Network Economy

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Network Economy – why?

- Better services ⇒ more traffic ⇒ bigger investments
  - subscriber penetration, traffic per subscriber

- Market liberalization ⇒ new players
  - global operators, ISPs, cellcos, CLECs

- Standardization fragmentation ⇒ new technology risks
  - IETF, ATM Forum, 3GPP/2, W3C/WAP Forum

- Tighter competition ⇒ new earning logics
  - bit pipes, ad-hoc networks, virtual operators, revenue sharing, prepaid, advertisement

- Telecom growth ⇒ new government involvement
  - privatization, new investments, frequency auctions, subsidies, pro-competitive regulation
Observations on Cellular

- Operator’s ARPU changes only slowly (now c. 40EUR/month in Europe)

- Governments strongly use their power on radio frequencies
  - licence-based service (e.g. UMTS auctions vs. beauty contests)
  - licence-free service (e.g. WLAN)

- Need of roaming drives the business boundaries
  - radio interface (maintains the global handset business)
  - network-network interface (maintains the bilateral roaming business)

- Person-to-person content more valuable than 3rd party content
  - Maslow hierarchy of needs for wireless (coverage->capacity->quality->features)
  - user perceived value of network = number of other users (snowball effect)

- Local content more valuable than global content
  - fixed Internet = virtual world, but mobile Internet = real world
Annual service market (BEUR)

1991
- Fixed voice: 360
- Fixed Internet/intranet: 30
- Mobile voice: 20

1996
- Fixed voice: 480
- Fixed Internet/intranet: 80
- Mobile voice: 120

2001
- Fixed voice: 550
- Fixed Internet/intranet: 180
- Mobile voice: 25

2006
- Fixed voice: 630
- Fixed Internet/intranet: 380
- Mobile voice: 230
- Mobile Internet/intranet and messaging: 490

“X-Internet” Beyond the PC

Forrester Research, May 2001
National perspective
Who drives and where?

Mobile Internet

Internet Finland
- US university cooperation
- late funding from EU
- consumer enthusiasm on technology

Internet USA
- strong computer industry
- university-military cooperation
- large homogeneous home market

Mobile Internet Finland
- history with GSM
- history with Internet
- consumer enthusiasm on technology

Mobile Internet Japan
- strong consumer electronics industry
- late in fixed Internet
- consumer enthusiasm on technology

Mobile Finland
- history with NMT
- competitive fixed telephony
- consumer enthusiasm on technology
Network Economy - what?

**Operator domain**

- **Consumer tariffs**
  - vertical vs horizontal bundling?
  - prepaid vs postpaid?
  - flat rate vs usage-based? QoS?

- **Investments**
  - technology choices?
  - CAPEX vs OPEX?

- **Interconnect charges**
  - bilateral vs centralized roaming?
  - revenue sharing?

**Pro-competitive regulation**

- cost-based interconnect?
- anti-competitive bundling?
- dominant position?

**Government domain**

- Licence auctions vs beauty contests?
- Subsidies?

**Vendor domain**

- **Investments**
  - technology choices?
  - outsourcing: production, R&D?
  - product vs service business?

- **Market dynamics**
  - new business ecosystems?
  - vertical vs horizontal markets?
  - vendor financing?
Reference Business Model

- **Service Broker**
- **Content Provider**
- **Service Provider (ISP, Corporate)**
- **Value Added Service Provider**
- **Access Network Operator**
- **Backbone Operator**
- **Advertizer**
- **Consumer**
Initial Research Focus

- GPRS operator-operator interface and QoS
  - roaming (Gp)
  - interconnect (Gi)

- GPRS operator-service/content provider interface
  - levels of interfaces (Gi, WAP gw, ”iMode”)
  - types of services (MMS vs email, WAP vs WWW)

- Tools: scenario analysis, mathematical modeling, simulation

- Contributions to IETF and GSMA
Thanks