05.2009	Excercise 2 – LBS und Mobile Communities	Excercise
	Excercise 2 – LBS und Mobile Communities	Excercise
27.05.2009	6 Mobile Surveillance, Data Protection and Identity Management	Lecture

02.06.2009	7 Cryptography	Lecture
	8 Application Domains II: (Mobile) Electronic Signatures	Lecture
10.06.2009	9 Regulation of (mobile) Telecommunications	Lecture
17.06.2009	10 Regulation by Licensing	Lecture
	Excercise 4 – Regulation	Excercise
24.06.2009	Guest Lecture, Dr. Udo Helmbrecht (BSI)	Guest lecture
01.07.2009	11 Exemplary Application Domains III: M-Payment	Lecture
	12 Exemplary Application Domains IV: M-Brokerage	Lecture
08.07.2009	13 Evaluation of Mobile Application Designs	Excercise
15.07.2009	14 Current Research Topics	Lecture
	Exam preparation	Excercise

Please Note:

Electronic library of magazines, access to more than 2000 magazines

www.ub.uni-frankfurt.de/banken.html

available only for University members via HRZ account (141.2.XXX.XXX IP-addresses; PC Pool) or via University Library login:

www.ub.uni-frankfurt.de/login.html



search.epnet.com/login.asp
www.jstor.org



Online search engines:

scholar.google.com
academic.live.com



Microsoft (2000) Materials for the Introduction of .Net

Passerini, K.; Gagnon, S. Cakici, K. (2004) Opportunities in the Digital Economy: A New Value Chain and Services for Mobile Telecom Operators, in: C. Bullen and E. Stohr (Eds.) *Proceedings of the 10th American Conference on Information Systems*, New York, NY, USA, pp.2530-2535.