

# Is there a need for mobile broadband? Good question!

Author: KPN Research, Marc Steen, 2003.

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Is there a need for mobile broadband? Will people adopt mobile broadband services? These are very important questions, because in general it is wise to first find out whether people need or will adopt what you are planning to build for them, and then start building. But for a complex innovation like 'mobile broadband' these questions and answers are also complex. The goal of this article is to make the reader aware of this complexity, and how difficult it is to make a good prediction of future. Actually, it boils down to making a set of realistic scenarios. This article introduces trends analysis, adoption theory and contextual enquiry as perspectives that may enhance insight in the need for mobile broadband.

## Need for mobile broadband: a complex question

You may be tempted to simply ask a person whether he or she will need 'mobile broadband'. If you would ask "Will you need mobile broadband or mobile broadband services?" the answers will depend on their personal interests and attitudes. People with a positive attitude towards technology who also know the possibilities of technology may mention future applications and say that they expect that people will need these. People with a negative attitude towards technology may be critical towards mobile broadband and mention aspects like privacy risks and human contact being replaced with technology. Asking these questions will not help to understand the need for mobile broadband. In the last paragraphs you will find a better method of enquiry.

It is not that easy to talk about mobile broadband technology in general. Questions about investing or building mobile broadband network technology are much more complex compared to the same questions for a single specific service. The question about mobile broadband network technology has many aspects, e.g. users, politics, regulations, financing, and there are many parties involved, e.g. operators, network builders, IT developers, device makers. In such a complex case, it is pragmatic to assume that in the coming 5 to 10 years there will be a need for a number of mobile broadband services, and that it is necessary to start specifying and building the network technology that will enable and exploit these. By the time the technology is ready, the marketing people will have studied specific needs and service developers would have developed specific services.

## What will be the 'killer application'?

It is tempting to try to formulate the 'killer application' for mobile broadband; because examples may help to focus attention during development. Over the past decades, we have seen many ICT initiatives claiming the 'killer application'. One example is the area of interactive TV, where most people keep using their TV in non-interactive ways. Marketeters, developers, device and equipment makers, service and content providers describe their 'killer app' and ask for money from potential investors, but after the pilot or introduction, many initiatives are disappointing for the industry and for end-users. Based on such cases, one can conclude that it is difficult to predict the exact 'killer app'. But one can guess that future 'killer apps' will look like current 'killer apps': people will enjoy mass entertainment in the living room, people will communicate with a small group of people, and people will share specific content with a small group of people [1]. And if you extrapolate trends in technology, you will see that devices become increasingly small and mobile, content becomes increasingly rich, i.e. a mix of text, images and sound. These trends suggest that a need for a mobile broadband network will arise and that on that network, services will live that are yet unknown.

## **Trends analysis: looking at society and daily life**

If you want to formulate arguments for this bold statement – there will be a need for mobile broadband – then you may use trends analysis. In a technology driven business like telecom, people often talk about technology trends, but the trends in society and in daily life are just as important. Or even more, because logic says that people may adopt a product with poor functionality if their need is large enough, but people will not adopt a product because of the technology if they have no need for it – except of course gadget lovers. If you analyse trends in society and in daily life, then you will find those that support the idea of a future need for mobile broadband.



For this case of mobile broadband, the trends of individualism, flexibilisation, mobility, and digitalisation are relevant [2]. People will prefer products and services that fit their individual needs and style (individualism), they increasingly mix work, family, friends and leisure (flexibilisation), they move increasingly between locations for work and private goals (mobility), and digital media play an increasingly important role in daily life. These trends indicate that people will adopt and use products and services that fit their personal needs and style, that help to live flexible and mobile lives, and that help to use multiple media for communication and information. Examples of such services are services for tele-working, working en-route or working on different locations. Also, one might think of services that help to organise and co-ordinate private and social life. A specific aspect within trends analysis is ‘scenario thinking’. Some trends are difficult to predict, or are ambiguous, e.g. the economy may grow or may stagnate. In such cases one can make ‘scenarios’, e.g. one based on the assumption of economic growth and one based on the assumption of economic recession. The idea is that no one can predict the future, but if you take into account different possible futures, then you are better able to prepare yourself.

We’ve stated that by the time mobile broadband technology is ready, marketing people will study specific needs and developers will develop specific services. This is a minimum option. If an R&D wants examples or images of specific future services, one can do better. One may study the mechanisms that influence adoption of innovative products and services (adoption theory) and one may study current behaviour of people and the added value that a new product or service can offer (contextual enquiry).

## **Adoption theory: triggers and thresholds for adoption**

Adoption theory [3] is helpful in understanding the properties of an innovation that influence whether people will adopt it or not. People will adopt an innovation if it fits their current daily life behaviour (‘compatibility’) and – at the same time – adds value to it (‘relative advantage’). An innovation like a ‘digital camera with mobile phone that can send and receive pictures via e-mail’ may fit well with current behaviour like ‘take a snapshot on the beach and share it with friends’. And it adds speed and ease-of-use to current behaviour; you can take the picture and send it within minutes to your friends, instead of delivering the film to a shop, collect the pictures and then mail them. Costs can also play a role in adoption, e.g. Ericsson states that more than \$1 per day is a threshold.

There is an important factor that may hinder adoption: ‘complexity’; the opposite of ‘ease-of-use’. The amount of effort that an end-user has got to put into learning or operating the product or service may be a threshold for buying or using it. So called ‘early adopters’ often have a high threshold for ease-of-use; their professional need or love for gadgets overrules the complexity. The last two properties are ‘visibility’ and ‘triability’; these refer to being able to see the results and benefits of the innovation, and being able to try it out before you buy it. Visibility and triability reduce uncertainty and stimulate adoption. In the ‘camera/phone’ example, the visibility may be low; it may look like a camera with a small antenna. A mobile phone on the other hand, has a high visibility score when you compare it with a fixed phone, it clearly shows: no wires, take me with you. The ‘camera/phone’ may score moderate on triability. You take the camera, push the button, enter your email address and push ‘send’, and then you find a PC, check your email and there it is. Obtaining passwords, subscriptions and configuring may be thresholds for triability. A mobile phone has again a high score: you take it, dial a number and speak with the person. With adoption theory, it’s easy to understand why mobile phones are such a success: it fits into current patterns of communicating, adds mobility to it, they’re easy to use, and their benefits are visible and triable.

#### **Factors that influence adoption**

Compatibility  
Relative advantage  
Complexity  
Visibility  
Triability

It’s important to understand that ‘relative advantages’ may be somewhat different in different contexts. In a work context efficiency may be a relative advantage; getting work done with less effort or getting more work done with the same effort. In public sectors or society contexts, e.g. in education, transport or health care, effectivity may be a relative advantage, realising a certain level of quality, of course for a reasonable amount of efficiency. And in a private or leisure context, the ‘fun factor’ could be a relative advantage; spending time may be more important than saving time, and an activity for fun is not aimed at realising goals. In a leisure context some people enjoy difficulty, e.g. a game that engages for days. Because of these different qualities of relative advantage, it’s difficult to say something in general about e.g. ‘ease of use’. In a work context ease of use may be key. In a public sector it may be subordinate to the overall goal, especially when a professional uses it.

#### **Contextual enquiry: current behaviour and added value**

The key to understanding ‘compatibility’ and ‘relative advantage’ is understanding current behaviour and needs in realistic contexts, and understanding the added value of the new product compared to current and available products and services [4]. If you want to develop products or services that people will adopt and use in their daily life, then you must first study current behaviour and current use of products and services that fulfil similar needs.

In such interviews or focus groups one could talk with people who experience the daily life problems, that one wants to fix, about their current behaviour. In the phone/camera example, one should find people who are active with pictures on different locations, e.g. people that currently use cameras for reportages on location (professional use) or people who travel a lot for leisure and want to share this (private use). One can talk with them with a focus on their current phone/camera-related behaviour and needs, how they do it, why they do it, what they like, what goes wrong. But one should not mention the innovation! Because that may lead interviewer and respondent in a discussion about future features of future products - this is less trustworthy compared to talking about current behaviour. After these interviews you have a clear picture of current behaviour and needs.

<p style="text-align: center;"><b>Contextual enquiry</b> Understand daily life, behaviour and needs in realistic contexts</p> <p style="text-align: center;"><b>Concept Development</b> Create user interface, storyboards, demos, prototypes, pilots</p> <p style="text-align: center;"><b>Concept Testing</b> Understand current use, acceptance, benefits, added value</p>
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After this ‘contextual enquiry’, one should try to add value to current product, like speed and ease of use, and formulate a new service in concept form. If visualising the concept in the form of a sketch, demo is a good idea. It is important to show the innovation in the context of daily life activities, in the form of a story, e.g. “A day in the life of ...” (also called a micro-scenario). If the concept is visualised in such a way, then one can show this concept to the target group again and talk with them about the benefits and drawbacks that they perceive. One can show the concept as a sketch or story to the target group and ask them to imagine this innovation in their current behaviour, and then compare it with current products or services, and then evaluate it. This is the ‘concept testing’ phase; testing whether people perceive the relative advantage. It is wise to execute contextual enquiry and concept testing in the early phases of product development, and to execute several iterations; this speeds up the process and improves the end-result.

**Complex answer: There will be a need for mobile broadband**

So, will there be a need for mobile broadband? It is likely that people will develop behaviour and needs that may be catered with mobile broadband services that require mobile broadband networks. There are several trends in society and in technology that point in that direction, and that would justify investing in and developing in networks. But it’s wise to already start with prototyping and market testing services, and not wait until these networks are finished. Trying out services in daily life in the early phases of investing and developing will yield a clearer picture ‘on the fly’ of the functionalities, size and scope of these networks under construction. In such an approach, developing the network becomes more iterative and effective, instead of ‘writing specifications from an ivory tower’. In such process of prototyping and market testing, the methods of contextual enquiry and concept testing are very helpful.

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  2. TNO Telecom, Trends analysis 2002 and Trends analysis 2003
  3. Everett M. Rogers: Diffusion of Innovations, 1995
  4. Hugh Beyer, Karen Holtzblatt: Contextual Design, 1997