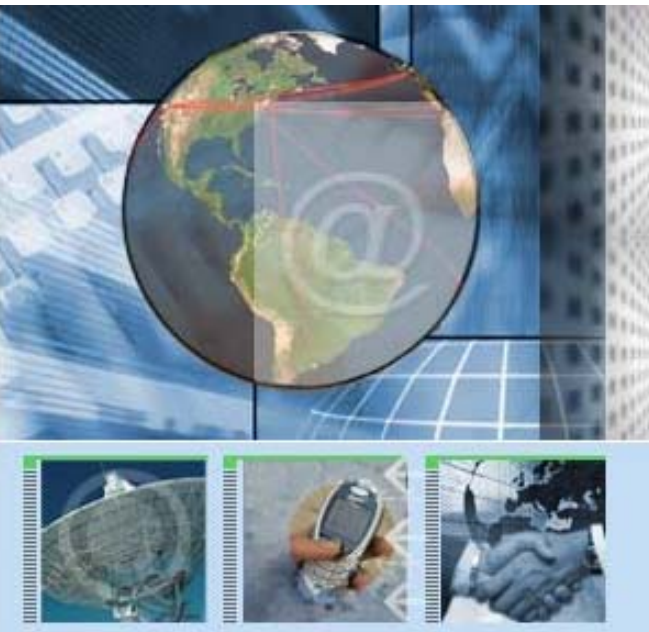


# Developments and Directions in Telecommunication Markets



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Lecture on the International ICT Convention:  
**The revival of the ICT sector: Preconditions and enabling factors**

University of Padua  
24th November 2003

# Developments and directions in telecommunication markets

- 1. Characteristics of telecommunication markets**
- 2. Market developments**
- 3. Challenges and opportunities**
- 4. Directions in telecommunication markets**

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# Definitions

## **Telecommunications in the broader sense:**

transmission of any kind of data (text, charts, pictures, audio, video, voice)

## **Telecommunications in its stricter sense:**

Two-way communication between some/few subscribers

## **Broadcasting:**

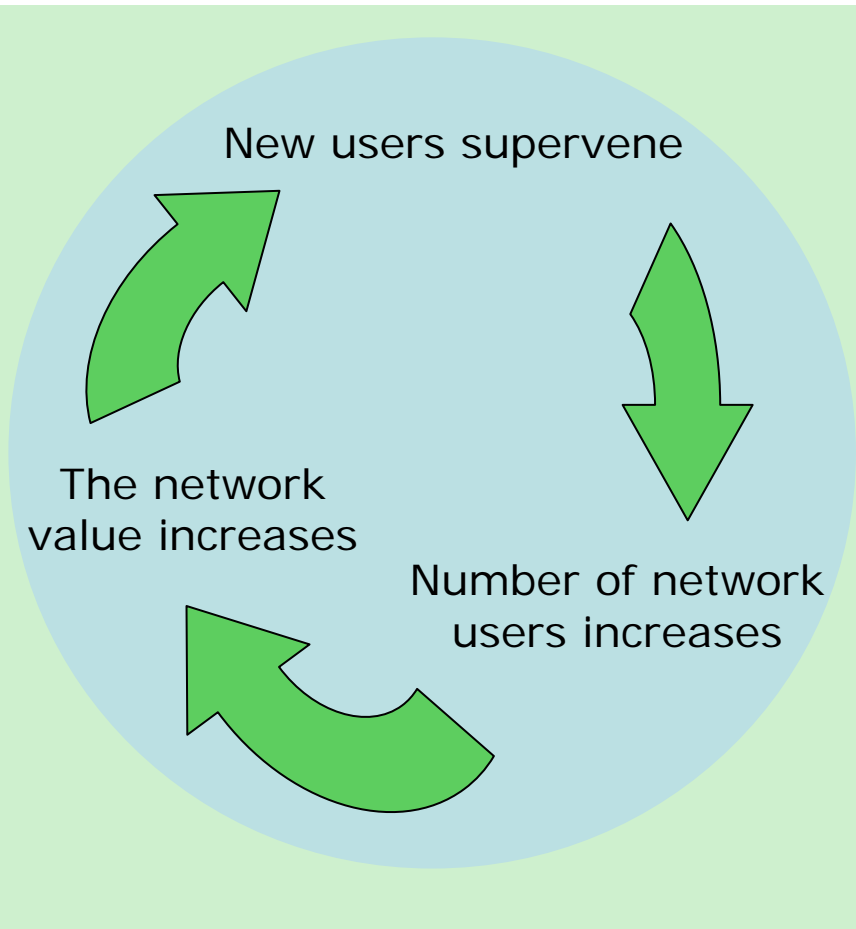
One-way transmission of contents from a sender to a variety of receivers

## **Information technology:**

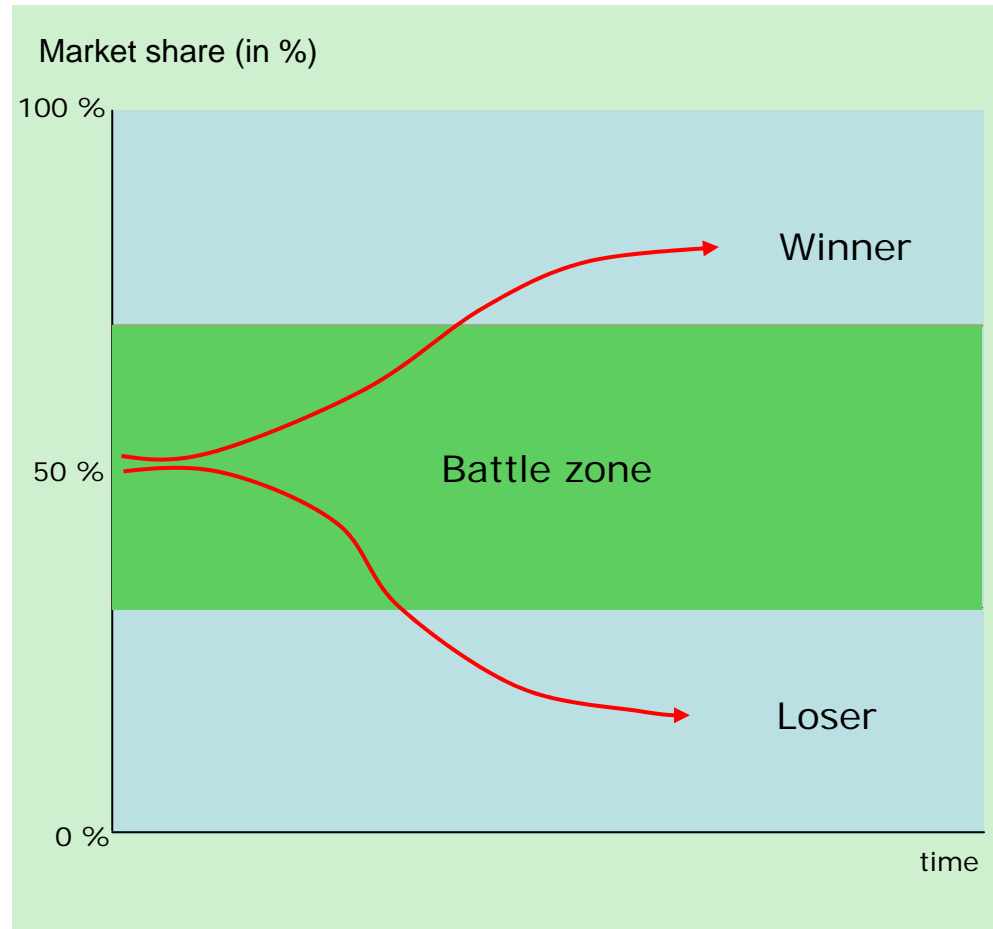
all technologies based on digital technology and microelectronics

# Positive Feedback

## The cycle of positive feedback



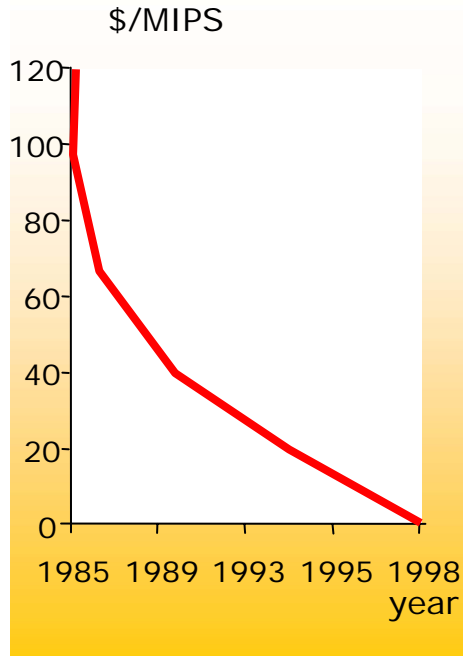
## The implications of positive feedback on competition



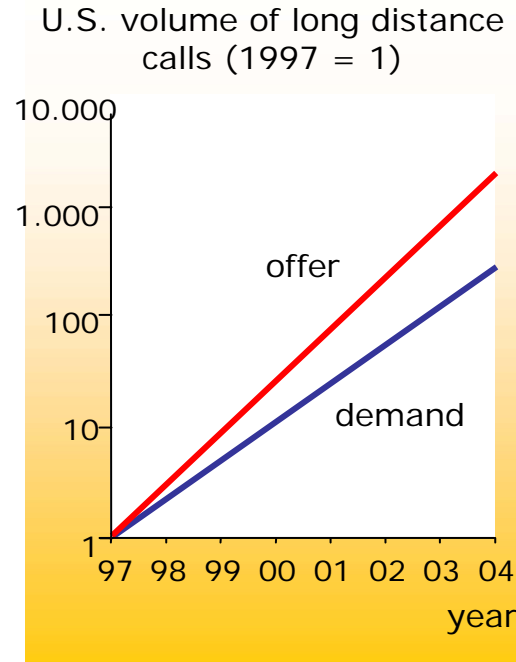
Source: Zerdick, A.; Picot, A.; Schrape, K. et al (2001)

# Some interesting principles

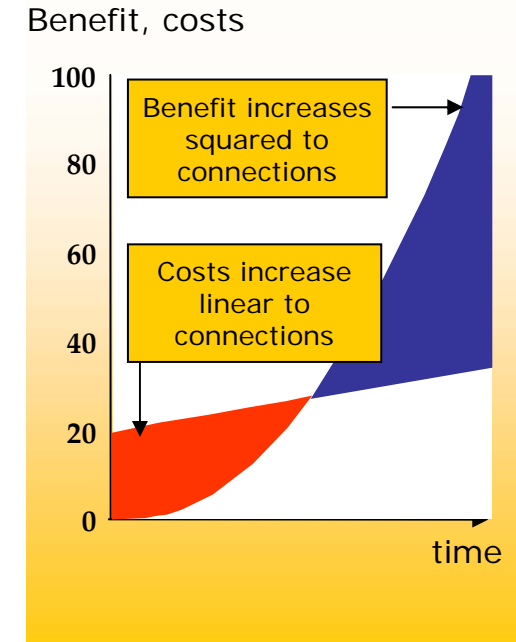
**Moore's law**



**Gilder's law**



**Metcalfe's law**



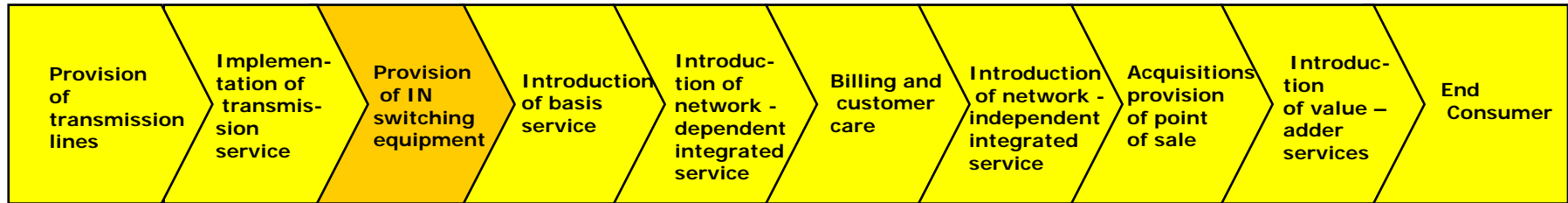
**Processor performance doubles every 18 months**

**Bandwidths triples every year**

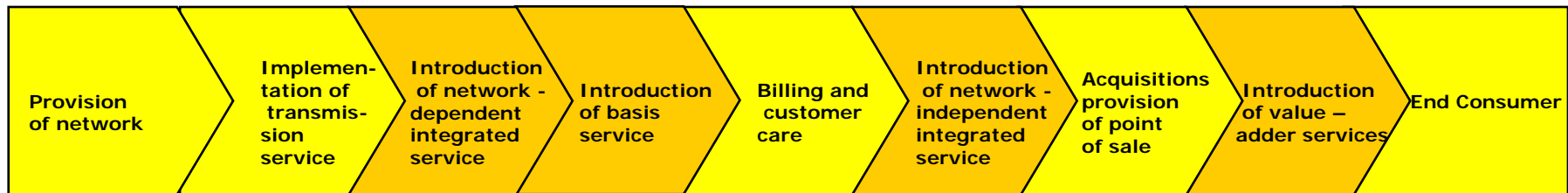
**Networking counts!**

# Development of the value added chain in the telecommunications market

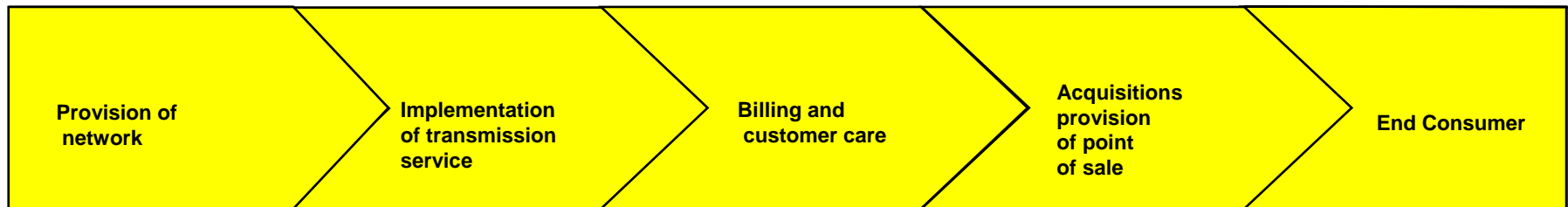
Time



## Intelligent networks



## Telecommunications sector

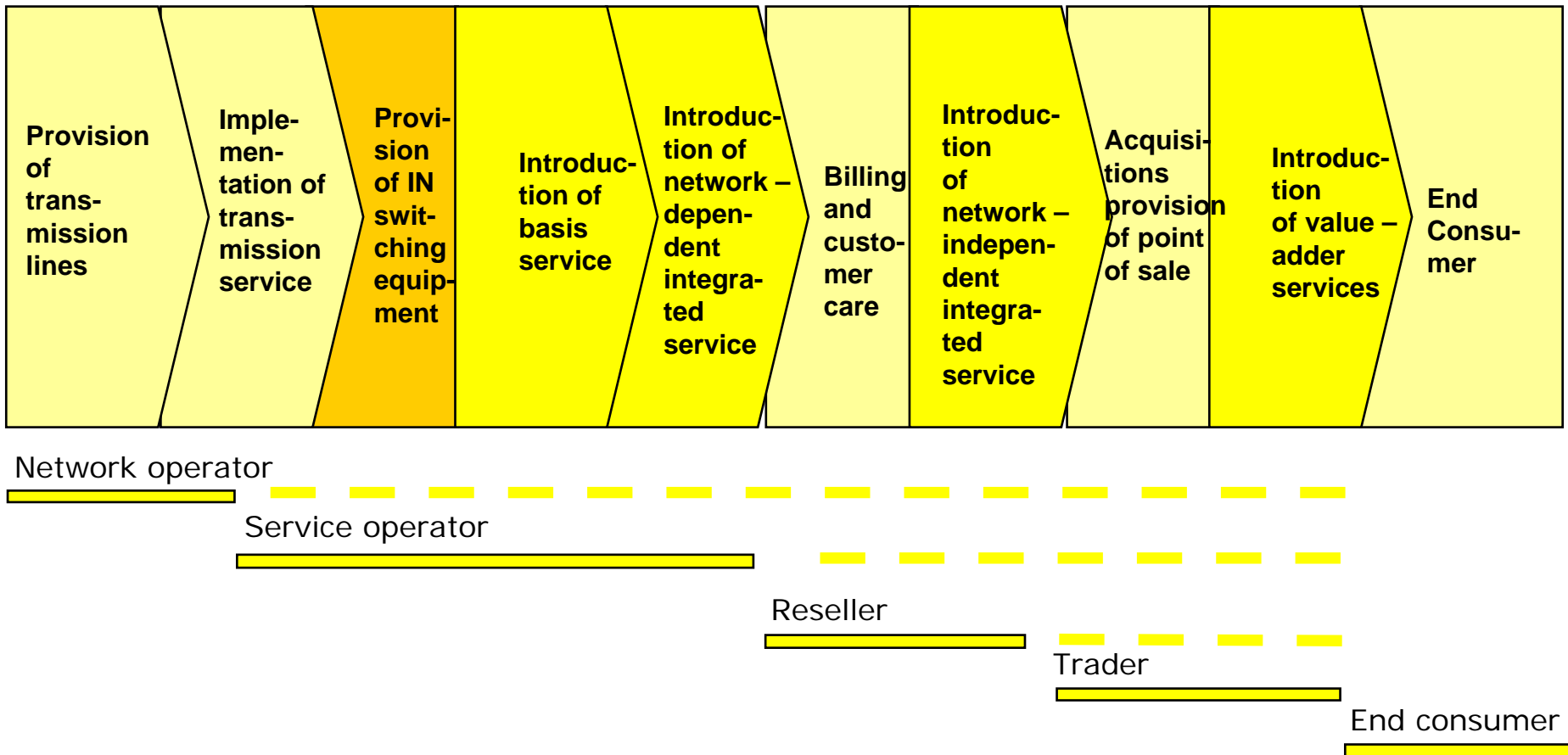


## Simple telecommunications value added chain

Source: Zerdick, A.; Picot, A.; Schrape, K. et al (2001)

# Value added chain in the telecommunication market

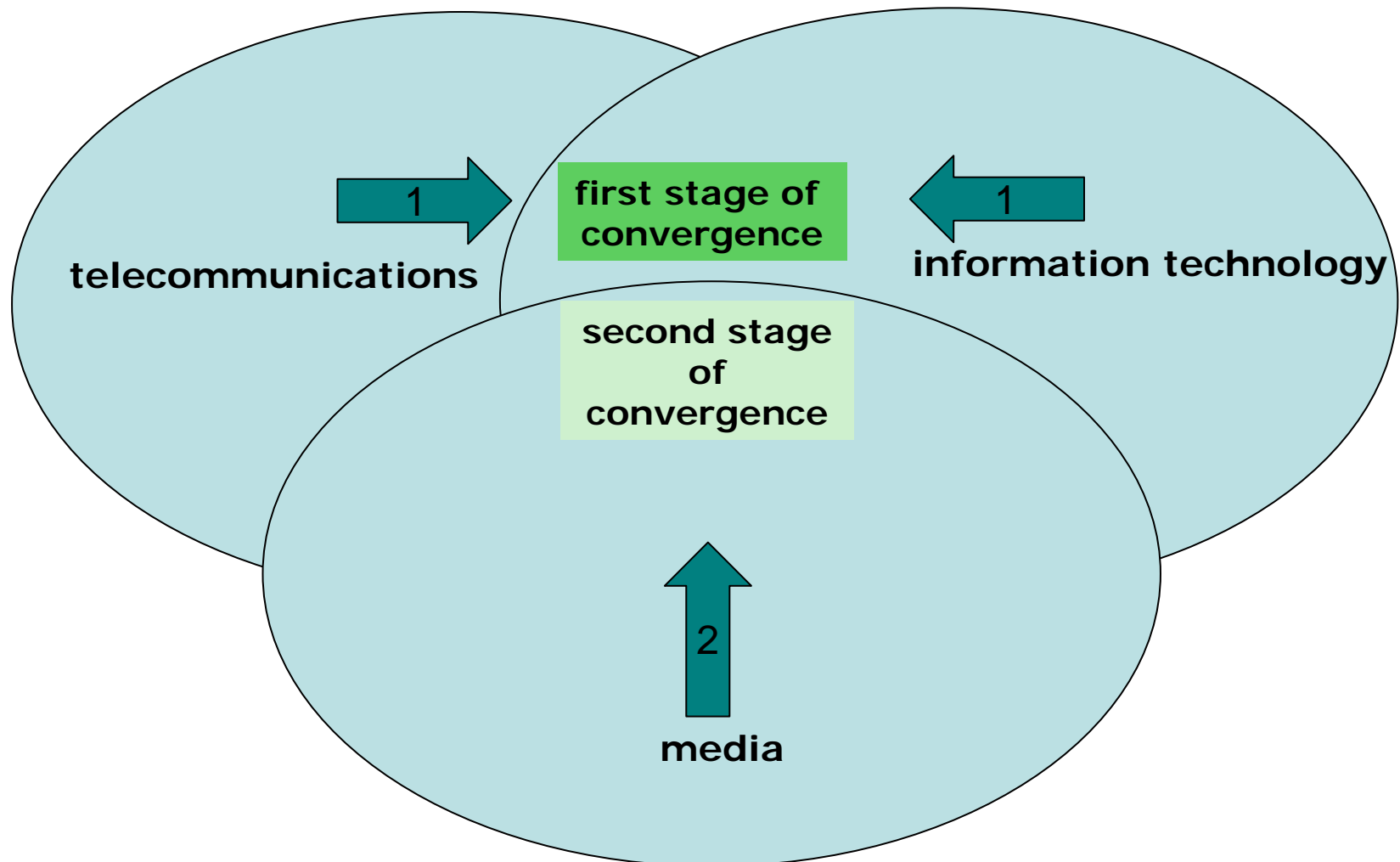
## Vertical (dis)integration



Source: Zerdick, A.; Picot, A.; Schrape, K. et al (2001)






# Convergence in the TC, IT and media sector is a two stage process



Source: Zerdick, A.; Picot, A.; Schrape, K. et al (2001)

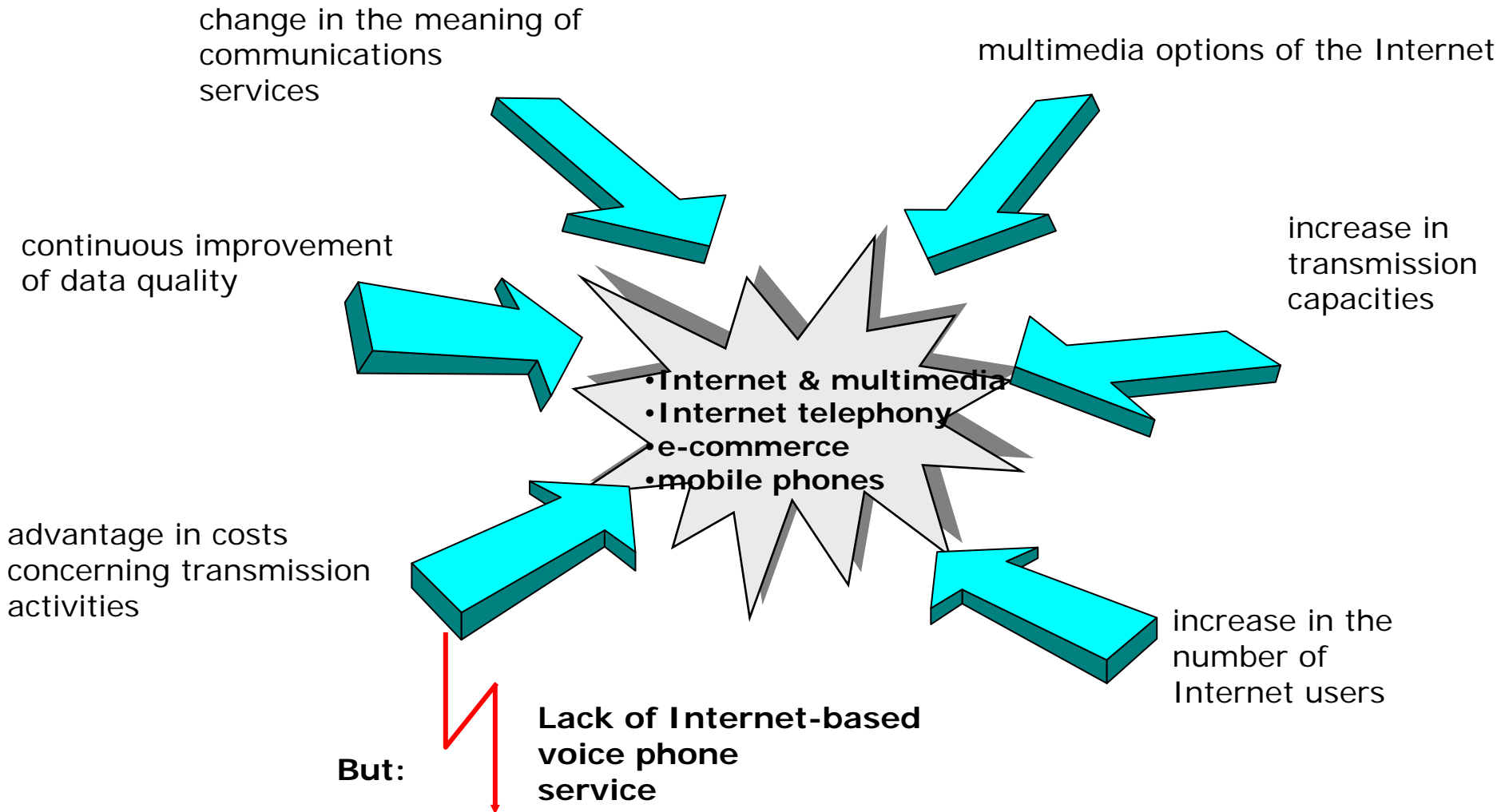
# Convergence changes technologies, applications and markets

## Examples of convergence

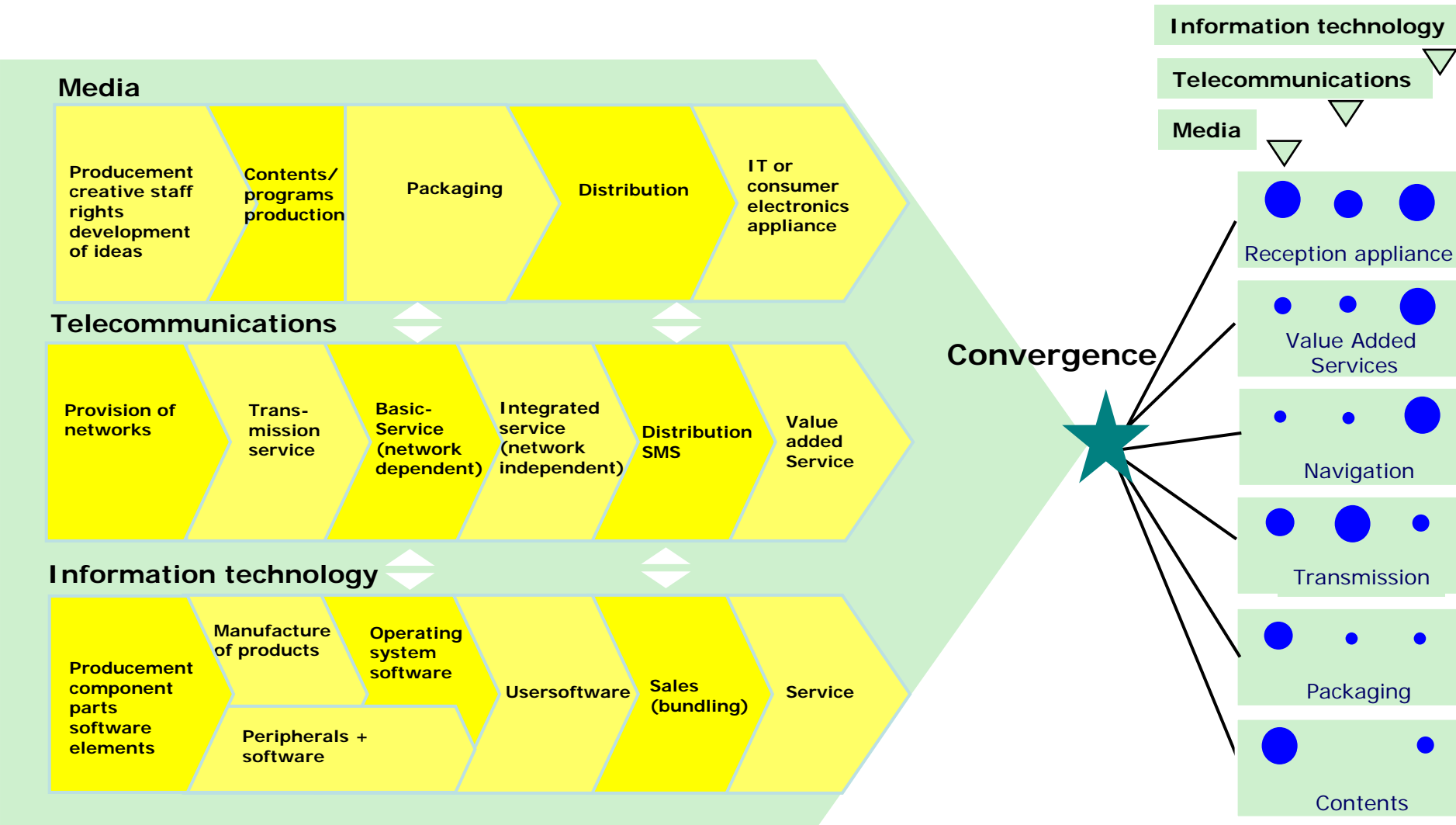
-  Implementation of different **services and applications** on a single platform  
Example: Convergence of data and voice communications  
- Internet telephony -
-  Convergence of **network technologies**  
Example: Convergence of fixed and mobile networks  
- O2 Genion service – phones for both applications -
-  Merging of **industries** into one market  
Example: Convergence of telecommunications, IT and media sectors

**Base for convergence: digitalization and development of the Internet**

# The convergence of communications services is closely linked to the internet



# Towards a new value added structure



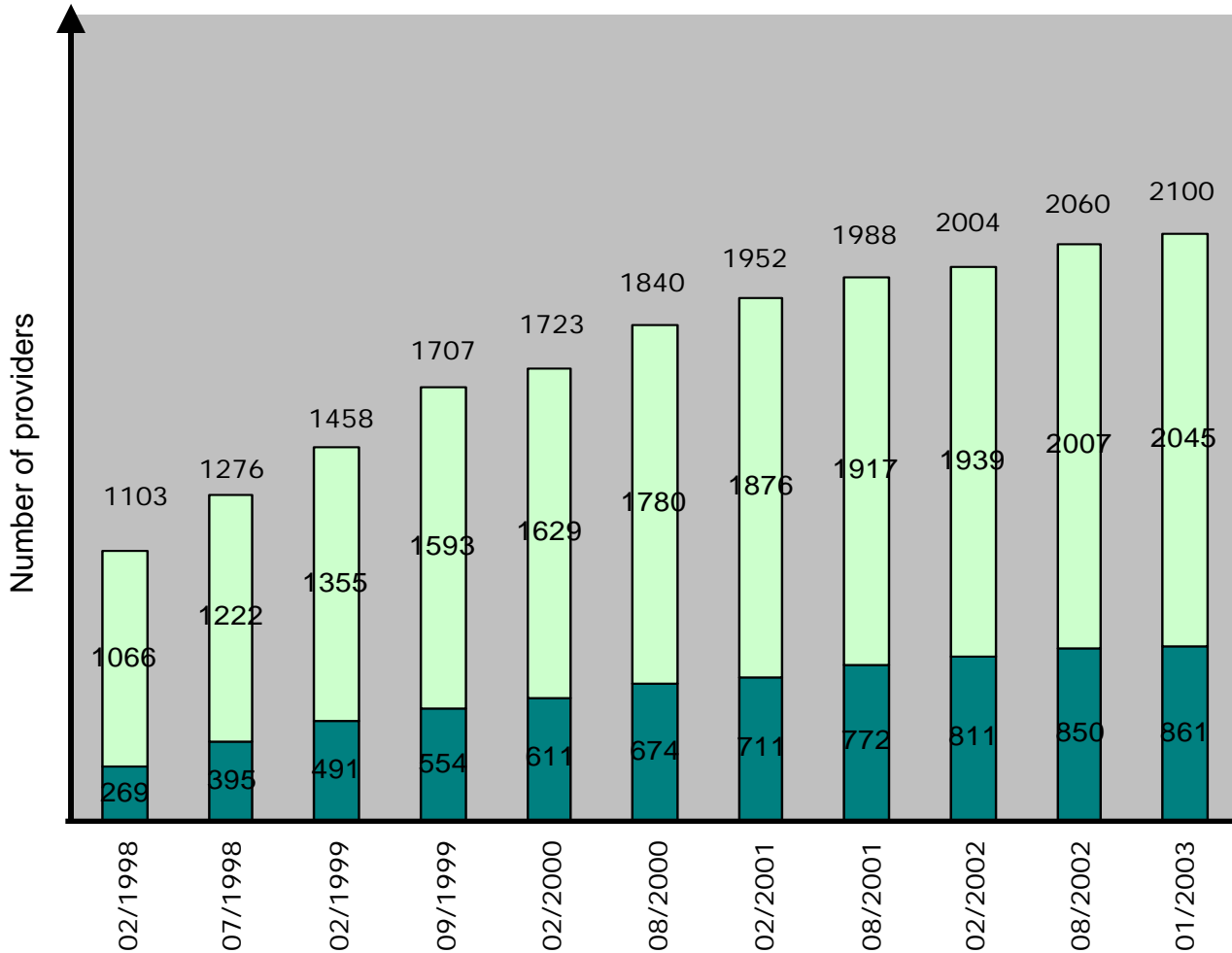
Source: Zerdick, A.; Picot, A.; Schrape, K. et al (2001)

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# Current development on the German telecommunication market

## Development of the number of telecommunications service providers



- Number of licenses
- Number of providers of telecommunications services which are not subject to licensing

The addition of the individual figures does not equal the number per capita.

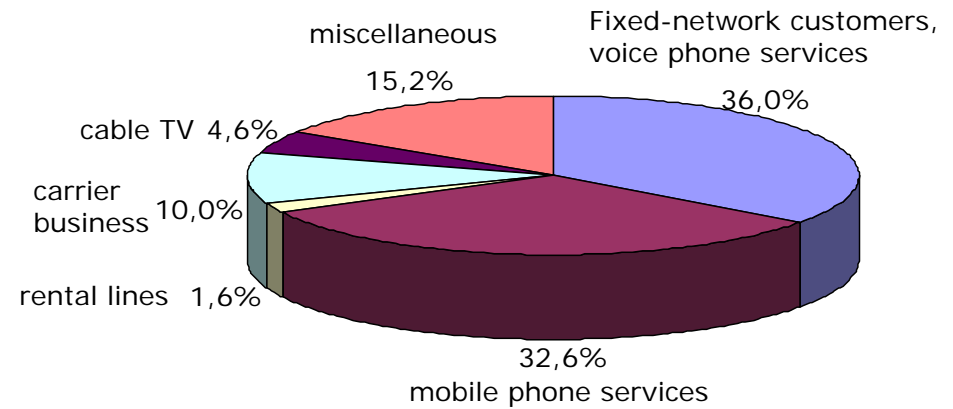
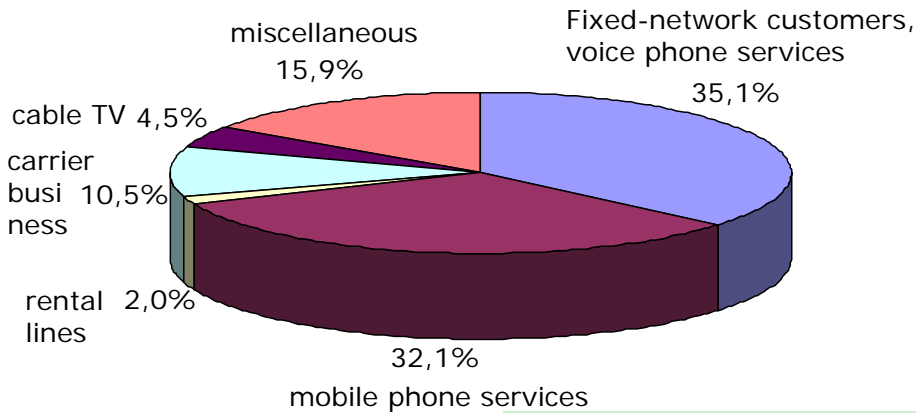
\* Licensees, operating in sectors of licensed service and of services not subject to licensing are counted single. Therefore, the addition of individual figures does not equal the number per capita.

Source: RegTP (2003)

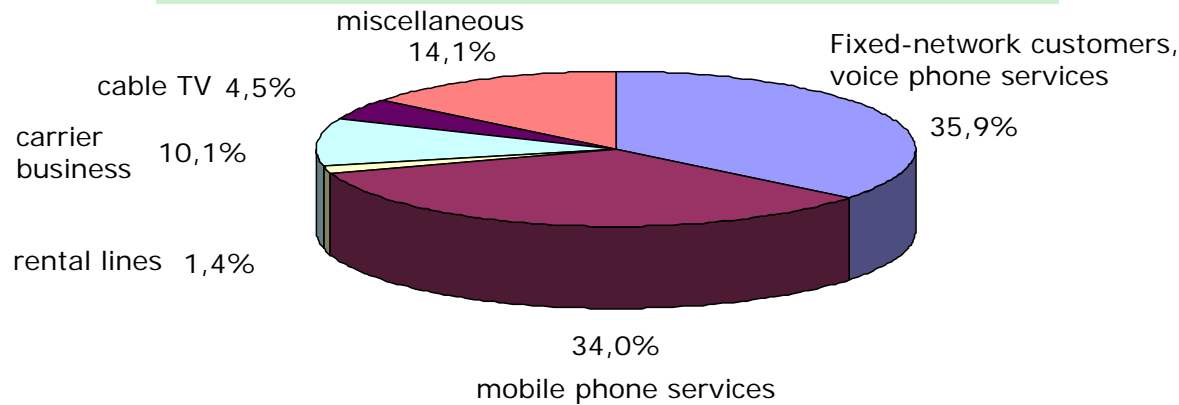
# Current development on the German telecommunication market

**Market Volume 2001: 59,9 bn Euro**

**Market Volume 2002: 61,1 bn Euro**



**Market Volume 2003e: 62,6 bn Euro**

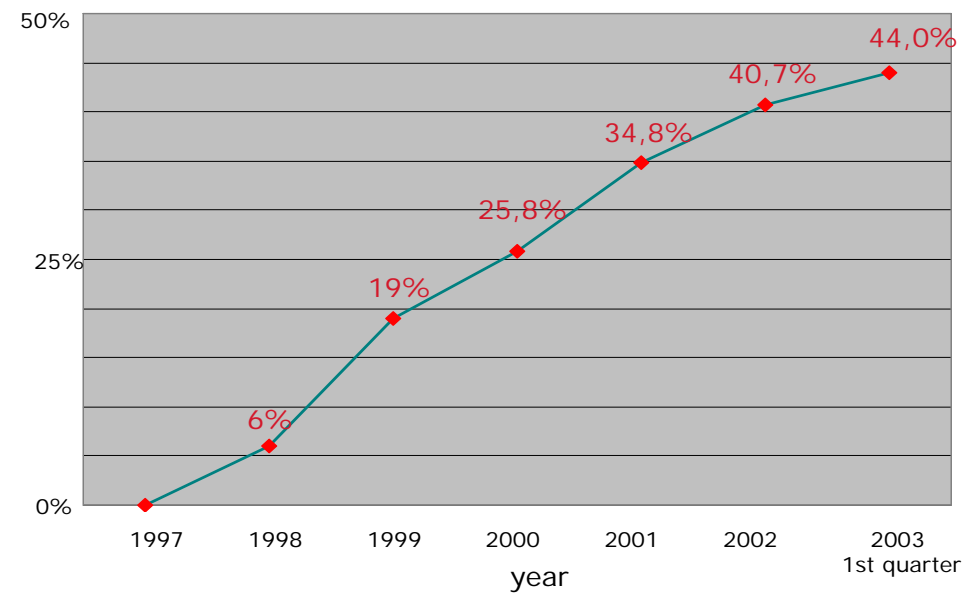
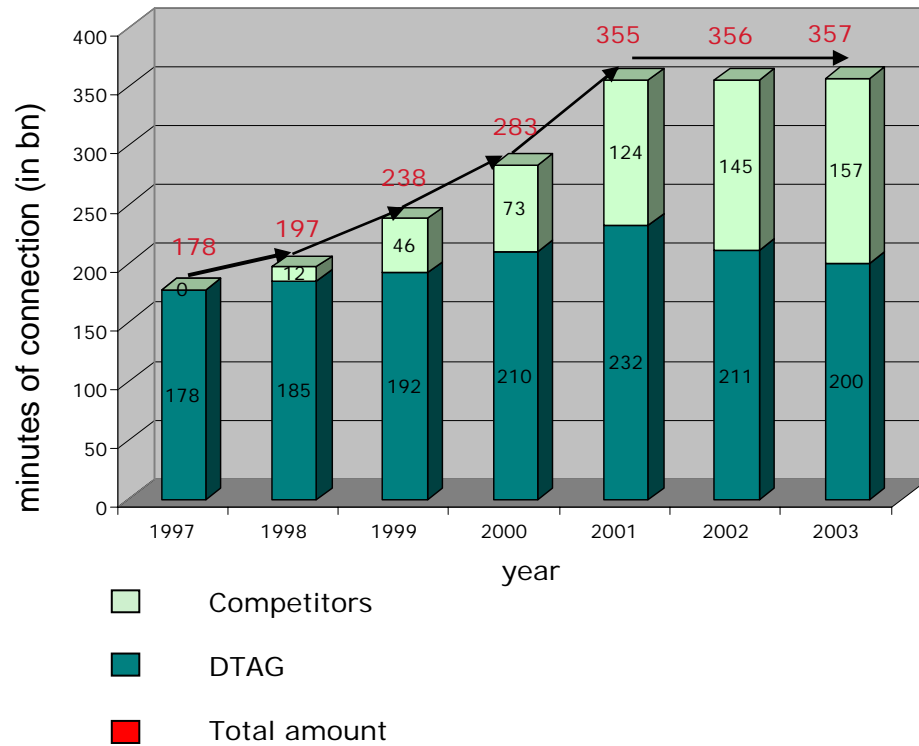


Source: RegTP (2003)

# Current development on the German telecommunication market

**Development of minutes of connection in fixed-telephony services (1997-2003)**

**Development of competitor`s shares of minutes in fixed-telephony services (1997-2003)**

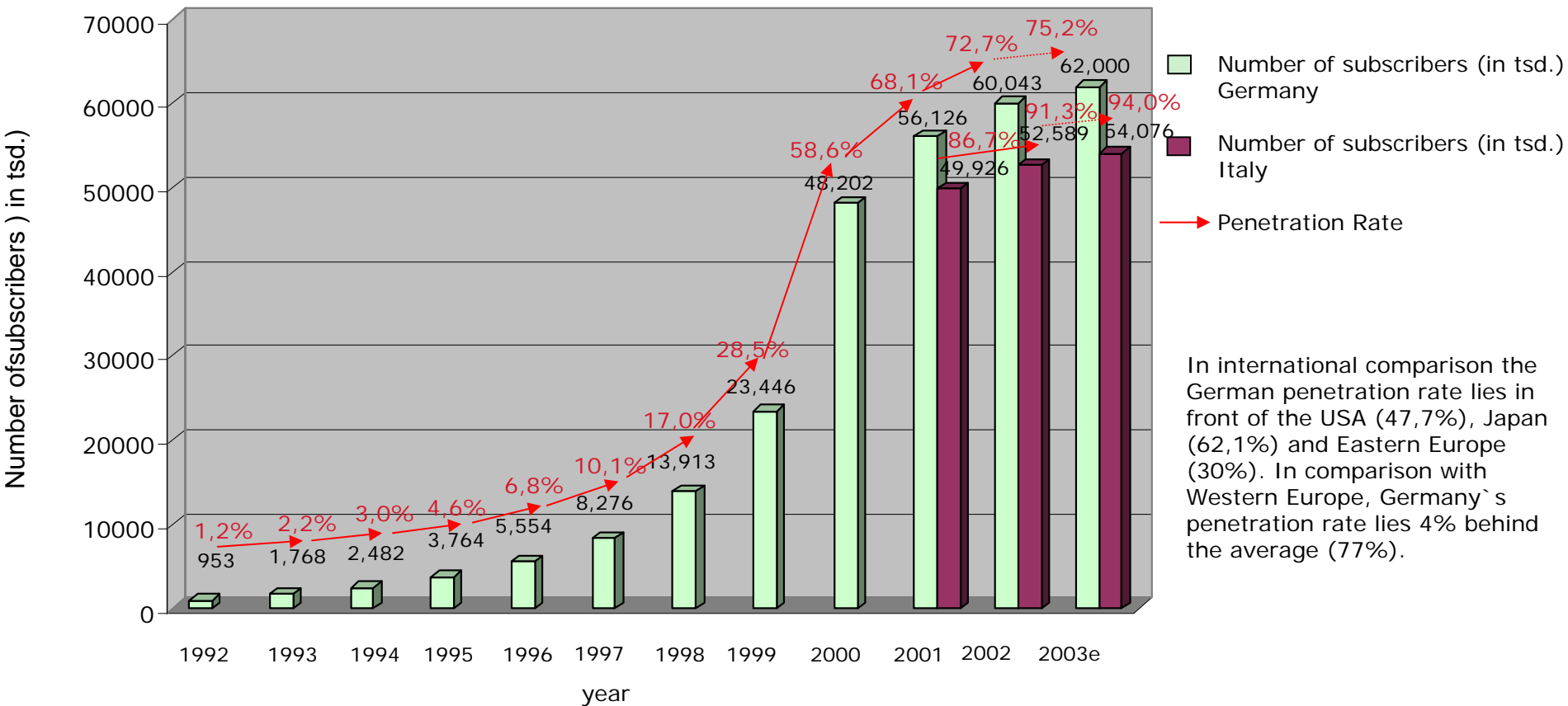


Source: RegTP (2003)



# Current development on the German telecommunication market

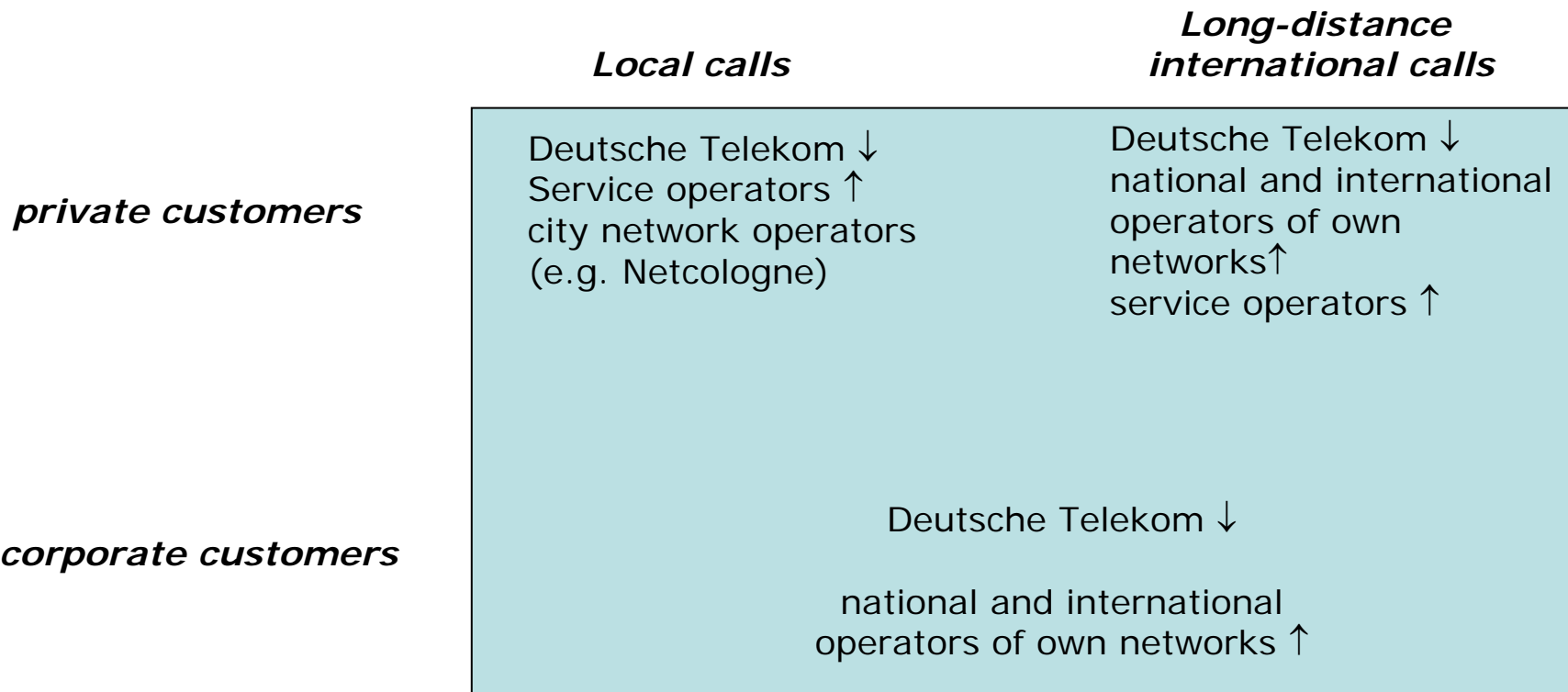
## Development of subscribers` numbers and forecast in mobile services



Sources: RegTP (2003); RegTP (1999); EITO (2003)

# Deregulation leads to an increase in competition in private and corporate customer sectors

## Structure of competition on the German market (2003)

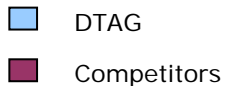
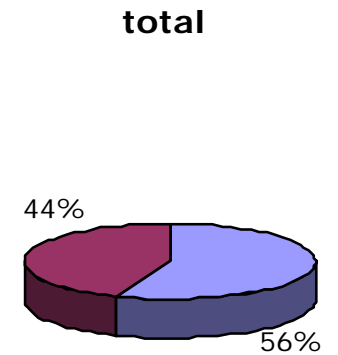
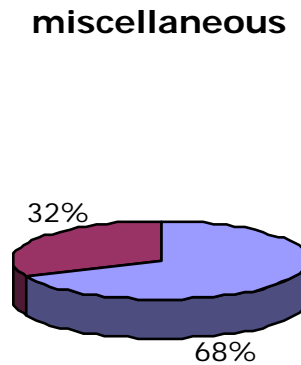
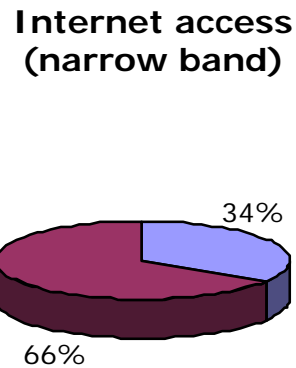
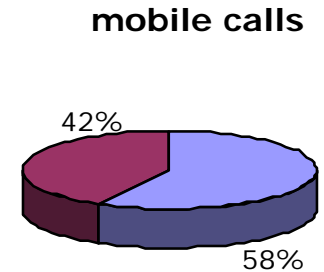
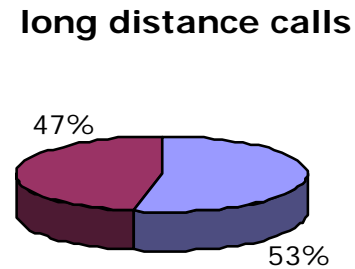
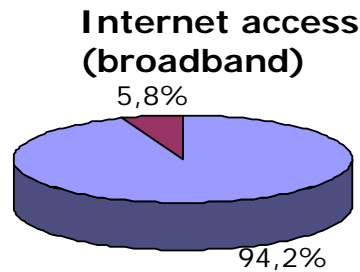
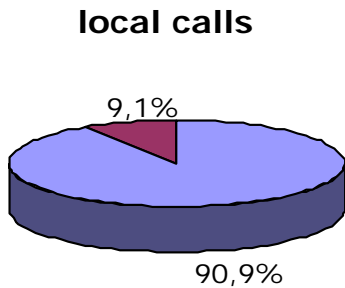


↓ Decrease in market power

↑ Increase in market power

# Current development on the German telecommunication market

## Market share of minutes of connection in fixed-telephony networks (1st quarter of 2003)



Source: RegTP (2003)

# The new European directives

In March 2002 the European Parliament and the Council adopted four directives and one decision to be implemented by EU members national governments until July 25th 2003:

**Authorisation Directive**

**Radio Spectrum Decision**

**Access Directive**

**Framework Directive**

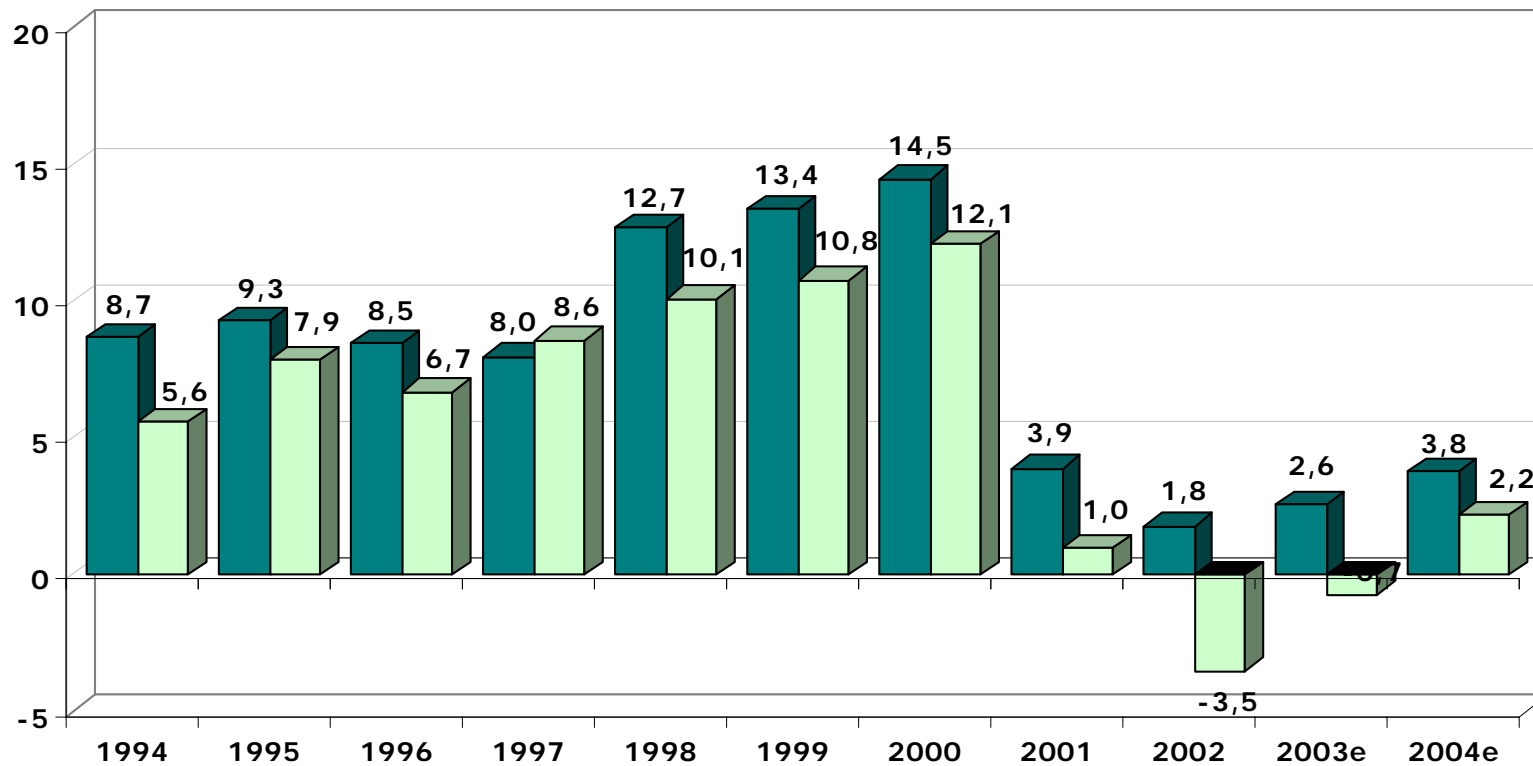
**Universal Service Directive**

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# The Markets for ICT in Europe and around the World

## Western European ICT market growth 1994-2004, in %



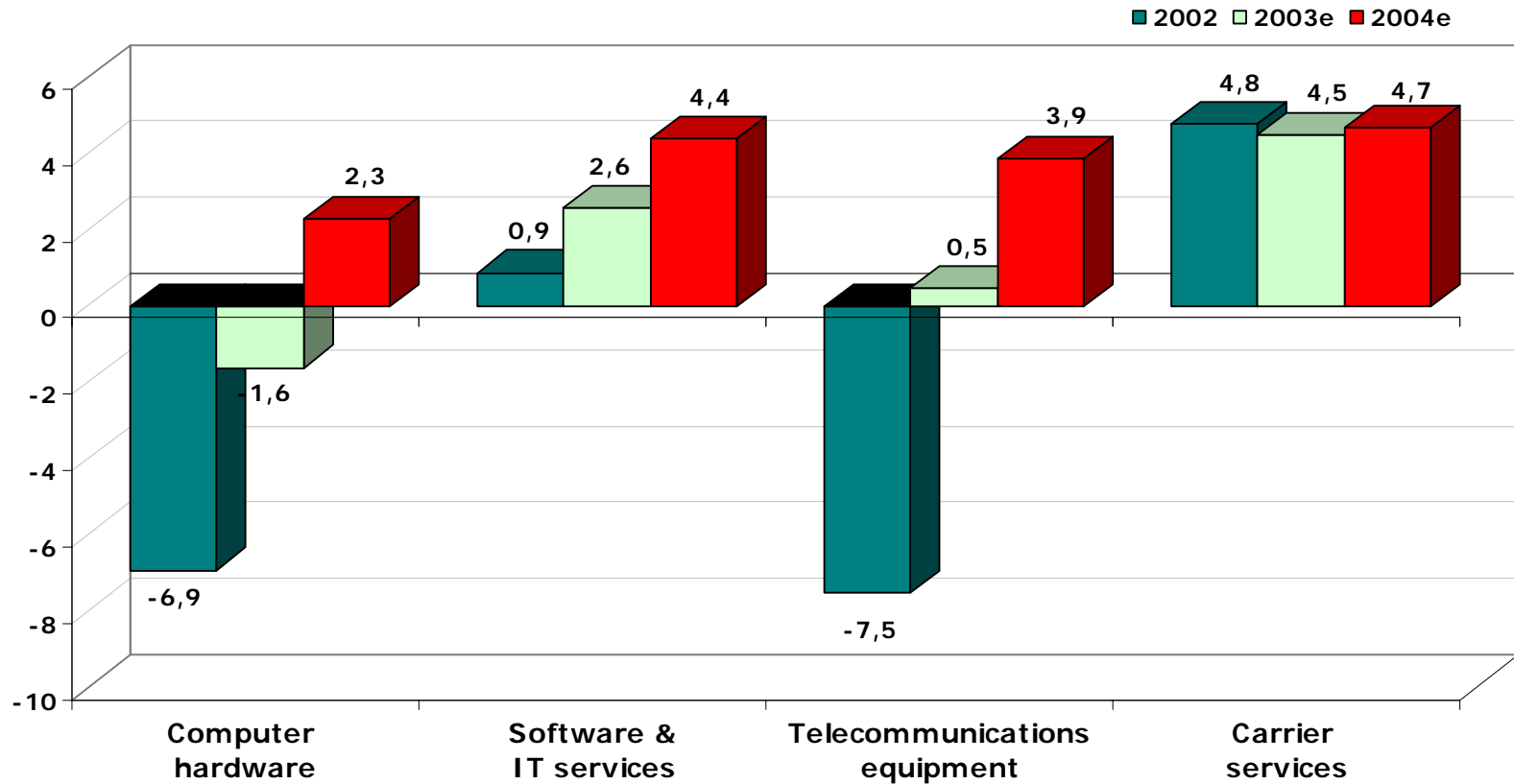
Market value 2003: 607 billion Euro

■ Telecommunications  
■ IT

Source: EITO (2003)

# The Markets for ICT in Europe and around the World

## Western Europe ICT market growth by segment 2002- 2004, in %

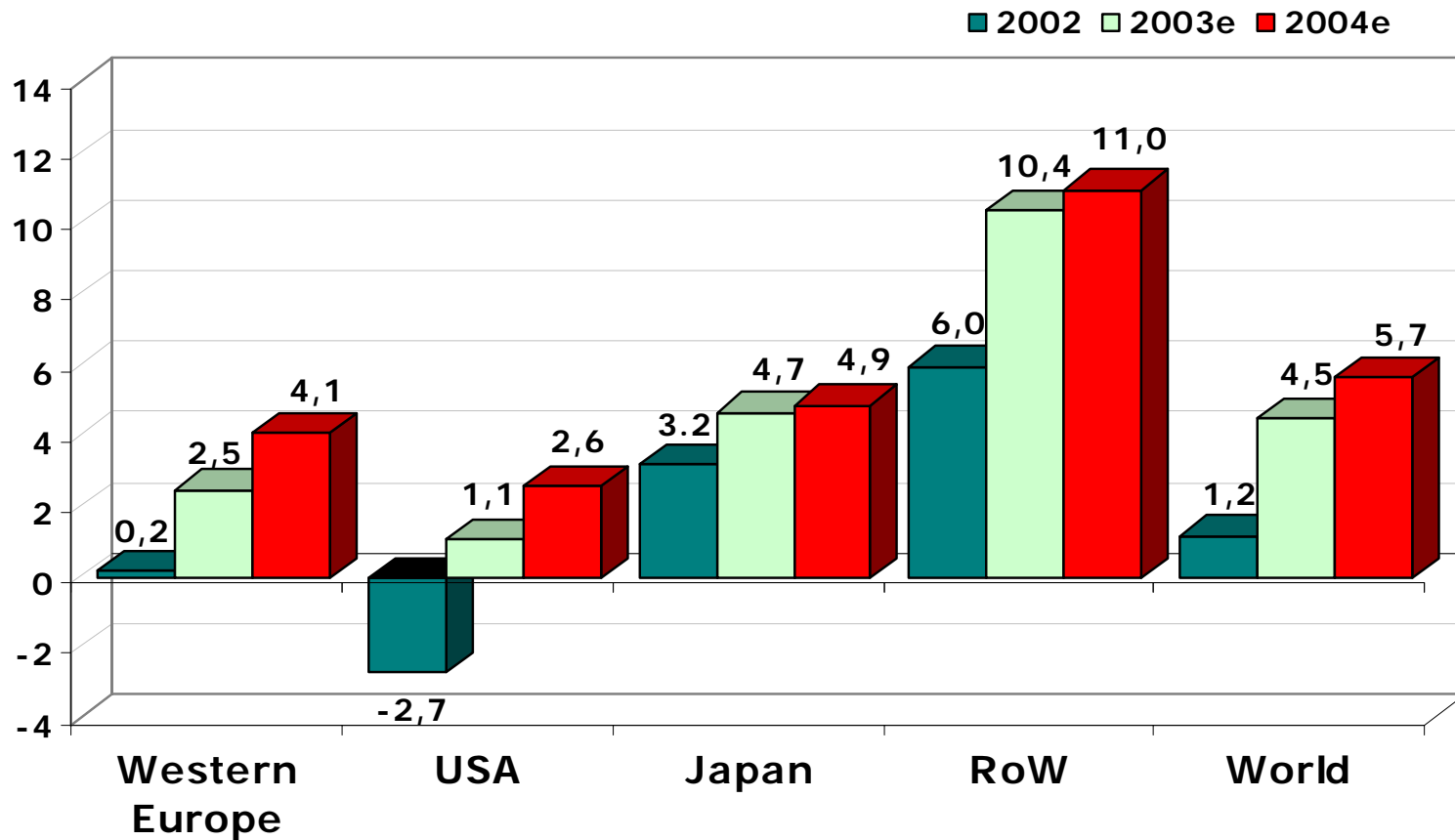


Market value 2003: 607 billion Euro

Source: EITO in corporation with IDC (2003)

# The Markets for ICT in Europe and around the World

## Worldwide ICT market growth by region 2002-2004 in %



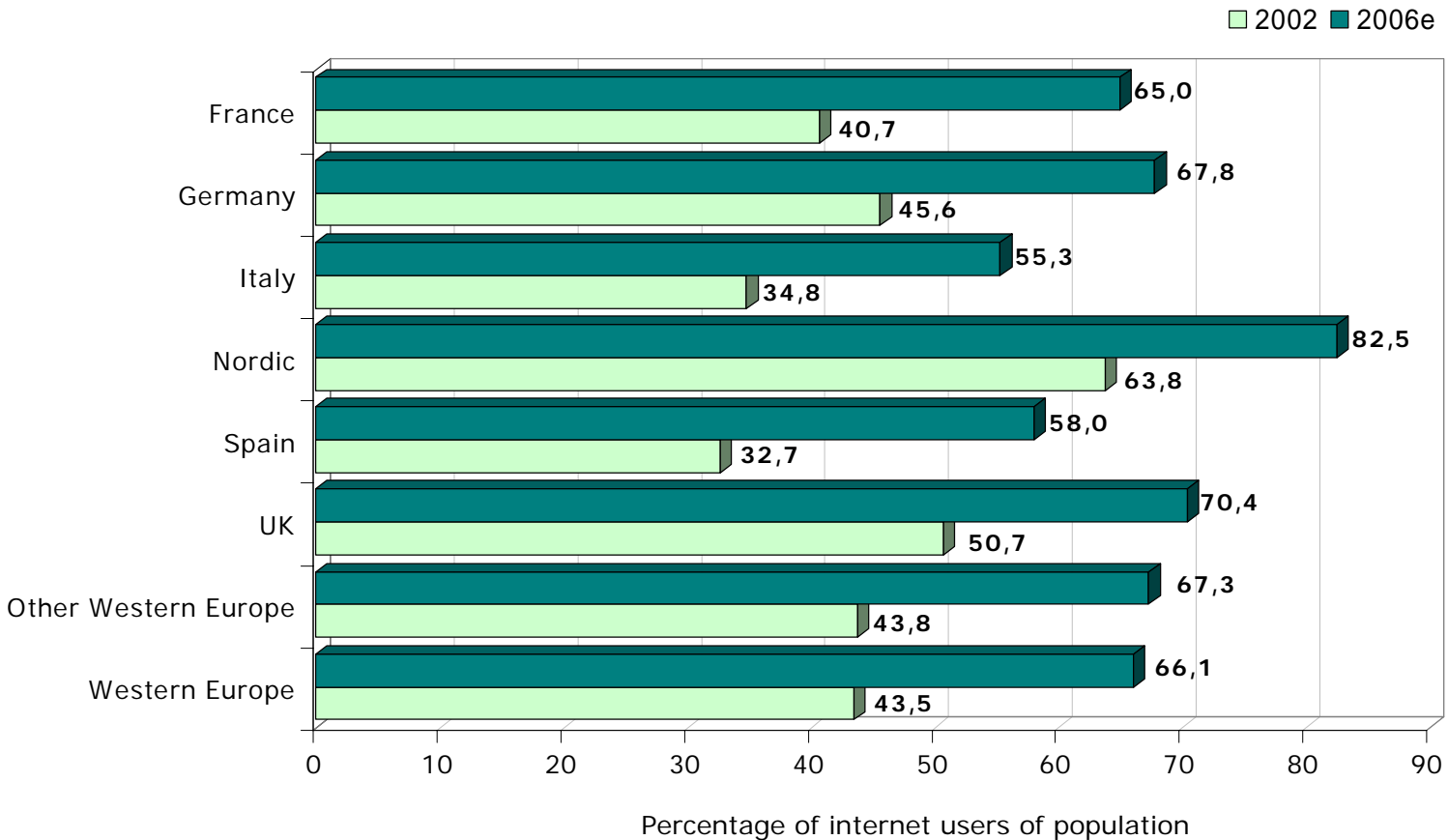
Market value 2003: 2,250 billion Euro

Source: EITO in corporation with IDC (2003)



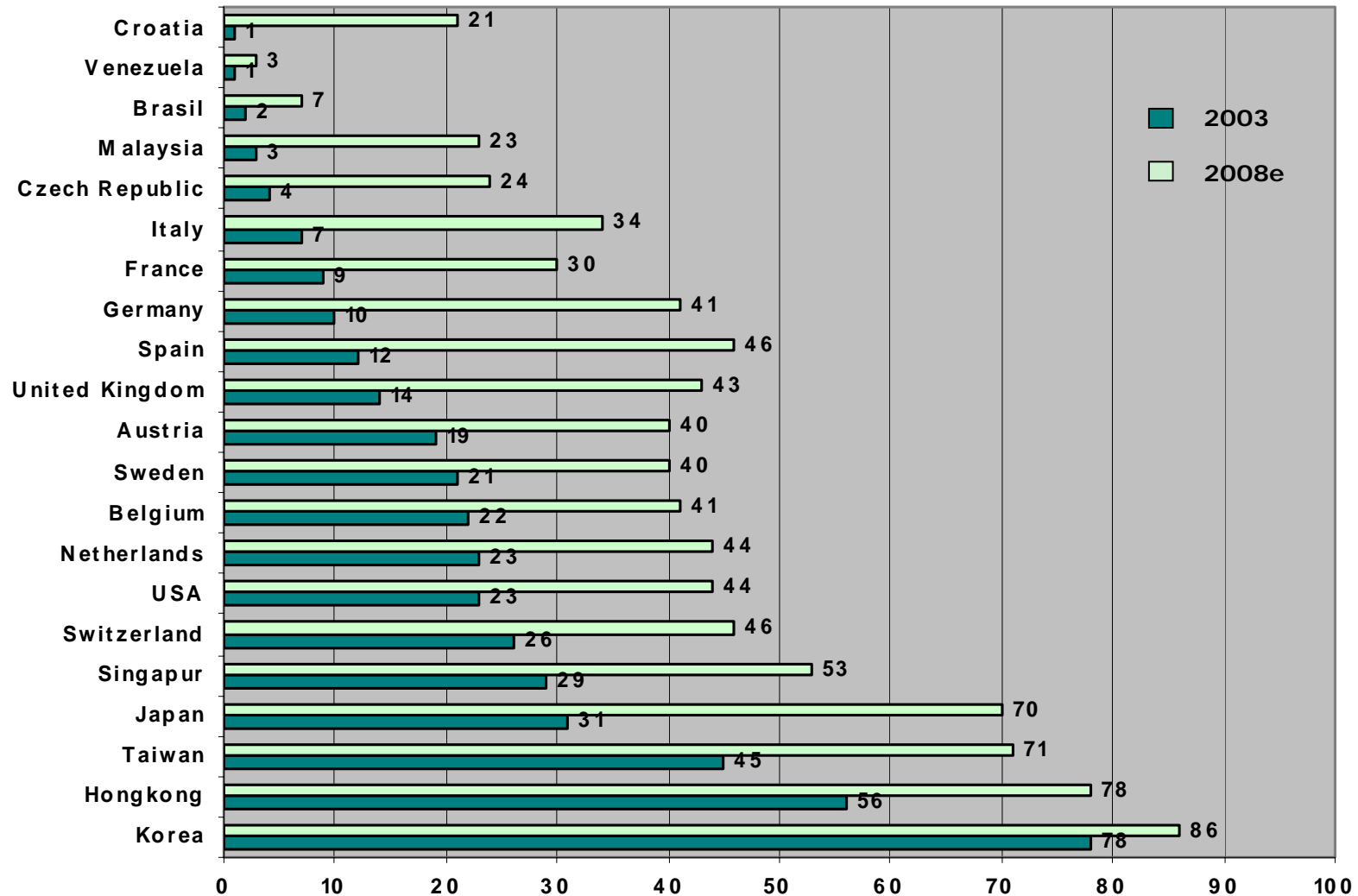
# Developments and directions in telecommunication markets

## Internet users as a percentage of population 2002 and 2006(e)



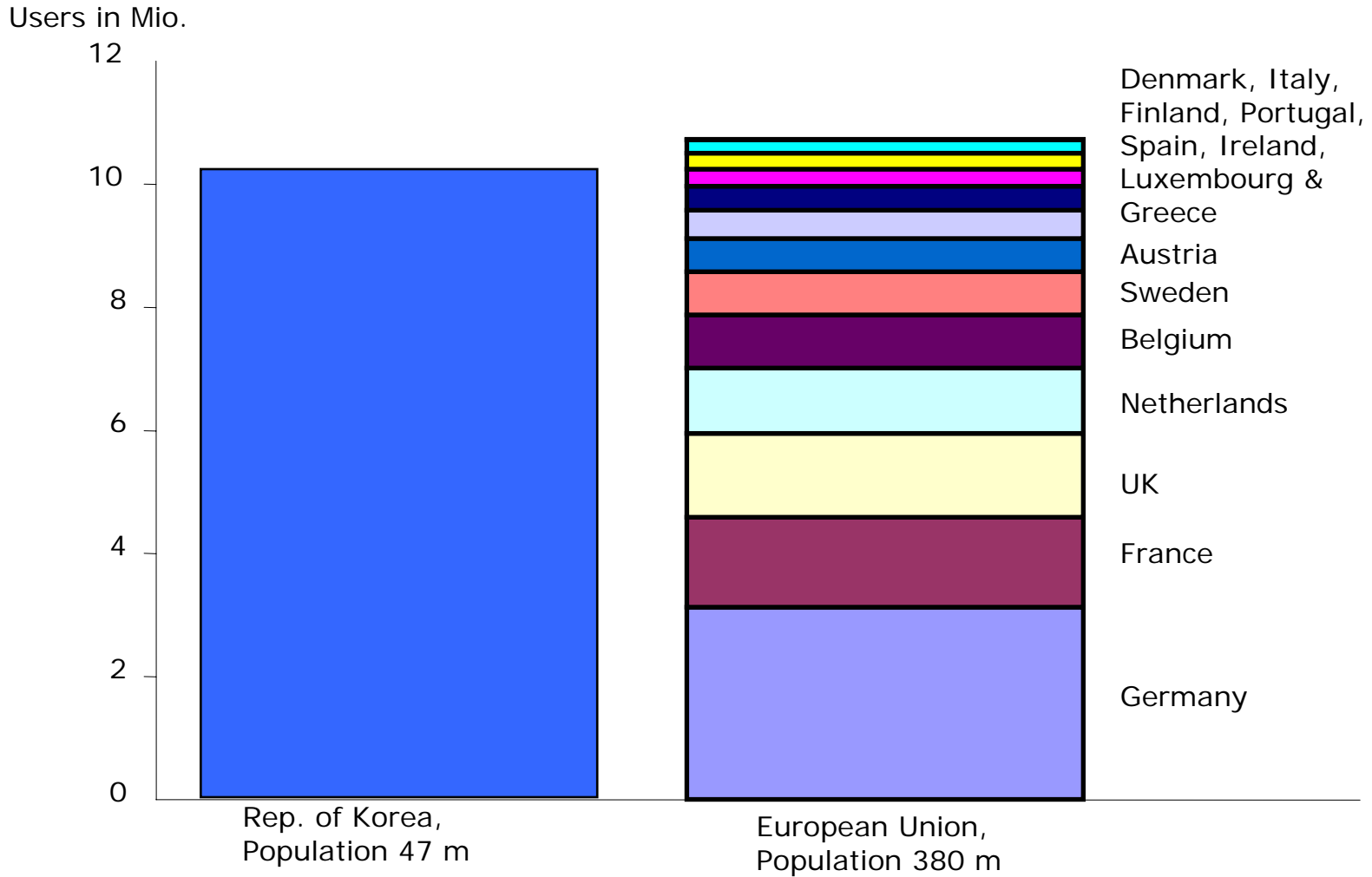
Source: EITO in corporation with IDC (2003)

# Distribution of broadband internet access in % of private households (2003; 2008e)



Source: Arthur D. Little (2003)

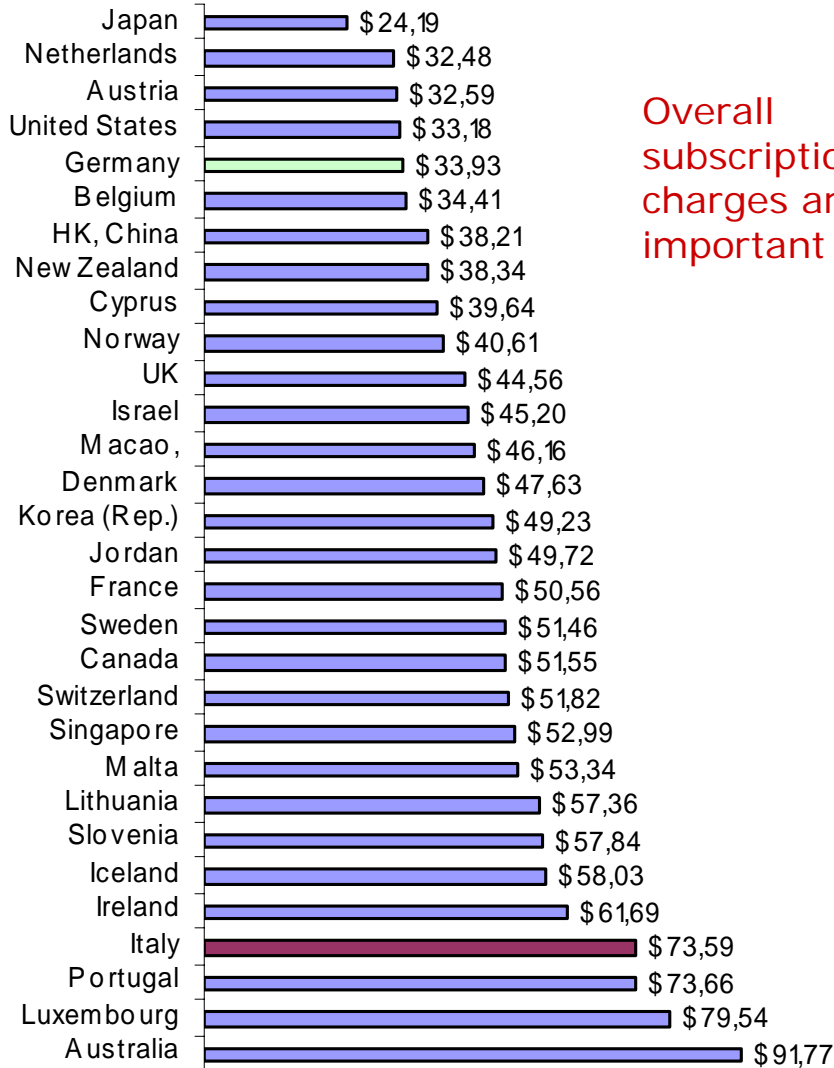
# Broadband subscribers (end 2002)



Source: ITU World Telecom Indicators Database (2003)

# Broadband Prices

Broadband subscription charges, July 2003 Us \$



Overall subscription charges are important

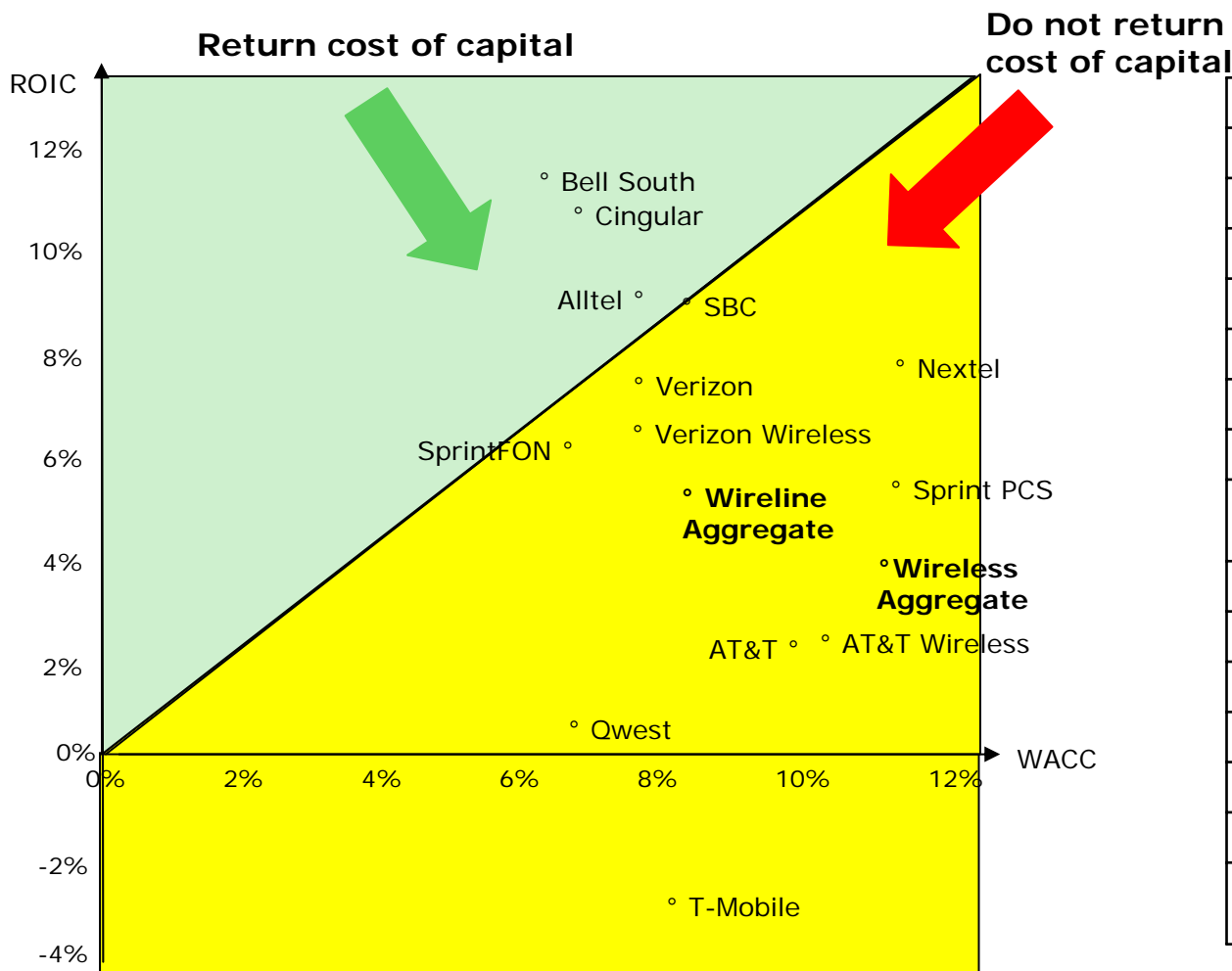
Cost of 100 kbit/s as % of monthly income



But factoring in the speed of the connection and income is the more telling story

# The telecommunication industry is confronted with difficulties – Many players do not earn their cost of capital

## US Telecommunication Players WACC vs. ROIC (2002)



ROIC: Return on invested capital  
WACC: Weighted average cost of capital

	ROIC	WACC
Verizon	7	7,7
SBC	8,4	8,5
Bell South	10,9	6,5
Qwest	0,8	6,8
Alltel	8,4	7,9
AT&T	2,5	10
SprintFON	6,1	6,6
<b>Wireline Aggregate</b>	<b>5,4</b>	<b>8</b>
Sprint PCS	5,3	11
AT&T Wireless	2,6	10,5
Cingular	10,2	7,5
Verizon Wireless	6,3	7,7
Nextel	7,5	11
T-Mobile	-3,4	8,2
<b>Wireless Aggregate</b>	<b>3,7</b>	<b>10,8</b>

Source: Booz Allen Hamilton (2003)

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# Telecom`s Paradoxon

**Telecom industry is in crisis in the midst of technological progress and strong user demand**

## The telecom industry is confronted with difficulties

- Telecom capital spending is down by two thirds since 2000, threatening future innovations.
- Some European companies must earn \$10 million a day for debt service.
- Telecom firms face costlier access to financial markets, as investors adjust their perception of risk.
- Cellular is reaching saturation, while 3G lags behind projections that led to extravagant auction bids in Europe
- Equipment firms face bankruptcy unless investment picks up
- R&D and innovation are slowing down, with long-term implications
- Investment slowdown and cost cutting is leading to decline in service quality



**How can the telecom industry cope with the new situation?**



# How can the telecom industry cope with the new situation?

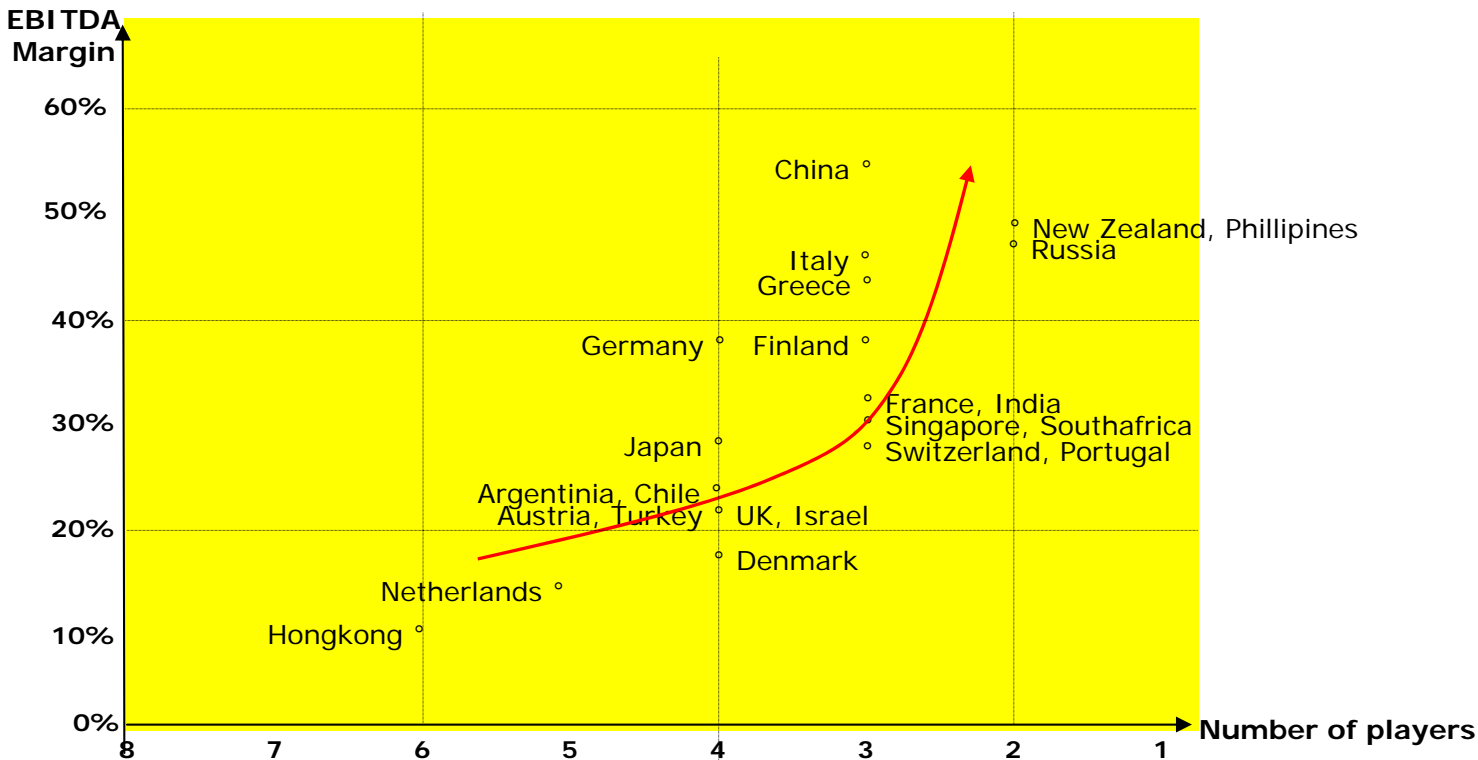
- **New sources of revenues**
- **The impact of economies of scale is significant. At least on the network level, oligopolies seem to be more successful in fixed and in wireless.**
- **Review of strategic positioning**
- **Network outsourcing opportunities have to be considered**

## New Sources of Revenues

- **In 2002 German subscribers sent 21 billion shortmessages via SMS and recently also via MMS**
- **Short message services share nearly 14 % or more than 2,5 billion euro of providers' sales revenues (in comparison to 12,4% in 2001)**
- **As shown the number of broadband accesses is rising rapidly**
- **The traffic in mobile communication is still rising (voice and data)**
- **New services will offer new business opportunities; experimental approach needed**

# The industry structure comprises too many players

**Exemple wireless telecommunication:** link between number of competitors and EBITDA Margin – also true for other telecom areas with high network and scale effects

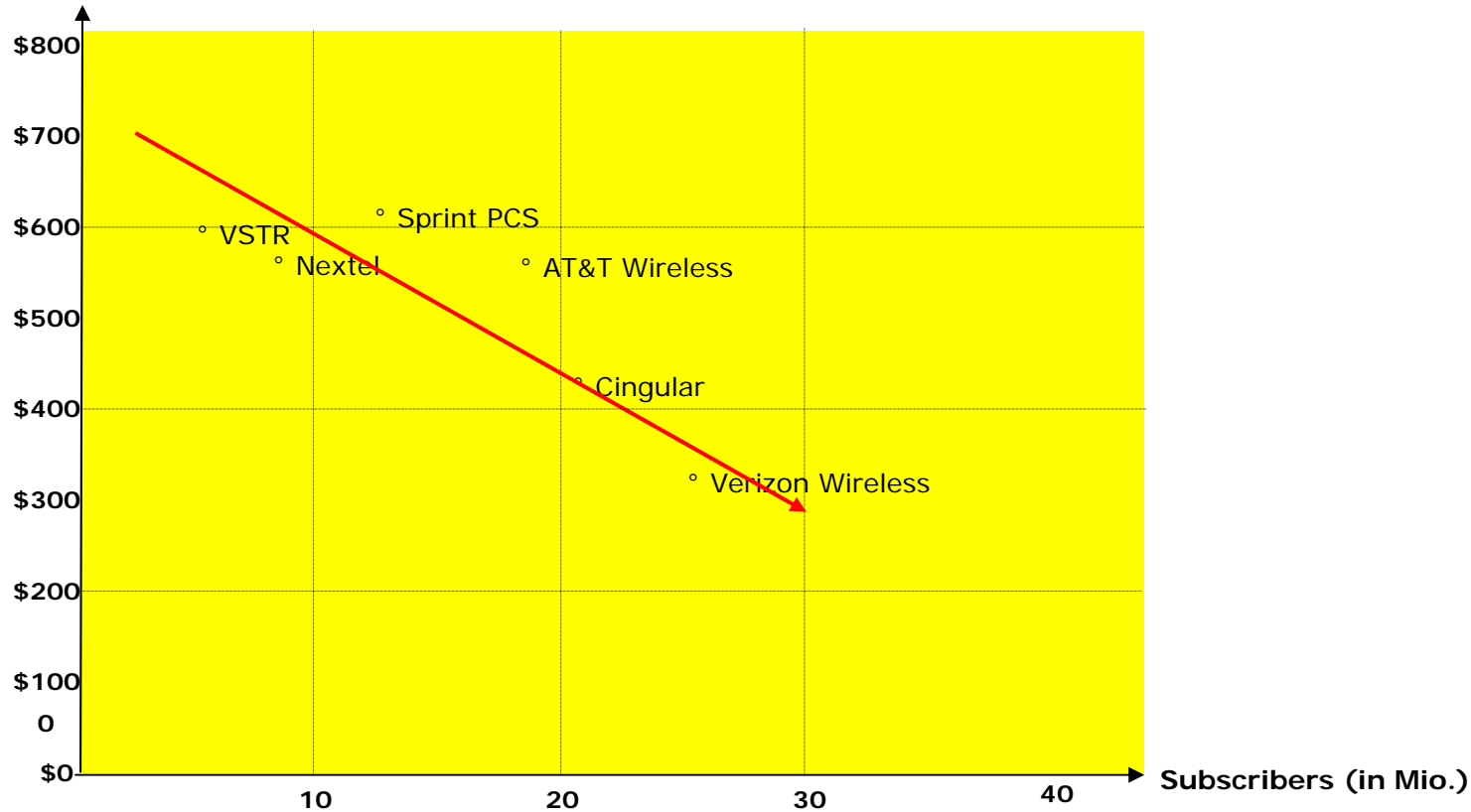


Source: Booz Allen Hamilton (2003)

# Economies of Scale in the wireless industry

Cost per Sub vs. Subscribers (National Operators USA)

Annualized  
Op. Cost  
Per Sub



Source: Booz Allen Hamilton (2003)

# Different strategic positionings are possible

- **„bit-pipe“**  
concentrate on traditional key competences thereby becoming utility providers who offer transmission capacities as a kind of physical infrastructural layer for manifold specialized suppliers of intermediate and endcustomer services in telecommunications
- **„comprehensive service provider“**  
evolve into vertically integrated value added generator with broad service portfolio, direct contact to the endcustomer and control over the entire value chain
- **„platform provider“**  
concentrate on design and operation of technologically advanced network, IT and service infrastructure as basis for third party service provisioning

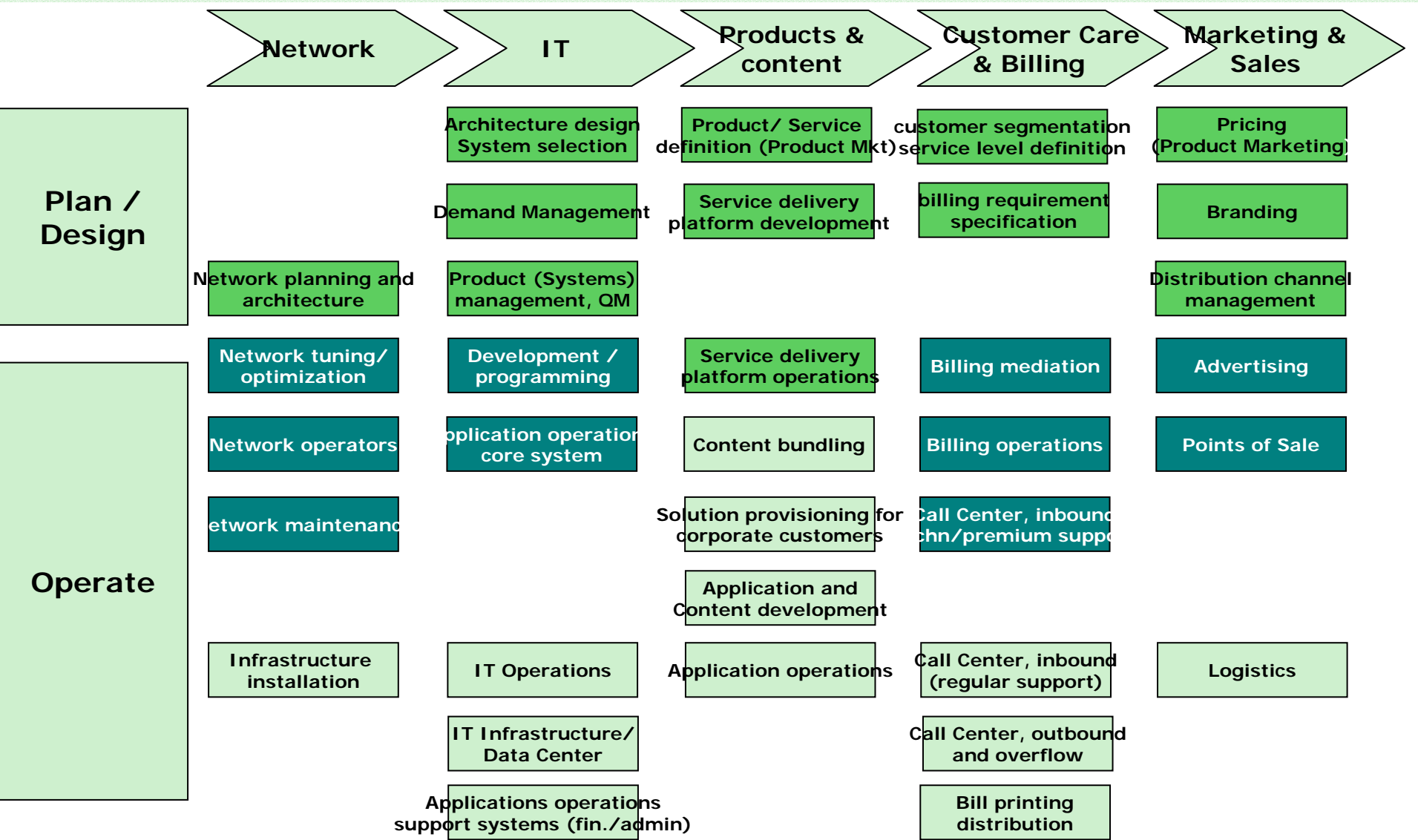
# Currently, each strategic option evokes open questions

- **bit-pipe**
  - profitability?
  - revenue sharing?
  - monopoly and regulation?
- **comprehensive service provider**
  - too large a portfolio of necessary horizontal and vertical competences to be manageable?
  - efficiency problems due to lacking scale and synergy advantages?
- **platform provider**
  - sustainable competitive advantage possible?
  - revenue sharing?
  - access regulation?

*Outsourcing considered in some cases/  
in mid term future*

*Kept in house*

# Network Outsourcing Opportunities



*Generally outsourced or under construction already or delivered in part*

Source: Eikelmann (2002)

24/11/2003

**In the end the markets will  
decide what strategy  
will prevail**



**Thank you for your attention**