Mobile Media
When is the breakthrough?

Munich, 7 November 2007

solon
What is Mobile Media?

Reasons for using Mobile Media

"Save Time"
- Use content and services anywhere, anytime
- Act quickly without inconvenient usage of the computer
- Added value of location-based information

"Kill Time"
- Passing time of travel and waiting times with good entertainment
- TV, video, music, mobile games

Eight Mobile Media Market Segments

- Personalization
- Mobile Gaming
- Infotainment Portals
- Mobile Music
- Location-based Services (LBS)
- Mobile Video
- Mobile Payment
- Mobile TV

Source: Solon
The Mobile Media market will double by 2010 to €1.5 billion

Revenue structure, mobile market 2006

100% = €23.2 bn

15% Messaging

6% Data

3% Mobile Media

76% Voice

Market prognosis of Mobile Media by segment in m€

<table>
<thead>
<tr>
<th>Year</th>
<th>Mobile Payment</th>
<th>LBS</th>
<th>Mobile TV</th>
<th>Mobile Video</th>
<th>Mobile Music</th>
<th>Mobile Gaming</th>
<th>Infotainment Portal</th>
<th>Personalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>760</td>
<td>33</td>
<td>56</td>
<td>496</td>
<td>43</td>
<td>163</td>
<td>204</td>
<td>44</td>
</tr>
<tr>
<td>2007</td>
<td>874</td>
<td>163</td>
<td>103</td>
<td>502</td>
<td>44</td>
<td>204</td>
<td>244</td>
<td>44</td>
</tr>
<tr>
<td>2008</td>
<td>1,005</td>
<td>163</td>
<td>103</td>
<td>495</td>
<td>52</td>
<td>244</td>
<td>285</td>
<td>52</td>
</tr>
<tr>
<td>2009</td>
<td>1,191</td>
<td>102</td>
<td>137</td>
<td>428</td>
<td>78</td>
<td>285</td>
<td>326</td>
<td>135</td>
</tr>
<tr>
<td>2010</td>
<td>1,498</td>
<td>93</td>
<td>166</td>
<td>386</td>
<td>46</td>
<td>103</td>
<td>33</td>
<td>103</td>
</tr>
</tbody>
</table>

Share of Mobile Media 3.3% 3.7% 4.1% 4.6% 5.5%

Source: Solon Mobile Media Marktmodell November 2007
From the user’s point of view, Mobile Media is in no way limited to mobile telephones and networks.

### Devices with typical strengths

<table>
<thead>
<tr>
<th>Mobile phones</th>
<th>Mobile consoles</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Mobile phone" /></td>
<td><img src="image2.jpg" alt="Mobile console" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notebooks</th>
<th>MP3 players</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.jpg" alt="Notebook" /></td>
<td><img src="image4.jpg" alt="MP3 player" /></td>
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</tbody>
</table>

### Networks with typical performance characteristics

<table>
<thead>
<tr>
<th>Mobile networks</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image5.jpg" alt="UMTS" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>W-LAN Hotspots and home networks</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image6.jpg" alt="Wi-Fi" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sideload over PC</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7.jpg" alt="USB" /></td>
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</table>

<table>
<thead>
<tr>
<th>Broadcast networks</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image8.jpg" alt="DVB" /></td>
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</tbody>
</table>

Source: Solon
The distribution of roles in the Mobile Media business over mobile telephones is in motion

So far: mobile communications providers as gatekeepers for Mobile Media, focus on paid content models

Source: Solon
The distribution of roles in the Mobile Media business over mobile telephones is in motion.

In the future: Content providers with direct access to customers, focus on content ad financing.
MNOs place mobile internet applications more strongly in the foreground

Focus on Mobile Media at 3

- £ 38 / month (€ 55)
  incl. 750 minute to all networks and data flat rate

New role for mobile communications providers

- Mobile Internet Service Provider
  - Affordable broadband data connection
  - Availability of own devices

- Mobile Payment Provider
  - Billing of own and others’ pay services

- One Content Provider (aside from many others), advantages:
  - Integration of services and subsidized devices
  - Development on top of existing customer relations for paid content

But: Offers must withstand competition in mobile webspace

Source: Company information, Solon
The first data flat rate is now available in Germany, but data transmission is still much too expensive for the mass market.

<table>
<thead>
<tr>
<th>Best data offer</th>
<th>Add’l. fee per month</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>True data flat rate</td>
<td>€ 25.00</td>
<td>e-plus with affordable flat rate tariff, but weak UMTS coverage</td>
</tr>
<tr>
<td>WebConnect Fair Flat</td>
<td>€ 49.95</td>
<td>Voice over IP usage is still excluded by all providers</td>
</tr>
<tr>
<td>Limited to 5 GB</td>
<td></td>
<td>Data usage still dominated by somewhat price-sensitive business segment (data cards)</td>
</tr>
<tr>
<td>(starting from 3rd month)</td>
<td></td>
<td>Concern of remaining revenue compensation with significant price reductions for data transmission</td>
</tr>
<tr>
<td>Data tariff L</td>
<td>€ 25.00</td>
<td></td>
</tr>
<tr>
<td>Limited to 5 GB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web’n’walk Large</td>
<td>€ 59.00</td>
<td></td>
</tr>
<tr>
<td>Limited to 5 GB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incl. 200 h W-LAN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Company information
More than calling: the new generation of mobile telephones is optimized for Mobile Media usage

Features for Mobile Media usage

- Large displays with resolution of up to 430 x 320 pixels and widescreen option (3.5” touch-screen display with Apple iPhone)
- Performance-ready data access: WiFi, UMTS with HSDPA or EDGE, GPRS, Bluetooth and USB for sideloading
- Optimized web browser
- Integrated music and video player
- High save capacity (up to 8 GB with Apple iPhone)
- High res. cameras (5 megapixel camera with Nokia N95 and Sony Ericsson K850i)

Source: Solon
Makers of devices enter into competition with mobile communications providers with paid mobile content

Apple iPhone with iTunes
- Music, Podcast and video downloads over iTunes

Nokia ovi Platform
- Nokia Music Store
- Relaunch Nokia NGage
- Nokia Maps
- Reaction to the connection between Apple’s iPhone and iTunes

Advantages
- Optimal integration of hardware, software and content offer
- Integration of WiFi as broadband and cheap mobile data connection
Aside from the established paid content model for Mobile Media offers, the business model of ad-financed contents will also be around

### Mobile Display Advertising

- Measurability of ad performance of mobile portals
- Attention strength of formats (incl. Rich Media)
- Critical mass of inventory

### Mobile Search Marketing

#### Mobile Internet SEM

- Acceptance through usage and entertainment value

#### Location-based SEM

- Development of customer base with mobile marketing permission

### Mobile Direct Marketing

- SMS / MMS Push Campaigns

Source: Solon
Moving image will play a central role in the Mobile Media usage – Three applications are in competition for attention

**Video Clips in the Mobile Web**
- Integration of video clips in mobile portals
- User-generated content and editorial contents
- Ad financing

**Videostreaming**
- Streaming of video content
  - as linear TV broadcaster
  - as Video on Demand
- Paid content model

**Mobile TV**
- Mobile Broadcasting over DVB-H
- Starting 2008 (license grant imminent, DMB since 2006)
- Paid content model

Source: Solon
Sling: The guerilla approach to Mobile TV

**Sling Box**
- Hardware for private streaming of TV and video content over the internet
- Access to the entire home media offer when out and about (laptop or mobile telephone)

**Sling Mobile Player**
- Client for Symbian and Windows Mobile Smartphones
- Mobile TV without content costs with access to Free and Pay TV at home
- Because of buy price (£ 99 + £ 19.99 for Mobile Player Software) and installation, still not a mass product
- In Germany, not yet on the market

Source: Company information, Solon
For the breakthrough of Mobile Media on the mass market, there are definite things to be done

<table>
<thead>
<tr>
<th>Mobile Content Provider</th>
<th>Mobile Comm. Providers</th>
<th>Makers of Devices</th>
</tr>
</thead>
</table>
| ▪ Integrate stationary and mobile internet services | ▪ Become mobile internet service provider  
  ▪ Provide bandwidth and coverage  
  ▪ Penetrate attractive data tariffs (flat rate!)  
  ▪ Distribute devices optimized for Mobile Media  
  ▪ Use customer relationship for transmission of paid content and paid service offers  
  ▪ Exist with own Mobile Media offers in open competition | ▪ Improve Mobile Media Usability  
  ▪ Software Integration (Internet Browser and operating system)  
  ▪ Displays (Resolution, Change to widescreen)  
  ▪ Navigation interface (e.g. touch-screen)  
  ▪ Processor and memory  
  ▪ Battery performance  
  ▪ Integrate data networks (UMTS/HSDPA, EDGE, Wi-Fi, Bluetooth, DVB-H) |
| ▪ Optimize websites for mobile usage  
  ▪ Formatting  
  ▪ Navigation  
  ▪ Content and services | | |
| ▪ Create add’l. usage through location-based services | | |
| ▪ Implement ad-financed model | | |
| ▪ Continue with paid content, where worth it | | |
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