Game analysis:
Cellular vs. WLAN

05.11.2003
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Helsinki University of Technology
S-38.042 :: Seminar on networking business
Structure of this presentation

- Background: Why mobile data?
- Mobile Data: Enabling bearer technologies
- Cellular vs. WLAN dilemma
  - Disruptive vs. complementary
- Operator strategies
  - Compete, co-habit, combine
  - Pricing schemes
- MOB Game analysis
  - Improvement proposals
- Summary & Conclusions
Background: *why mobile data?*

- Mobile Voice ARPU decreasing in developed countries
- Mobile Operators seeking to introduce new services to maintain growth
- Industry forecasts predict data revenues will compensate decreasing voice ARPU and later become an important portion of overall revenue
Enabling bearer technologies

- Cellular voice evolution towards cellular data
- Cellular is synonymous for huge investments
- Other industry players eagerly exploiting significantly lower investments required to roll out public WLAN
  - Low entry barriers; new players: fixed operators, wireless ISPs, service providers, premises owners…
Bearer properties

**Table 1: WLAN vs. cellular properties**

<table>
<thead>
<tr>
<th></th>
<th>WLAN</th>
<th>Cellular</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coverage</strong></td>
<td>Hotspots, primarily indoors</td>
<td>Scalable to nationwide coverage</td>
</tr>
<tr>
<td><strong>Spectrum</strong></td>
<td>Unlicensed (ISM)</td>
<td>Licensed</td>
</tr>
<tr>
<td><strong>User data rates</strong></td>
<td>Up to several Mbps</td>
<td>~20-500 kbps</td>
</tr>
<tr>
<td><strong>QoS</strong></td>
<td>Best effort, load sensitive,</td>
<td>Planned and managed. Guaranteed QoS possible.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
<td>Nomadic. Possibly also session continuity</td>
<td>Full mobility. Seamless service.</td>
</tr>
<tr>
<td></td>
<td>with Mobile IP</td>
<td></td>
</tr>
<tr>
<td><strong>System cost</strong></td>
<td>Low cost. Low entry barriers.</td>
<td>High cost. High entry barriers.</td>
</tr>
<tr>
<td><strong>Pricing schemes</strong></td>
<td>Free / bundled / one off / prepaid</td>
<td>Telco model (prepaid / postpaid, etc...)</td>
</tr>
</tbody>
</table>

- **Coverage + reliability vs. data rates + cost**
Coverage vs. data rates… and the impact on services

• For some services, end-users are accustomed to ubiquitous service availability, continuous rechabinity, and reliability (QoS), which WLAN cannot provide as a standalone technology.
  – Voice, SMS, MMS…
Cellular vs. WLAN dilemma

• Concede WLAN revenue to other entrants vs.

• Risk of canibalization of core business (cellular voice and data)

• MO have synergies to exploit
  – Bundled Cellular + WLAN offering
  – Roaming agreements
  – Introduction of multimode terminals
    • SIM authentication
  – Trusted mobile brands
  – Billing…. 
Disruptive vs. complementary

• Little commercial or strategic sense for MO to invest in public WLAN as a standalone business

• Vision of users always being connected via the best technology for a given service
  – Seamlessly switching between different data bearers when required

• 3GPP Cellular-WLAN interworking
  – 6 IW scenarios with different degrees of integration
Operator Strategies

• **Strategy A: compete (drive vs. follow)**
  – Compete for nomadic customers
    • Roll out own WLAN infra (Telia, Sonera)
    • Compete with cellular (H3G?)

• **Strategy B: co-habit (wait and see...)**
  – Premise: cellular & WLAN target different markets
  – WLAN not lucrative enough to justify investments
  – Roaming agreements/Reselling if WLAN picks up
  – In 2003 several MO migrated away from this strategy

• **Strategy C: combine (exploit)**
  – Alliance forming with WLAN access providers
    • MoU, acquisition of stake, or complete acquisition (T-Mobile USA, Swisscom)
Pricing Schemes

- **Free** (unsustainable)
- **Prepaid** (typically time-based)
- **Subscription**: Flat rate + several block pricing packages
  - Surcharges typically time-based
    - *Sonera argues this better accepted by end-customers*
- **Bundling** with cellular data -
  - Sonera
  - Many others are expected to follow

### Bundled services & Usage charges

<table>
<thead>
<tr>
<th>Service</th>
<th>Usage charges (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPRS</td>
<td>1.95/MB</td>
</tr>
<tr>
<td>wGate</td>
<td>0.37/min. (FIM2/min.)</td>
</tr>
<tr>
<td>HSCSD</td>
<td>0.18/min. (1 channel), 0.26/min. (multichannel)</td>
</tr>
<tr>
<td>SMS</td>
<td>0.14/message</td>
</tr>
</tbody>
</table>

*Note: Prices do not include VAT.*

Source: Sonera
MOB Game analysis [1/2]

- Market players
  - It’s not just mobile operators…

- Licencing issues
  - Not every MO holds a 3G licence

- Degrees of interworking
  - Cross-fertilization.
  - Offload non-premium (*low end user willingness to pay*) services from cellular to wireless.
MOB Game analysis [2/2]

- **MO strategy**
  - Compete (+), cohabit (+) or combine (-).

- **Pricing Schemes**
  - Time-based surcharges
  - Bundling with cellular

- **Service offering**
  - Data services is not just bitpipe access to Internet
  - Several emerging services unsuited for isolated WLAN
Summary and Conclusions

- MO expect new growth from mobile data
- Cellular vs. WLAN bearer technologies
- Complementary + bundling strategies
  - Role of Multimode terminals
- MOB Improvement proposals:
  - Licencing issues: *non-homogeneous market*
  - Pricing schemes: *bundling with wireless*