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# Is there a 'Killer Application' in Mobile Technology?

## A Tailored Research Approach

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## Zusammenfassung

Derzeit existierende mobile Anwendungen sind durch die Vielzahl und Komplexität der ihnen zugrundeliegenden Technologien und Architekturen gekennzeichnet. Klassifikationsschemata sind deshalb oft lediglich deskriptiv und weniger an qualitativen Aspekten ausgerichtet. Aufgrund des besonderen Umfelds im Mobile Business sind jedoch qualitative Forschungsansätze zu bevorzugen. In diesem Artikel wird daher ein kombinierter Ansatz aus „Grounded Theory“ und Delphi-Methodik zur Untersuchung mobiler Anwendungen vorgestellt. Er soll als Grundlage für die Entwicklung eines Frameworks mobiler Anwendungen dienen und damit zu einer größeren Transparenz der marktlichen und technolgischen Einflussfaktoren im Mobile Business beitragen.

## Stichworte

Mobile Technologien, Mobile Business Anwendungen, Grounded Theory (Gegenstandsbezogene Theorie), Delphi-Studie

## Abstract

Applications of mobile technology in business in the current environment are characterised by a critical reliance on a diversity of highly complex and often competing technology infrastructures and architectures. Classification models are often very descriptive and orient themselves more on the overt attributes than on the underlying qualities. Recent models, however, apply a wider set of concepts in an attempt to establish basic concepts. It is argued that the special character of mobile applications, their fluid environment and equally changeable technology foundations make qualitative research approaches more appropriate. A combination of Grounded Theory and Delphi Research methods is recommended for future research and a nascent research project with the objective of establishing a fundamental framework for mobile applications and a basic understanding of the market and technological forces governing them. First results from the study are outlined and commented upon.

## Keywords

Mobile technology, mobile business applications, grounded theory, Delphi research

# Inhalt

# 1 Introduction

Applications of mobile technology in Business (further on referred to as Mobile Applications) in the current environment are characterised by a critical reliance on a diversity of highly complex and often competing technology infrastructures and architectures. The technical underpinning is thus often of less than desirable reliability and intra-compatibility between its components is nearly always an issue. It is no surprise that against this backdrop the technical aspects of mobile business have often appeared to dominate its assessment. However, the many failures of the 'dot.com' ventures showed that business models generated to support activities designed because they could be done technically – rather than support customer needs - are likely to achieve less than anticipated rates of success. Following these insights, a new set of classification and assessment approaches has appeared in the literature. This paper sets out

- Firstly to discuss, compare and critique a set of taxonomy models, predominantly from the German and other European literature;
- Secondly to look at an alternative, grounded approach for a classification schema.

# 2 Recent approaches to categorise Mobile Applications

Mobile applications are a subset of Electronic Business (EB) applications. It seems therefore useful to look first at general models of EB to use as a backdrop against which to set specific categorisations of Mobile Applications.

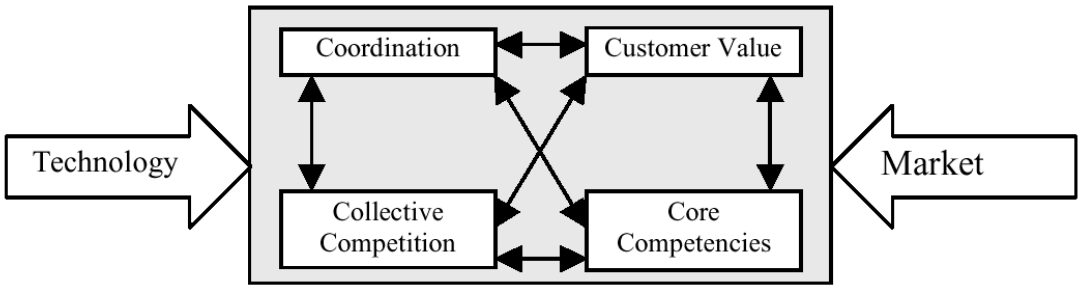


*Fig. 1: Framework for business model analysis [PaPD01]*

[PaPD01] suggest a model for EB which seems to be appropriate for Mobile Applications. The model acknowledges the influences of technology and links them specifically with competitive and co-ordination capabilities. The latter, specifically, is of importance to mobile applications because of the larger number of actors required to deliver a product or service. Technology is then juxtaposed by market influences, focussing on core competencies and

customer value respectively. In this respect the model clearly takes into account the lessons learned from many the failed 'dot.com' firms of the last few years. Figure 1 illustrates the model.

Building on models developed by [Lehn01] for the interactivity of the multiplicity of actors and platforms in the technology environment and [Timm98] interaction dimensions of functionality and innovation, [Roet2002] proposes a model that further dissects the market related issues affecting Mobile Applications, especially those in the M-Commerce arena. The model elements are segmented into firstly Value –adding Factors, namely

1. Personalisation
2. Localisation

(both of which are considered to be not yet fully obtainable technically)

3. Ubiquity
4. Immediate Access

Secondly, there are Hygiene-Factors (i.e. they have to be present for initial uptake of the service, but do not in themselves add value). They are

5. Cost (lowest possible)
6. Security
7. Convenience

[Meie02] takes this market focus further into looking at mobile applications as contributions to Customer Value. Looking at the specific environment of the banking and finance industry, [Raus01] moves even further into the concept of customer relationships, using Maslow's hierarchy of needs to classify mobile applications as to the extent that they can satisfy basic and higher needs. In contrast to such 'factor' models there are a number of classification schemes for applications by either their target user-community and/or by the industry of their supplier(s). [Roet02] (citing [Riem01]) separates two classes of applications. [DLLV02] extend these classes and set out a classification matrix that maps applications by initiators and recipients. The matrix, together with examples of products/services for each combination of initiator and recipient is shown in Table 1.

| *initiate>>>receive* | *Business* | *Consumer* | *Employee* | *Administration* |
|---|---|---|---|---|
| *Business* | SCM, Alliances | Information, Products & Services | Sales Force Automation | N/A |
| *Consumer* | Purchasing, Payments | Peer-to-peer exchanges (e.g. products, information, payments) | N/A | Tax returns, other formal interactions |
| *Employee* | On-duty reports, sales reports, expense claims | N/A | Peer-to-peer-applications, e.g. Network-of-experts | Compliance applications; |
| *Administration* | 'Personalised' due-date-reminders | Personalised interactions, e.g. reminders | Personalised interactions of a formal nature | Peer-to-peer-communication applications, |

*Tab. 1: M-Commerce Application Matrix (after [DLLV02])*

In addition to the several types of generic types of mobile applications users, there are also a number of players involved in the creation and distribution of the technology applications. This adds more complexity to the mobile applications by introducing another dimension to their classification, as [MaSt02] discuss, in their case for the specific environment of financial services provision. Figure 2 shows the interaction between the key classes of participants in the creation of a mobile application.

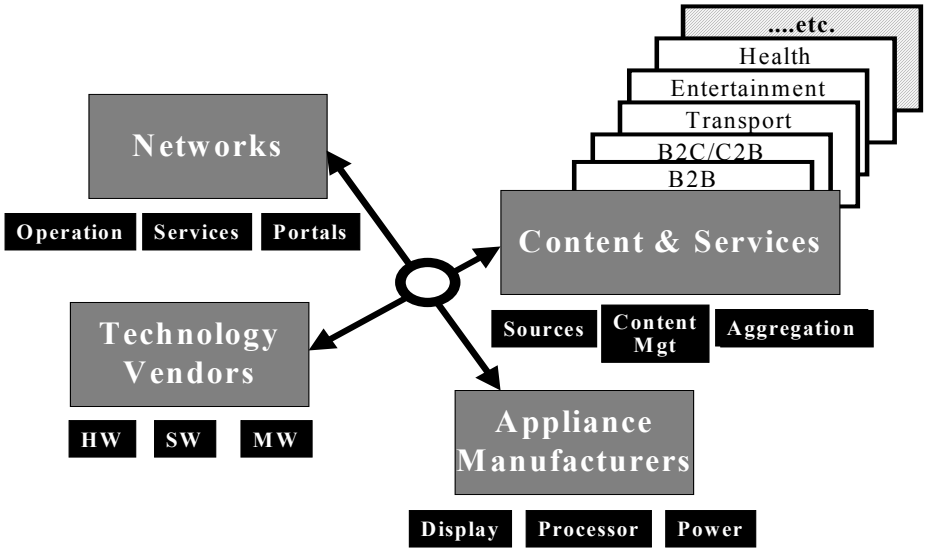


*Fig. 2: Participants in Mobile Commerce Applications (after Lehner, 2001)*

[CD+X01] introduce another perspective, which brings together the actors either as 'customers', 'producers' or 'management' (a rather diffuse category, which unites all the

various business and economics issues raised by mobile applications, such as cost/value ratios, logistics, etc.). In this model, customers and producers complement each other in their key concerns, as the following comparison shows:

| ***Customers** demand* | ***Producers** supply* |
|---|---|
| **Flexibility** and ubiquity | **Modularity** and generic **building blocks** (in support of flexibility) |
| **Value-adding** functionality | **Layers**, to personalise products services to add maximal individual value |
| **Quality-of-life** enhancing features | Bundling of modular blocks into personalised/localised products/services |

In consequence, [CD+X01] then dispute (as do a number of other researchers, e.g. [MaSt02]) the existence of any specific singular 'Killer Application'. Instead they point to a number of potentially 'lethal' bundles, which they characterise by whether the components can be distinguished and by the amount of synergy the components generate[1]. They conclude that the synergy providing bundles will have a greater propensity to satisfy users' demands within the limits of technology as well as within sensible economic boundaries.

Building on a model that [StWa00] developed for categorising and classifying E-Commerce along the interest of the six generic key stakeholders[2], [LeWa01] propose an extended model by adding two more perspectives:

- Services and Applications are a conglomerate of three generic components, i.e. information provision/processing, transaction execution or communication processes; and
- Institutional market units, i.e. the actors (as defined in [Lehn01]) in their particular configuration for a specific service or application. [VaVe01] suggested a specific life-cycle for their interactions.

[Lehn02] brings together these multidimensional approaches into a comprehensive taxonomy, which classifies mobile applications according to four key characteristics:

1. Type of communication (information, interaction, transaction, uni- or bi-directional, push/pull, etc)

[1] They named the first group ***Killer Cocktails*** or ***Pizzas*** (recognise ingredients or not), ***Soups*** or ***Fondues*** (operator needed or not) and the second group ***Killer Bouquets***

[2] These are: (1) suppliers or (2)intermediaries, (3) customers (4) government, (5) employees, and (6) investors.

2. Basic functions (e.g. which media application (voice, graphics, etc), payment, security, etc)

3. Technical platform or service (network (GSM, GPRS, etc.), technical service (WAP, i-Mode, etc.); and

4. The application's domain in industry terms.

The basic schema is demonstrated in Fig. 3.

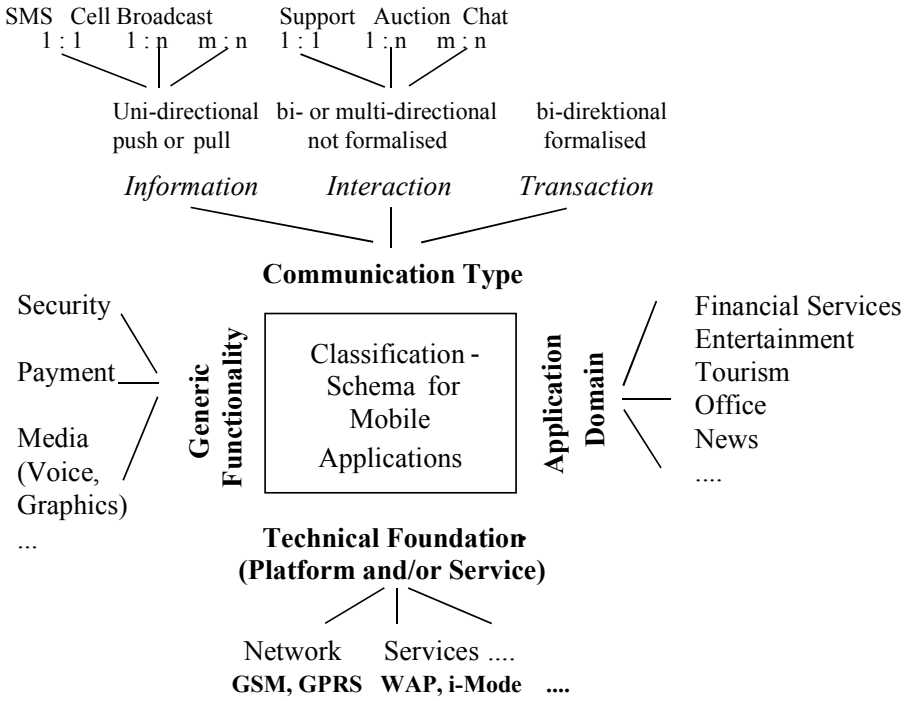


*Fig. 3: Classification Schema for mobile applications (Lehner, 2002)*

## 3 Critique of the Classifications Models and Schemas

A majority of these earlier models and taxonomies are in the first instance descriptive. They order mobile applications by a number of 'surface qualities' such as by industry, by type of process, nature of the application and so on. This hold also true for a large section of practitioner-oriented research, mostly done by professional research companies such as Gartner, Forrester, Ovum and Durlacher, etc. They produce useful statistics on technology penetration (e.g. number of WAP handsets), application usage (e.g. SMS), mobile internet access parameters and similar topics. Many of the remaining publications, sometimes originating from academic sources, are similarly technically oriented or just surveys (for an overview see e.g. [PrMK00], [Mull00], [Webb99], [LLLB99], [HMNS01]). These studies are not very conducive to developing a conceptual understanding of the application of mobile technology, or to fathom why some applications are accepted and used by more people than

others, why some applications can command a price whilst others struggle to be given away. Some of the more conjectural classifications schemas are not at all borne out by the realities of the mobile applications market, as an analysis of a database of selected applications in the German speaking part of Europe testifies ([LeLe02]). Two thirds of the applications do not fit into the grid as provided by [DLLV02] and can only be classified with the help of one or other of the additional dimensions provided by [Lehn02]. This is demonstrated in Figure 4 below. The illustration further shows the surfeit of similar generic applications such as mobile payments that are destined to consolidate severely if and when a leader application provider emerges.

Some of the more recent attempts at classification, however, are beginning to address this concern. Using approaches like Maslow's need hierarchy as [Raus01] did, or distilling the concepts of Hygiene *versus* Value-adding factors in the analysis of mobile applications ([Roet02]) are attempts at using some deeper seated characteristics to gain a wider-reaching understanding of mobile applications.

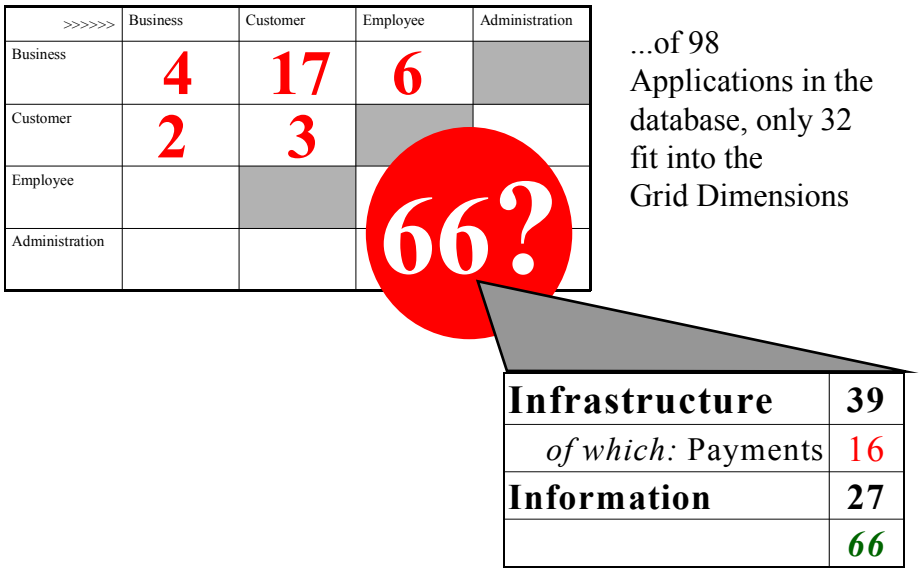


*Fig. 4: Classification fit of a selection of mobile applications (after Lehner & Lehmann, 2002)*

Similarly, [Meie02] and [DLLV02] apply perspectives which are aimed at developing insights into the dynamics of user acceptance and market interaction of mobile applications. [CD+X01] try to bring together the variety of elements, actors and environments in the "attempt to form an embryo of a conceptual framework for m-commerce products and services". [LeWa01] actually present such a framework, which encompasses and links markets, actors and applications. [Lehn02] developed this further into a four-dimensional framework, further refining applications by type and content.

Is there a need to go further? If what we are on about were traditional IS, the answer would be in the negative: there is little need to further the understanding of technology applications in a field that has been well researched for many years and is by now reasonably well understood.

Mobile applications are different and it has been argued that the whole of mobile business is an emergent field with it its own sets of concepts, rules and relationships. This claim is often made by nascent fields of research and the reasons are often the lack of knowledge and understanding, the inability of making sense of what is going on. Some of the view that mobile applications are different stems no doubt from that corner. On the other hand, for example, cell phones are used by poorly educated and even illiterate people, a segment significantly different from the well-educated white-collar workers that are so often the subjects of traditional IS investigations. Cell phones have an aural, tactile, and visual interface, whereas the bulk of IS research has focused on visual interfaces. Mobility and ubiquity are another set of issues that have not traditionally concerned IS researchers, whose investigations have predominantly occurred within the office. When an information technology affects new populations with a new interface in new places, IS researchers are venturing into terra incognita. Whilst there is no doubt that there will be some revisiting of old issues, the study of mobile applications will force researchers to confront some significant new IS issues.

# 4 A Grounded and Iterative Approach to Concept Development?

Where a new situation does not allow the carry-over of theoretical frameworks from which to form conceptual ideas from, methods that attempt the derivation of insights from quantitative data are often less than satisfactory. Methods are needed that develop interpretations of the data from the data itself and go on to build coherent and comprehensive mental pictures of what is happening inside the phenomena studied. Such methods are predominantly qualitative and aim to create conceptual frameworks that can both explain and predict the occurrences under observation.

There is a wide variety of qualitative research methods in use in the social sciences and their use is becoming firmly accepted now in information systems research. One of the approaches specifically useful for the investigation of mobile applications would be the discovery of ‘Grounded Theory’ as it is specifically designed for situations where no previous experience or theory dominates. What will happen in the field of mobile applications will furthermore be determined by the deliberate actions of a number of actors, rather than develop in an evolutionary way. Delphi approaches, with their roots in Future Research are appropriate for

such an environment – albeit not often used in qualitative settings. In the following paragraphs both are briefly introduced and their combined use discussed.

Grounded theory is a qualitative research method that seeks to develop theory that is grounded in data systematically gathered and analysed. According to [MaTu86], grounded theory is

*"an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data."*

The major difference between grounded theory and other qualitative research methods is its specific approach to theory development - grounded theory suggests that there should be a continuous interplay between data collection and analysis.

Grounded theory approaches are becoming increasingly common in the IS research literature because the method is extremely useful in developing context-based, process-oriented descriptions and explanations of the phenomenon studied ([Myer97]). One reason that researchers are attracted to grounded theory approaches is that it offers relatively well signposted procedures for data analysis, and it gives original and rich findings that are closely tied to the data ([Orli93]). It is this last point can provide the researcher with a great deal of confidence, as for each concept produced, the researcher can point to dozens of instances in the data which relate to it.

Furthermore, the field of Mobile Technology is characterised by

- Uncertain technology, often changing unpredictably (e.g. as forecasts of vendors are 'updated');
- High complexity of the applications themselves, which often involve several, not always fully compatible, technologies;
- Multiplicity of actors involved in mobile applications, of different size and stability, often with uncertainty about their ability to deliver or perform to specification/expectations.

[LiTu75] maintain that a research approach based on multiple question and feedback techniques, such as a Delphi study, is appropriate in situations where:

- The problem does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis;

- The problem at hand has no monitored history or little adequate information on its present and future development;
- Addressing the problem requires the exploration and assessment of numerous issues connected with various options where the need for pooled judgement can be facilitated by judgmental techniques;

This seems to encourage the use of a Delphi approach for the investigation into the future of mobile technology and its applications.

Traditionally, the Delphi method had been applied with a quantitative bias – with the aim of consolidating the frequency distributions of related answer clusters and to reduce the variance among the responses. It involves a multi-stage process that requires the collection and synthesis of data from a panel of experts within the field of study interspersed with controlled, summarized information and feedback of opinions derived from earlier responses ([AdZi96], [DeVG75]). Since its development in the 1950's by the Rand Corporation for use in military planning and forecasting ([Wart99]), the Delphi method has been applied many times to problems ranging from governmental planning and policy making ([BaOR82]) to healthcare ([AdZi96]) to climate change ([Delo95]; [WiTi97]). However, asking questions about such – practically – non-quantifiable issues as technology standards, application types and business models makes a quantitative approach inappropriate. Applying a Grounded Theory paradigm for the conceptual analysis of qualitative responses seemed therefore a good complement to the iterative, feedback driven data/information capture inherent in the Delphi approach. In combination, both methods should work well in tandem.

# 5 A Delphi Study of the Future of Mobile Technology Applications in German-speaking Europe

Directed from the Centre of Mobility and Information at the University in Regensburg, a multiphase study in the Delphi tradition was started in July 2002. The panel of participants comprises researchers and academics, industry people from ‘application’ providers and in a ‘user’ capacity and representatives of the ‘supply’ industry (telecommunications companies and network operators) across Germany, Austria and Switzerland as shown in the table below.

The participants were asked to prepare - and return - exposés, based on their own experience and/or research that expressed their considered opinion on what would be the situation over the next 5 to 7 years with reference to the following topics:

(a) Which will be the dominant technologies?

(b) What will be the user/customer/market structure?

(c) What will be the dominant applications of mobile technology?

(d) What will be the prevalent business models?

(e) Who will be the dominant players/powers in the market?

(f) Will there be significant national differences – and where?

| *Type* | *Firms* | *Respondents* |
|---|---|---|
| Application | 18 | 23 |
| Supply | 8 | 14 |
| Research | 8 | 15 |
| *Total* | *34* | *52* |

*Tab. 2: Panel of Participants*

The replies were substantial: Over 80% of the panel replied on time and the average answer to the detail questions were essays of about 800 words. The responses are being analysed in two ways:

- 'Open Coding' in the Grounded Theory tradition is applied to the data and commonalities are conceptualised from it;
- The set of concepts will then be built into a set of scenarios, assembling concepts of like content, and will be tested for contrasts between and/or within groups.

The results will then be summarised and sent back to the panel for a new opinion, now commenting on the scenarios that have emerged. After two more iteration it is expected that clear scenarios and opinion groupings will have emerged that reflect the consensus or agreement-to-differ to such an extent that further feedback/loops would not yield any more significant movement of the issues – they will be "saturated' in terms of Grounded Theory technique.

In the following paragraph an overview of the first summaries to the top three topic groups is presented as a demonstration of the method.

## 5.1 Views on the Future Technology Trends

Seven conceptual groupings emerged from the answers to the technology question. The key response was that firstly, wireless technology will be dominant in the near future, long before 3G[3] (still assumed to be 4 to 7 years away) will have found widespread acceptance. Furthermore, WLANs[4] are expected to dominate the urban landscape, relegating 3G to the countryside – a reversal of what is seen as the only economically feasible way of rolling out 3G. The other technologies too will remain in use: 2.5G seen as adequate for most B2E/B applications, which account for 3 out of 4 users. This makes it imperative that 'roaming' between technologies is possible.

| *Technology Trends* |
|---|
| UMTS/3G is still 4-5 years away before useful "industry-strength" applications will be available |
| WLAN will dominate in the near term |
| WLAN and UMTS will co-exist; WLAN will dominate in the urban centres ("Hotspots") and UMTS will be available in the remote/country regions |
| 2.5G will be enough for most B2E/B applications and will dominate (70%) |
| Roaming between 2, 2.5 and 3G as well as WLAN will be of key importance |
| Small handsets, using a mix of technology standards and running specialised applications will emerge:<br>• Voice still on 2G,<br>• WAP types services on 2.5G and<br>• Multi-Media-Services (MMS)/"I-mode" type on 3G |
| **Significant minority view:**<br>The dominant appliance will be a hybrid of mobile-phone-type handset and personal-digital-assistant (PDA) - will be designed to cater for all applications; |

*Tab. 3: First Round summary of forecast trends*

There is a spit of opinion whether specialised handsets for different applications or one type of general-purpose appliance will dominate the market. Table 3 shows this summary.

[3] 1G=**1**st **G**eneration of **analogue** mobile technology; 2G= **digital** mobile technology; 2.5G=compromise technologies (Generic Packet Radio Standard, GPRS, is one of them) to fill the gap until 3G=**wideband** technology is made public. In the European context 3G is the set of Universal Mobile Telecommunications System (UMTS) Protocols
[4] Wireless Local Area Network(s)

## 5.2 Who will be the dominant users?

A similar conundrum for the network suppliers characterises the forecasts about the user community: the most likely users to want to avail themselves of the 3G wideband applications such as audio, video and multimedia messaging are the teenagers – who cannot pay for them. The user group with the largest growth rate are believed to be the young(ish) professionals, male and aged 25 to about 40. Their business uses can, however, be supplied adequately with 2.5G technology and they, too, will not pay for wider bandwidth.

This is borne out by current developments: The German and Belgian 'i-mode' networks (the closest approximation of 3G network services) will only be signing up some 300,000 users in their first year – compared with Japan's 30 million in three years. At an annualised rate, Europe this is a take-up rate of less than 3% of what i-mode experienced in Japan some three years ago ([LuNM02], [Scot02]). A significant minority view looks at a group of special-needs users as a major application area for 3G services (see Table 4).

| *User Community Trends* |
|---|
| UMTS users will be teenagers and young adolescents – however: majority of this age group will not be able to afford the cost of UMTS services on a broad base |
| Majority users will be male, 25-40 age group, professional/business executive types; using B2E type functionality – will run on WLAN and/or 2.5G; this will be where the large growth in mobile applications usage will come from; |
| Wideband services (WLAN/UMTS) will stay a minority; traditional telephone on 2G, occasional 2.5G application on a pay-by-transaction basis; |
| **Significant minority view:**<br>Large group will comprise of special needs users: Handicapped, aged, convalescents, parents of children/adolescents; |

*Tab. 4: First-Round summary of the forecast trends in the user community*

## 5.3 Forecasting Mobile Technology Applications

When it comes to predicting what will be the most successful/useful, i.e. the "Killer" applications, there is no easy consensus visible. There is some accumulation in the view that business applications will dominate, of the type that not only sales people can use, but also application clusters that will be of assistance to mobile workers, such as repairpersons and travelling supply contractors.

In general, these applications will be useful, interactive and often essential for the mobile workforce in a wider context. There are very few consumer applications named that would provide a feasible customer base for mobile technology. Small payments and ad-hoc ticketing/reservations services are the more commonly mentioned consumer-type applications. This trend is summarised in Table 5.

| *Application Trends* |
|---|
| B2E/B type applications centred around messaging: voice, e-mail, short-message-service (SMS) – will be upwards of 70% of all applications |
| Specific sub-group of B2E, B2B, E2E will involve applications for the mobile workforce (MRO[5] type work as well as Marketing/Sales type work |
| Small payments (B2C) and ticketing/reservation type applications (C2B) |
| **Large number** of "**Other**" applications (often information services of various types, sometimes with a Location-Based-Service characteristic; and multiple **minority views** |

*Tab. 5: First-Round summary of the forecast trends in the mobile applications area*

This can be seen as a close extrapolation of the existing applications on offer: Of all the possible positions in the applications grid between Business, Consumers, Employees and Administration (i.e. local and central government) only a few cells are seen to be viable applications markets, as Figure 5 shows.

| >>>>>> | ***Business*** | ***Customer*** | ***Employee*** | ***Administration*** |
|---|---|---|---|---|
| ***Business*** | B2B Sales & Supply | B2C Payments | B2E Marketing & Sales | |
| ***Customer*** | C2B Ticketing & Reservations | | | |
| ***Employee*** | E2B Mobile Workforce | | E2E Team Management | |
| ***Administration*** | | | | |

*Fig. 5: Forecast applications trends*

## 6 Conclusions and First Pointers

Classification schemata and models available to assist a deeper understanding of what is happening with the applications of mobile technology are often merely taxonomic and too descriptive to really fulfil their purpose. Recent models are beginning to use a wider set of

concepts and ideas to facilitate a more penetrating comprehension of mobile phenomena. It is demonstrated, however, that models based on quantitative and deductive approaches only account for a small proportion of the variance among real-life mobile applications. Deductive conjecture does thus not perform as well in the process of 'sense making' and it is argued that in order to foster understanding and explanation of the phenomena a qualitative, grounded method is needed. This can be further strengthened if a Delphi research approach is adopted, i.e. if data collation and analysis is carried out in multiple iterations among a setting of expert participants, who are also stakeholders in the substantive area of mobile technology applications.

Following these considerations, a Delphi research project had been started in three European countries with the aim of establishing some fundamental insights into the demand for, the nature of and the relationships between the elements of mobile technology applications. An analysis of the three more pressing questions, i.e. the dominant technology, the largest user group and the "killer" application is outlined below. Two observation have been made immediately: Firstly, the overwhelming majority of participants shows clear and precisely articulated opinions, often underpinned with their own investigations, experiences and research. This makes for clear groupings of results and often sharply divided minority standpoints.

The second key characteristic of the first summary forecasts of the face mobile technology will present in the next 5 to 7 years is that they are surprising in a number of ways:

- UMTS, the predominant mobile technology in Europe, is not seen to be successful, or at least not in the next 5 to 7 years. On the contrary, wireless network technologies will take over the market in the near term, especially in the urban areas with high user densities;

- Moreover, the 3G market as a whole is considered to be much smaller than commonly – or "officially" – foretold; the main reason for this is that

- The largest user group will be male, 25 to 40 year old professional business users; they will, however, use mostly 2.5G services, which are seen as greatly sufficient for business applications;

- The dominant application clusters are thus B2E services/facilities with limited requirements for graphical, audio and/or video sophistication; teens, the only group with a presumed interest in genuine 3G capable services (such a s games, audio and video

[5] Maintenance, Repair and Operations

products and messaging), will however not be prepared (or able) to pay the required tariffs and rates for them;

- Consumer applications with the exception of electronic ticketing and payments, show a wide spread and there is little consensus among the participants.

These findings are in conflict with the official "line" taken by the 3G providers in Germany, Austria and Switzerland, where the research is domiciled – they do however show similarity with the findings of professional Internet research firms. Forrester, for one, predicts in their latest market assessment ([LuNM02]) that the number of 3G subscribers will only amount to about 20% of what network operators expect by 2007. Therefore, the average operator in Germany, Austria and Switzerland will not be breaking even before 2014 – assuming that they can achieve maintaining the exorbitantly high rates they need to charge because of the extravagant prices they paid for their licenses three years ago. Even then, the break even point will occur are just a few years before their licenses run out.

The results will now be summarised and given back to the panel who will be asked to comment on them and, in the light of these first results, perhaps modify their points of view/opinions and forecasts. Depending on the degree of 'movement' in the second round of answers, a third round might be needed to consolidate the final results. The project is scheduled to finish in March 2003.

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