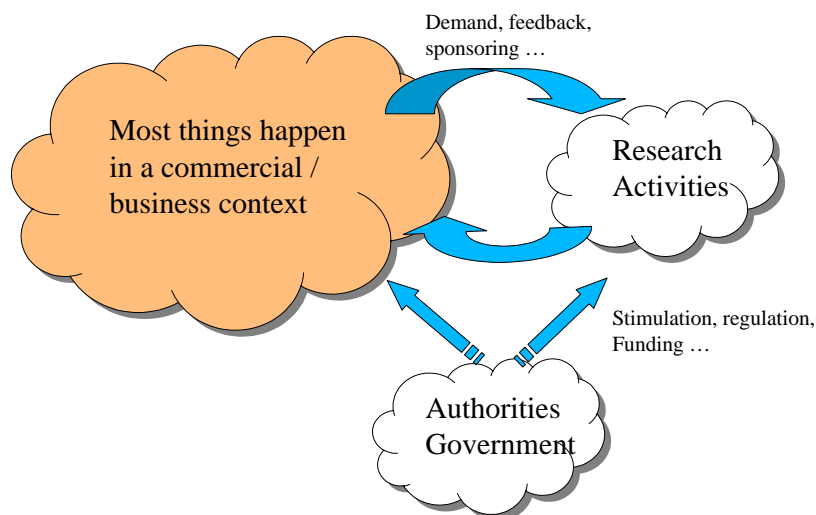# Extended Abstract WG 1 "Business Models"

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Abstract

This document presents the results from the working group "Business Models" (WG 1) discussing the seminar topic under market aspects. Main objectives were developing a shared view of the field (i.e. matching business, technology and research interests), identifying key players and relations between them (including barriers and lessons learned so far from the 2G/2.5G market), discussing the role of business models and value chains and applying them to P2P-networks. In the concluding round the difference between traditional DB/IS applications and mobile applications is explored.

1 Market mechanisms

In the world of mobile applications most things happen in a commercial or business context. This is a good reason why business aspects should be taken into consideration when planning new applications or looking for market opportunities for new technologies. Unfortunately the economic aspects of mobile systems have received too little attention so far in a technology driven context.
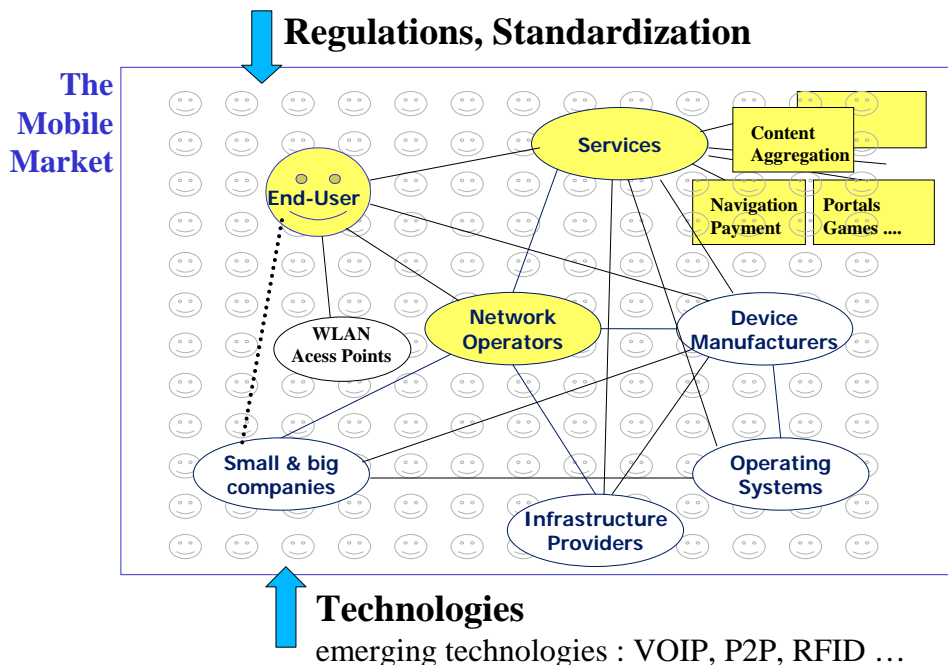

A structured and systematic discussion of unsolved problems therefor should consider technological and business aspects in a balanced manner. A first step would be the development of a common view identifying the key areas on a high level. In a first approach four levels of discussion can be distinguished:

(1) market level (including legal and regulative issues)

(2) enterprise level (business models etc)
(3) user level (single/group, private/workplace etc.)
(4) technical level and global infrastructure (s) (including legal environment(s), cultural and other aspects)

Based on this views a business oriented view of applications and technology use can be developed. The model also helps to go into the details of the mobile market and identify the key players, dependencies between players and market participants, influencies, driving forces etc. and discuss possible scenarios. In our discussion we found that the network operators and the service provider are playing a dominant role at the moment (and there are no changes in sight for the next years). The end user has (at least indirectly) some influence on the market development but he is not really the driving force. The acceptance of new products and services within a market environment is dependent from many factors (among them price, social value, trust, security etc.)

Regulations, Standardization

The Mobile Market

End-User
Services
Content Aggregation
Navigation Payment
Portals Games ....
WLAN Acess Points
Network Operators
Device Manufacturers
Small & big companies
Operating Systems
Infrastructure Providers

Technologies
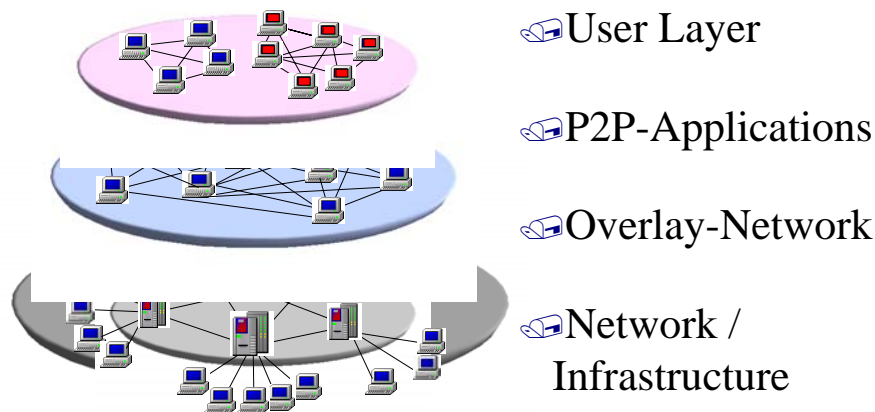emerging technologies : VOIP, P2P, RFID …

2 Business models for P2P networks

Within the field of mobile applications P2P-technologies are becoming more and more attractive as a new paradigm within electronic communication. Due to the success and popularity of applications like Napster, KaZaa and others a lot of ideas were created how to use P2P networks within an organisation as well as an instrument for creating new businesses. Both areas can lead to new market opportunities and also to the foundation of new firms. At this point we did not discuss the different definitions of P2P (e.g. Sharing of computer ressources and services by direct exchange between systems, Intel P2P Working Group, P2P is a class of applications that takes advantage of resources – storage, cycles, content, human presence – available at the edges of the Internet, Clay Shirky etc.) or the characteristics of P2P networks in detail (network of equal nodes, shared infrastructure, no central authority, added values through shared resources leading to network effects etc). In any case we

found that P2P technology is a good example to learn about interactions and links between technology & business interests (which do not always overlap).

There are several reasons why (mobile) P2P is worth being investigated. Beside ubiquitous access to existing services new opportunities (adhoc networking, vehicle networks etc) are seen. What makes it difficult is the fact that several layers of abstraction (technical, logical / conceptual, social, business) can be distinguished.

  ✎User Layer

  ✎P2P-Applications

  ✎Overlay-Network

  ✎Network / Infrastructure

Searching now for business models currently there are more questions than answers. Is there a market for P2P applications at all? Is P2P commercially interesting? Is there a need for a business model and what could be its role? Who should make the first step and demonstrate practicable solutions (companies, research units)? .... We discussed the topic under different aspects and tried to find examples for a commercially argumentation as well as for non commercial arguments:

- Commercially interesting
    - To a certain extent yes – but also applicable for improving companies work efficiency
    - Different interests of different players, e.g.
        - terminal/device manufacturer
        - service provider, e.g. media companies Bertelsmann, Napster , Skype, ebay
        - virtual network operators (NO), e.g. AOL (ICQ)
        - profiling, data mining, e.g. MoneyBee

- Non commercially interesting
    - reputation / reciprocity, e.g. LL2
    - "open source" incentives
    - Elimination (dominating) market players, e.g. KAZAA, eMule

The motivations for initiating P2P networks or applications are quite different and could not discussed in detail. What can be seen anyhow is the tension between regulation attempts and a free economy, disintermediation and some more effects. Problems which can be seen with existing P2P applications are
- Third-party infrastructures are required
- Very costly maintenance protocols

- Maintenance protocols may compromise structural properties (e.g., load-balancing)
- Previous knowledge is lost (e.g., reputation of the peer, QoS, etc.)
- No current approach addresses security
- Only the owner should be allowed to update the mapping
- DOS, replay, man-in-the-middle, etc. are not addressed

3 Barriers, inhibitors and lessons learned so far

Discussing the field from a business or market point of view usually leads to the question what happened so far, is there anything to be learned from the market experiences in a 2G/2.5G-environment. In the meanwhile we do have a lot of new technologies (3G, WLAN, Bluetooth, NFC, P2P, RFID, VOIP and many more). The following aspects can help to understand what is going on so far:
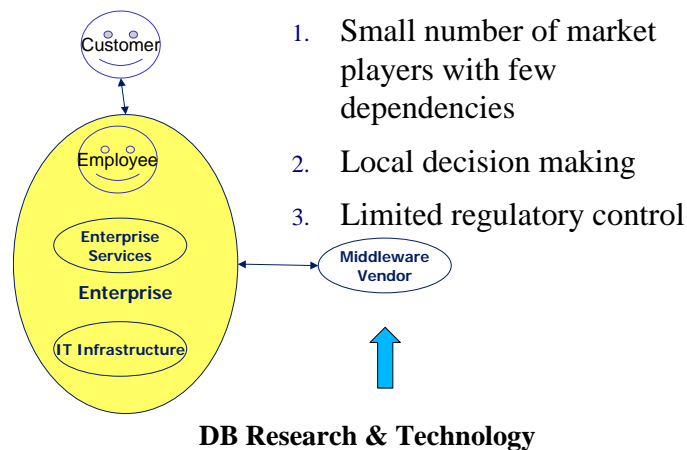
- **Where is the content?**
  Market access:Europe's MNOs decide who can enter the market
  Jamaba, Lycos,
  revenue sharing is unfair for content providers in Europe
  in iMode NTT DoCoMO takes 9 % of the revenues for official content providers, but takes all of the airtime revenues; this is the main revenue source
  roaming works only for voice and SMS? not for applications/services (contractual issues)
- **What happened to UMTS?**
  i-Mode was similiar to WAP and a success in Japan why,
  in Europe the technology was sold not the services or value proposition
  too many promises, too few real things
  the market in Japan began to grow, but not in Europe
- **Security issues:**
  users feel insecure
  privacy legislation is there in Europe it might help to reduce the insecurity, but might also cause additional costs to providers
  Mobile payment: People trust their bank but not unknown provider or MNO
- **Cost aspects**
  variable costs are high (transfer costs) fixed costs low
  the cost models are too complicated for users in Europe
  Charging of data transfer is per kilobyte
- **QoS of LBS**
  the QoS is not predictable, sometimes too low position accuracy, but also quality of data
- **Standards**
  sometimes   not detailed enough or not followed strictly by terminal manufacturers or their subcontractors (microbrowser)
  heterogeneity of terminals, heterogeneity of standards by diverse MNO/Service providers
    in B2C services this is bad; many terminals require adaption of the contents and service
    no service roaming possible; walled garden!

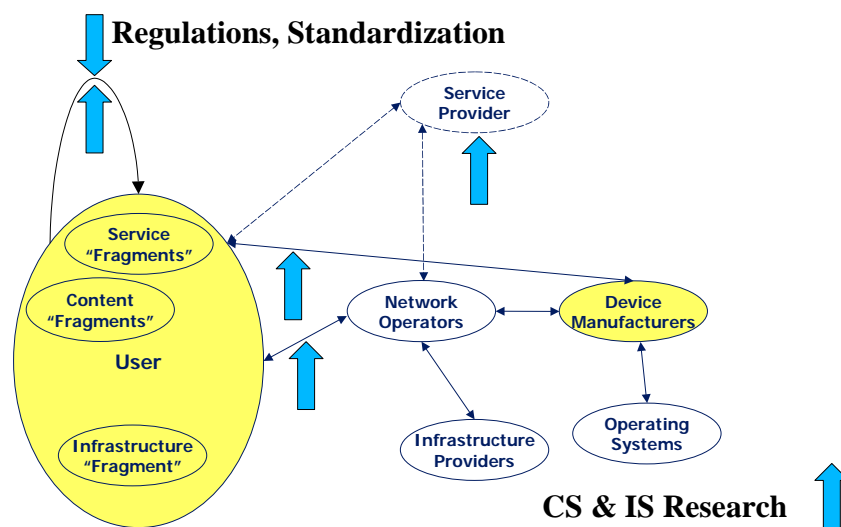## 4 "Delta" between traditional DB/IS and mobile applications

In the concluding discussion the participants tried to identify the differences between traditional DB/IS applications and mobile applications. Understanding the differences can help to develop better methodologies and guaranteeing also to some extend an economic success. Looking back one sees that traditional DBs/IS were (and still are)

- Generic DB provided by a software vendor
- Specific IS constructed for „the enterprise"
- Well-defined user group (internal / external)
- Hardware, software, infrastructure, staff „owned" by the enterprise

We have the three (or four) tier model distinguishing between presentation, workflow, algorithm or process and data layer. Traditional applications address a small number of market players with few dependencies, support local decisions, and operate under limited regulatory control. The middleware vendors (e.g. IBM, Oracle) are the major players from a R&D point of view and the consequences from changes can be localized and to a certain extend kept under control.

1. Small number of market players with few dependencies
2. Local decision making
3. Limited regulatory control

DB Research & Technology

In the world of mobile applications (and even more when we talk about P2P-applications) we face a totally different situation:

Regulations, Standardization

CS & IS Research

The consequences for engineering are:
- Be explicit about non-technical constraints / assumptions
- Identify potential user of engineering artifacts
- Try to reduce number of parties that have to change their current practices

But the real issues and challenges which have to be taken into consideration are:
- Device capabilities are crucial
- Extremely high number of autonomous users
- Decision of individual user based on perceived personal benefits
- economic value
- social criteria (fashion / style, peer groups, reputation, being connected, ...)
- psychological issues (safety, joy, ...)

So a lot of work remains to be done – especially if mobile and / or P2P systems shall become a success also under business perspectives.