

Information and Communication Technologies in Germany



Government Relations Organization – Europe, Middle East & Africa
Reinhard Waehlen

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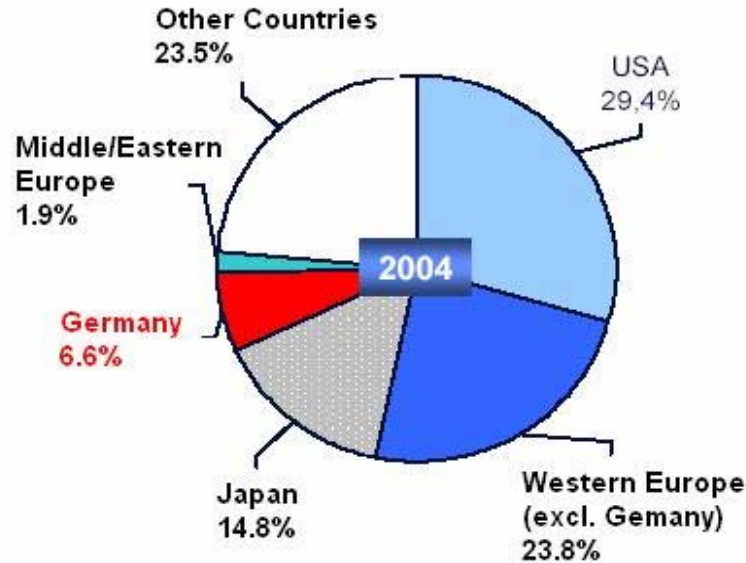
Information is the Driver

- Information and communication is a part of the infrastructure
- In Germany #1 of the economy with 132 billion revenue € in 2005
- 750.000 direct employed and 650.000 in sub-branches
- The speed of the development is still increasing
 - +2.4% in 2006 up to 137 billion €
- The next step's of the development are
 - broadband mobility
 - Network integration
 - convergence

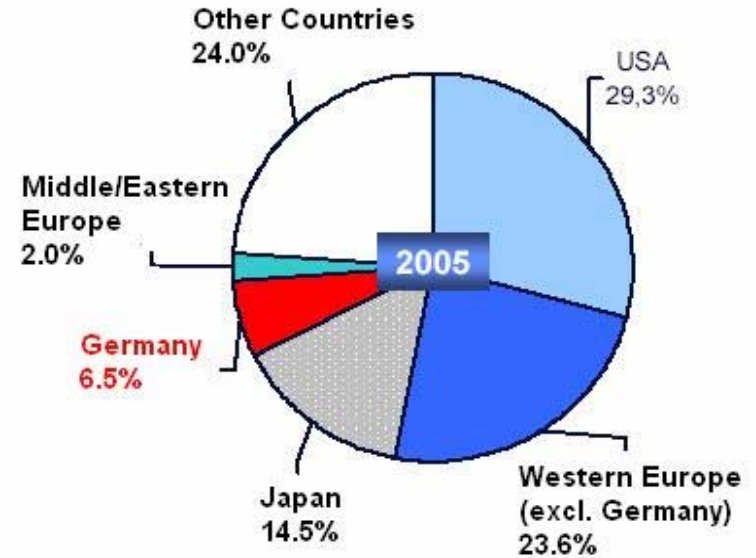


Germany still one of the leading IT and Telecom markets worldwide

Global market for IT and Telecom in percent 2004 - 2005



Total 2004: 1.959 **Bill. Euro**
 Germany 2004: 128 **Bill. Euro**



Total 2005: 2.043 **Bill. Euro**
 Germany 2005: 132 **Bill. Euro**

Source: EITO Picture: TNS Infratest Business Intelligence



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Information is the Driver

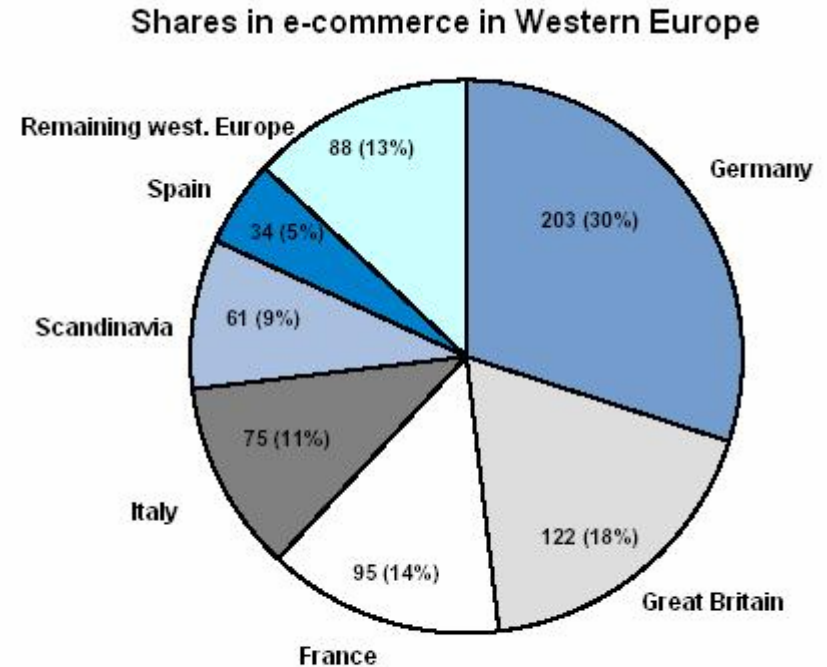
- Use of the Internet
 - >58% of the private households
 - 94% of the companies
 - across all ages

- Digital convergence
 - mobile communication, mobile telefonie, internet and TV are growing together
 - discribed since a while but visible today
 - Mobile TV is just today quite visible
 - New technologies like RFID will change a lot



Information is the Driver

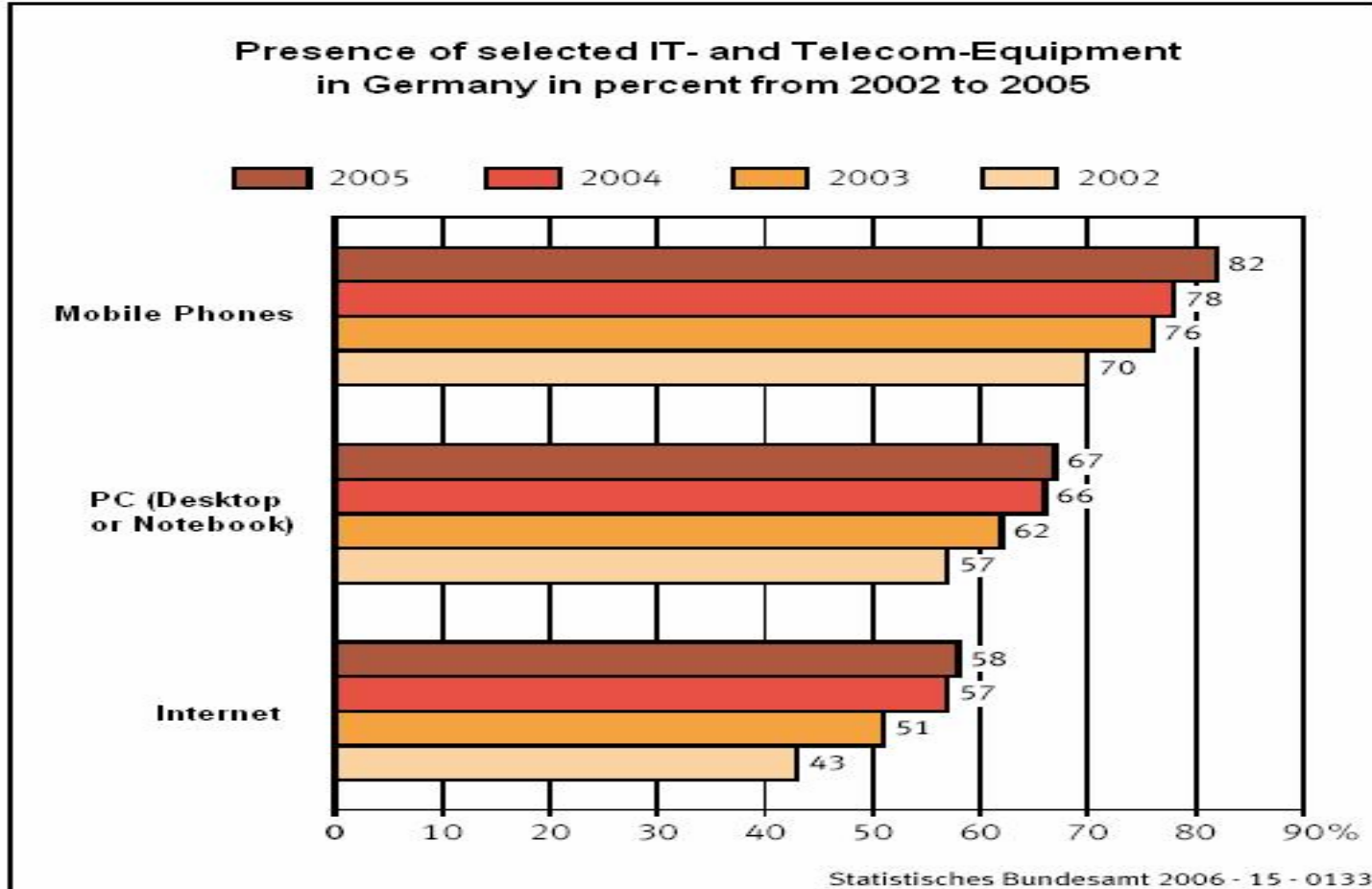
- Shares in e-Commerce the government has to be/ is one of the drivers of e-Commerce



Western Europe in total: 680 Mrd. EURO

Source: BITKOM/EITO 2005

Information is the Driver



Information is the Driver

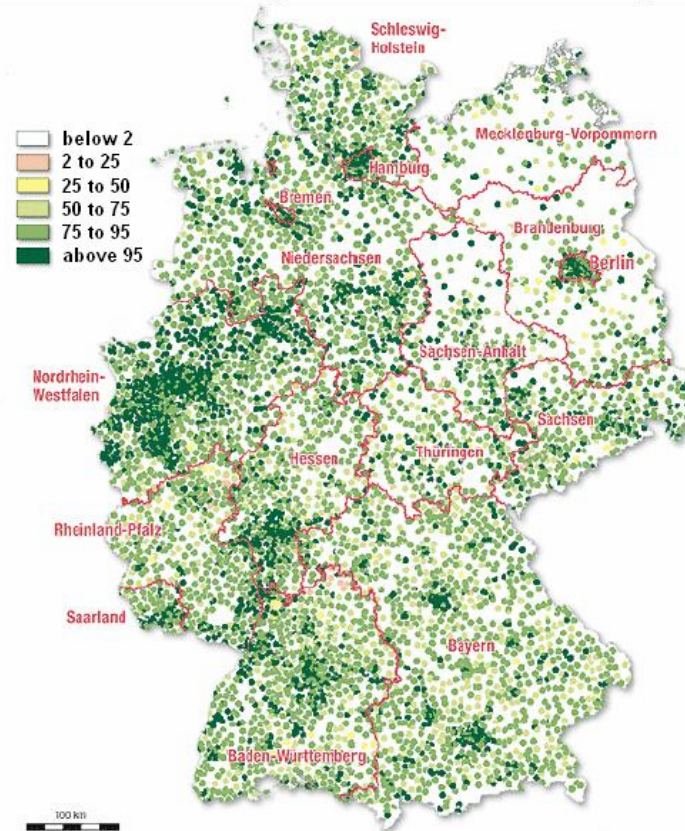
- It research
 - Germany is installing a new program called IT 2010
 - US is spending 2.6% for research
 - Japan ~ 3%
 - Germany ~ 2.5%
- But per head: US 964 \$ and Germany 654 \$
- EC is requesting an increase to 3% until 2010
- IT security is one of the key issues



Broadband Situation in Germany

- Broadband connection is a key factor for competition
- It is far more than only exchange of data
- Broadband is even more important for rural areas

Availability of broadband Access in Germany



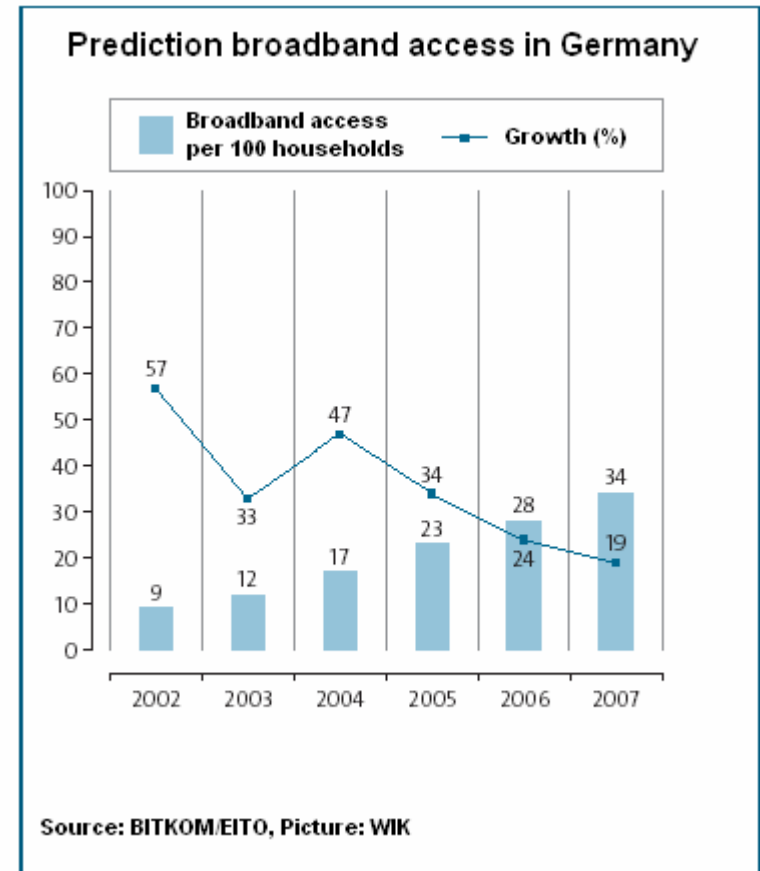
Source: BMWi Picture: FAZ

Broadband Situation in Germany

- DSL is the reference
 - since introduction growing with two digit figures
 - Challenge for all alternatives
- alternative technologies
 - TV kabel infrastructure
 - Powerline
 - Public wireless LAN
 - WiMAX
 - UMTS (HSDPA)
 - Satellite

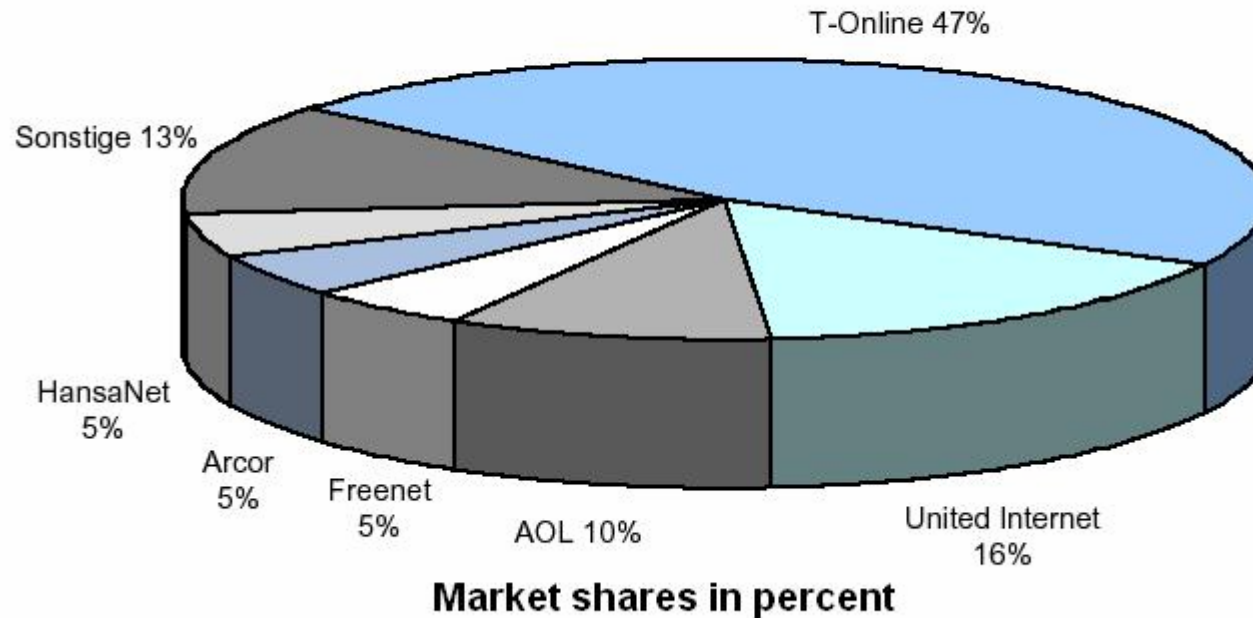
Broadband Situation in Germany

- Penetration figures for Germany
- More than 95 % is still DSL
- Competitive technologies growing
- More than 900 ISP competitors
 - Price competition
 - Speed increasing
 - Innovative tariffs
- IT usage is getting standard but
- Regional coverage is quite different



Broadband Situation in Germany

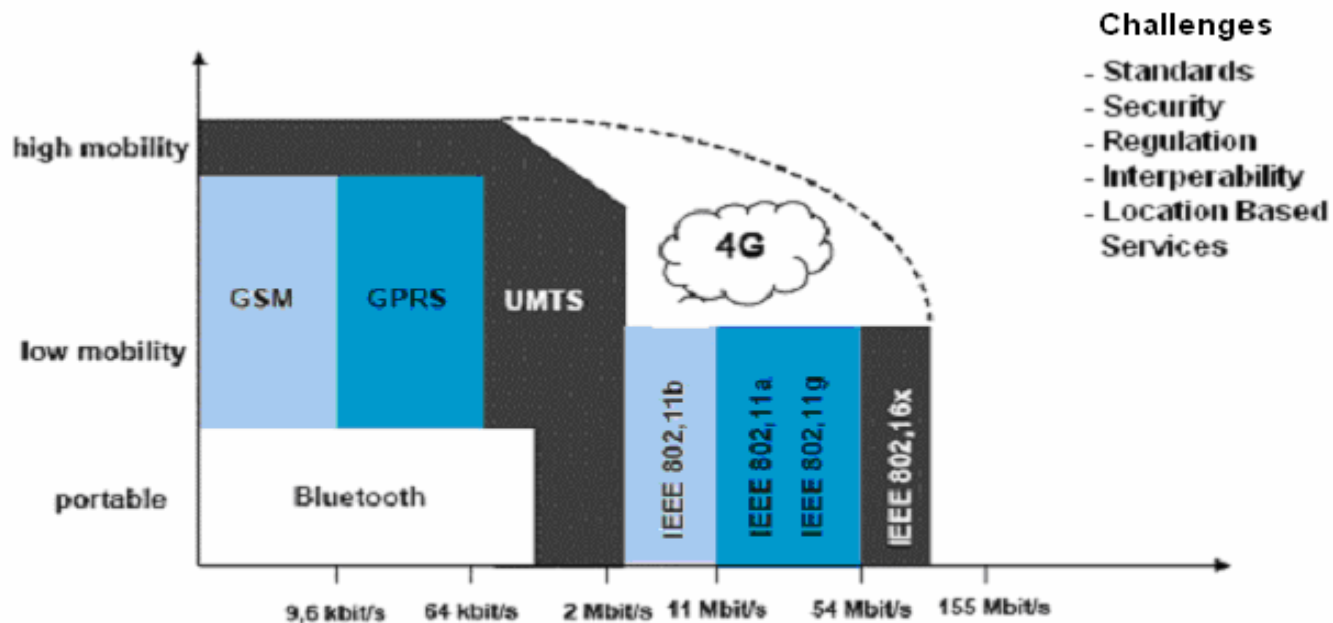
Competition in Broadband Access in Germany



Broadband Situation in Germany

- Alternative broadband connection via radio
 - Wireless LAN / Wi Fi **PAN**
 - IEEE 802.11x family - 2.4 GHz band max 54 Mbit/s
 - WiMAX **MAN**
 - IEEE 802.16x family - 3.5 GHz 50 – 70 Mbit/s / cell ?
 - UMTS (HSDPA) **? MAN**
 - W-CDMA - 2.0 / 2.5 GHz band 3 – 10 Mbit/s / cell ?

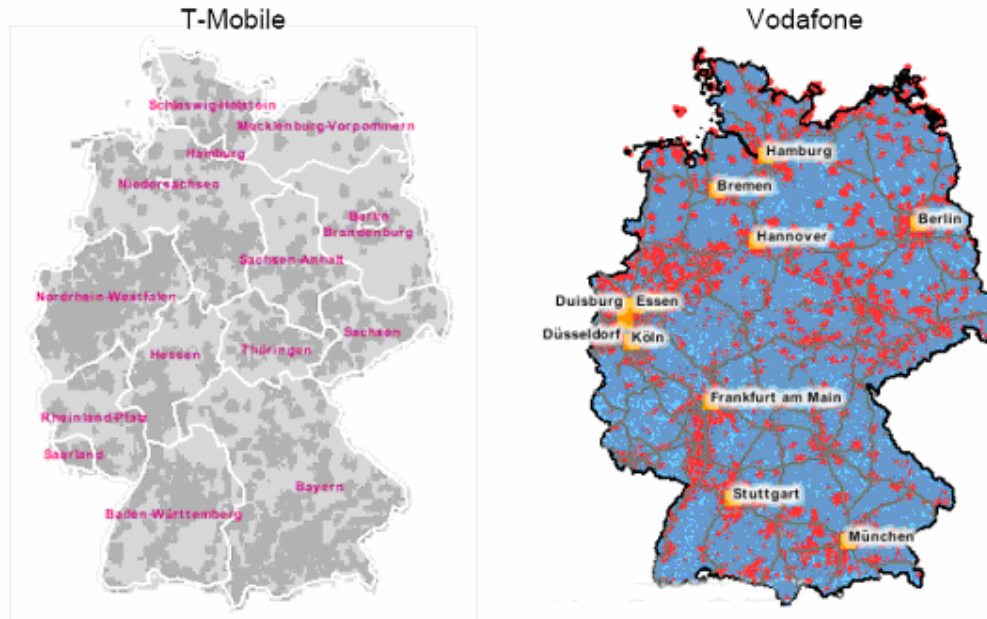
Broadband Situation in Germany



Source: dacor GmbH / WIK

Broadband Situation in Germany

UMTS Coverage T-Mobile and Vodafone, Nov. 2005



Source: T-Mobile, Vodafone (Copyright: Tele Atlas IV)

Convergence a definition

- Separat industries and/ or services growing together
- Horizontal convergence
 - consumer electronics and media industry
- Vertical convergence
 - digitalisation of the whole chain
- Funktional convergence
 - communication, information and entertainment

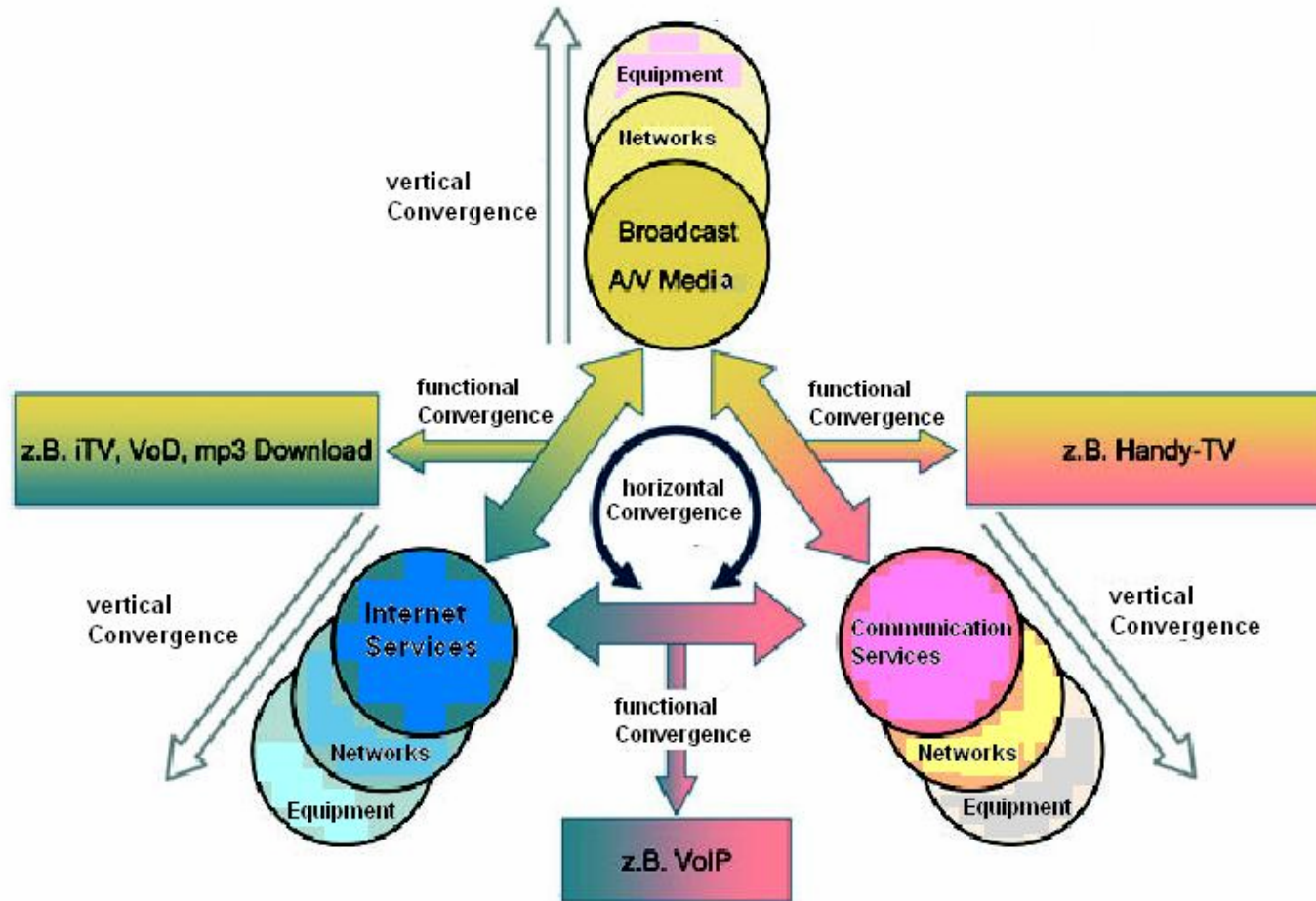
Digitalisation and Interoperability are the key words for success



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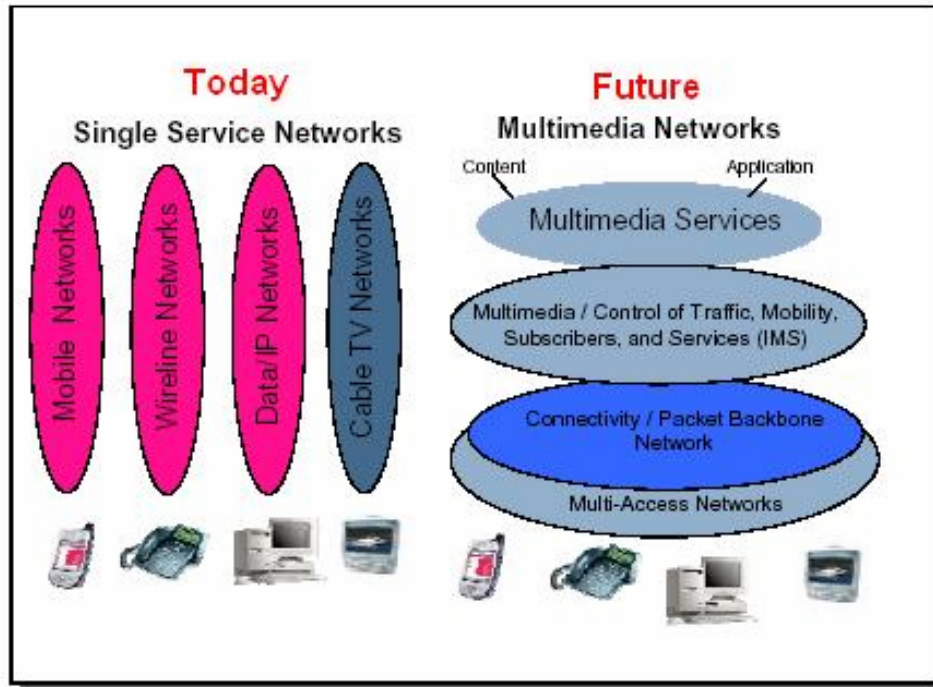


Convergence a definition



Convergence a definition

New Communication Architecture
Convergence of today's Networks to a "All IP-Platform"



Source: Deutsche Telekom

ITCM technologies are cross section
Solutions

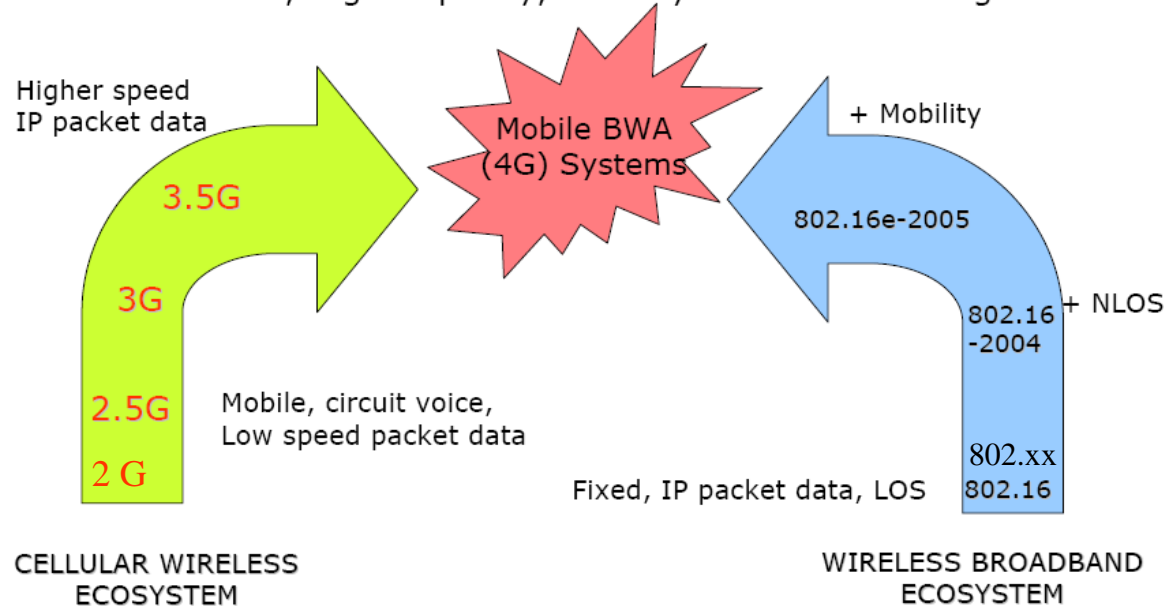
More efficient

Creation of new value-added services

Convergence a definition

'Convergence' of Wireless Broadband Ecosystems

All-IP Services, High Capacity, Mobility enabled Converged core



IT Development

- In the past Germany lost some world wide competitions
- Now we have again a change in technologies and services therefore
- Aducation policy and work-force laws have to be adjusted
- Strategic innovation has to be the line for political decissions across all levels
- Special focus to support competitive – people, schools, companies...
- School, Universities and companies have to work together to support high capacity students



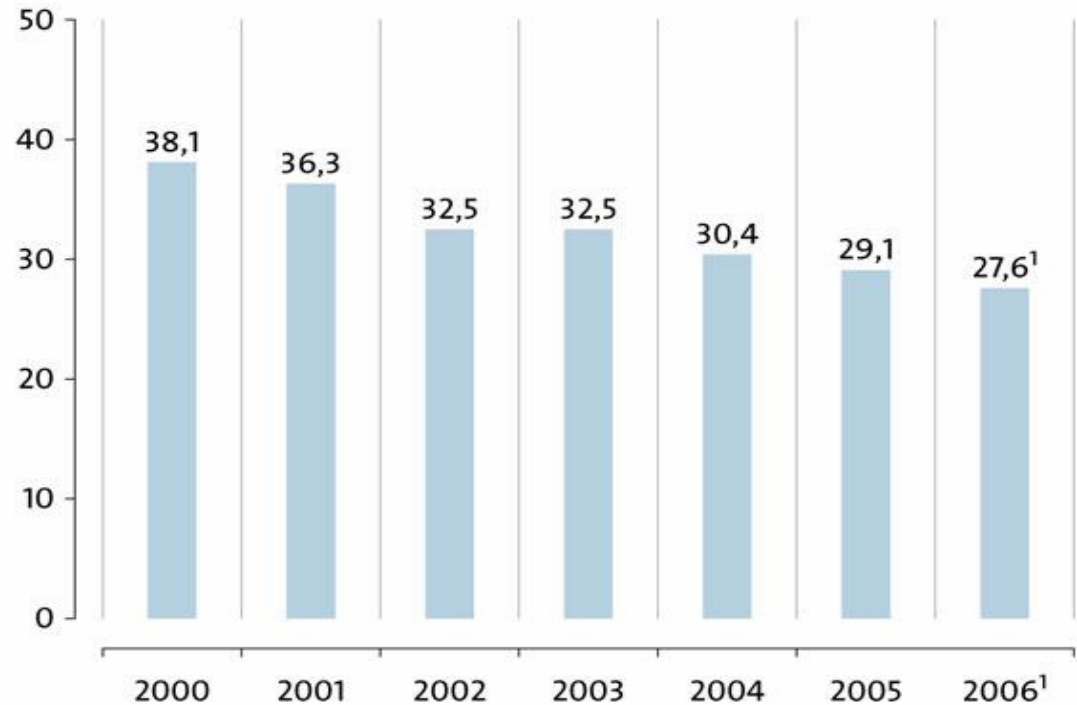
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IT Development

- 15.000 – 17.000 engineers needed per year
- Decrease from 38.000 in 2000 to 28.600 in 2004. ~ 50 % skip their study and this means we do not have enough educated people

University entrants in Information Science Germany
(in thousands)



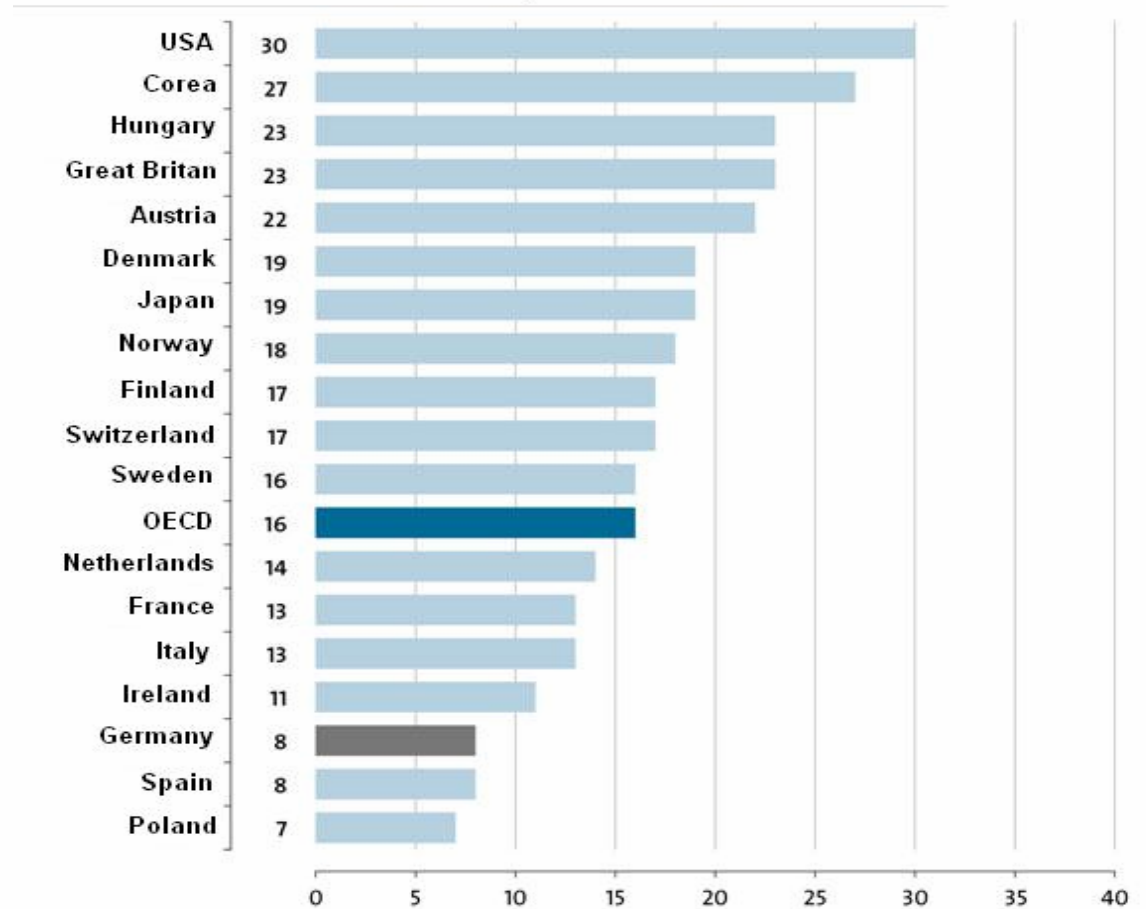
(1) estimated

Source: BITKOM, Statistisches Bundesamt

IT Development

- Basis education has to be improved
- Information science should get more support
- In the near future we have less kids than today

Number of PC's in schools per 100 students 2003



France: PISA 2000

Source: BITKOM, OECD PISA 2003

Summary

- Germany Speed is increasing

BE PREPARED

THANKS QUESTIONS



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