Internet Economics 6

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Agenda

- Basics of Internet Economics and Trends
- „Warm up“ and Introduction into Selected Topics
- Organization of the Seminar
- Topics
Questions and Answers – Internet Economics

- What is the “Internet”?
  - It’s a net of networks.

- Didn’t we think that the Internet is free?
  - Well, sure, we have a bridge to the future to be sold!

- What should then be accounted for?
  - It depends on who is counting.

- Who should pay the costs involved?
  - What are you willing to pay? What will your customers be willing to pay? What will somebody else be willing to pay?

Internet Economics – Areas and Central Question

- Electronic Commerce ...
- Internet Commerce ...
- eCommerce ...
- eBusiness ...
- Internet Economics ...
- Net Economics ...
- Netnomics ...
- Webonomics ...

How to make money on the Net, the Internet?
### Trends and Observations

- **Funding structure:**
  - Away from governmental funding to different structures.

- **Multimedia applications:**
  - From absence to broad demands.

- **Minimal service class model and shortage of QoS:**
  - From best-effort to guaranteed services.

- **Bandwidth overhead and protocol efficiency:**
  - User data with minimal overhead and control information per packet.

- **Lack of efficient electronic micro-payment systems:**
  - Introduction of security methods.

### Inventions in Telecommunications

<table>
<thead>
<tr>
<th>Year</th>
<th>Bandwidth (bit/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850</td>
<td>1800 voice channels over cable and microwave</td>
</tr>
<tr>
<td>1860</td>
<td>1800 voice channels over cable and microwave</td>
</tr>
<tr>
<td>1870</td>
<td>560 voice channels over cable (T3) and microwave</td>
</tr>
<tr>
<td>1880</td>
<td>60 voice channels over coaxial cable</td>
</tr>
<tr>
<td>1890</td>
<td>60 voice channels over coaxial cable</td>
</tr>
<tr>
<td>1900</td>
<td>600 voice channels over cable</td>
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<tr>
<td>1910</td>
<td>600 voice channels over cable</td>
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<tr>
<td>1920</td>
<td>600 voice channels over cable</td>
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<tr>
<td>1930</td>
<td>600 voice channels over cable</td>
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<tr>
<td>1940</td>
<td>600 voice channels over cable</td>
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<td>1950</td>
<td>600 voice channels over cable</td>
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<td>1960</td>
<td>600 voice channels over cable</td>
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<tr>
<td>1970</td>
<td>600 voice channels over cable</td>
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<td>1980</td>
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<td>1990</td>
<td>600 voice channels over cable</td>
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<tr>
<td>2000</td>
<td>600 voice channels over cable</td>
</tr>
<tr>
<td>2001</td>
<td>600 voice channels over cable</td>
</tr>
</tbody>
</table>

- Oscillating needle telegraph experiments
- Baudot multiplex telegraph (6 machines on one line)
- Printing telegraph systems
- First carrier telephony
- 12 voice channels on wire
- Carrier telephony carries 12 voice channels on wire
- 32000 voice channels over cable
- 188000 voice channels over cable
- Multimode optical fiber 140 Mbit/s
- Multimode optical fiber 565 Mbit/s
- Multimode optical fiber 45 Mbit/s
- Multimode optical fiber 140 Mbit/s
- Multimode optical fiber 3.2 Tbit/s
- DWDM optical fiber 3.2 Tbit/s
- Monomode optical fiber 16 Gbit/s
- Monomode optical fiber 565 Mbit/s
Use of Protocols

Source: Gartner Group

IP is the only protocol that matters anymore!

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Fixed Voice Revenue for Western Europe

Cellular Subscribers per Region (June 2002)

[Source: Analysys]
Mobile Statistics Snapshot (September 2002)

- Total Global Mobile Users 869m
- Total Analogue Users 71m
- Total US Mobile users 145m
- Total Global GSM users 680m
- Total Global CDMA Users 127m
- Total TDMA users 84m
- Total European users 283m
- Total African users 18.5m
- Total 3G users 130m
- Total South African users 13.2m
- European Prepaid Penetration 63%
- European Mobile Penetration 70.2%
- Global Phone Shipments 2001 393m
- Global Phone Sales 2Q02 96.7m
- #1 Mobile Country China (139m)
- #1 GSM Country China (99m)
- #1 SMS Country Philippines
- #1 Handset Vendor 2Q02 Nokia (37.2%)
- #1 Network In Africa Vodacom (6.6m)
- #1 Network In Asia Unicom
- #1 Network In Japan DoCoMo
- #1 Network In Europe T-Mobil (22.3m)
- #1 In Infrastructure Ericsson
- Global monthly SMSs/user 36
- SMS Sent Globally 1Q02 60 billion
- SMS sent in UK 6/02 1.3 billion
- SMS Sent 2001 102.9 billion
- GSM Countries on Air 171
- Total Cost of 3G Licenses in Europe 110bn Euros

Evolution M-Commerce, 2002 – 2010, Europe

Usage (Penetration Rate)
Percent of Population

- 2G (GSM)
  - 2002: 58
  - 2004: 51
  - 2006: 35
  - 2008: 16
  - 2010: 3

- 3G (UMTS)
  - 2002: 7
  - 2004: 19
  - 2006: 38
  - 2008: 60
  - 2010: 75

UMTS Market Growth
in EUR billion

- 2002: 150
- 2004: 25
- 2006: 125
- 2008: 125
- 2010: 150

M-Commerce/ M-Services

- 2002: 65
- 2004: 70
- 2006: 73
- 2008: 76
- 2010: 78

Voice

M-Commerce-Turnover equals GDP of Denmark

Quelle: CSFB, JP Morgan
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Organization

- Target:
  - Self-performed reading and investigation.
- Process:
  - Contact supervisor by email!
  - Read.
  - Search, think, and classify.
  - Write: min 14 max 20 pages.
  - Identification of open issues and hand-in of pre-version
  - Integration of changes and corrections.
  - Preparation of talk: 45 minutes.
  - Preparation and moderation of discussion (statements).
  - Reply to questions and problems.
Basics of the IntEco Seminar

- **Introduction**: Thursday, April 3, 2002
  - ETZ H91, 13.15 – 14.30 hours.
- **Seminar**: Thursdays
  - ETZ H91, 13.15 – 15.00 hours.
- **Electronic Information**:
  - News and updates.

Every participant needs to contact the supervisor within two weeks from now on by e-mail directly!

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Topics

- Investigation of three areas of Internet Economics, relevant for the commercialization of the Internet:
  - Content:
    - P2P and content delivery networks
    - Internet TV/Radio
  - Economic support and incentives:
    - Pre-paid schemes and content-based charging
    - E-CRM
  - Technical means and mechanisms:
    - Reputation and trust
    - Distributed program communication
    - Service fusion

Overview of Topics and Dates (1)

Talk 1: Peer-to-peer Filesharing
Supervisor: Jan Mischke; May 15, 2003: Samuel Lüthi

Talk 2: Content Delivery Networks
Supervisor: David Hausheer, April 24, 2003: KEINER

Talk 3: Reputation and Trust in Distributed Systems
Supervisor: Jan Mischke; May 8, 2003: Karl Presser

Talk 4: Distributed Program Communication
Supervisor: Jan Gerke; April 17: KEINER

Talk 5: Internet TV and Radio - Concepts/Technology for Streaming
Supervisor: David Hausheer; May 22, 2003: KEINER
Overview of Topics and Dates (2)

Talk 6: **Pre-paid in Mobile Networks - Today and Tomorrow**
Supervisor: Pascal Kurtansky; June 5, 2003: Michelle Waeber

Talk 7: **Operating Systems for Mobile Devices**
Supervisor: Pascal Kurtansky; June 12, 2003: Silvio Böhler

Talk 8: **Service Fusion**
Supervisor: Jan Gerke; June 19, 2003: Marc Schiely

Talk 9: **Electronic Customer Relationship Management**
Supervisor: Hasan; June 26, 2003: Daniel Schmid

Talk 10: **Content Charging - Standards and Solutions**
Supervisor: Peter Reichl, Pascal Kurtansky, David Hausheer; July 3, 2003: KEINER

Summary


- In case of questions by e-mail to the respective supervisor:
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