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University of Athens, Greece, November 2008

Adoption and Usage of Mobile Services

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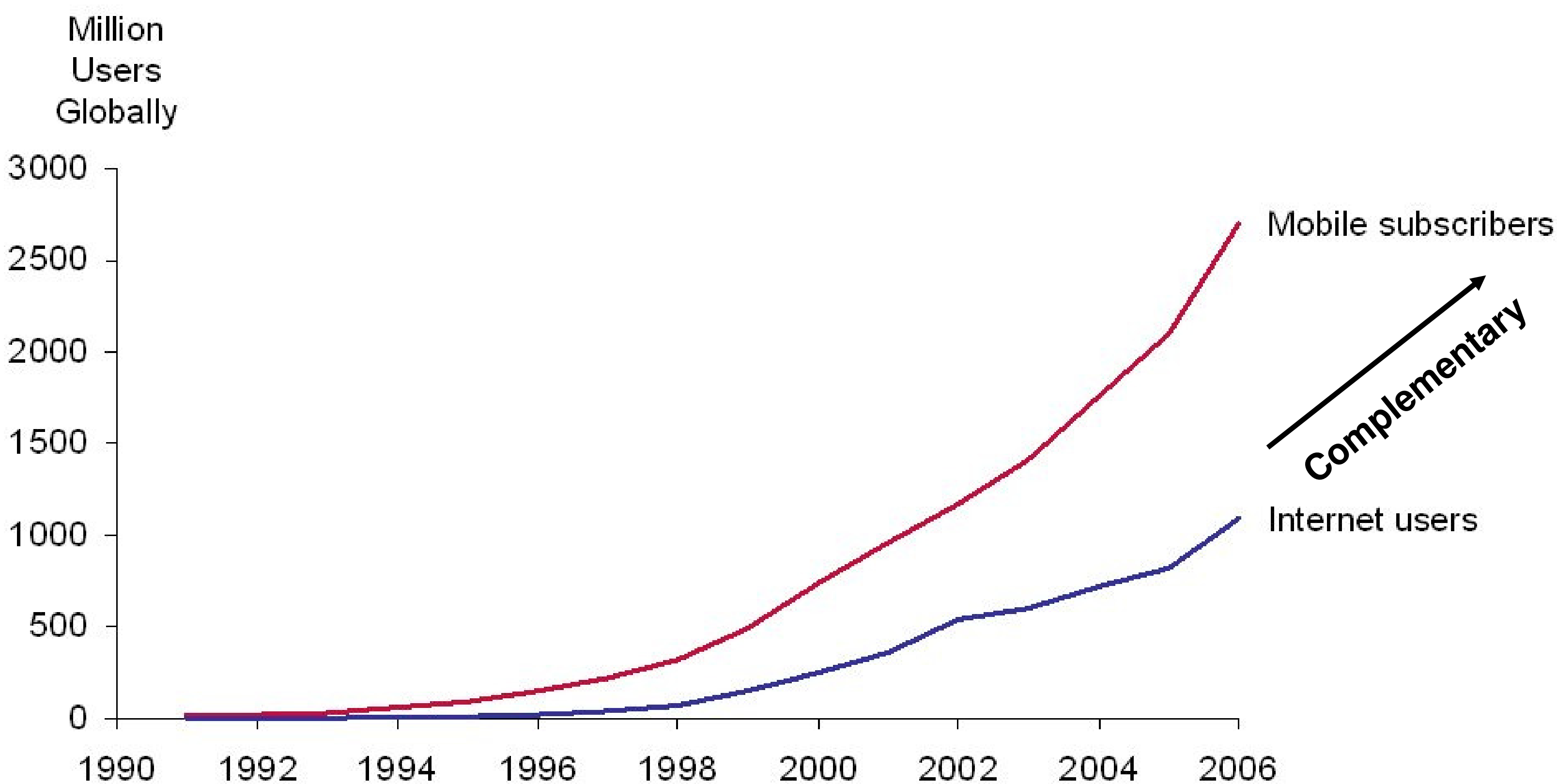
Agenda

- Mobile industry: definitions and trends
- Unique properties of mobile services
- Research on mobile service adoption
  - Background and tools
  - Empirical findings

Mobile industry evolution: statistics



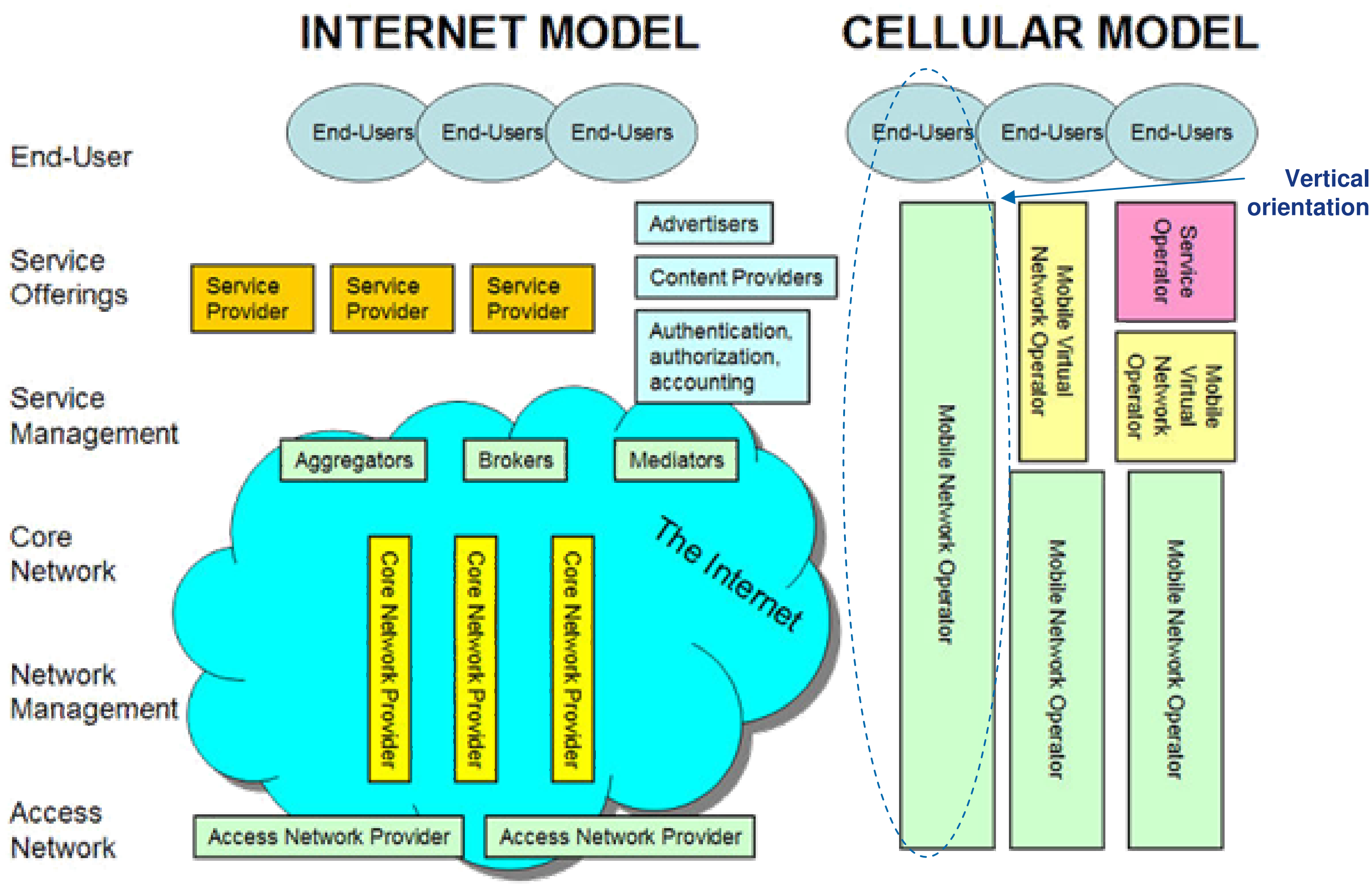
What is mobile?

– Could be defined from different angles:
  – **Mobile device** (handheld pocket-size devices with wireless connectivity)
  – **Mobile network** (wireless network; typically *wide area network*)
  – **Mobile services and applications** (run in mobile devices, to be used with mobile networks)
    – How about offline applications?

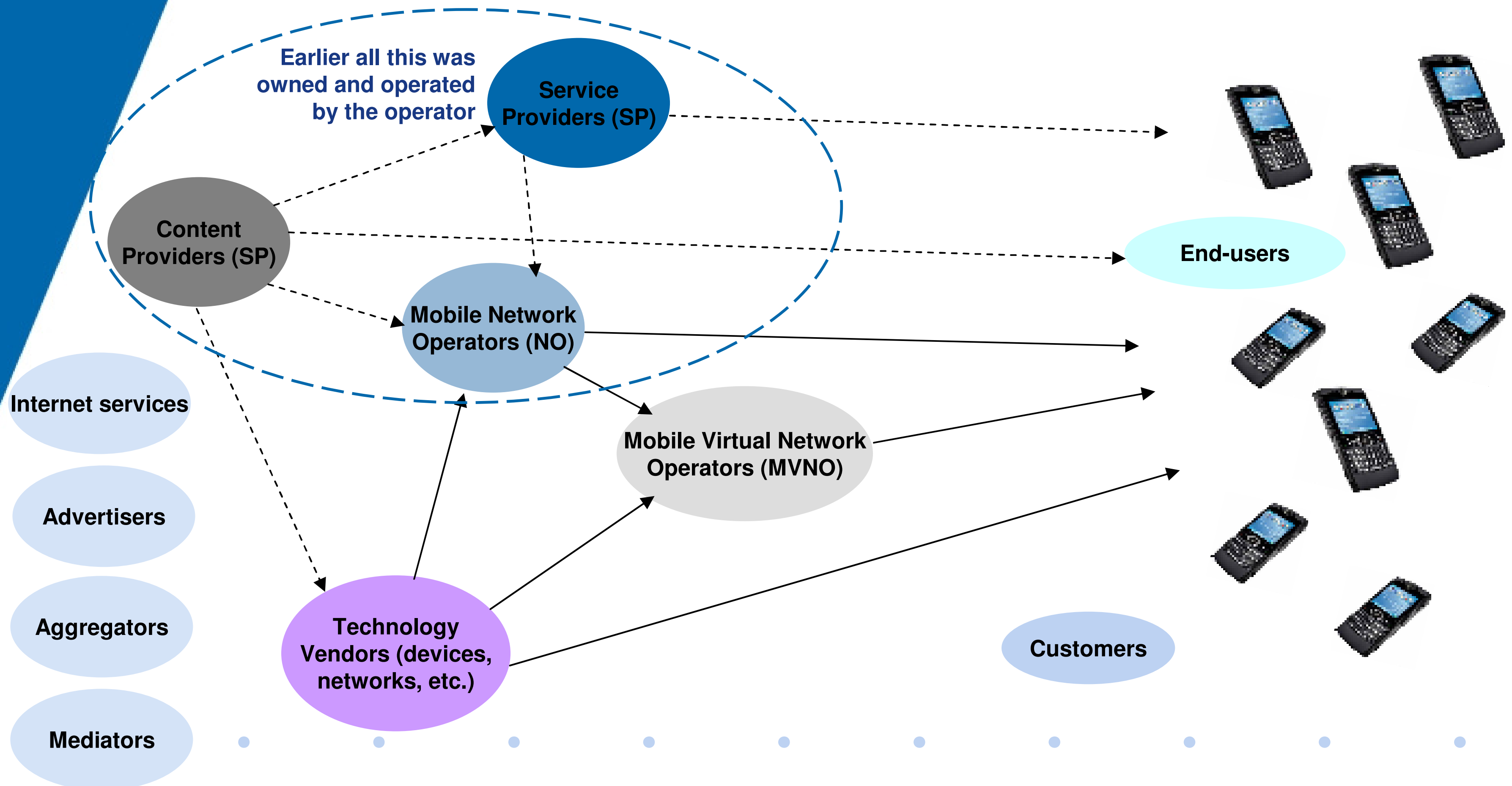
– From *mobile phones* to *converged devices with various wireless connectivity options*

– A significant change (due to mobile phones) with regards to how electronic services can be delivered to end-users and what kind of services to deploy (unique characteristics of mobile services)

Mobile industry traditionally vertically-oriented



Mobile industry – new value chains



Mobile industry transformations

- The traditional model: operators, device vendors, and users
- Today complex value-exchanges, for example…
  - Devices through operators (handset and subscription bundling) or directly by vendors?
  - Services and applications bundled with device (case Nokia)?
  - Content bundled with device?
  - Role of mobile advertising?
- The new forces reshaping the industry
  - The <u>open smartphone platforms</u> are changing the game
  - The <u>mobile Internet</u> brings transformations
  - The <u>role of end-users</u> is changing (end-user-driven innovation and content)

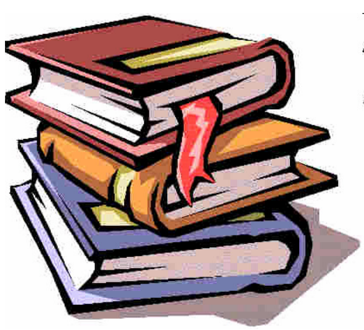
Merging of media, Internet and telecom industries

- Not any more just one industry - many industries are merging together
- Media = content, entertainment, information, news
- Internet = IP-based technologies, the Web 1.0 (static content), the Web 2.0 (user-generated content and social networking)
  - The "Web 3.0" is all about contextual and ubiquitous nature
- Telecom = connectivity

- The mobile industry converges with the other industries, and mobile phone just represent a new medium of access + use
  - Tomi Ahonen calls mobile phones as the 7th mass media
  - New revenue models such as advertising will emerge
  - The computer industry experienced similar transformations 20 years ago

Mass medias

1. Print (1500s)
2. Recording (1900s)
3. Cinema (1910s)
4. Radio (1920s)
5. TV (1950s)
6. Internet (1990s)
7. **Mobile (2000s)**



Mobile phones – unique characteristics

- Any time
- Anywhere
- Personal
- Payment channel
- At the point of inspiration
- Social context

Categorization of mobile services

End-users | Device monitoring systems | Usage accounting systems | Network nodes and links | Servers

Device
- Mobile phones
- Smartphones
- PDAs
- Ultra-mobile PCs
- Laptop PCs
- Desktop PCs
- Other devices

Application
- Calling
- Messaging
- Browsing
- Infotainment
- Multimedia
- Games
- PIM
- Productivity
- Utilities
- Device management
- Other applications

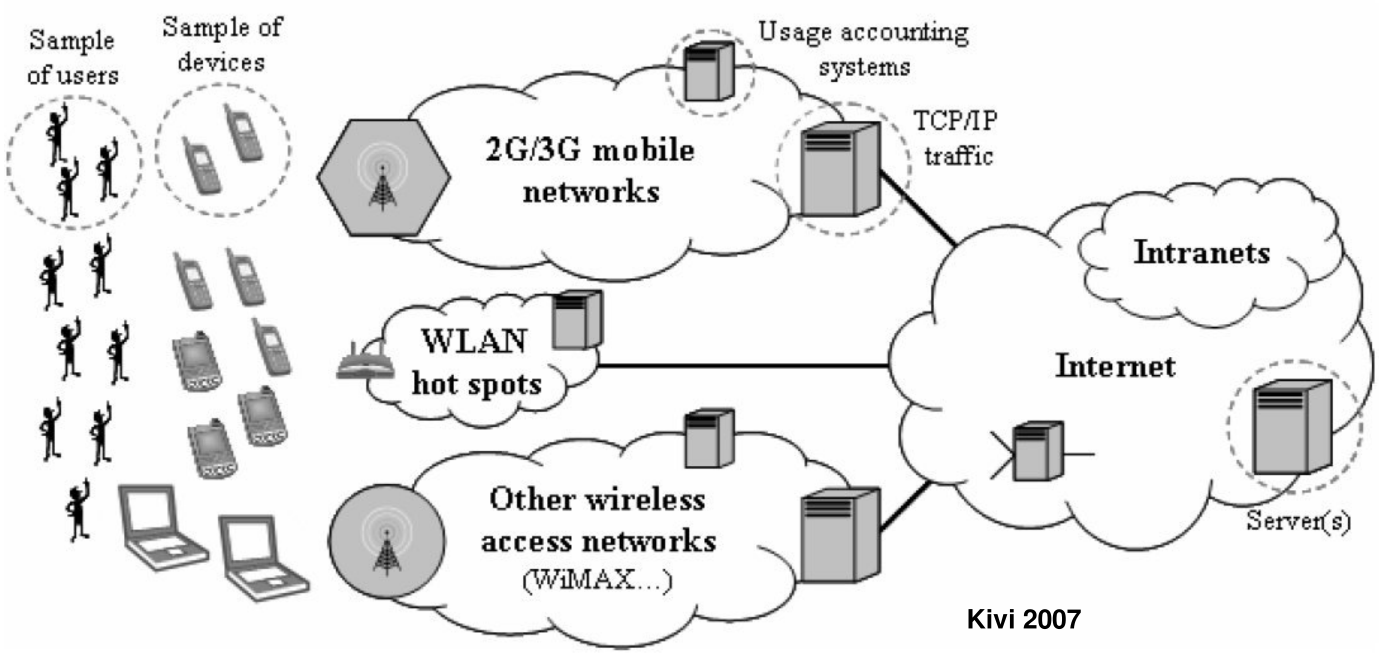
Network
- Mobile networks
- Wireless MANs
- Wireless LANs
- Wireless PANs
- Offline
- Other networks

Content
- Calls
- Messages
- Personalization
- Information
- Entertainment
- Web search and portals
- Banking / E-commerce
- Infrastructure
- Other content

Source: Verkasalo, Kivi, Smura 2007

Empirical research increasingly important

- Not only network or charging record statistics, or surveys, but comprehensive research requires instead
  - Coordinated consumer research on ***mobile consumption***
- Various empirical research methods exist



Kivi 2007

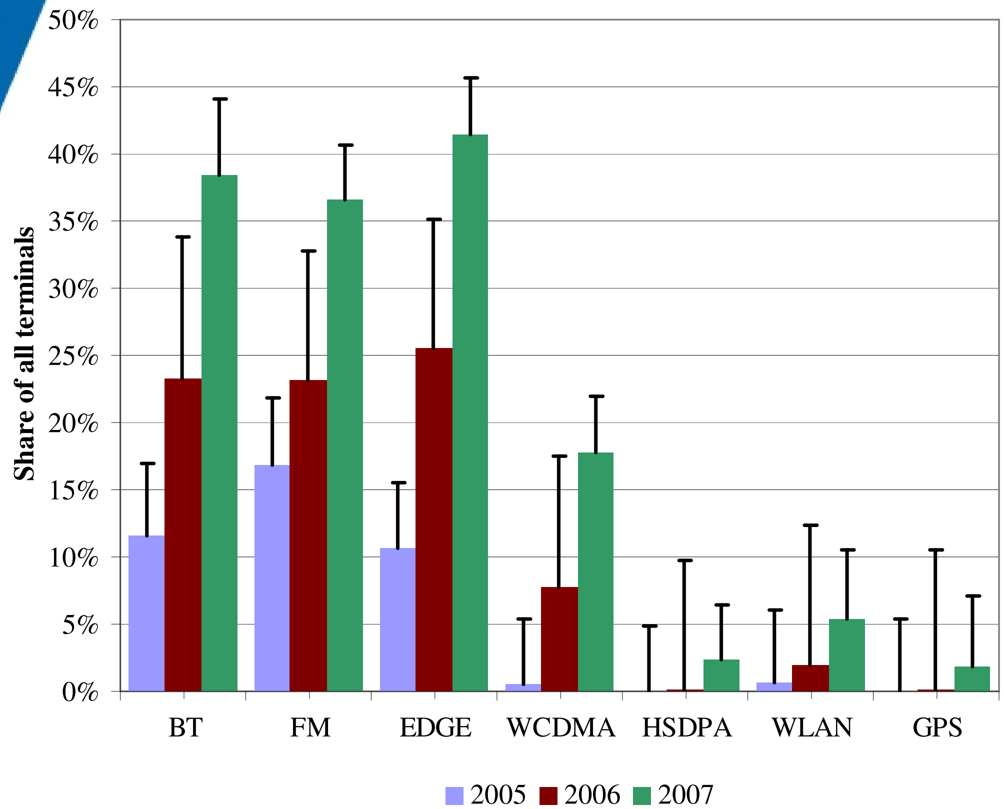
Motivation for adoption studies

- Ongoing emergence of new mobile services (technology)
- Strong push by service providers (supply-side)
- The mobile Internet and smartphones (enablers)

- STILL, people spend most of the time with legacy services, most new services have difficulties in penetrating to the market, and revenue from the mobile Internet is mediocre.

→ The **adoption process** is worth studying

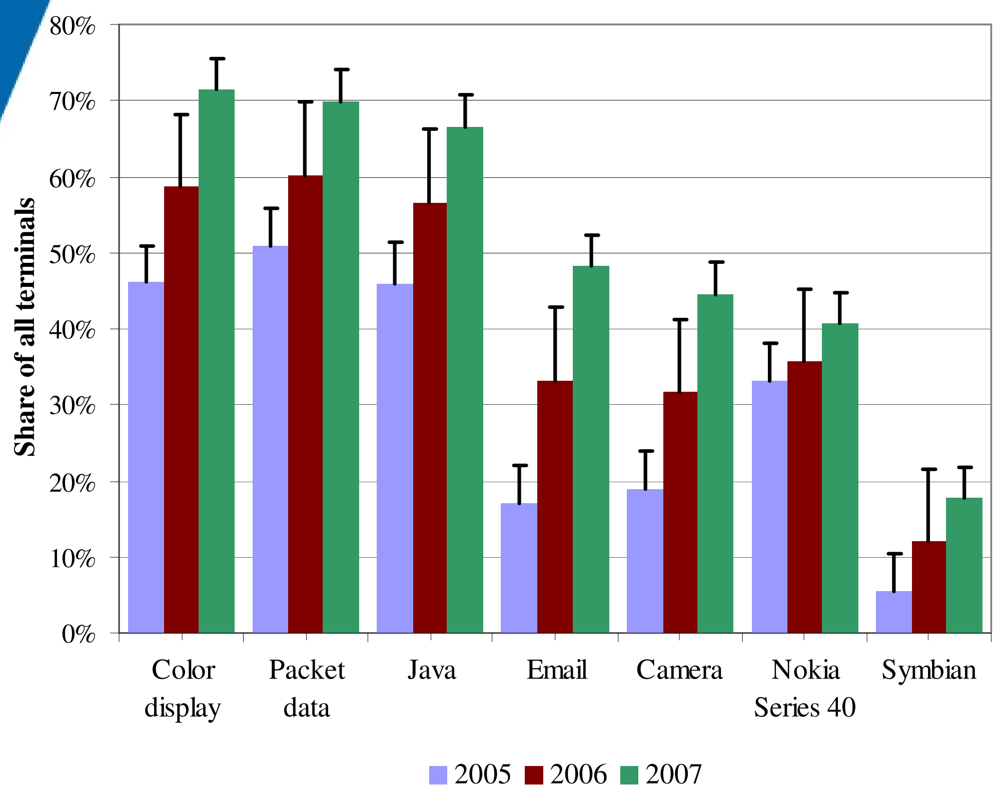
Device Functions



- Key features for mobile packet data usage spreading rapidly
  - EDGE 25 % → 41 %
  - WCDMA 8 % → 18 %
  - HSDPA 0,1 % → 2 %
  - WLAN 2 % → 5 %
- Growth of 3G (WCDMA) especially rapid, due to handset bundling
  - Very steep S curve, growth comparable to more mature features
- Share of non-handsets up to 2,1%
  - From 1,4% (2006) and 0,7% (2005)
  - Data cards and USB dongles, partly explaining rapid HSDPA growth
- Other remarks
  - GPS emerging (2%)
  - Unidentified terminals (T) increase somewhat penetration of all features (2007: 4-6%, 2006: 10-11%, 2005: 5-6%)

Kivi 2008

Device Functions



- Color displays, packet data and Java mainstream features
  - ~70% penetration
- Symbian OS in 18% of all mobile terminals
  - S60 growing: 66% → 74% → 84% Series 80 decreasing: 34% → 26% → 15%
  - UIQ marginal: <1%
  - 54% of S60 handsets are 3rd ed. in 2007
- Other advanced OSs (e.g. Windows, Linux, iPhone) marginal

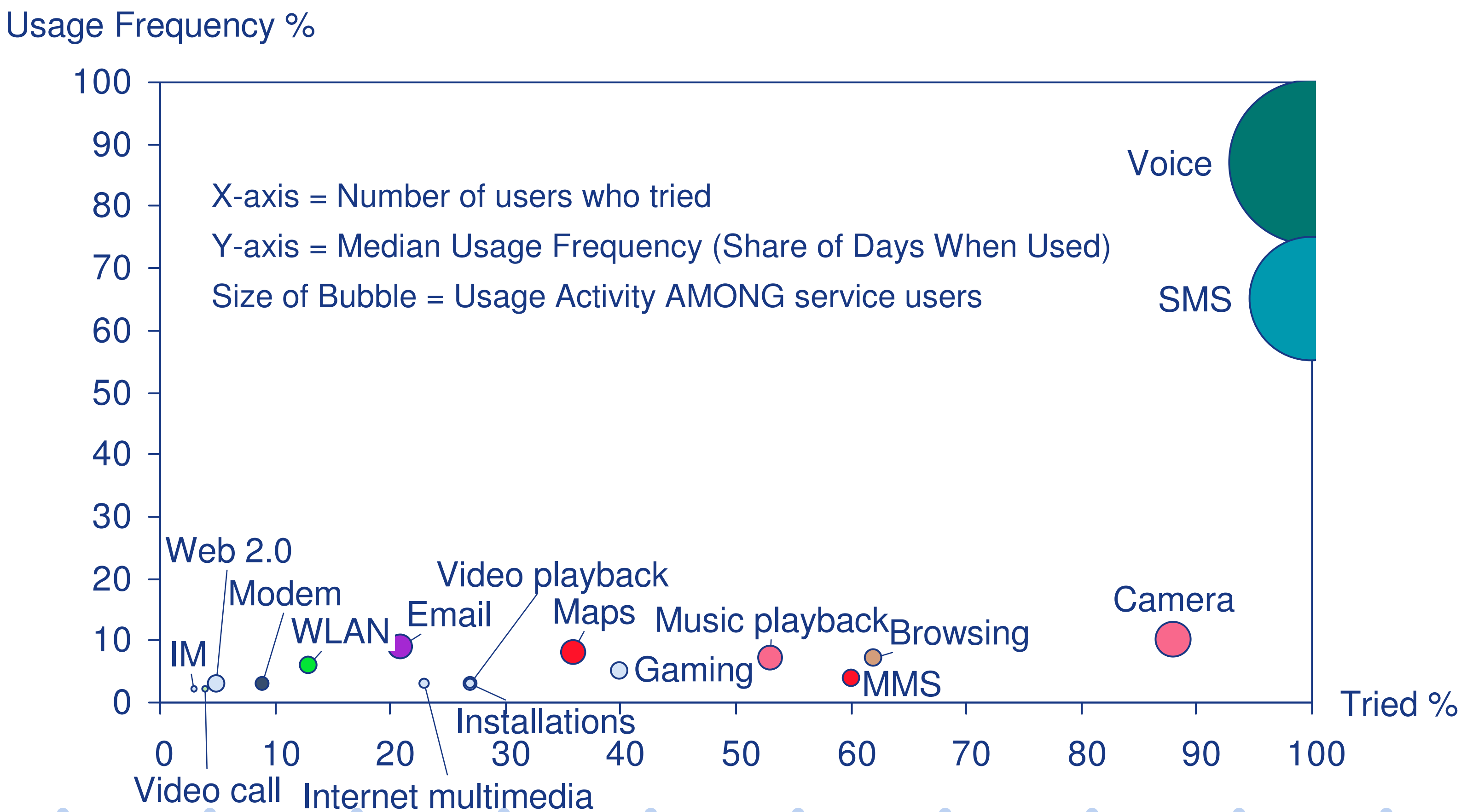
Kivi 2008

Handset-Based Mobile Consumption Analysis

- A new research technology
  - Specialized research application for handsets
  - Server architecture to capture research data
  - Analysis procedures with the collected data
- A panel study was deployed in 2007 to study the behavior of Finnish smartphone users
  - All three operators (Elisa, TeliaSonera, DNA Finland) collaborated
  - Both survey data and handset-based statistics were collected
  - All together 579 panelists involved in the study

Research findings

→ New mobile Internet services are emerging, but **Voice and SMS are still the key services**



Source: MoMI 2008

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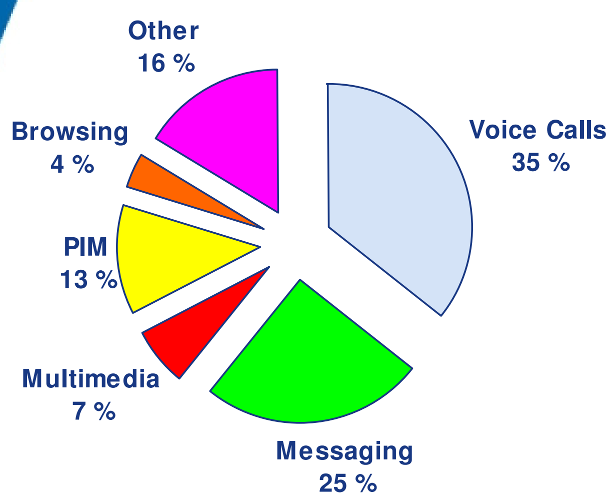
Research findings

→ Mobile phone is not only for communications today

→ Internet and multimedia usage is increasing among early-adopters

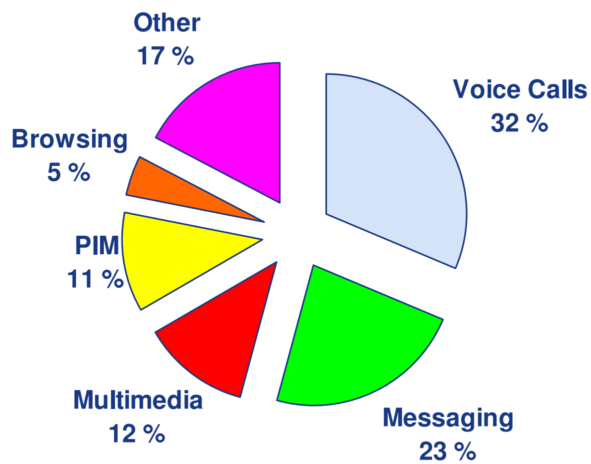
Time Allocation in 2005



Communication ~70% and other ~30%

Typical user: ~ 22 minutes of usage / day

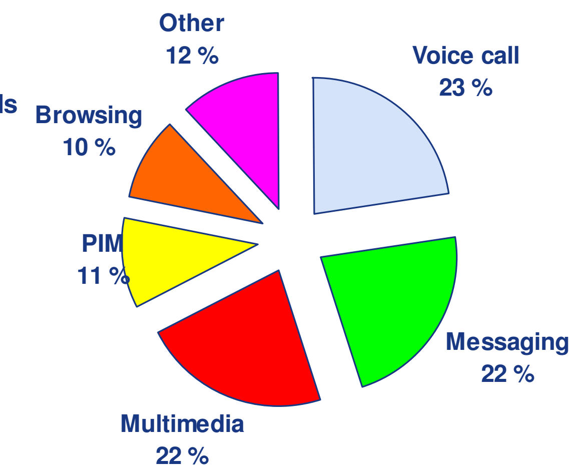
Time Allocation in 2006



Communication ~ 60% and other ~ 40%

Typical user: ~ 33 minutes of usage / day

Time Allocation in 2007



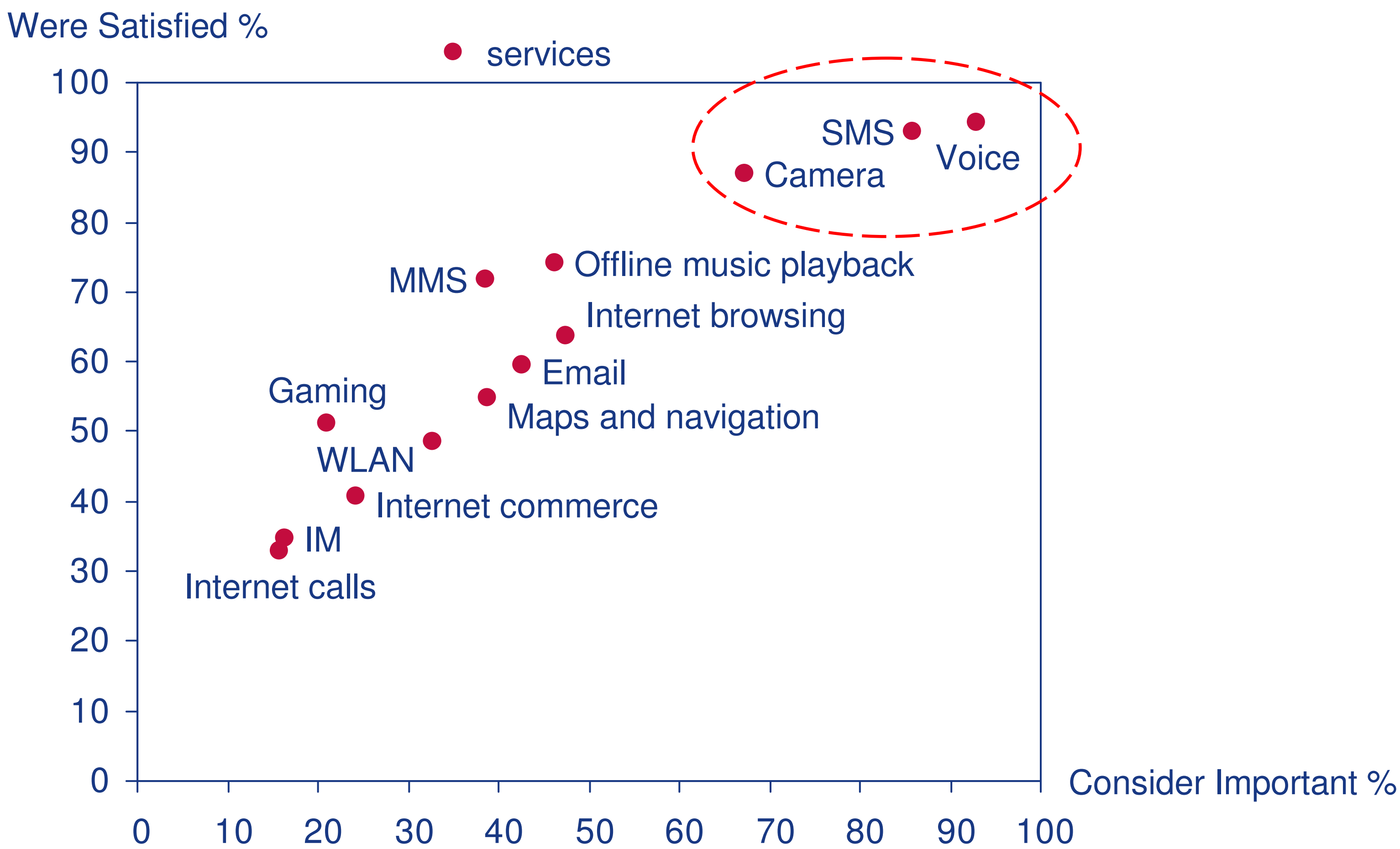
Communication ~ 55% and other ~ 45%

Typical user: ~ 39 minutes of usage / day

Source: MoMI 2008

Research findings

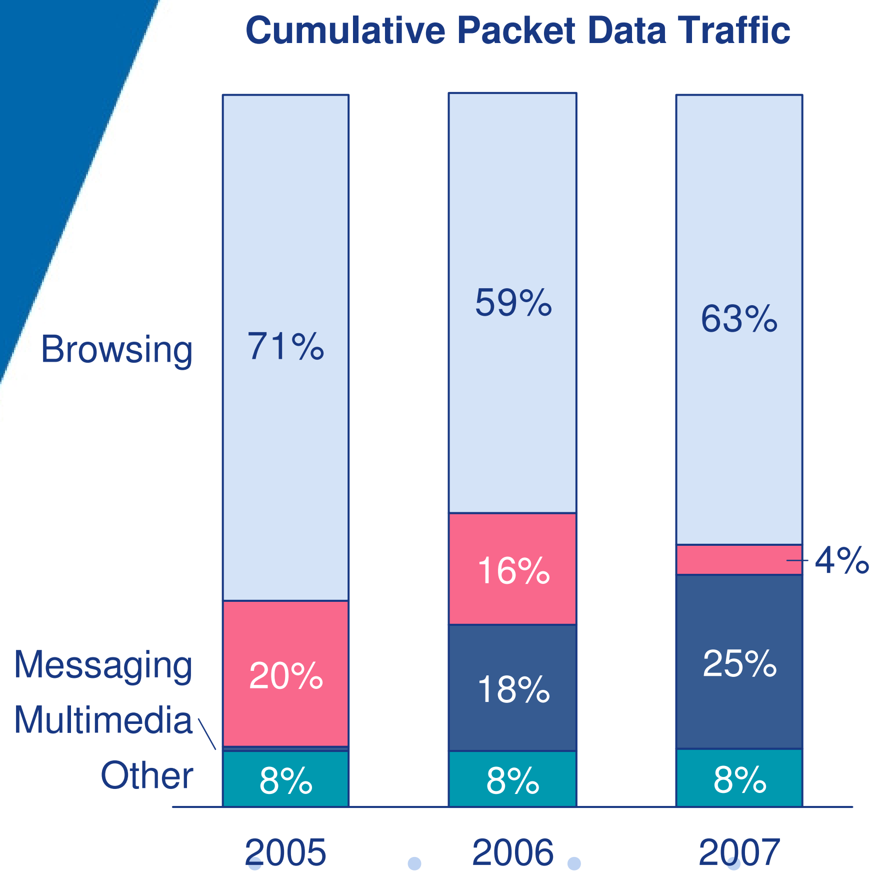
→ Voice and SMS are still the core services

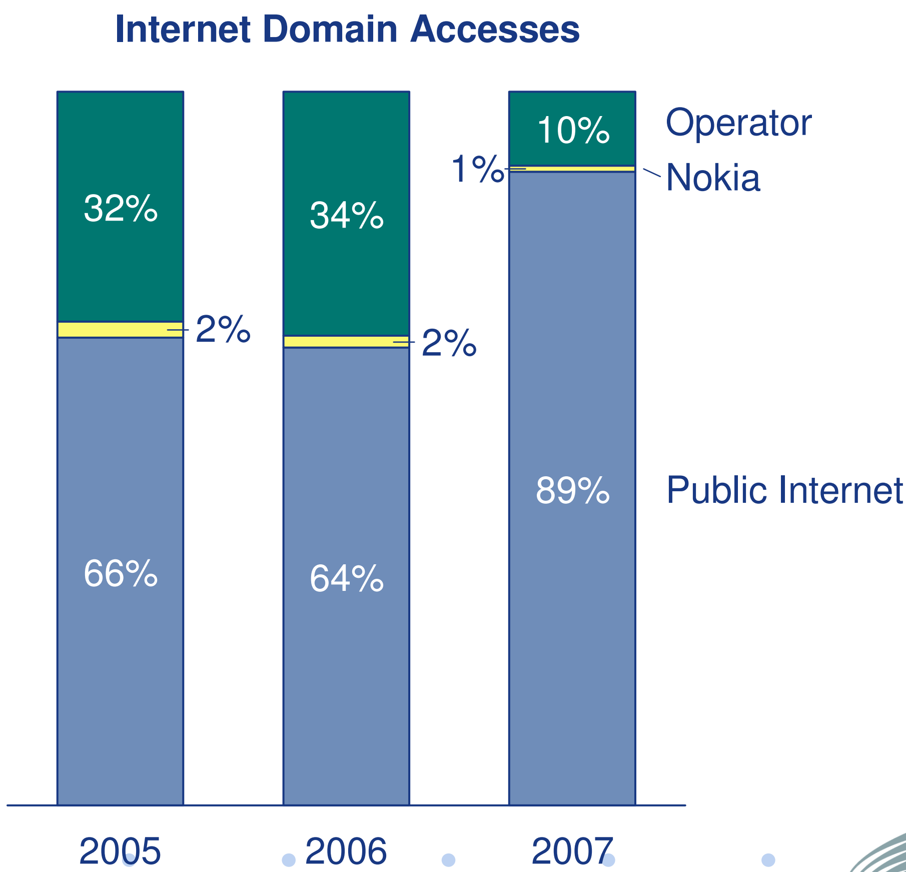


Source: MoMI 2008

Research findings

→ Mobile Internet brings many kinds of new services
→ Traditional players of the mobile field are facing challenges





Source: MoMI 2008

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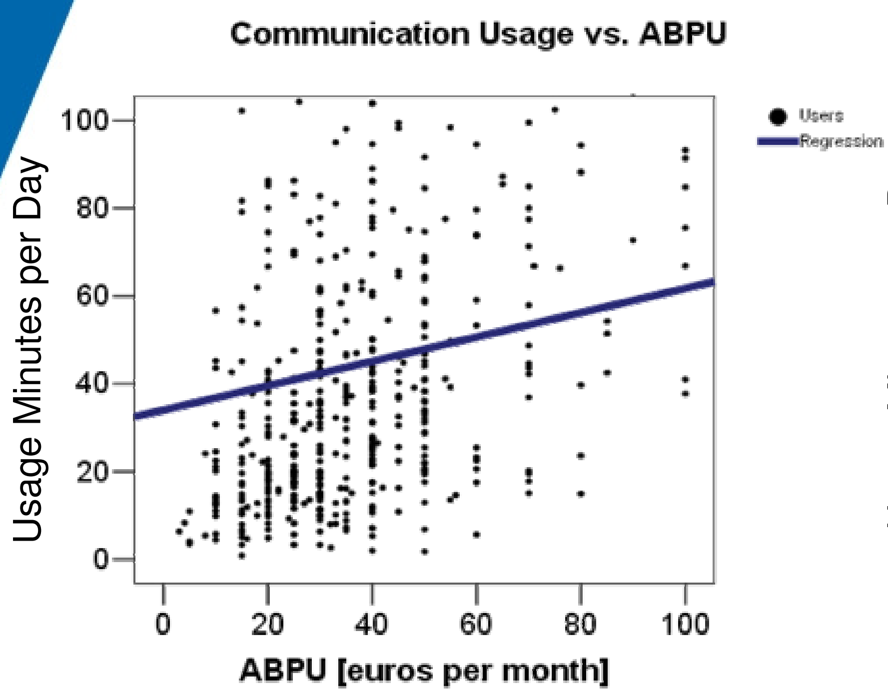
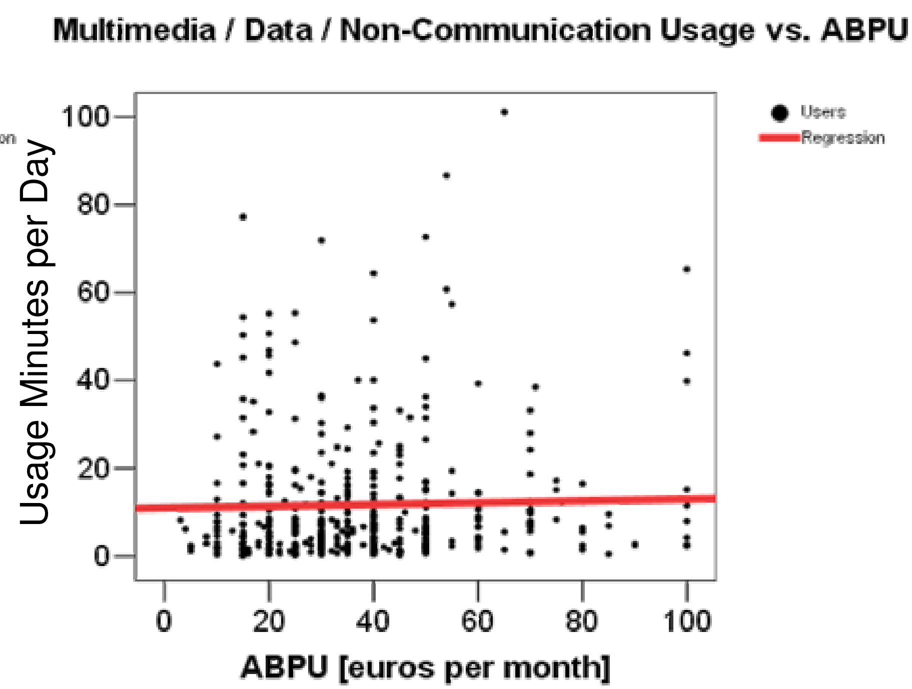
Research findings

→ No revenue to operators from Internet and multimedia services





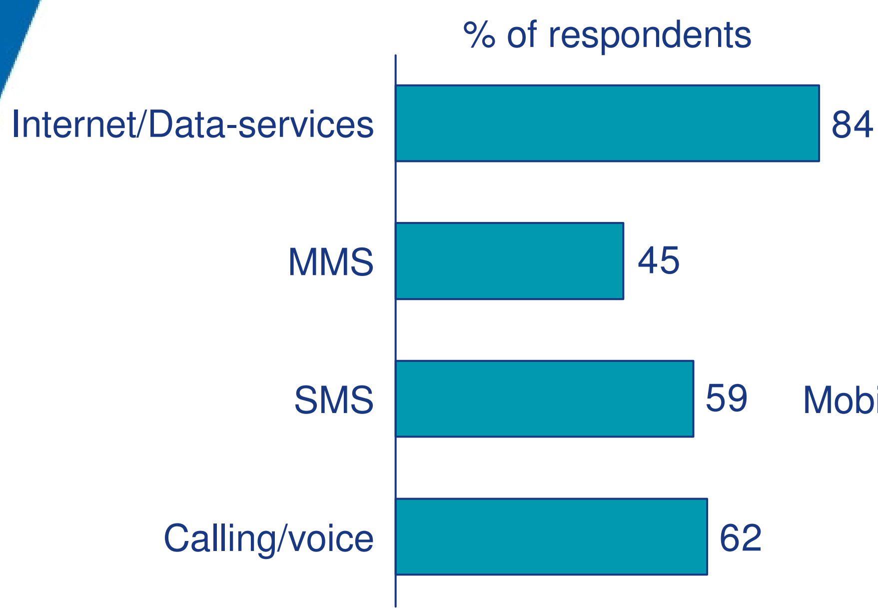
Source: MoMI 2008

Research findings

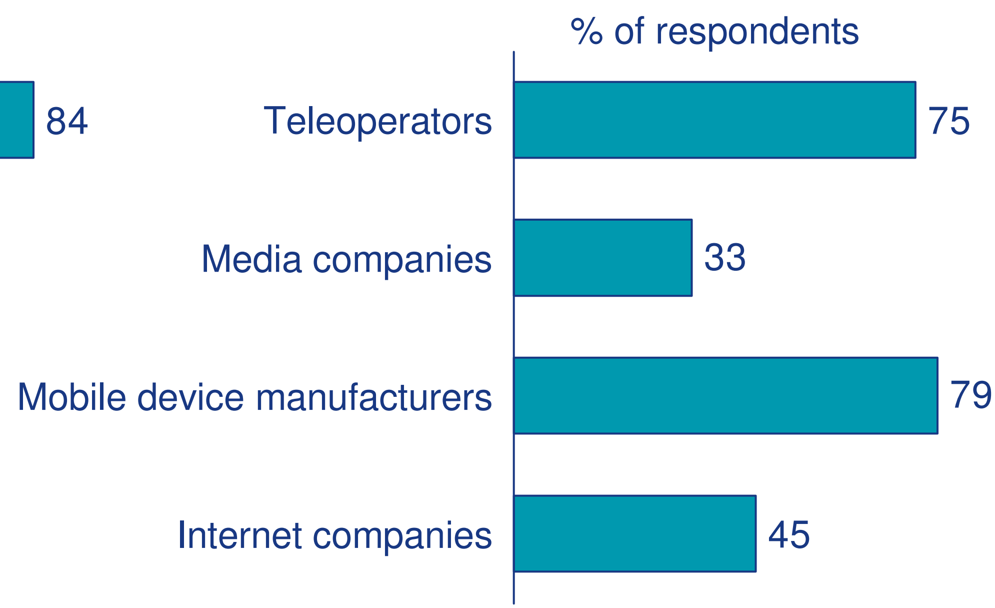
→ Flat-rate is what people want

→ Operator not any more the most important actor in mobile services

Flat-rate is better than usage-based pricing…



Actors are important in mobile service delivery…



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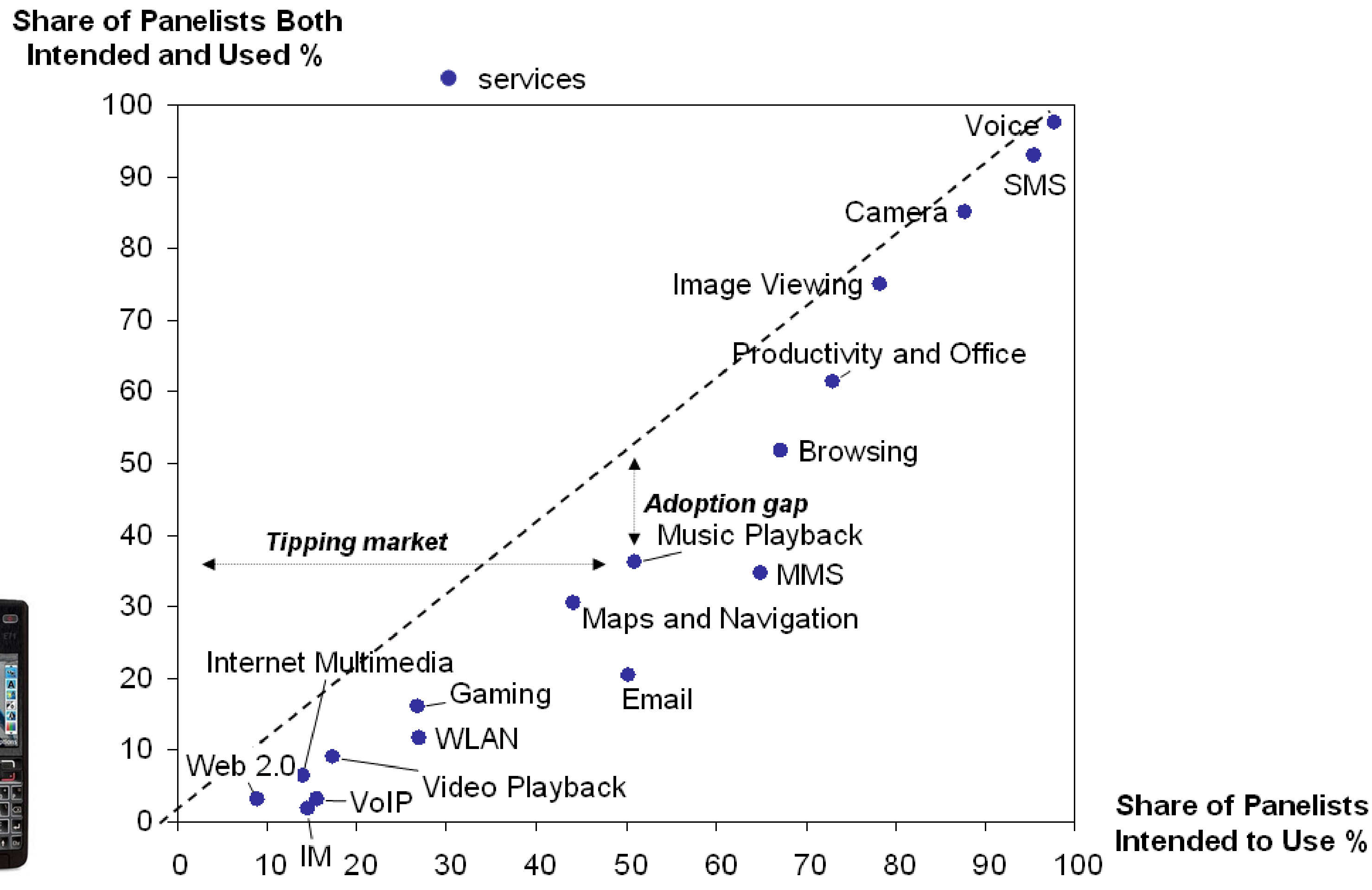
Various adoption gaps exist



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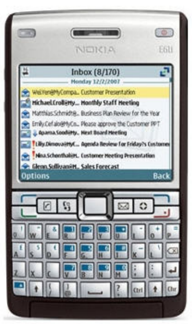
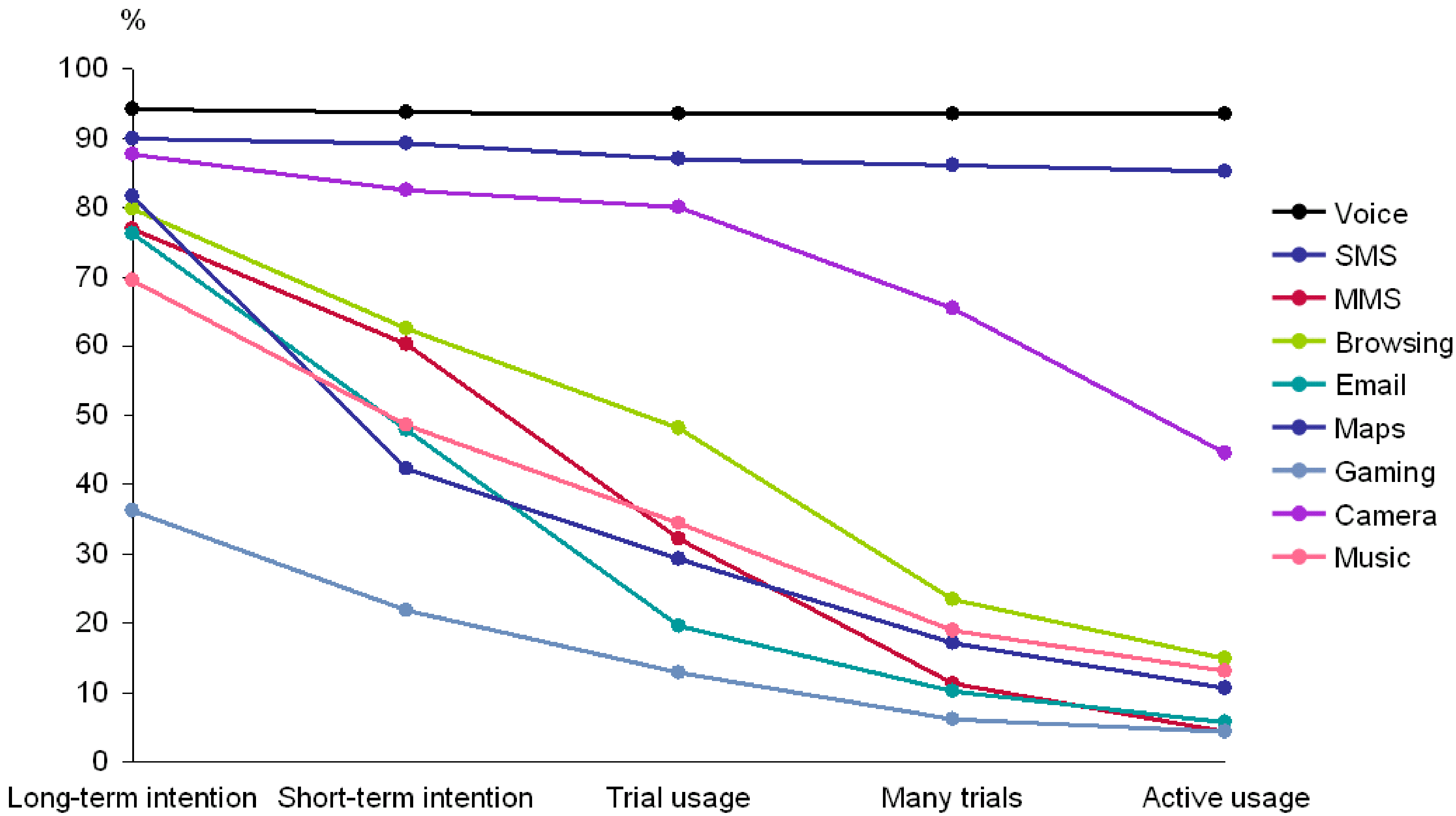
Only three services experience active usage





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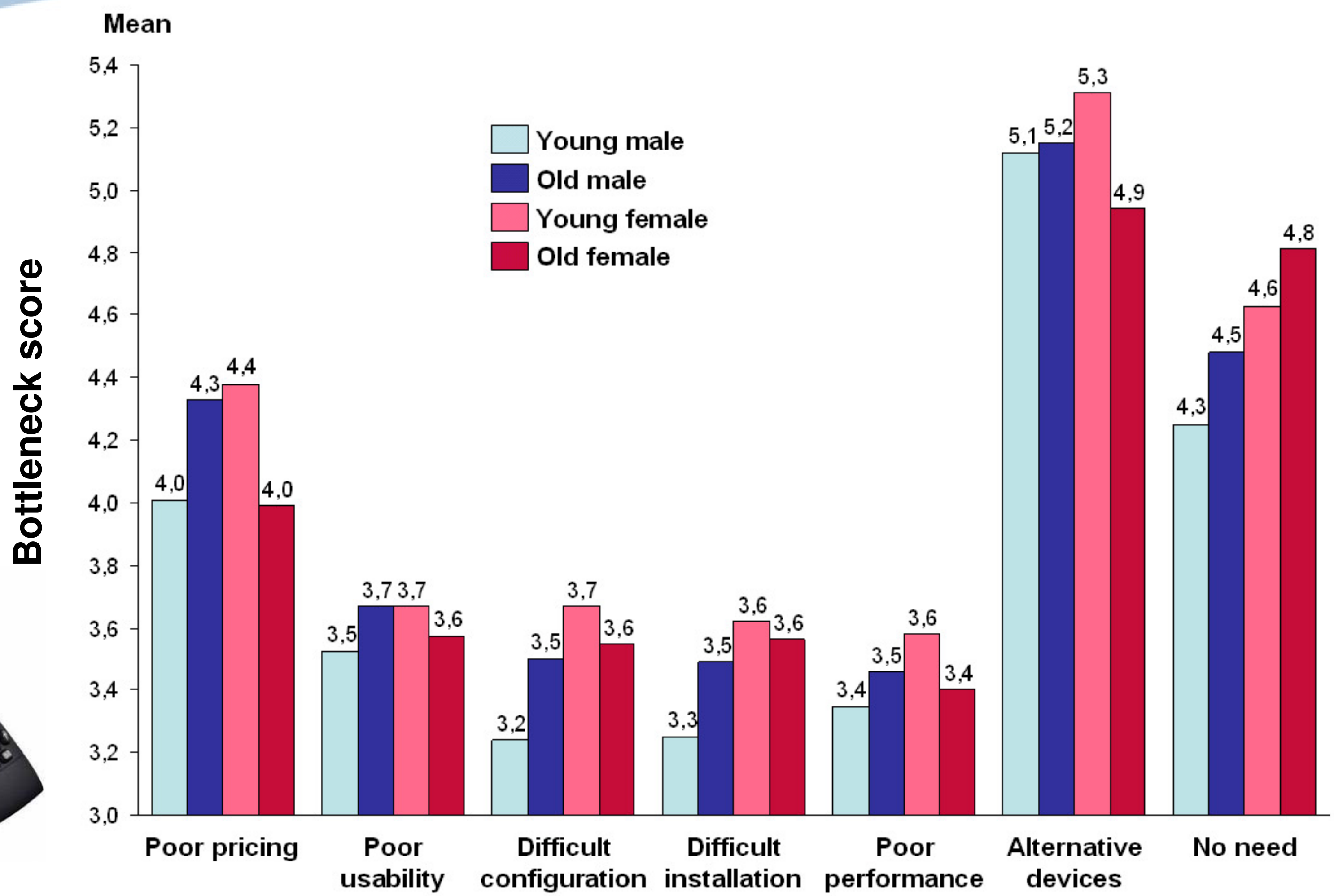
Performance or usability is not the issue! Main bottlenecks are context, needs and pricing!



Conclusion of the lecture

- The mobile industry is in turmoil: new players, new services, new business models
- Voice and SMS are being challenged by emerging services that might complement or substitute them
- According to our studies, browsing and camera are already widely used, though not very active yet
- Many services and applications face adoption problems (demand does not equal supply)
  - Main reasons: context (alternative devices outperform at home and office), no serious need, pricing
- New research methods and analysis procedures are being developed in our research team to better understand the dynamics of mobile service adoption

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