The German Telecommunications Market in 2000/01

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Major Trends in Telecommunications in the Year 2000

- Dynamic growth is continuing
- The competitive environment is flourishing
- The local loop bottleneck has not yet been eliminated

1. Dynamic Growth is continuing

Dynamic growth in the telecoms markets is continuing unabated. Innovative products and services are driving up customer levels and volumes.

Call Minutes 1997-2000

Annual Growth Rates in Fixed Network Traffic

Customer Access to Alternative Operators
2. The Competitive Environment is flourishing

The work of the Regulatory Authority to spur competition and open the markets is now bearing fruit. Lower prices, more jobs and the promotion of technical innovation are benefiting the economy as a whole.
Regional Breakdown of Telecommunications Service Providers

Fixed Telecommunications Services

Licences Class 3

Licences Class 4

Development of ISDN-Channels - International Comparison -

3. The Local Loop Bottleneck has not yet been eliminated

Regrettably, however, the real bottleneck is the local loop, where competition is still largely undeveloped. This area will therefore require the Regulatory Authority’s special attention in the months ahead.
Number of Alternative Carriers in Cities with more than 50,000 Inhabitants

- Berlin: 4 (1)
- Hamburg: 3 (7)
- Bremen: 2 (12)
- Freiburg i.B.: 1 (76)
- Munich: (Number of Locations)
- Stuttgart: (Number of Locations)
- Nuremberg: (Number of Locations)
- Hanover: (Number of Locations)
- Saarbrücken: (Number of Locations)
- Cologne: (Number of Locations)
- Frankfurt: (Number of Locations)

As at October 2000

Number of Carriers (Number of Locations)

BT’s Market Shares of Telephone Lines in the UK

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Latest Reg TP-Decisions to foster LL Competition

- Unbundled Local Loop Prices lowered
- Basic Conditions of Line-Sharing pronounced
- Resale in the Local Loop allowed

UMTS is on its Way

After the UMTS auction has ended, the winning companies aim is to built up their networks and to develop value added services as fast as possible.

The UMTS – ‘Prediction’

"For many people all over the world, mobile phones may be their first point of access to the Internet. The mobile has the potential to emerge as the largest ever engine for Internet subscribers."

Andersen Consulting, eEurope 2000

Evolution (): Changes in the Relation of Voice and Data

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Growth of IP Traffic

- Voice
- Data

Collaboration

Commerce

Multimedia

Video / Images

Subscription Services

Email

Information Access

Time
Evolution (II): Mobile Communications in Germany

- 2 G
- 2 G +
- 2 G ++
- 3 G

- GSM
- GPRS
- EDGE
- UMTS

1991 → 2000 → 2002

Evolution (III): The „Mobile“ Value Chain Changes

GSM

<p>| Access - | Transport - | Service - | Sales and |</p>
<table>
<thead>
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<th>Network</th>
<th>Network</th>
<th>Providing</th>
<th>Distribution</th>
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<td>70 %</td>
<td>30 %</td>
<td>„Technical“</td>
<td>„Business“</td>
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<td>„Technical“ Area</td>
<td>„Business“ Area</td>
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UMTS

<p>| Access - | Transport - | Service - | Sales and |</p>
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<th>Network</th>
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<th>Providing</th>
<th>Distribution</th>
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<tr>
<td>40 %</td>
<td>60 %</td>
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M-Business Areas

- Mobile Entertainment
- Mobile Commerce
- Mobile Information
- Mobile Communication
- Mobile Support
- Mobile Employee Services

- Games
- Music
- Video
- Lotteries
- Banking
- Shopping
- Auctions
- Ticketing
- Common
- Sports
- Travels
- Finance
- E-Mail
- Voice
- Chat
- Telemetry
- Medicine
- Passport
- Member Services
- Loyalty Programmes

Business to Consumer ↔ Business to Business

Future Player in Mobile Communications

- Incumbent Mobile Operators
- Service Provider
- New Player
- New Mobile Operators
- Internet Provider
- Content Provider