# Game analysis: Cellular vs. WLAN

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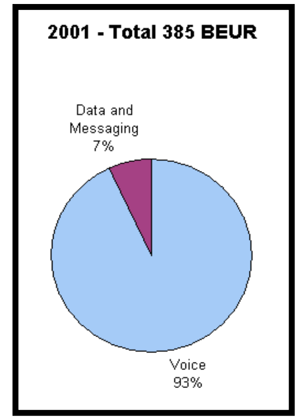
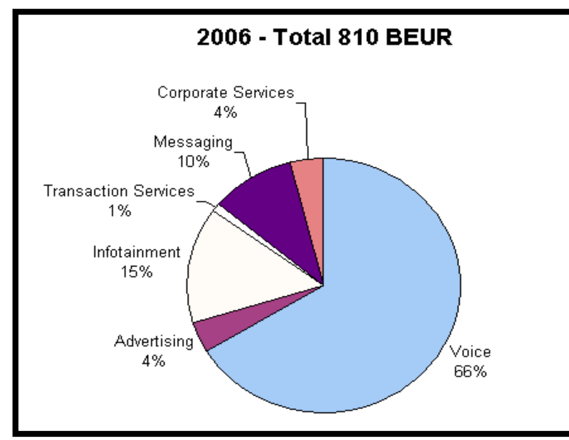
# Structure of this presentation

- 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?*

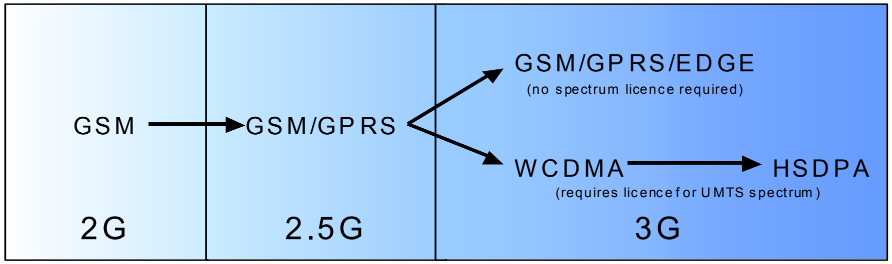
- Mobile Voice ARPU decreasing in developed countries
- Mobile Operators seeking to introduce new services to maintain growth
- Industry forecasts predict data revenues will compensate decreasing voice ARPU and later become an important portion of overall revenue



# 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…

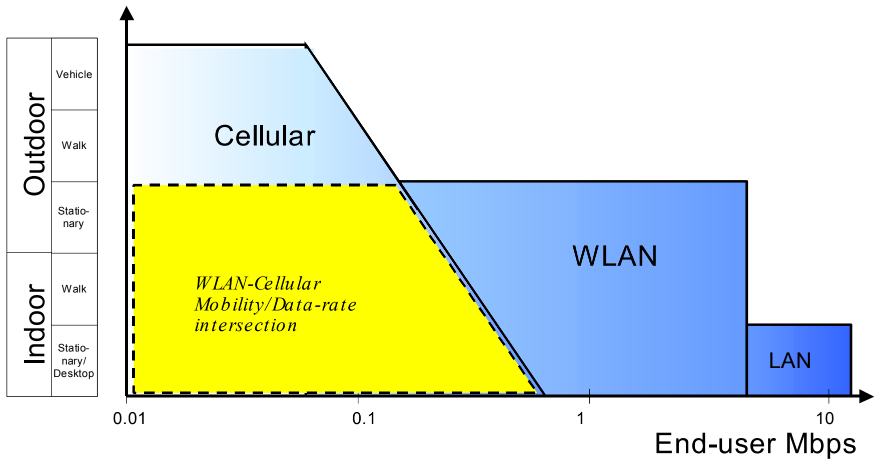
# Bearer properties

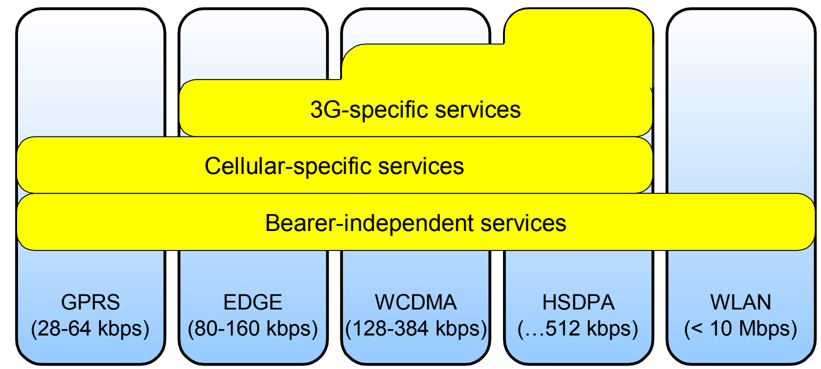
**Table 1: WLAN vs. cellular properties**

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

- 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

| Subscription | €3.36/mo. |
|---|---|
| **Bundled services** | **Usage charges (€)** |
| GPRS | 1.95/MB |
| wGate | 0.37/min. (FIM2/min.) |
| HSCSD | 0.18/min. (1 channel), 0.26/min. (multichannel) |
| SMS | 0.14/message |

***Note: Prices do not include VAT.***

*Source: Sonera*

# MOB Game analysis [1/2]

- Market players
  - Its not just mobile operators…
- Licencing issues
  - Not every MO holds a 3G licnece
- 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 unsiuted 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*