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Telecoms and Internet as
Interface to Interreality

A search for adaptive technology and defining users

by

Jacob van Kokswijk

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Dedicated to Erna and Bas,
my source, anchor and mirror


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JACOB VAN KOKSWIJK

Jacob van Kokswijk, MSc IT, PhD, (1949) is a communications expert, a part-time ICT consultant with Cap Gemini Ernst & Young and a sought-after speaker on IT and telecommunications conferences.

He is also associated with the Fontys University as an imagineer for ICT and education. In addition Van Kokswijk is carrying out research at the Architecture of the Cyberworld, related to human behaviour and user-system interfacing.

He has followed several academic courses in Dutch constitutional law, communications, marketing, scientific journalism, and informatics.

Jacob is member of the Next Generation Networks Initiative and was leader of EU's IST Fp5 Mobile User Requirements Workpack. Furthermore he is author, editor and columnist of several magazines, like Telecommagazine and Management & Information.

Utrecht, November 27, 2003


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PREFACE

A well-known contradiction of modern times is the discrepancy between technological progress and emotional well being. Technology makes our material lives more and more comfortable, and our entertainment choices richer and richer, but our emotional and spiritual needs seem to become more and more difficult to fulfill, with our mental equilibrium getting affected. For those of us in the telecommunications field there is a particular dilemma, as we are responsible for the extraordinary increase of communication choices and means, enabling mankind to interchange information at a level and a speed unimaginable even a decade ago. This brings with it the potential danger that face-to-face human communication cannot compete with the ubiquitousness and easiness of long distance communication and will be overwhelmed and weakened by it. Much has been written about the bad effects of television, that is blamed not only for inciting violence in youth and promoting moral and intellectual decay, but also for killing good old human conversation and interaction. People stay locked in their homes (figuratively and literally in some cases) watching (mostly innocuous) television instead of meeting friends at the neighbourhood bar or interacting with their families. Similar fears are expressed about the Internet and the world-wide-web, through which you can satisfy almost all your needs by interacting only with a machine and without necessity of any displacement. Jacob van Kokswijk's work is a welcome contribution towards understanding this process and making sure that the telecommunications technologies we are developing are used to enhance human communication and not to replace it, to improve mental well being and not to be an excuse for loneliness.

As Jacob concludes, there is a need to coordinate between the offer and the demand, or between the service and the user. This is also the objective of the EU's 6th Framework Research Program, the advent of an Ambient Intelligence where the user occupies center stage, with products and services being developed around and after the user, not before or irrespective of the user. Jacob wants a personalized service approach, because each user is unique, as the European motto of 'unity in the diversity' tries also to defend.

Paulo T. de Sousa

Head of Sector Broadband
Mobile, Satellite & Personal Communication
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TABLE OF CONTENTS

INTRODUCTION

The revolution in the telecommunications industry has been going on for some time; we just haven't noticed it because we have spent our lives – all of us – immersed in a monopoly run industry that, even today, derives most of its revenues from one application – voice. The revolution started when data applications like short-message-service and the World Wide Web were adopted by the more adventurous of us. SMS is in the mainstream now and you can find an Internet café in most towns even in emerging countries. The business methods that were the foundation of the voice dominated monopolies (and their offspring that pretend to be competitive but who still reason in the same archaic ways) will simply not work when there are hundreds, or even thousands of applications and services that have the potential of improving the lives of a wide variety of constituencies.

The approach of the monopolist is to find the common denominator in the market and mold that market into one that can be served by a single product. The needs of the "different" constituency are anathema to the monopolist. But the public, even those of us that are latecomers to cyber technology, is increasingly demanding customization and personalization. People are different from each other and yet it is possible to aggregate many large groups of users, of customers, each of whom represents a desirable and potentially profitable market.

But the approach to these new markets takes an entirely new way of thinking and no one is better qualified to think about, and to express, this revolution from centrally controlled rigidity to self-organizing flexibility than Jacob van Kokswijk.

In “The Architecture of the Cyber Culture” Jacob takes the refreshing (at least in the telecommunications industry) of examining the needs of the individual and *then* considering how to use technology to address those needs. Jacob has intimate knowledge of both the technology and of the people the technology must serve if is to be successful. And he examines every facet of the problem of delivering the cyber world to the people who were born into it.

Brace yourself! Jacob delivers a blizzard of ideas that force the reader to reread, and to ponder. One doesn’t describe, in simple terms, the revolution of an industry fossilized by over 100 years of monopoly thinking. This is a glimpse into the future of the cyber industry that will replace telecommunications.

Martin Cooper

Dr Martin Cooper (75), former general manager of Motorola Systems, now chairman of the board of ArrayComm Inc, the creators of the iBurst protocol, is presumed to be the inventor of the cell phone.

His first wireless phone call was proved in April, 1973 to his rival, Joel Engel, de director of Bell Labs.

SUMMARY

The Internet, the PC and mobile phones have made dramatic changes to society during the past 25 years. Is the way new ICT technologies are launched really changed during this period? How adaptive are interfaces between user and system? Today, we struggle with the same fundamental concerns as researchers Nora and Minc did in 1978´s `l'Information de la Société`: how can we use this technology to bring about positive changes in our society and economy with a minimal negative impact? Since the early 1990s many governments all over the world, including the Dutch, have initiated discussions, debates and reports about the use of advanced means of communication, information and network technologies. This dissertation examines the underlying developments in society and technology, the questions and suppositions that have arisen along the way, and the various studies that are being carried out worldwide.

Men use tools to help themselves and each other. Specific tools, in case communication media, are used to contact each other, to remote communicate and to trade interactive. There are a lot of people on earth, so there is a lot to talk and deal. In 2004, worldwide around 1,4 milliard users of a mobile phone, of which 100 with a camera and 236 million for data transfer. [IDG] More than 300 million of those 1,4 milliard are in Europe, almost 29 million in Russia and more than 200 million users in East Asia. They send daily each other 1 billion SMS-messages.

In 2004, more than 700 million people use Internet, of which 233 million in Europe, 178 million in USA en 173 million in Asia. [eMarketer, IDG, Jupiter R] In

Europe, 83% of the kids and 37% of the adults is online. Together, they use 70% of the Internet traffic [eMarketer]. In 2004, the e-conomy expects to reach a turn over of € 1.1 to 4 trillion. [Gartner, Forrester] Those e- and m-commerce summit the balance with approximately € 113 billon wireless.[Visa-Boston Cons] Of that result, 4,1 billion Euros go to the pick-pockets of the 'adult content industry' [Datamonitor] and € 55 million to the exploiters of 67.611 WiFi hot-spots. [ABI] The active network components like routers, switches, servers, basis stations, are good for € 525 billon. [Synergy] So, Cyberworld isn't a depressed developing country.

Networks and computers support and replace information processes of both man and machine, without much ethical objection. Developers, technicians and entrepreneurs do not ask themselves if something is possible, but how it can be made possible. The concepted applications are so promising and can be so usefully incorporated into the daily life of people that cyberisation is unavoidable. On the one hand, these developments will require an improved form of management of existing networks, particularly with regard to the contact from device to device (M2M). Self-organising and disruptive networks are being realised which take over and combine the management of regular, wireless and ad hoc networks. On the other hand, an integral worldwide standard will have to be developed for the physically connected networks enabling the physical networks to keep communicating with the environment and be context aware during a business trip or on holiday. And this is only the beginning of a bio-revolution in the knowledge society.

My interviews and desk research findings show that the acceptance of a communication tool (by its user interface) mainly lies in the way in which a commu-

nity uses this tool to exchange information as well as in the experiences and assessments of the members of the community to which the user belongs. Differences in gender and age (group) when using these tools also play a significant role as well as the possibility to switch seamlessly between both worlds. And last but not least the price/performance ratio of the offered services/products. Much less attention is paid by both industry and science to the triangle between users, the group(s) in which they (physically or virtually) participate and the technical communication tools (user interface, network and communication systems). Hardly any attention is paid to the transparent way in which these tools are used in and between the physical and virtual worlds, such as the emergence of personal parallel networks in both worlds and the resulting total hybrid experience. Although there are flaws and indistinctnesses in the so-called virtual world, new ways of making contact and new communication channels have developed, such as SMS. These (im)possibilities and the technical characteristics of a modern communication networks as the Internet enable people, in combination with wireless communication systems, to (anonymously) move around in a virtual society and thee by have changing identities, relationships, transactions and habits. Thanks to technologies as the Internet and mobile telephony, there is innovation not only in the contact and channel, but also in unexpected and unintentional new ways of talking, lurking and communicating has developed. This takes place in one-on-one relationships as well as inside and outside groups, although technology in this area does not match up the required functionality (behaviour) of group communications. New forms of anonymity and dissociation (assuming multiple personalities) are cultivated in this virtual society and they lead to different behaviour patterns. Much attention is paid to

this phenomenon from a sociological viewpoint in the academic world but less from other single and multi disciplinary research programmes.

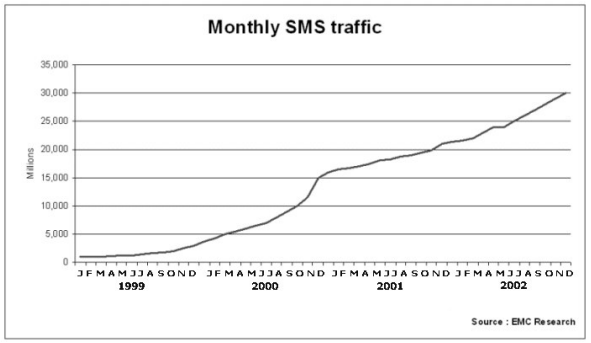
Factors such as communication speed, time (as moment of action), identity and short service life of products and services play an important role in the daily life of the average person. They are even more important – or better: self-evident – for the 'Born Digital: the early-adopting, hyper connected, always on: Children of the Revolution' (Wired, 2002), the generation that has grown up and therefore accept the speed of communication, firm reaction deadlines, and trends and hypes that influence their identities. The younger world citizens are living in the midst of this tidal wave of innovations. Conceived in synergy and planned time, born with their own mobile phone as a musical box and parent alarm in their cradle. Playing in their playpens with a play station as a box of building blocks and sop. They grow up with the Internet as an encyclopaedia, with MTV as moving wallpaper, with the filled refrigerator as a source of energy and are provided with pocket money that exceeds the child allowance. Digicam for the on-line photo album, Playback show in kindergarten, PowerPoint in primary school and Personal Exposure in high school. Young people experience progress and innovation faster (counting steps 1, 3, 6, 10 instead of 1 through 10), read faster (teasers and buzzwords) and write faster (all dead weigh in language is left out: 'cu l8r' = see you later). After all, improvements in communication manifestations take time and then you lag behind in following the continuing process. This next generation thinks fuzzy logical, talks digital, writes HTML, communicates via MSN and SMS, and enters the labour market now. As employees they set up their own on-line contact centre at the workplace, expect the terms of employment to be based on the cafeteria model and

use benchmarks as output. They do not live simultaneous but hybridised in both worlds.

New technological tools enable people to communicate in many ways and, if so desired, to break away from gender, looks, origin, culture and prosperity. New ways of communication result in different relationships, both individually and in groups. In companies new relational contacts lead to other ways of working (together) of organising knowledge transfer and exchange of experiences. Likewise transactions change, for example delivery without money being paid physically or by giro (e-bank). In the current physical world all this leads to a different, partly parallel society with different organisations languages, personalities and forms of expression. The regular society has a hard time with this virtual society as shown by of incidents, in which the language as means of communications attracts the most attention.

The 'make ability' of people, initially in the form of adornment using clothing and colour, followed in the 20th century by the use of cosmetics, all kinds of lenses, orthodontics, plastic surgery and photomontages, has boomed in the (multi) media and computer technologies. Voices are adapted to people's wishes using DSP and sample technologies. Musical compositions are turned into popular ‘easy listening’ with notation programs in the computer. Faces are made uniform and attractive to the public using morphing technologies. Images of people captured by means of digital cameras are fashioned into the personalities that at that time get the highest ratings. You can transform yourself into this idol's clone in order to increase your acceptance in cyberworld, for example like the pop star Madonna who cleverly uses the media to get more attention and fans. These technologies are within reach of the general

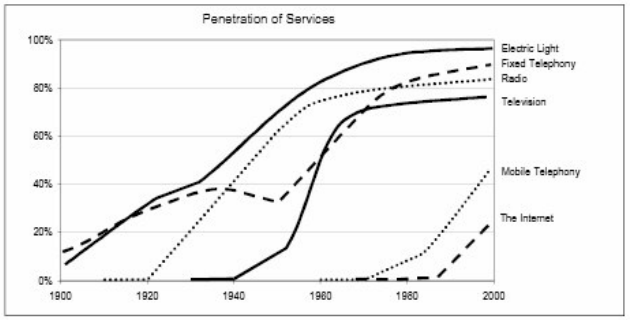
public and particularly the youngest generation is increasingly using them to 'position' their actual and/or desired image of the Young people communicate much more than older people in images. You do not have to learn image language. Interactive television stations such as TMF use technologies that firmly link images and sounds so that the message is transferred multimedially. With the aid of computer design refined photo drawings are on the rise containing the face of a popular person (the hero or idol as role model) but with a body that meets specific fantasies (the celebrity) usually combined with an imaginary world as backdrop'mselves. Manipulation of-to-day starts primary in the medium, not anymore in the mind.



With the Internet time zones have fallen away and space has become a relative concept. It meant a change in direction in communications and has led to an acceleration of message traffic. The related technologies, such as wireless telephony, enable man to move not only his belongings, but also his contacts and to continue his or her life somewhere else as if nothing has changed. Wireless networks and hotspots are advancing. Internet can now be accessed almost anytime and anywhere. Plug & play has become a dimension of time and space. Up to now

man has usually adjusted to this technology by learning how to operate the various buttons and how to deal with all those weird phenomena (having to push the **off** button to switch something **on**). Each time someone replaces (the control of) an electronic device or equipment a new learning path has to be travelled. Before we realise it, we will have a fruit basket full of wireless devices to regulate our lives. In this area users and government are undergoing a broad social change. 'User in the driving seat' is the theme of the European Commission as a reaction to the buyers' strike among consumers. After the pressure to realise new services, all research programmes will be pointed.

It is vitally important to understand the real needs of subscriber with respect to new generation communi-



Source: US Bureau

cation networks. More is needed than the instant chat and messaging functionality of the wireless Internet. Devices must better match user habits and expectations. The interface between user and the device should have some kind of empathy, intuition, context awareness, or recognition of emotions. This is not self-evident. Most interfaces are designed on

the basis of cognition and perception. In view of the number of studies in this area that have been initiated since 1999 the European industry needs clarity about the needs and expectations of 'the' end user, if there is one. Attention is primarily paid to the interface between man and technology. Both mobile and Internet penetrations are now on the exponential portion of the classic “S” demand curve illustrated in the figure beside, and new services will not be Internet-based - they will be truly unique mobility services. So the new devices should be enabling this mobility.

Justly so, as it turns out: according to one of these studies the design of the control of the device determined the social impact of the mobile phone.

In addition, the relationship of the (end) user with his social environment and be context aware, and the way in which the wireless Internet supports the social life, plays a role as well. This is also the theme of the evaluation model for telecom services: better coordination between the offered services and products and (the personal needs of) the user(s) by back casting the needs and redesign the developing process backwards, fulfilling need to suitable technology.

PROLOGUE

Even before the world wide web, many of us in the IT industry were getting very enthusiastic about cyberspace. We spent days mapping out future cyberspace applications - computer generated environments, socialising, shopping, playing games and doing business. In the following years, technology delayed some of the dream and much of the enthusiasm died. But some of the dream has happened, in ways that are less visual than we thought, but still just as effective. The web is here to stay. We can't do business easily without it. As people gradually adapt to a highly networked world, so technological progress is bringing to life some of the earlier cyberspace dreams. Broadband, wireless connectivity, superb displays and high speed computing are all becoming ubiquitous very quickly, and the full potential of the net is at last becoming clearer to everyone.

But the plague of junk e-mail is enough evidence to show that we can't assume that everything will go smoothly. Techno-utopia is unlikely, and we must very carefully develop system architectures that enable ordinary people to harness the full potential of IT without enabling anyone to ruin it for everyone else. A generation already exists who have had everyday access to computers all their lives. They have had to learn to use the machines. It would be wonderful if the next generation could use machines that are intuitive and natural to use. We will need excellent user interfaces, with service design and interfaces linked closely to human needs and behaviours, not just the whim of geeks and engineers. And then, how will people use these tools? When everyone is using them every day, how will society adapt, and how will it's needs change? What changes can we

expect and how can we make them benign? Read on, and learn.

Ian Pearson,
British Telecom

Futurologist Ian Pearson, presents his insights into the future of many aspects of our daily lives - from work to leisure, and from capitalism to the care economy.

http://www.btinternet.com/~ian.pearson

PREAMBLE

‘ People Propose, Science Studies, Technology Conforms‘

Donald Norman

This book discusses the changes in information and communication thanks to teletechnology, as well as the use of and need for wireless telecommunication. It explores the phenomenon of 'interreality', a creation of a hybrid total image of and in both the physical and virtual worlds. Necessarily a broad research has been conducted into which perspectives were required and desirable with regard to this 'imagination', but in order to keep to the broad outlines further differentiation was not possible.

Internet is pioneering, ‘do it yourself’ in particular. The youngest generations were quick to latch on. Why wait for the deliberations of the traditional world, which avoids risks but keeps the money earned itself when successful? With your mobile telephone, a borrowed HTML script and a few hours behind the PC in the library you position yourself in the world. You are a publisher, photographer, architect, media station and movie director for and of yourself at the same time. The virtual world seems a mirage to some, but it is not. One aim of this dissertation is to draw attention to, and stir up a discussion in scientific circles about this phenomenon of imagination via (wireless) data communication.

Background

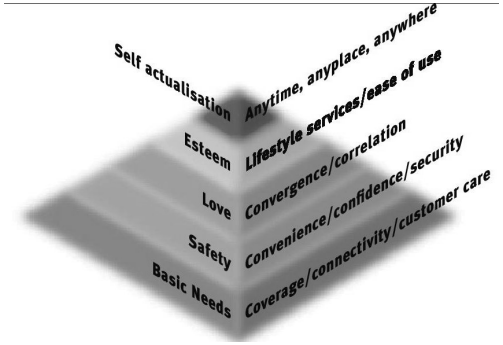
In the spring of 2001 I was asked to give a lecture in Geneva for technicians who were working on the development of the so-called third generation of mo-

bile telephony (UMTS). The proposed theme was ‘user behaviour'. The reason was the apparent sales dip, just at a time when many European telecom operators had paid enormous amounts of money to acquire a licence. Building on the knowledge and experience acquired after my Masters of Science in Informatics [2000] study I had already delivered presentations in which I expressed the people's need for technology in a hierarchical list:

People use ‘technology’ for:

- what you have to do in case of emergencies (e.g. an axe);
- being able to do it better (knife for subtler work, instead of the axe);
- being able to do it easier (a cart to transport heavy goods);
- being able to do it with more fun (toys);

which I concluded with technology you do not really need but sometimes use for fun (e.g. a toilet roll holder as a hat to easier blow your runny nose).



Telephony, radio communication and human-machine interfacing were not unfamiliar to me, but the reasons for the declining buying behaviour of end

users were. I acquainted myself with the subject matter and soon felt a relationship with Maslow's hierarchy of needs. I assumed that the needs for technology, which I had previously put in a hierarchical list, were an essential part of the interest in new communication services. By means of combining and deducing I suspected a relationship between Maslow's hierarchy of needs and the order in the needs of users of means of telecommunication for the availability of specific services. I linked this thought to my hierarchy list and instinctively processed it into the opposite two-dimensional diagram. On 23 May 2001 I presented it on the 3G world conference in Nice with the warning that the telecom sector – in order to be successful in the roll-out of 3G – had to offer its services bottom-up instead of top-down. After my presentation in Geneva I was asked to lead the Workpack 'user requirements for mobile services of the Next Generation Networks' in the framework of the so-called *IST Framework 5* programme of the European Union. In order to be sure of the value of the model I had 50 interviews conducted for this European project in 2001. They are described in chapter 7 under empirical research. When looking for and selecting candidates for the interviews it turned out that there was hardly any (and therefore insufficient) response from young people (up to 25 years of age). On being asked, they said that answering surveys takes too much time and energy, that in fact it is volunteer work and that they had enough work already.

In order to still gain the necessary insight into this target group the idea occurred to me, thanks to published research of the Stanford University [SIQSS, 1999] and, at the time, ongoing research into sexual behaviour on the Internet [Greenfield, 1999, Cooper, 2000], to conduct the youth interviews via chats. The model and survey are incorporated in the report of the EU Smonet project [2002]. The triangular model

was developed into the current four-sided triangular model (a tetrahedron) that has since been further developed via all kinds of lectures, presentations and publications. In its latest form it has been fitted in into Cap Gemini Ernst & Young's Adaptive IT programme at the end of 2002. The reactions are positive. The reality value of this model has been assessed in practice. Scientific material on the need for technology is difficult to trace and hardly relevant. In the end I managed to collect a fair amount of supportive material, partly based on casuistry and partly on related empirical research, which has been further worked out in my PhD dissertation.

'It is puzzling that even theorists steeped in this tradition seem slow to see the relevance of new information technologies to their preferred ways of understanding development. Shifts in the way that children are relating to knowledge may be happening faster than we are organizing a research agenda.'

Charles Crook, Loughborough University, U.K.:
***Cognitive development and Internet*,**
Monitor on Psychology, Vol. 31/4, April 2000

Apparently we find ourselves at the edge of science with a theme into which broader and more in-depth research should be carried out to gain more insight into the area of tension between (the behaviour of) man, technology and society, en the effects of communication technology, which has been changing at top speed in the past decades. The knowledge related to this technology is spread among specific interscientific communities, such as Human-Computer Interaction, Tele and data communications, *Computer Supported Cooperative Work* and Artificial Intelligence. And furthermore among cognitive studies, (information) ergonomics, industrial psychology, group dynamics, communication studies,

anthropology, philosophy, social psychology, organisational psychology, sociology and law (on account of matters such as copyright, identity, privacy and digital government: in this case private law, public law and international law, including tax law, information law and right to vote). Optimum use of this knowledge is hampered by the considerable fragmentation between the various sciences which – in my experience – do not have much contact with one another.

Interreality

The actual topic of my research is '*Interreality*', with all necessary and desirable perspectives, in the context of the architecture of a cyber culture. Interreality is the hybrid total experience of the physical and virtual reality. The aim of this dissertation is an exploration, a quest into developments in society that are decisive for the place of new communication technologies, into questions and suppositions that have arisen along the way, as well as into research that is being conducted worldwide for years, leading to recommendations, if any. These issues, the relationship with technology, society and innovation is further worked out in chapter 'Technology and quality of life' (page 48). In my explorations I have looked at the phenomenon of 'the virtual world' from different sides, taking into account the various scientific perspectives, such as social psychology, communication studies, economics, philosophy, and ergonomics as well as the legal and technological knowledge areas, with some emphasis on the electro technical (information and telecommunication) and social-psychological sciences.

Leitmotiv

The fast developments in communication technology offer unprecedented possibilities: for example for the creation of virtual worlds, for the benefit of exchange of knowledge. However, due to an uncoordinated 'push' approach they form at the same time an intrinsic brake for optimum development and use of those possibilities. Almost parallel to these developments the debate arose about the relationship between technology and society, which in the first instance focused on the technological assessment procedures, but in which increasingly behavioural scientific and social aspects are involved (support, risk communication, trust). In the latter area, however, little or insufficient empirical research is available as yet. The research that is available usually focuses on a single dimension of the issue or is not accessible (trade secret). For that matter, such knowledge is very fragmented present in specific interdisciplinary and/or intersectoral scientific communities which, in addition, do not have much contact with one another. Whenever research data are available, the research methods used are insufficient to draw valid conclusions.

The influence of ICT on behaviour can be formulated with the following questions:

- Why do people choose particular ICT applications and how do they use them?
- What are the direct and indirect influences of the introduction of particular ICT applications on behaviour-in-context, i.e. on opinions (and other qualities of people) and on behaviour such as information search behaviour, task execution and interactions with others, and on their results?

- On which does the strength and direction of such influence depend?
- In which way is the nature and meaning of Information & Communication Technology & Services (ICTS) determined by people, how (can) people learn to use ICTS?
- How can the interaction be optimised, i.e. what are the design guidelines for ICT services and for use contexts?

This is the common line within research methodology of 'describing, comparing, defining, explaining, predicting, designing and evaluating'. The focus usually lies on describing the context within which new technologies, whether or not in connection, find their application. In this book I state that nowadays it is no longer self-evident that innovations linearly move through the various social groups, like Everett Rogers stated. The distribution among *early adopters*/*laggards*, too, no longer seems to apply to many innovations. The *early majority*, the first part of the large majority, is usually not reached because meanwhile a new innovation is introduced. It is also partly due to an improved communication that not only goes deeper, but is also broader, faster and more convincing. In addition, the innovation technologies in themselves have improved and stepped up on account of *copy-cat* practices and simultaneous import and export of technologies. In the current economic system product service lives are becoming shorter and shorter and the pressure on innovations (also presented as '*updates*' or '*upgrades*') is increasing.

All this makes the development and distribution processes faster and more complicated. It forces to critically assess the usual linear form of 'explaining, predicting, designing and evaluating' and possibly

convert into a cyclic iterative form. Practical experiences by Hoogenboom &Van Krugten in Japan and Korea, compared with the Netherlands, [1997] learned that in iterative approach in *Iterative Application Development* is fruitful and culture-free. Projects that are set up in a cyclic way also bring people and groups together which otherwise would remain far apart. If in these examples a representative of the user (organisation) was sometimes still physically present in the project, with the current technology all kinds of users can contribute continuously and virtually to (stages) in the development process.

In this book I emphasise that in view of the improved and stepped-up, and therefore changed and changing technologies of innovation implementation, a different line of conduct is desired, in the sense that an exploration of the (near) future must be described (*backcasting*) based on the various observations of trends within the development of the technology, its application, the consequences and assessment of developments. The (end) user should be interactively (and, if possible, virtually) involved in the iterative development process of his/her user interface. The latter could have a healing effect on the poor interaction of man, ICT services and context, and could be a resolving factor with regard to questions on which behaviour scientific knowledge can presently shed not much light.

The relationship between ICT services and human behaviour can be studied (still in the line of 'explaining, designing and assessing') at various levels, namely the levels of:

1. Man-system interaction, with areas of attention such as user friendliness of systems, optimum task allocation man & system, information search behaviour, virtual realities, but also information overload and RSI;

2. Media communication: effects of interaction via the media, individualisation and mass media, more businesslike contacts, Internet addiction, electronic emotion;
3. Computer work, with areas of attention such as nature of information work, quality of computer work (mental pressure and stress), learning how to deal with new technologies, mobile and spread labour, teleworking;
4. Computer supported teamwork: working together over distances, project management in virtual groups, support systems group;
5. Organisational processes: aspects of virtual organisations: coordination, involvement, the 'learning organisation', implementation of new technologies and structures;
6. Social relationships: digital democracy, relationships rule & ruler, dual society, threat to privacy.

However, lacking are important factors in behaviour such as power (relations), gender, sexism, individualism, group influence, uncertainty avoidance and long-term orientation. From his function as president of IBM, a multinational and multicultural organisation, Hofstede identified five fundamental dimensions in the world culture in 1991: power distance, individualism versus collectivism, femininity versus masculinity, uncertainty avoidance, and short versus long-term orientation. This classification was an inspiration for Marcus's *'One Size Fits All?: Culture(s) in User Interface Design for the Web*', in which he observes that the majority of the user interfaces (to computers, sources of information, means of communication and communication media) is presently geared towards, and focused on Western users.

It is exactly the characteristics Hofstede mentions that are so recognizable in the behaviour related to technology. Man wants to at least have power over the device if he cannot have any over people. Think of the feeling of power when stepping on the gas pedal in the car, when using the electric drill and the remote control of a device. Look at the form of devices and buildings as phallic symbols. A uniform device for men and women is unique. For example, men design telephones for women that have a menstrual cycle warning system (Ladyphone) of which women say that men can better use those phones themselves so that they can anticipate the menstrual side effects in women. Women avoid clumsy, complicated or time consuming functionalities. You can stand out from a group by means of your 'personal' device, but in groups the 'best' designed device can be discarded as 'not done'.

Technology as support

Feelings of shame, frugality (long term, static) and balance, respect for traditions and honouring favours and gifts (short term, dynamic) have influence on choices regarding the future. Avoiding ties with communication devices on account of frequent replacement and/or 'money sucking' subscriptions seems to be a result of uncertainties and vague expectations for the future. Each society in the world has ways of dealing with uncertainty, in particular when an unbearable tension is created. This pressure is relieved by means of religion or legislation, but also increasingly by means of technology, such as ICT.

In particular from the (end) user's view technology should completely support man. Nowadays the personal computer is a vacuum cleaner for information,

whereby the user cannot summon the courage to go looking for the hovered up piece of information in the dust catcher. The Internet is the lifeblood of modern society, but neglects the users in their explorations. Usually the mobile telephone is the life line in contacts of which the (end) users regret that no storage takes place of the contacts that are maintained via all kinds of media.

Unfortunately ICT is interwoven with social (organisational and socio-economic) changes, but it does not automatically entail that designing complex systems and/or solving problems then also implies knowledge of the domain concerned. Each sector has it own specific form in which problems occur. For spread teamwork the virtual organisation brings with it processes of media communication and machine interaction. Solving problems and designing complex systems therefore require a multidisciplinary approach. Who asks himself which social questions or developments we will be facing and which application and/or use of behavioural scientific knowledge they require, and whether behavioural scientists are equipped to deal with these questions, can better not hide behind the traditional research philosophy, but will have to go into the field and form a picture of the horizon by means of observing behaviour and interaction, in order to steer the research from there.

Drastic social changes are linked to steered change processes (such as mergers, organisational changes, introduction of new technologies for, for example, the production of food, provision of electricity, risk prevention), with the development of new techniques and technologies and their application in certain organisation structures, production processes and labour organisations. At the moment the discussion focuses more and more on issues of public support for certain technological developments, on

exchange of knowledge, acceptance, high-risk behaviour and in particular on the theme of trust: ‘basic trust’, ‘technology trust’, ‘legal trust’, ‘behavioural trust’ and ‘product trust’.

Within the technology development governments and businesses are increasingly realising that they depend on the public support. Did apply in the 1950s and 1960s that the individual just had to adjust and had to listen to the government, in the 1970s people were of the opinion that the individual was entitled to participation. At the moment the maxim applies that the individual is entitles to communication. The experience and research teach that governments, authorities, the business community, non-governmental organisations and non-profit institutions are happy to let themselves be inspired by the individual and want to enter into a discussion or dialogue with him/her. To this end Havelock already developed the so-called ’Planning for innovation’ in 1971, but in practice the right approach seems to be lacking.

New world

During chats with young people on the Internet, whereby I presented myself in various personalities (changing gender, age and background) in order to obtain the required information, I discovered that in particular young people, but also relatively many people in their thirties live from time to time in 'a completely different world'. In accordance with a basic manual for research in virtual societies it meant reading along a lot and recording facts.

Sign *Imagine that you as a 52 year old researcher are kicked (=removed) from a chat site by an under-age moderator! It happened to me when I tried to make contact with kids. They unerringly know at once that you're not a teenager. As soon as I typed in more than six words, 'sign' was hurled to my head. Even correcting typing errors immediately led to 'hey, go away fossil'. Asking 12 year old girls if they had a mobile phone resulted in 'gramps, go 2 your tomb'. I was 'ready for the coffin'. Logging in under an alias, not reacting, reading along and making notes was the best remedy to pick up the rites and mores of the virtual world. After a few months' observation and careful tries I could eventually pose as a 17 year old adolescent. A new world opened up for me!*

[Van Kokswijk, M & I 2002/1]

Listening and talking to all kinds of people, irrespective of age or gender, of knowledge or skills, of their stations in life, set me thinking about a world that is coming closer and closer and yet seems to be intangible: *cyberworld*, an abstract society with imaginary organisations, which usually are a kind of addition to the existing real organisations and manifest themselves in the stepping stone from an industrial society to an information society. Looking around (lurking & chatting) in this digital environment I wondered where this extraordinary world came from, who is maintaining it. It appears that the wired Internet and wireless telephony are the carriers of *cyberspace* in which a parallel virtual society is developing, cyberworld, where you experience *virtual reality*.

As indicated by the subtitle of this book, under the influence of new technology other forms of narrativity and literary communication are developing as well as other ways of dealing with literary and scientific 'texts'. Other ways of asking for attention and holding

it also arise. The computer and the derived interactive media change(d) the communication between people and with machines, but also have a visible influence on art and literature. Ignoring and manipulating text are taking root. An interactive narrative takes on the (expressive) form of appealing with ASCII characters. The less space for text, the faster the medium, the more inventive the language users. A chatbox is the place to score with clever language finds – and it is stimulating. That is only logical: when you use formal language in cyberworld, you are usually ignored.

The line processing power of the computer ensures a structuring, steering role of technology in language. Less 'political' text, more intermittent factual content in the form of modules From idea and dialogue immediately to decision.

Come and I take you to the world in my living room...

Jacob van Kokswijk, November 27, 2003

Part 1: People

COMMUNICATION

“The wireless telegraph is not difficult to understand. The ordinary telegraph is like a very long cat. You pull the tail in New York, and it meows in Los Angeles. The wireless is the same, only without the cat.”

Albert Einstein

This chapter provides an introduction to the subject of the book, the underlying developments in society and technology, the questions and suppositions that have arisen along the way and the various studies that are being carried out worldwide. At the end it contains a summary with a number of conclusions, which are discussed in more detail in the following chapters.

Smoke signals

In order to be able to communicate with other people over larger distances you will need a modern technical aid. The two tin cans connected by a rope had not been invented yet when the first smoke signals for wireless communication went up in the sky. The history of the so-called mobile communication shows that the first forms of wireless signal transfer were realised using light, flags or smoke. The semaphore [1791] was a wireless communication system from before the industrial age, followed in the 19th century by the electric telegraph [1838] and telefax [1843]. The use of light and flags as signals remained important in shipping until Maxwell's introduction of radio transmission in 1870. Shortly thereafter the wireless telegraph [1874] and the wired telephone [1876] were invented. Wireless calling systems and telephones had already been in existence since the

1930s, but were bulky and heavy. The (transmitting) licence system became less rigid in the 1960s, so that companies could also use a radio transmitter. After the invention of the transistor the handy-sized walkie-talkies were on the rise, but after the positioning of the public cell phone (invented by Martin Cooper in 1973) they made a restart for consumers and the business community. In the 1990s all kinds of solutions for wireless communication with ever-smaller telephones were invented worldwide. Parallel to this the Internet was developed. It gained a prominent place in our daily communications thanks to easy access (home connection, relatively low costs, the browser interface and Web applications). The wireless Internet was introduced at the end of last century, a concept that combined wired computers and wireless telephones. The sometimes addictive phoning and internetting usually took place in a secluded and private environment, but now mobile phones are freely being used in the street, outdoor cafes, trains or shops. This is not a hype, but seems to become a new world: the *cyberworld* is created by, and exists by the grace of tele-technology.

Cybernetics

In 1948 Norbert Wiener wrote a manifesto for a new science titled '*Cybernetics: Control and Communication in the Animal and the Machine'*. In it he gives an overview of a twofold and parallel history, that of the automaton and the human body. Wiener distinguishes four great periods in the history of the automaton; a mythical Golem era, the era of the clock, the steam era, and the era of control and information. Each one has its own model of the human body. The body as a mouldable figure, as a clock, as a refined steam engine and as an electronic system. Simultaneous to the development of machines, in

which servomechanisms are the most important, the discovery of neurons ensures that neither machine nor human body can be considered as conservative systems with rather limited possibilities. The study of automata '*whether in metal or in flesh'* [Wiener, 1948] is imbued with terms such as message, noise, coding, information amount and feedback. The image of a communication network springs to mind.

It is the feedback – which implies bidirectionality or interactivity, and its increased scale in particular – that forms the core of the cybernetic system. Steam engines, too, had feedback technologies, but the complex technological systems that surfaced in the 1940s allowed a deep penetration in the social field, where previous automata were restricted to the industrial tissue of a nation. To Wiener the application of this new technological theory was not restricted to the world of machines. This view was equally valid for the contemplation of the workings of the human body and mind. Body and machine are no longer considered as systems whose main function or activity is to save or transfer energy. It is communication that enables the functioning of both organism and machine. Only within the cybernetic concepts such as cyborg and cyberspace can be thought and in this respect Wiener stands at the origin of these terms.

"Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding..."

Gibson, 1984

Telegraph, telephony, radio and the Internet, together termed 'telecommunication', have led to an acceleration of message traffic worldwide. Time zones have fallen away and space has become a relative concept. This introduced a change in direction in communications. The related technologies, such as wireless telephony, enable man to move not only his belongings, but also his contacts and to continue his or her life somewhere else as if nothing has changed. *Plug & play* has become a dimension of time and space.

The space of flows is where your savings are. You think your savings are in the bank, but they are not. They are moving around electronic circuits constantly, trying to make as much money as possible. The systems are located in some financial centers like Tokyo and Amsterdam. The space of flows are all these centers linked through computers and organized in a global network. The same is true of media and also political institutions right now. The space of flows is something that is not anywhere, and it is everywhere. Everything that matters to you in terms of the forces that shape our lives is in the space of flows, like money, political power and media. Probably not what matters most to you: your friends, your loves, your family, your culture, your identity, your neighbours, all this is still localized in your country, in your town, in your home. But all this on which your life depends is in the space of flows. Most things that tell you who you are however are still locally based.

Manuel Castells 1998

Technology and Sociology

Technology was and still is at odds with the traditions of society. Many people view it as something different, as a specific phenomenon. Although integration has become widely accepted, for many people technology still is somebody else's problem. Prof. Edward de Bono says in his book *Technology Today* [1971 that a society that objects to the necessity of technology can be compared to a body that criticises its legs.

'…We see there are levels or types of technology. Each taken by the standpoint of an individual who observes it, and the definitions of technology are dependent of that individual's arbitrary rule base. If levels of technology can not be defined, the whole situation becomes frustrating when the subject of materials used in technology is considered. Wood in itself, is not technology, but can be fashioned to perform in the ways of technology. Cloth maybe considered as technology, in as much as its a product for technology and produced by mechanical means. Baking a cake, (better as applied physics) is not technology although the equipment used in the process of baking may be variants of technology. To place a wooden gear along side cloth, a cake, a telephone and then uniformly label the whole as technology, can now be observed as considerably problematic'…'Those who assert that technology has done more harm than good are thinking of a romantic dream world in which a select élite lived a short life of ease and intellectual sophistication surrounded by a population living an even shorter life of poverty, starvation and disease'.

De Bono

Technology should not necessarily dictate to the user what must happen, on the contrary: the user of technical devices must dictate to technology what it should do in order to serve the user. This way of thinking about technology has had an enormous impact on the way we learn and execute. It took some time to become familiar with this way of thinking, probably because we were used to think pragmatically.

Technology changes traditional relations and fear for renewal plays in particular a role in I(C)T innovation and implementation. Howard Rheingold describes in the chapter '*Telematique and Messageries Roses: A Tale of Two Virtual Communities*' of his book *The Virtual Community* the origins of the concept 'telematique' (telematics). In the middle of the 1970s the French industry feared IBM and were worried about the British experiments with videotex, the (failed) experiment that would enable information services to be sold the public via television screens and the keyboards of their telephones. French intellectuals and scientists wrote in the media about the importance of the upcoming information century. The French electronic industry was considered as outmoded compared with other European countries. Pressure was exerted on the government and industry to do more than just modernising an antiquated telephone system.

In 1975 a large amount of money became available to develop a mega project. In 1978 Simon Nora and Alain Minc drew up a report about the computerisation of society at the request of the president of the French republic, Giscard d'Estaing.

'A massive social computerization will take place in the future, flowing through society like electricity. (…) The debate will focus on interconnectability. (…). The breakdown of power will be determined between

the people who create networks and those who control the satellites. (…) Anxiety makes people long for a rational, certain future. It increases when pro-found changes uproot traditional values. For a hundred years now, the most spectacular transformations of society have had technological bases, which makes it tempting to predict a future controlled by technology itself. At present the vision is represented by telematics and finds expression in contradictory illusions.' (…) '… the advent of cheap computers and powerful global communications media was leading to (…) an uncertain society, the place of uncountable decentralized conflicts, a computerized society in which values will be object of numerous rivalries stemming from uncertain causes, bringing an infinite amount of lateral communication.'

The Nora-Minc report, *L'Informatisation de la Société* [1978] was followed by an extensive modernisation programme, which resulted in an easy accessible information service (*Télétel*/Minitel), digital telephony (ISDN and ADSL) and packet switching for data (*Transpac*/X25). France is the only country that (still) has a mass market for added-value telecommunication services. As a consequence, the French industry has firmly positioned itself in the market.

The Internet, the PC and the mobile phone are changing society in a way Nora and Minc could have hardly imagined in 1978. Now, in 2003, we struggle with the same fundamental concerns as they did 25 years ago: how can we use this technology to bring about positive changes in our society and economy with a minimal negative impact? Since the early 1990s many governments all over the world have initiating discussions, debates and reports about the use of advanced means of communication and information and network technologies. In 1994 the Bangemann Report was submitted to the European

Commission recommending an action plan for Information Technology. This marked the start of the EC Information Society Technology (IST) program. Currently the world leader is South Korea whose government decided by the end of 2002 that all inhabitants had to be provided with a 1-Mbps broadband access by the end of 2005 and they are providing financial assistance to the providers. The wireless Internet is also being promoted. Thanks to these kinds of encouragement information technology makes itself felt in our society at an increasing speed, as well as in our actions, habits, standards, values, procedures and ways of working. It increasingly determines our way of living and has a place in our daily activities, such as study, work, travels and recreation.

Technology and quality of life

Before the industrial revolution (late 18th century) the quality of life, with only few technical aids, was acceptable and suppliers of products or services were totally customer-oriented. From the moment mechanisation and automation were introduced to mankind, client relations between supplier and buyer started to change: the more technology, the larger the companies, the less customer-orientation. For technological products to be successful in daily life (and therefore on the mass market) more is required. Variety in assortment is essential as well as user-friendliness. The time of buying technological 'things you just have to have', the ‘techno toys for boys’, will pass. Customers who buy a product in the early stages of its service cycle (so-called early adopters) are interested in the (realisation of the) technology and are prepared to make concessions with regard to user-friendliness, simplicity and operating procedure, but subsequent customers are absolutely not. The more

a product becomes fully developed, the more the influence of technology on the design process should be reduced and replaced by the input of user experiences and the reactions of service desks, help desks and repair centres. With the exception of occasional hypes – ensuing from psychological causes –the majority of the customers decides to buy a product for the actual value it offers in daily, practical use. Technical ingenuity and degree of innovation are of marginal importance. ‘Technology should not be seen, but experienced imperceptibly' is the motto of Raskin, the designer of the highly praised Apple Macintosh graphic interface.

Culture of digitising

Not seen, but imperceptibly experienced... How? You hear, see, feel, taste and smell with your (physical) senses. With these senses we notice things that happen around us. Our intuition interprets this information and is therefore called our 'sixth sense'. Many people assume there are only five senses. Others believe that the sixth sense is a ‘feeling’ that some people have. Einstein even called it our `truly valuable´. But what is intuition? With this 'sense' it would be possible to see or hear the past and the future. You would be able to perceive someing intuitively that in the present cannot be perceived by the five senses. From the ancient Chinese and Indian cultures stem intangible concepts as chakra and aura. In some cultures people who have (or are perceived as having) a sixth sense are worshipped as sages, healers or priests. Some consider it occultism or spiritualism. Other cultures feel it is witchcraft, which is scary and maybe dangerous (like the witches of Salem). The person who claims to 'have it' is declared crazy or ostracised or the phenomenon is simply denied. You are not a prophesising necro-

mancer, are you? People who trust their instincts when taking decisions are generally not taken seriously, which is not all that strange considering that we do not provide proof or a concrete explanation of our choices. Go and try to explain why you attach so much value to exactly that particular feeling.

Think gossip about sex only happens in school locker rooms? Welcome to the new millennium. These days, kids are talking about sex in some unexpected places. In this high-tech world we live in, sexual gossip among teens has moved to chatlines and chatrooms. "It makes me feel more comfortable actually because you get your feelings out." And whether it's emotional or physical, legal or criminal, more and more teens say they're feeling that destructive nature.

KOVR 13 News 25-9-2001

Analog, digital and something more

Science is usually down-to-earth: proof before belief. When using means of communication 'experiencing' must therefore be representative and processable into units. Digital and analogous metaphors are complementary forms of representation, which means that they bear a relation to each other and, to some extent, can replace one another. Analogous means processing data and representing them as physical variables. Digital means processing numbers. A mother can take her child's temperature by laying her hand on its head or by using a (digital) thermometer. At the 1951 *Macy Conference* Gregory Bateson went a step beyond processing with his concept to code human communication. In his book he calls it codification: by analogy with the work behaviour of communication technicians one event instinctively represents another. Bateson identifies

three kinds of codification in relation to information: analog, digital and ‘Gestalten’, suggesting something apart from the human central nervous system. Based on this line of reasoning the human body would be an experimental analogous model that copies changes in another person. Some people can use their entire body in order to empathise the emotions of others by means of kinetic imitation. A body is then a medium [with its own message, see McLuhan] for both digitally and analogously coded communication. Language is digital and paralinguistics analog. In speech, in addition to the spoken language, we have the loudness, silences in between, the sign language and so on. The latter are much closer to a universal communication between people than a text translation. Everyone will recognise this example from vacations: put young children from various cultures that have different (body) languages together and in no time they play and communicate with each other. They maintain their interrelationship without the need to translate words or concepts. They understand each other by empathising and experiencing.

Conversion A/D and D/A

Communication is primarily about building and maintaining relationships, followed by an exchange of information that conveys one or more messages. As a derivative this is also laid down in the digital handshake protocols of data communication. If the central theme in communication involves the relationship between people, then the digital language is almost without meaning. After all, analogous communication is our primary means to communicate messages about relationships. In this respect, the difficulties encountered when translating digital in to analogue (D/A) is a critical point. In digitalisation (A/D) some information is lost due to the sampling technology.

Conversion leads to an enormous loss of information, for people communicate and convert both. Digital language has a very complex and powerful logical syntax, but it lacks adequate semantics in the area of human relations. The analogue language has the semantics, but lacks an adequate syntax for the definition of the qualities of a relationship. Both modes can be 'contradictory', but the moment the digital and analogue modes are complementary and go together as well, a complete and context-rich message is expressed, which jointly contains the ‘Gestalten’ code. Who at times has not had the experience that by lack of words the body sent a non-verbal message and that the whole still emanated (charismatic) power?

The Internet, wired or wireless, puts people into contact with each other (and thus establishes, builds and/or maintains relationships between people). It is a one-dimensional contact, primarily aimed at the sense of 'sight'. In a valid situation, the eye reads and the fingers react by typing a reply. By adding (telephone) sound and/or image the connection becomes two-dimensional, and thus paralinguistic elements are brought into the contact and more senses are stimulated. But where is the dimension of the analogue and ‘Gestalten’ communication? In chats you read that people do not experience the contact as ‘real', that they do not completely trust their chat partners, but nevertheless they do pour out their soul more than via any other communications medium. Cyberworld is not a full, complete world as you cannot eat a snack or become ill in it. In the area of communication as well it cannot become a lifelike reality unless man adapts genetically, as nature evolves when the environment physically changes. The way in which the youngest generation (born in the digital age, after 1980) familiarises itself with the new communication technology as a matter of

course, creates expectations. They can convert A/D and D/A more quickly, hop from ‘real' to ‘cyber’ and vice versa and seem to be able to call up ‘Gestalten’.

Digital communication

Digital communication contains the same important basic procedures of signal transmission in the inter and intracellular information transfer. Lasswell split up the communication problems in five main questions: who? Says what? How? To whom? And with what effect? Because mind reading isn’t a standard issue, Shannon contributes to this model with coding and decoding. Translating thoughts to words is called coding. Transforming characters to thoughts is decoding. When people are in contact, they constantly code and decode their thoughts to digital characters. After receiving and decoding new information, the receiver will try to interpret the new information. As extra in this extended communication model Lasswell positioned noise and interpretation. Due to coding the regular communication (including written language) is getting standardized. So, a new possibility is available: filtering and triggering of the communication. Al those noise, filtering and misinterpretation by translation make it sometimes difficult to communicate via electronic way. There is a mismatch between what the sender wants to communicate (and what the receiver does not receive) and what the sender unintentional communicates (what the receiver receives).

Digitalizing the media makes it possible for the consumer to control. You can make your own play list of the tracks of music and film, you can read the hypertext and you can ignore automatically specific messages, sounds, images (like ad’s). Digital communication makes it really easy to use filters and triggers

to control your personal communication and to tune your communication to weighted combinations of your identity, your message (contains content and medium), time (priority, synchrony and actuality) and environment (context, activity, authority and intimacy). Let's sniff a little theory of communication:

A message contains:

- information;
- interpretation;
- meaning and;
- the symbolic activity between communication partners.

In a communication contact is a message:

- content;
- medium;
- time;

and contains the content of the message usually:

- facts (objective);
- meanings (subjective);
- feelings (expressions of a state of mind and mood).

The quality of the contact depends of the way of communicating. In analogue communication that happens at three levels:

- aware (thinking);
- less aware (feelings);
- unaware (will).

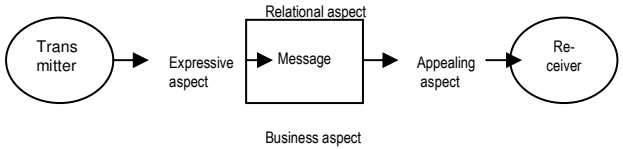
Digital communication polarises more to awareness and unawareness, and supplies the level of unaware (unwillingness).

This unaware communication with unwillingness happens when music or films are containing separate frames with other information to trigger the unaware of the receiver.

Other side of the medal is that people can use electronic filters and blocking to ignore the unwished information.

Aspects of communication by digital media

According to Schultz von Thun's (1981) model of communication, a message is composed of four elements: content, appeal, self-revelation and the relation between the actors. In spite of the lack of visual and sensitive contact, most of young chatters are able to describe the expression "Communication" and to differentiate it from close related expressions like "information", "interaction" and "perception". They don't know the theoretic methods and definitions, but are able to enumerate differences between pure signal transmission and interpersonal communication. By its meaning for interpersonal communication the importance of different communication forms and channels will be clear in the flow of communication and interaction in role-plays.



When the receiver is free to make a choice which information of a message "arrives" to decode, this could lead to disturbing the communication because

the receiver don't react to a specific intended aspect of the message, or – more irritating - when the receiver takes only the information (s)he likes, and does not react to the message itself.

Effective and poor communication via digital media

Language influences our behaviour and creates cognitive categories. At the same time, language is determined by the society it is used within. This interdependence of society and language creates the world we live in and the world we enter by cyberspace. Problems that may occur by coming up against the limiting factors of such a system are presented in some theory how communication is influenced. The main influences from psychosocial context, ethnic and gender background on the digital interaction are (split up more fundamentally):

- Communication: nonverbal (including autonomous functions and aspects), verbal (linguistic), para- verbal (loudness, emphasis et c.) contents, information and interaction concerning structure, generation, direction. (paradox communication: mismatch between aspects of content & relation)
- Interaction and information: Mutual contact, coding and decoding.
- Models: Sender (coding); Receiver (decoding), semiotics of communication, language, structure and syntax; Content, message, information, self-disclosure: information about sender (voluntary/-involuntary), feedback of receiver to sender, differences between dyadic and group-interaction.
- Perception: selection, weighing, distortion, perception errors, modification following needs, social context and roles.

- Relationship: between sender and receiver, transmission predominantly through non-verbal communication. Neglect of information enhancing dissonance, repression, provocation of receiver to a certain reaction, appals, emotional influence.

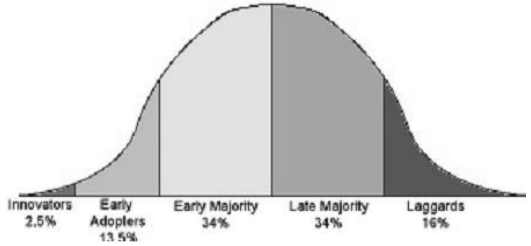
When we project the model of Schulz von Thun to the digital communication, the model gets a different application by the often restricted and disturbed way of that digital communication. Restricting and disturbing possibilities are:

1. Restriction in the content of the message (e.g. the amount or type of characters);
2. Restriction in the transmission of the message (e.g. IP-address-blocking);
3. Disturbing the transmission of the message (e.g. bad performance of the network);
4. Disturbing the reception of the message (mismatch of spam filter or undecoding);
5. Disturbing by interactive interchange of messages (combination of 1-4 on both ways of transmission).

The youngest generations mostly know the lacks in the electronic systems, used for the digital communication, and use those hints and kinks for automatically ignoring the sender, or at least its messages.

Change processes in innovation

The virtual world is new; it changes our communication behaviour and our normal way of living, e.g. by the adoption of the mobile phone. However, not every renewal is an innovation.



A change does not necessarily mean improvement. Innovators create products and services that they want to sell to others, the intention being that those purchasers, alone or in groups, gradually accept something innovative.

The so-called ‘early adopters’ play a central role in this respect. After studying a number of large-scale innovation projects in the United States, Everett Rogers expounded this in a theory with a timetable. Some advocates of 'directed' information are successful in identifying ‘early adopters‘ and ‘opinion leaders’ (both individuals and organisations) and, together with them, are working hard to plant and disseminate the idea among others. Trying to convince the slow middle group and laggards - about 50% of the total target group – must be avoided: they are too many and it is frustrating work. The dissemination of an innovative idea or product consists of the innovation, the related communication, the communication channels and the time frame.

Rogers' diffusion theory is well known, being taught as required basic knowledge and applied in several disciplines. The basis of the four elements and the theoretic content of the five adoption stages still apply, but the interrelationship of the four dissemination elements has become dependent on the kind of innovation. Nowadays it is not self-evident that innovations move linearly through the various social groups. The distribution among *early adopters*/*laggards*, too, no longer applies to many innovations, partly due to improved communication that not only goes deeper, but is also much broader and convincing. In the current economic system the service life of products is becoming much shorter and the pressure on innovations is increasing. In addition, copycat practices are emerging as well as simultaneous import and export of technologies. This results in a quicker and more complex dissemination process, which, in turn, has consequences for the time element.

Social factors such as knowledge, language, age, world culture, class, prosperity, family composition, empirical affinity and gender, plus factors other than communication speed, trend/hype, design and product modifications cannot be processed (very well) as variables in Rogers' model. Now that many new products skip growth stages, linear phasing does no longer apply to all innovations. Models are abstractions of reality and the question arises whether Rogers' theory is still valid, whether the time (in innovation) is ripe for a circular diffusion or whether the composition, weighting and classification of the variables should be adjusted.

Time and identity

Factors such as communication speed, time (as moment of action), identity and short service life of products and services play an important role in the daily life of the average person. They are even more important – or better: self-evident – for the generation that has grown up and therefore accept the speed of communication, firm reaction deadlines, and trends and hypes that influence their identities.

We are familiar with the message (content) and the medium as the message (see McLuhan), but when we ponder what is going on in the virtual world, there is also the time of receipt/taking note of the message (messenger).

For example: a telephone call at night (when already asleep) carries a different message than one during daytime. When after a message of the school board that pupils who failed the final exams will be called between 4 and 5 p.m., the telephone rings at 4.23 p.m., it is a message as well. Recently the management of a concern in England e-mailed the message that anyone who did not receive a notice before (date/time) would be fired. The large amount of e-mails that is waiting for you after your vacation each have a different value than an e-mail that <*ploink*> comes in when you are on-line and working. A reaction to an invitation is useful as long as you are not already underway to your destination. A reaction to an advertisement is of value as long as you do not have the offered/requested item. As soon as one is provided from time *t*, the content of the message as well as the medium is not useful and therefore useless.

I have noticed that the young (in order to come to a choice/decision/result) set *deadlines* for themselves

in the era of messaging. They want to know/have something/someone NOW and often send a question into cyberspace, shooting pellets at everything that moves and each reaction is sniffed and checked for value/usefulness until a certain moment; then it is no longer useful or even undesired. From that moment they start to ignore them. In certain situations they even physically close off reception, e.g. by logging out when they are on-line (to subsequently log in again under a different nickname [= identity]) or by using a special e-mail address of mobile phone number that they no longer use after the deadline (after some months they automatically die a virtual death by automatic reset). The younger generation uses ignoring to rule the core.

Before, I quoted Wiener who in mechanics views the factor time as a component of feedback, the timer of the current electronics, which in a model-based control of a message anticipates whether a corrective action is desired or necessary.

Also, I referred to Bateson who describes a *momentum*, namely an event (in time) in the work behaviour of communication technicians, where one event instinctively represents another. In itself this also indicates that time is a message.

Because of this development of telecommunication contacts, the ensuing increased speed of message traffic and the ability to manipulate it (at the moment of arrival, mailing and/or perusal) time as a message has begun to play a role.

For that matter, time also has a relation with identity. The body, the space you enter and the time (period) in which you live, play fundamental roles in the process of forming your identity. In puberty you learn to discover yourself in interaction with others, at home, at school and elsewhere. The result of this percep-

tion is an equality between the person on the one hand and his personality (identity) on the other hand. You express that personal identity, which is inextricably bound with your body. In the past the body was limited in its comings and goings, but changes in mobility, communication, lifestyle and leisure activities broaden the possibilities to give shape to yourself. It is no longer limited to your own physical environment. You can now test your individuality on the Internet, day and night, worldwide, multichannel via all media and in every culture, thus constantly developing it. If at a certain time you want to be somebody and want to have the related identity, then you just make yourself! And if the new identity does not suit you, you adjust it on-line. The Wannabe wannado. Contrary to mobile telephony, where identity is linked to the device (via the so-called SIM-ID card). Internet technology makes it possible to assume any number of different identities, which are used to enter into multiple relationships. This will be discussed later on in more detail.

Signals from society and media

Communication technology as an extension of man

Hundred years after the first telegram was sent from post office to post office, we now send messages from device to device. From fax to fax, PC to PC, mobile phone to mobile phone. Almost everyone has his or her 'own' wireless phone to communicate with each other. A '*mobile',* which, because of its function, size and appearance, is playing a role of a personal treasure in all cultures and with which we make our way into all groups of society. A remote control which makes walking to and fro superfluous. In other words: a wireless communication device that to-

gether with the internet has led to new forms of contact, formation of groups and transfer of knowledge and experiences in just a few years. Up to now man usually adjusted to this technology by learning how to operate the various keys and how to deal with all those weird phenomena (having to push the *off* key to switch something *on*). Each time someone replaces (the control of) an electronic device or equipment a new learning path has to be travelled. Before we realise it, we will have a fruit basket full of wireless devices to regulate our lives. 'We can only make it easier, not nicer.' Technology should primarily serve man (instead of the usual other way around). In order to start such a change we must first determine whether an interface between man and machine or network is 'good' and/or what improvements can be made.

Anti-Abduction implant for children *Parents afraid that their daughters could be abducted are asking a British scientist to implant a tracking microchip under their skin, so that they can be found quickly. Cybernetics expert Kevin Warwick said he had received requests for the procedure from "a number of families" following the deaths of 10-year-olds Holly Wells and Jessica Chapman. One girl, 11-year-old Danielle Duval, will have a device implanted in her arm sometime during the next few months. Mr Warwick said the system could work by using a mobile phone network or global positioning system, to pinpoint the person on an electronic map via a signal from the implant. Danielle also said she was happy to have the tag fitted. "I'll feel so much safer - I'll know my mum knows where I am," she said.*

The tag will be put in Danielle's arm by a GP using local anaesthetic in a procedure expected to take minutes. Mr Warwick said the device could cost less than £20 ($35).

BBC 2-9-2002

Disseminating communication technology

Eleven per cent of the younger section of the world's population (< 15 year) was on-line in 1997. It is estimated that by the end of 2003 this number will be doubled and a quarter of the young generation (<25 year) will have come to see the computer as an integral part of his/here life. What applies to the youngest generation, could also apply to the older generation (from the age of 55). In 2002 the University of Maastricht (The Netherlands) initiated a research into the influence of the Internet on the quality of life of the elderly. 240 elderly people between the ages of 65 and 75 participated in the research. The researchers expect to be able to show that the use of a computer and the internet by elderly people will lead to improvement of cognitive skills relating to memory, attention and processing speed of information. Use of a computer can also have a positive influence on the social networks of elderly people, e.g. satisfaction with their lives and the extent to which they feel that they can organise their own lives. This should lead to the elderly being stimulated and supported in familiarising themselves with the possibilities of information technology. It would useful if a control device (keyboard, terminal) would better take into account the behaviour and limitations of older people. The elderly entertain this expectation themselves as well, e.g. the reaction in Holland to the phone companies with regard to ever-smaller keys and screens. There is a clear need to meet their demand for an oldies phone. 'Many elderly just want to have a mo-

bile phone for emergencies. It should be very simple. It must have an on/off switch and a telephone book.'

Push to wireless Internet

Me, My Mobile and I *The BBC reports on a three-year study that has concluded that many people would be unable to live their lives without their mobile phones and those mobile phones are becoming essential to the management of our private and emotional lives. 86% of those questioned used texting to make arrangements rather than a voice call, as a text message could be precisely worded. Many saw this as an important way of filtering relationships and allowed people to respond appropriately to others. 46% of survey respondents used the phone to entertain themselves or their friends and to lift their own mood. 55% to stave off boredom and 52% to gossip. Users, the study said, fell into three groups, cyborgs, prosthetics and the connected but unattached.*

BBC News, 12 May 2003

Nowadays many people can hardly imagine life without mobile phones. Over 95% of the Italian have one. Between 80-90% in other western countries. But mobile is also booming in e.g. Maroc and Brasil. New wireless services that build on the incredible success of ‘mobile telephony’ are being developed. After adjusting to the change from packet- to circuit-switching these services will add extra functionality to mobile communications. This is called 'the wireless internet' and its praises are being sung in many TV commercials. However, new generations of mobile networks will have to offer more than just wireless access to the Net. For a seamless transition from one medium to another at the very least the full support of contact functions offered on the internet (such as the contact list with on-line signalling, in-

stant-messaging and conference meeting facilities) is required in order to enable a meaningful step from Web to wireless Internet.

Is this conversion from 'immobile' to 'mobile' Internet a task for telephone companies? We need to discuss this sentence. Telecom operators should perhaps remain telecom operators; they should not have the ambition to render services with an added value, as the transition of 'telephone unit counters' to 'bit pipe' will require quite some effort, the most important challenge being the switchover from circuit-switched billing to packet-based billing. This transition is being realised at varying speeds. The development and introduction of the next generations of mobile phones (GPRS, EDGE, UMTS) is in full swing, driven by worldwide efforts in the areas of standardisation and marketing. Licences for third generation frequencies (3G) have been allocated; GPRS is already offered in many countries. The era of the worldwide mobile Internet society offering enormous business opportunities seems to be approaching. Based on the developments in Japan and South Korea, where wireless video cameras extend the hype of camera telephones, expectations are that within a few years more people will use a mobile phone to access the Internet than a PC. It is also expected that the number of wired, 'immobile' devices will quickly decrease.

'... The next techno-cultural shift-ashift will be as dramatic as the widespread adoption of the PC in the 1980s and the Internet in the 1990s. The coming wave is the result of super-efficient mobile communications-cellular phones, personal digital assistants, and wireless-paging and Internet-access devices that will allow us to connect with anyone, anywhere, anytime. From the amusing ('Lovegetty' devices in Japan that light up when a person with the right date-potential characteristics appears in the vicinity) to the

extraordinary (the overthrow of a repressive regime in the Philippines by political activists who mobilized by forwarding text messages via cell phones). Examples of the fundamentally new ways in which people are already engaging in group or collective action. … Consider the dark side of this phenomenon, such as the coordination of terrorist cells, threats to privacy, and the ability to incite violent behavior. This is penetrating perspective on the brave new convergence of pop culture, cutting-edge technology, and social activism. The real impact of mobile communications will come not from the technology itself but from how people use it, resist it, adapt to it, and ultimately use it to transform themselves, their communities, and their institutions.

Howard Rheingold, Smart Mobs, the next social revolution [2002].

From a technical perspective widespread use of the wireless Internet is some way off, particularly with respect to the development of mobile (telecommunication) devices (as terminal devices). Colour screens, processor power, power consumption and battery capacity are barriers that have to be overcome. In addition, most providers of wireless telephony have severe financial problems following the licence auction of the UMTS (3G) frequencies [1999-2000]. The perception is that more radiofrequency capacity is required in order to be ready for the transportation of video, long music tracks, interactive games and automated tours de force. It is those tours de force that no longer appeal to the market. The drive to create a guaranteed successful application (‘killer app’) is still present. However, with a technology that is not fully developed and without a supply of useful services and content, users will not be enthusiastic, therefore no additional turnover. No return on those huge 3G investments. Meanwhile the

market has become demand-oriented: *push* is out, *pull* is the in thing. The investments in licences have become millstones around the necks of operators and all kinds of marketing tricks to sell the customer at least something seem not to be successful. After the so-called ***dot.com*** debacle and the money laundering by World On Line there is now a 'mobile deadlock'. The downward spiral of user interest is continuing, not so much because wireless telephony has been overhyped, but because people take their mobile phone for granted. The novelty has worn off and – contrary to public expectations – the price is not going down although usage is increasing and the service offer is about the same. Why then should you buy something that is not really new?

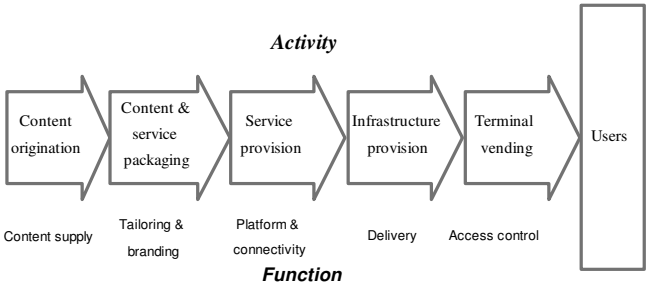
… However, the threat of entry limiting exploitation of monopoly power is usually an important component of this argument: incumbents might be pushed to innovate in order to pre-empt rivals. Moreover, the argument can be reversed, since incumbents usually have higher opportunity cost of adopting potentially superior technologies whenever the knowledge acquired to master the old technology is only partially transferable to the new one.

OECD 16-01-2002

Chicken or egg, both cost money

Service providers for both the Internet and telephony use the so-called *Subscriber Valuation Model* and *subscriber acquisition cost analysie*s. In this way a discount on one hand is compensated by a financial correction on the other (free phones and expensive calls). The financial loss and the annually continuing loss of clients (*churn*) are primarily caused by not meeting the price and performance expectations of the end user.

In view of the interests that play a role after the UMTS auction debacle [2000] and the financial problems all telecom companies are still facing, all parties in the telecom chain are under great pressure to achieve considerable sales.



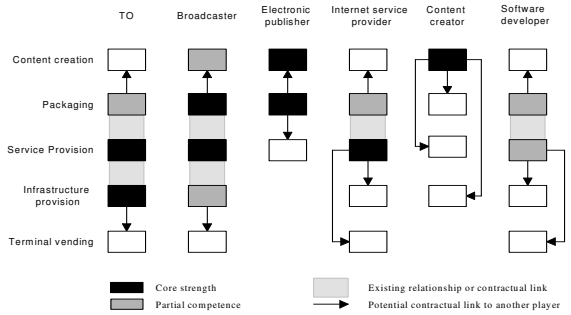
The emerging value chain
(Source: Squires Sanders Dempsey LLP and Analysys Ltd.)

The European Commission decided at 23/24 March, 2000 in Lisbon, and by the Commission's eEurope Action Plan, towards to reducing costs to European consumers and stimulating growth in the European economy. The Telecom Package will result in a comprehensive reform of the regulatory framework for electronic communications in Europe. It adapts the existing rules to take account of the convergence between telecommunications, information technology and media, applying the principle of technological neutrality in an evolving market, where the same services can be delivered over a variety of platforms and received via a range of different terminals.

The new legislation will:

- **Roll back regulation** as competition becomes effective on specific markets.

- **Simplify market entry rules and stimulate more competition**.
- **Strengthen the internal market** through strong co-ordination mechanisms at European level.
- **Maintain the universal service obligations** to avoid exclusion from the Information Society and the creation of a “digital divide”.
- **Establish a policy framework** in the Community for the co-ordination of policy approaches on radio spectrum.
- **Provide regulators with tools** to cope with evolving future technology and market changes.
- **Promote European standards for interactive digital television**. Member States will encourage the use of European standards.
- **Ensure that national legal systems allow for appeals** on decisions by the national regulatory authorities.



Locations of the Major Players in the Value Chain and Relationships between them
(Source: Squires, Sanders Dempsey LLP and Analysys Ltd.)

User expectations

After the pressure exerted by the European Commission to realise useful new services it is vitally important to understand the real needs of subscribers with respect to the new generation communication networks. More is needed than the instant chat and instant messenger functionality of the wireless Internet. Devices must better match user habits and expectations. The interface between user and the device (human machine interface (HMI) or user system interface (USI)) should have some kind of empathy, intuition or recognition of emotions. This is not self-evident. Most interfaces are traditionally designed on the basis of cognition and perception. In view of the number of studies in this area that have been initiated since 1999 the European industry needs clarity about the needs and expectations of 'the' end user, if there is one. Attention is primarily paid to the contact point between man and technology. Justly so, as it turns out: according to one of these studies by Marti the design of the control of the device (the so-called *user interface*) determined the social impact of the mobile phone. In addition, the relationship of the user with his social environment and the way in which the wireless Internet supports this plays a role as well. This is also the theme of the evaluation model for telecom services: better coordination between the offered services and products and the (end) user.

People consist of numbers

With regard to telephone and Internet there is an assumption that a person-to-person contact proceeds from terminal to terminal, without taking into account the identity of, and relationship between the persons behind those terminals. Yet people make that distinction; they make it pragmatically, e.g. they differentiate between their private life and work, as

well as between acquaintances and strangers. The communication technology is set up to allocate a number to each destination. Each terminal device has an address in the form of a series of hexadecimal characters. It is visible to the user as a series of numbers, sometimes translated into a letter image (URL, domain name or e-mail address). If someone has different communication devices, (s)he will therefore also have various communication addresses. In the Western world almost everyone has a different telephone number for their relational environment (home, office, car, mobile) and they may have different e-mail addresses as well. Now, however, there is a translation model (Enum) that converts a telephone number in a so called IP address and vice versa, which brings the conversion and integration between the Internet and telephony a step closer. Currently private and work telephone numbers and e-mail addresses are intentionally kept separate and many people have more numbers and addresses. Some attempts to unite these addresses into one personal number (*Unique Personal Number* / *Unified Messaging*) have faded away after a rapid rise at the end of last century, although a similar personal number service via Edutel in the Netherlands is used in certain (frequently mobile) professions. Evidently the separation of numbers relates to concealment of identity.

But there is more going on between private life and work. We can see that the younger generation (< 25 year) builds and maintains relatively confidential relationships with members of their circle of friends, hobby club or soccer club. They read and have chat conversations which shows that group-oriented (community) contacts are a replacement for the relationships one used to maintain within the family, church, bar or club. Scientific research of Cova, supplementary to that into tribes, has shown that the members of such a circle/club/group can have a big

influence on each other's buying and consumer behaviour at home and at the workplace. An influence regular marketing can fully wipe out by the intensity of the combination of media and commercials, as described in the modelling model of Bandura. The influence of brands on the judgement of products (‘all Nike products are good') leads to a disrupted consumer behaviour, which in turn leads to fierce counteraction (such as Naomi Klein's *No Logo*).

Group processes

In this perspective the influence of new communication technologies, such as the Internet and wireless telephony, on these group processes is interesting. A first field orientation in 2000 gave the impression that among the younger generation (< 25 year) the demand for functionality that supports their group communication is the biggest (‘mobile’ instant messaging and chat). Those children and youngsters have adopted the technology from birth.

–‘Born Digital: early-adopting, hyper connected, always on: Children of the Revolution’,

Wired, 2002

Close at hand, at school or in their pockets it is their direct line to others who think alike. The penchant for own groups and the need to communicate on-line with them in various electronic hangouts (such as graphic chat rooms) is remarkable. This also applies to the work floor. There is a demonstrable relationship with communities and (in the USA) tribes. Both segments are barely addressed in the market segmentation of regular marketing. To a different extent the same applies to the telecom companies. European suppliers such as Nokia and network providers such as T-mobile and Orange, have been focusing

on communication to groups for some years now. However, their attention remains limited to marketing & sales, such as a discount for caller groups. There is no progress with respect to the functionality of networks and devices in the chain linking content and content users. Because of this different way of communicating, gathering information and doing transactions, different user demands are made with regard to the wireless communication devices, which are more in line with the interests and behaviour of the user in relation to his environment. The technological aspects of these user requirements will be discussed in more detail in Part 4.

If this industrial sector is to have a continued, economic healthy future not marketing will have to focus on the need of people in communities. It is hard for the industry to set a course. Remarkably different human and social behaviours are developing in the so-called virtual world, e.g. Wellmann's influence of the Internet on social capital. What should you focus on?

'… People in virtual communities use words on screens to exchange pleasantries and argue, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love, find friends and lose them, play games, flirt, create a little high art and a lot of idle talk. People in virtual communities do just about everything people do in real life, but we leave our bodies behind. You can't kiss anybody and nobody can punch you in the nose, but a lot can happen within those boundaries. To the millions who have been drawn into it, the richness and vitality of computer- linked cultures is attractive, even addictive. …'

Rheingold, H. [1993]: The Virtual Community: Homesteading on the Electronic Frontier (p. 3)

From literature, experiences and findings including many virtual 'conversations' with (mainly younger) people) I can conclude that via the internet, wireless telephony and the new multimedia a new 'virtual' society is developing at an unexpected and sometimes unpredictably rapid pace. This makes it possible to assume several identities without being impeded or checked, and enter into multiple relationships. This society exist parallel to the 'normal' society and leads to different ways of life and communication and to regular (money) transactions.

New forms of anonymity and dissociation (= assuming multiple personalities) are cultivated in this virtual society and they ead to different behaviour patterns. Much attention is paid to this phenomenon from a sociological viewpoint in the academic world. Some studies indicate that younger people are increasingly becoming dependent on communication via the Internet and wireless telephony, making visible the negative impact of cybersex, cyber relationships, Internet transactions, on-line computer games, SMS-ing and a barrage of information (e.g. always wanting to be the first to receive the latest version of movies, games or software). Bellamy & Hanewicz described in 2001 how various studies indicate that of all Internet users – depending on how the measurement is defined – 17% (measured in >40 hours 'on-line' per week) up to 80% (measured in the degree of dependency) can be considered 'addicted'. This potential addiction receives much attention among the older generation, while the younger generation consider the computer, wireless phone and underlying media as a natural part of their daily lives. In interviews, held worldwide, they say they cannot live without them.

'Je me suiciderais' *Pour les adolescents, le téléphone portable a ceci de mieux que le téléphone*

fixe : la liberté. La mobilité, quant à elle, n'est qu'un détail ! A la question ouverte: 'Que vous arrivera-t-il si l'on vous privait de votre téléphone portable maintenant ?' quelques réponses de sondes nous ont paru significatives: ' « Je deviendrais folle; « Je ressentirais un besoin énorme; « Ce serait difficile pour moi; « Ce serait comme si on me coupait la tête; « Je me suiciderais; « Je deviendrais fou; « C'est impossible; « Ce serait comme si on prenait une partie de moi; « Je ne pourrais pas vivre sans mon portable; « Normal ; « Ce serait une catastrophe; « Pas grand-chose, je serais moins facilement joignable; « Je serais comme un soldat sans armes! Intro « La technologie a révolutionné les moyens de communication, dont le téléphone, imprimant du même coup de nouveaux comportements et attitudes chez les utilisateurs. En particulier les jeunes, bien plus sensibles et perméables à la nouveauté et au changement que leurs parents. … Votre téléphone portable vous a permis de communiquer plus avec l'autre sexe: Oui = 67%; Non : 33%; Votre téléphone portable vous a permis d'avoir des connaissances d'amis : Oui = 70%; Non 30%; Votre GSM vous a permis d'avoir une relation amoureuse stable: Oui = 52%; Non = 48%.

Maroc Finances News Magazine 2/2002

The chat and desk research findings show that the acceptance of a communication tool (e.g. user interface) mainly lies in the way in which a community uses this tool to exchange information as well as in the experiences and assessments of the members of the community to which that user belongs.

Differences in gender and age (group) when using these tools also play a significant role, as well as the possibility to switch seamlessly between both worlds And last but not least the price performance ratio of

the offered services/products.

'…There seems to be a new type of intoxication enshrouding the world today. One could perhaps term it NNM: a Net/Nasdaq mania. It has a tightening grip on an ever-greater portion of the world's population every month. With more and more business and entertainment being channeled into the Internet, a huge transformation is taking place in how life is being lived. Communities are focusing on getting 'wired' and individuals are seeking 'wireless' communication. Within a relatively short five-year period, the entire notion of communications technologies involving individuals and companies has been rewritten. '

Carol Carlson Georges [2001]

Much less attention is paid by both industry and science to the triangle between users, the group(s) in which they (physically or virtually) participates and the technical communication tools (user interface, network and communication systems). Hardly any attention is paid to the transparent way in which these tools are used in and between the physical and virtual worlds, such as the emergence of personal parallel networks in both worlds.

Expectations and needs of the end user

In order to be able to say something meaningful about the expectations and needs (which underlie the motivation of the end user) of any kind of user these concepts will be related to the traditional influencing theories, as used, for example, in the communication and sometimes in advertising sciences. Based on a user who buys these products a distinction is made between user requirements, user habits, user needs and community user behaviour. Both the need to buy and the context in which this need arose

are of importance.

Is *a* user also *the* user? It would be easy if everyone were the same, with the same expectations and identical habit. You would not be able to influence each other. But in view of all the differences in expectations, habits, needs, questions and requirements it becomes important to know exactly what someone means. What is the question behind the question? Does a certain event lead to a specific need? The meaning of the words requires precision.

Expectations do not equal needs, but lie somewhere between needs and requirements. An expectation arises from a question about a habit someone is or is not aware of (low involvement/feelings). Usually an event results in a question. And we have created our own habits, for example on the basis of our daily experiences with the different suppliers of services and goods. Habits are usually automatic and persistent. Then they become patterns. On the basis of these patterns we take decisions. They do not change if you want them to, but the influence of the environment will change them without you realising it. Ever since the emergence of e-mail we know that habits change because of new technology. The wireless telephone has also changed behaviour and habits creating needs for technology to meet. Needs arise from an event, a lack, a necessity. Expectations are more related to habits than needs. In view of the interaction between needs, requirements, habits and expectations these concepts will be discussed along with the discussion of the user questions.

User requirements are not really interesting in the framework of this document. After all, you can expect that someone who needs something is able to express his requirements and can thus sufficiently steer the suppliers to meet it.

Whether someone acts automatically, unconsciously or from group behaviour, interaction with the device concerned makes acting a lot easier. Specialised researchers and scientists have been working for years to find the ideal connections between animals (incl. human) and automaton. Usually between one person and one or more machine(s). The human factors with regard to (interaction with) technical communication tools can not be separated from the (end) user. The expectations of the user (user requirements) and the group(s) in which this user participates (community requirements) also play a crucial role. With the current knowledge of fuzzy logic and artificial intelligence (AI) it should be possible for technology to adapt to those (automatic) habits (so-called *user patterns*), but alas, an intuitive mobile phone is not for sale yet.

Innovation of communication

Although there are flaws and indistinctness in the so-called virtual world, new ways of making contact and new communication channels have developed, such as SMS, IRC and IM. These (im)possibilities and the technical characteristics of a modern communication networks as the internet enable people, in combination with wireless communication systems, to (anonymously) move around in a virtual society and thee by have changing identities, relationships, transactions and habits.

I have noticed that thanks to technologies as the Internet and so-called ‘mobile’ telephony, there is innovation not only the contact and channel, but also in unexpected and unintentional new ways of talking and communicating has developed. This takes place in one-on-one relationships as well as inside and outside groups, although technology in this area

does not match up with the required functionality (behaviour) of group communications. The question whilst subsequently the very same technological industry lags behind in facilitating this group communication behaviour. The question whether this new behaviour is socially desirable, falls outside the scope of this book.

To change the world start with yourself

New technological tools enable people to communicate in many ways and, if so desired, to break away from gender, looks, origin, culture and prosperity. New ways of communication result in different relationships, both individually and in groups, as National Geographic find out in their web survey of 60,000 adults worldwide. Their mobility, connectivity, Internet activity, civic involvement, social networks, attitudes and tastes are published in their Survey 2000 about *Social Networks, Geographical Mobility, and Internet Use*. In companies new relational contacts lead to other ways of working (together), of organising, knowledge transfer and exchange of experiences. Likewise transactions change, for example delivery without money being paid physically or by bank. In the current physical world all this leads to a different, partly parallel society with different organisations, languages, personalities and forms of expression. The regular society has a hard time with this as shown by of incidents, in which the language as means of communications attracts the most attention.

SMS essay rings alarm bells for youth literacy
Education experts have warned of the potentially damaging effect on literacy of mobile phone text messaging after a pupil handed in an essay written in text shorthand.The 13-year-old girl submitted the essay to a teacher in a state secondary school in

Scotland and explained that she found it "easier than standard English".Her teacher said: "I could not believe what I was seeing. The page was riddled with hieroglyphics, many of which I simply could not translate."The teenager's essay began: "My smmr hols wr CWOT. B4, we usd 2go2 NY 2C my bro, his GF & thr 3 :- kds FTF. ILNY, it's a gr8 plc." Translation: "My summer holidays were a complete waste of time. Before, we used to go to New York to see my brother, his girlfriend and their three screaming kids face to face. I love New York. It's a great place."The Scottish Qualifications Authority has expressed concern about the problem in its report on last year's Standard Grade exams, and revealed that "text messaging language was inappropriately used" in the English exam. A psychology lecturer at Glasgow Caledonian University said texting was second nature to a generation of young people. "They don't write letters, so sitting down to write or type an essay is unusual and difficult. They revert to what they feel comfortable with. Texting is attractive and uncomplicated."

Daily Telegraph,
March 4 2003

Because of its apparently elusive character this phenomenon has been named 'the virtual world' or ‘cyberworld’, suggesting that a world next to ours has come into being and in a way it has. On the Internet you can set up and use two- and three-dimensional spaces, which may develop into social virtual worlds. In these world avatars navigate (move) as representations of persons through the 2D and 3D environments and interact and communicate with each other. Such worlds are referred to as inhabited virtual worlds.

Schizophrenia as Commodity Fetish

A person called Julie was presented on a computer conference in New York in 1985. Julie was a totally disabled older woman, but she could push the keys of a computer with her headstick. The personality she projected into the "net"--the vast electronic web that links computers all over the world--was huge. On the net, Julie's disability was invisible and irrelevant. Her standard greeting was a big, expansive "HI!!!!!!" Her heart was as big as her greeting, and in the intimate electronic companionships that can develop during on-line conferencing between people who may never physically meet, Julie's women friends shared their deepest troubles, and she offered them advice--advice that changed their lives. Trapped inside her ruined body, Julie herself was sharp and perceptive, thoughtful and caring. After several years, something happened that shook the conference to the core. "Julie" did not exist. "She" was, it turned out, a middle-aged male psychiatrist. Logging onto the conference for the first time, this man had accidentally begun a discussion with a woman who mistook him for another woman. "I was stunned," he said later, "at the conversational mode. I hadn't known that women talked among themselves that way. There was so much more vulnerability, so much more depth and complexity. Men's conversations on the nets were much more guarded and superficial, even among intimates. It was fascinating, and I wanted more." He had spent weeks developing the right persona. A totally disabled, single older woman was perfect. He felt that such a person wouldn't be expected to have a social life. Consequently her existence only as a net persona would seem natural. It worked for years, until one of Julie's

devoted admirers, bent on finally meeting her in person, tracked her down.

The ‘on-line’ exchange of only text is normally all that is needed to establish long-lasting communities. The fact that all kinds of electronic contact platforms, chat rooms (virtual spaces within which you relate to other persons present), on-line forums and conference systems are flourishing clearly shows that it is not absolutely necessary to use 2D and 3D graphic environments (like Muds en Moo’s) to establish social virtual communities via the Internet. Such 'virtual' communities can function extremely well with the aid of e-mail lists, bulletin boards and non-graphical chat rooms, as well as via interactive websites and (multiplayer) worlds that are solely based on text. Within virtual communities you can position your identity in two manners. At first you assign yourself 'attributes'. These attributes have to do with your choice of a name, gender, age and characteristics such as haircut, physical appearance, strength, intelligence and so on. These attributes do not have to correspond with those of the person sitting in front of the computer. Subsequently you start 'writing' to others in that virtual room and are thus engaged in a continuous process of constructing your identity via social interaction. These virtual rooms provide a simple opportunity to play with identities (and outward appearances) and try them out. The person who can create different identities in various rooms does not only decentralise his own personality, but can also multiply it infinitely. After all, at least, there is no limit to the virtual rooms within which you can manifest yourself. In this respect electronic contact platforms and chat rooms are experimental environments in which you can discover who you are and who you want to be. Observation showed that in chat rooms

children succeed in manifesting several identities next to and apart from each other.

The 'makeability' of people, initially in the form of adornment using clothing and colour, followed in the 20th century by the use of cosmetics, all kinds of lenses, orthodontics, plastic surgery and photomontages, has boomed in the (multi) media and computer technologies. Voices are adapted to people's wishes using Digital Sound Processing and sample technologies. Musical compositions are turned into popular ‘easy listening’ with notation programs in the computer. Faces are made uniform and attractive to the public using m*orphing* technologies. Images of people captured by means of digital cameras are fashioned into the personalities that at that time get the highest ratings. With the PowerMac G4 someone can be made into an idol and with the aid of the *Adobe Photoshop* image manipulation program you can transform yourself into this idol's clone in order to increase your acceptance in cyberworld, for example like the pop star Madonna who cleverly uses the media to get more attention and fans. These technologies are within reach of the general public and particularly the youngest generation is increasingly using them to 'position' their actual and/or desired image of themselves.

Young people communicate much more than older people in images. You do not have to learn image language. Interactive television stations such as TMF use technologies that firmly link images and sounds so that the message is transferred multimedially. With the aid of computer design refined photo drawings are on the rise containing the face of a popular person (the *hero* or *idol* as role model) but with a body that meets specific fantasies (the *celebrity*) usually combined with an imaginary world as backdrop.

A Celebrity is one that knows nobody and that everybody knows. You can't be a personality who is both a hero and a celebrity. American social historian Daniel Boorstin made a distinction between the two: 'The hero is known for achievements, the celebrity for well-knownness. The hero reveals the possibilities of human nature, the celebrity reveals the possibilities of the press and the media. Celebrities are people who make the news, but heroes are people who make history. Time makes heroes but dissolves celebrities.

Playing is learning

'Culture emerges as a kind of play, initially culture is played'; 'it develops *in* a play and *as* a play'. In the virtual world very many, generally innocent and purely entertaining games are played. An extra handicap is that players change their names, ages and gender. But cyberspace is not an amusement arcade where people can let of steam playing fun games. The fictions and simulations required to create virtual worlds are serious. In the cyberworld space people are playing seriously. The modern 'homo ludens' letn his/her hair down in a fantasy world. Like all other forms of play it is only possible when participants create a common hallucination: they set the rules, play their own role and deceive themselves into thinking that their world is reality. The digital world is therefore a playground like any other. People are playing animals who use their fantasy and set store by the element of '*make believe*' that already played a role in primitive beliefs. Therein lies the playful character of the cultural life. *Make yourself to make believed*. In view of the growing number of personal websites on which one or several photos of the maker himself are placed, this desire to be seen and be believed seems to a form of 'desired behaviour' adapted to the virtual world.

Babes on the Web has already existed since the beginning of the Internet, but *girlies* are a 21st century phenomenon.

New media

The popularity of organised media manifestations in the form of music videos, movies such as *Spiderman* offered via various communication channels (*multi channel*). Television shows such as *Idols* and *Starmaker* indicate that there seems to be a relational connection between the physical environment, the media plaza and the virtual world. They melt into one another. The digital wallpaper of the analogous environment. The American '*screenagers'* (as Rushkoff called them) between the ages of two and eighteen spent six hours and 32 minutes per day in 1999 on media consumption, such as television, recorded or rented videos, movies, video games, radio, recorded music, Internet and computer contacts. Young people have learned to jump from topic to topic, absorbing bits of information everywhere that are of interest to them at that moment (*Scratch and Sniff*) and have learned to be able to handle a dozen things simultaneously. Research in Jamaica showed that children between the ages of four and eight watched television five hours per day in 2000. This behaviour is not limited to the young. Adults in countries such as Morocco, Tunisia and Egypt also exhibit the same behaviour.

Several studies indicate a direct relationship between watching television, internetting and making mobile phone calls. Contrary to earlier expectations, the media do not mitigate but in fact strengthen each other. In Sweden two-thirds of the young between the ages of 15 and 20 are daily active on the Lunarstorm contact site, use their mobile phones in the

process to read newsgroup news or to follow chats, and watch MTV in between.

Lunarstorm is Sweden's largest web community and youth site with more than 160,000 individual visitors/day. For the vast majority of Sweden's young people, Lunar-Storm is as natural as mobile telephones and clean drinking water. Members are extremely active and send more than 1.5 million text messages via the URL every week. LunarStorm's member base is growing at a rate of 25,000 members a week. LunarStorm's 500,000 regular users represent 65 per cent of all Swedish young people aged between 15 and 20. With Vodafone a MVNO is realised.

Digital newsletters (e-zines) have replaced neighbourhood newsletters and club bulletins. They are electronic magazines, geared towards the various target groups and themes and sent by e-mail on a regular basis. The influence of the individually composed on-line newspapers and web loggers (bloggers) is increasing as well. After an e-zine had disclosed ex-president Clinton's affair with Lewinsky, e-zines are getting so popular that media experts expect it to become a communication channel that is equally powerful to regular channels.

'Imagine a world where there are two kinds of media power: one comes through media concentration, where message gains authority simply by being broadcast on network television; the other comes through grass-roots intermediaries, where a message gains visibility only if it is deemed relevant to a loose network of divers publics. Broadcasting will place issues on the national agenda and define core values; bloggers will reframe those issues for different publics; ensuring that everyone has a chance to be heard. '

Professor Henry Jenkens,
MIT 2002

Part 2:

Virtual Reality

VIRTUAL LIFE

“A cartoon has nothing to do with time, a cartoon is like still water.”

Willem Wilmink
[lyrics: A world without time, 1990]

As mentioned before, modern telecommunication facilities have led to an acceleration of message traffic. Time and space thus acquire another dimension and new phenomena come into existence, such as 'virtual experience'. The Internet becomes an extra window from your home (or workplace) overlooking the outside world. The more often you climb through this imaginary window, the more it becomes a 'door' to the virtual society in the virtual space.

More and more people, in particular the young, start to lead a kind of 'virtual' life on the Internet through this 'window'. They choose a place to stay, to show themselves, to exchange messages or to conduct transactions. They pick 'their' name, address, (mobile) telephone number, age, mother tongue, gender, looks and relationships, unhampered by their physical abilities and appearance in the regular society. A stutterer with typing skills can participate in fast discussions in a chatroom without being impeded by his or her ailment. A rejected lover keeps his chin up in a chat and full of bravado picks up one woman after another. A lonely mother only needs to turn on her pc to get all the attention she desires after she hears the MSN *<ploink>*. It means a change in direction in communication. The Internet and wireless telephony lead to the establishment of virtual contacts on a large scale on the basis of interests or involvement, whereby each contact in itself is part of one the many groups (so-called *communities of interest*).

Physical, virtual and potential other realities seem to integrate in a total perception. Monitored chats and publications show that in the perception of frequent participants in the virtual society a more abstract total reality exists with regard to this virtual society. In their doings they integrate the physical and the virtual in a total perception.

Phenomena

'Everyone his truth,' Godfried Bomans, a famous Dutch author, once exclaimed as a contradiction. It is a fundamental thought, but 'truth' and 'reality' are no synonymous, neutral, objective terms, but terms that are *relative* to (1) the group of people and (2) the time in which one lives. Truth is always historical and relational, and reality relates to 'consciousness' and the present. Which reality are we talking about when we compare the physical to the virtual? The (general) reality is something that according to philosophers (such as Spinoza and Heidegger) is fundamentally hidden in man, so that the only thing he needs to do is to develop insight into himself. Acquiring insight is a unique human ability based on the all-encompassing entity of reality. As a consequence he can work out what reality is and the more he succeeds the more balanced he becomes. Virtuality is always related to, and interacts with real, actual phenomena.

Do physical and virtual realities exist next to one another? Or could it be that in the human mind an even more abstract total reality is developing in which both realities exist both in a parallel simultaneous and integrated way? And if so, can anyone create this sensational *interreality*? Is it an abstraction or a kind of hybrid thinking?

In order to try to answer these questions we name the physical reality a real reality, to subsequently name the virtual reality an unreal reality. In order to consider both realities we need to go to a higher abstract level of thinking: abstract thinking.

Switching

When observing the behaviour and explicit experiences of Internet users, you will notice that the young in particular (<25 years) seem to effortlessly switch between the physical and virtual realities. Through various (often non-converging) media they are supplied with information and contacts. They share address books, make appointments and within seconds hop from one reality to the other. They actually do see a hybrid reality: the crocodile which was first sitting under the bed is yawning with boredom in Sesame Street, only to surface seconds later in Digital City foaming at the mouth. In the other window you have to find the hidden salt-water crocodile in the Zoo before you lock him up together with the lion before you can free the Allosaurus. If after finding him you quickly vote for this crocodile, you earn bonus points. Meanwhile you half and half watch a documentary on the Discovery Channel in which the crocodile grabs a wading aardvark and wolfs it down. A child's magical world is no longer an unstable world, but from the cradle the child feels physically and virtually its way towards the reason that makes 'the world' objective. It discovers that the crocodile can evoke both fear and affection; that real teeth look dangerous but that you can crawl through virtual teeth to take an exciting look in the crocodile's stomach. Without delving too much into the innermost feelings it really seems as if in their minds an even more abstract total reality is created in which both

realities integrate into a hybrid experience, an *inter-reality*.

Fraiberg says that children extend their horizon in the first eighteen months and become afraid of 'the outside world' when they start loving someone for the very first time (= association with attention, satisfaction, pleasure and protection). In the first, very emotional stage of 'love' the absence of a beloved person is experienced as missing a part of itself. People are by nature social beings and only become reserved when they are disappointed in people. Children therefore easily make contact by themselves and especially now they experience the Internet as if it were a pacifier 'in the cradle' they will extend their horizon through this medium that offers so many contacts. Whereas a quarter of a century ago they leaned out of the window to chat with their neighbours' children playing in the street, they now make contact with children (and adults) all over the world through the Internet window. They ask for and get attention, usually much more than they would receive from children in their neighbourhood. As soon as the virtual reality behind this virtual horizon satisfies them with a kind of 'love' and is not disappointing (or not as often in the physical reality) they will also be inclined to consider *cyberworld* as part of their 'world'.

'Getting old is a terrible thing. I remember when I realized I could beat my dad at most things. Bart could beat me at most things when he was four.'

Homer Simpson, on repeatedly losing to his son Bart, at video games

Although parents generally do not let their young children wander around in a city, they usually do not like to visit the city called the Internet, which means

that kids can discover 'the world' themselves. It explains why young children can establish social networks in the virtual world (among other things by using address lists and MSN groups/Yahoo clubs): they find themselves – from a psychological point of view – in a state of being formed and while their understanding of 'the reality' is being formed in and out of season, the hybrid reality is given an equal place in their perception of the environment.

From the abstraction one could say that the integral virtual and physical reality in people is formed the moment they associate hybrid reality with 'love' in the form of attention, satisfaction, pleasure and protection. The more associations are made with these primeval feelings, the more intensely virtual reality will be experienced as a 'real' reality.

Cyberworld is not a truly complete world as you cannot eat a snack or become ill in it. In the area of communication as well it cannot become a lifelike reality unless man adapts genetically in the same way as nature evolves when the environment physically changes. The way in which the youngest generation (born in the digital age, after 1980) familiarises itself with the new communication technology as a matter of course, creates expectations. *Zapping* gives way to *channel* surfing, whereby the Internet is just one of the many contact and media channels. Thanks to the rapid technical development the quality of the *fantasy role playing games* has increased to such an extent that they have the character of a simulator for virtual reality. Children become adept in repeatedly stepping in and out of this *virtual reality*. The ever-changing circumstances make them *The Children of Chaos*.

"They keep changing the rules – how we're supposed to behave in each situation. They keep changing it. It's just like the world: everything keeps changing constantly."

Young US soldier
during a police operation in Haiti, October, 1994

According to Douglas Rushkoff children are also much more challenged to constantly and flexibly deal with changes. Not only do they stand live in front of the boring crocodile enclosure at the zoo while at the same time being busy capturing (virtual) crocodiles on their gameboy, they are also forced to tease and please to get and keep getting attention. 'Look mom, no hands,' no longer suffices to get the desired attention from mom in all the hustle and bustle. The one moment they are not noticed, the next they are treated as little gods. That is why the act like Teletubbies and adjust themselves to each environment. They can convert A/D and D/A more quickly, hop from 'real' to 'cyber' and vice versa, and seem to be able to call up 'Gestalten'. Douglas calls it 'the fall of mechanism and the rise of animism' in an era in which everything is self-validating. Over the years children have noticeably had some difficulty with this 'switching'. In both chats and songs the words 'I am real' were frequently uttered. Just as in the ending of each *Scooby Doo* episode children eventually want to pull off the monster's mask to reveal his true identity and appearance. Their hunt via the channels (television, the Internet, electronic games, textbooks with cd-roms) and their deliberations and explorations via interactive communication channels (the Internet, mobile telephony and text services on television) provide a wealth of information. On the one hand, it seems to be used to develop *'that feeling'*, but on the other hand it also has an impact on their tease and please behaviour (make yourself a *wan-*

nabe). For that matter, hardly anything is known about the consequences as well as about the aftermath of the Playback TV Show effect on children. At the moment the feeling for what is real and not real as well as their hybrids and derivatives seem to be well-developed among the youngest generation. Also remarkable in *chats* is the fact that most children know they are influenced by the media. On being asked, they say that they - driven by '*What's in it for me?*'- go along with it as long as it suits them. They 'obediently' click on the banners to get the bonus, but when the benefits dwindle or the advantages change into disadvantages they unscrupulously drop the provider: they sever the connection and if need be, they block the sender.

Influence of the virtual world

Nobody likes to admit that he or she copies some else's behaviour, let alone when it is questionable behaviour. We then prefer to talk in the third person: "others let themselves be influenced by the media, but not me.' (perception). However, when sufficiently involved we follow the majority (bandwagon effect) or, in case of strong prejudices, consciously choose the minority point of view (underdog effect). Behaviour is very frequently copied in cyberworld, where click & lick is very common. Not only with regard to the way in which one communicates or behaves in virtual reality games or how one installs and uses computer programs, but especially with regard to the ways in which one immerses oneself in this virtual world and presents oneself in it.

A qualitative study into the nature of the components makes the following distinction:

- **infatuation** – romantic fantasies about sport celebrities;
- **adoration** – a combination of idol, hero, alter ego, mentor, role model;
- **fantasised interaction** – daydreaming about the idol, about meeting the idol, becoming the idol or being like the idol;
- **imitation of the role model** – in a different context.

The influence of the visual media (particularly television and photo websites) is substantial. There are a great many copies of media stars such as Madonna and Phil Collins and of idols such as Jennifer Lopez and Ali G. With thousands of clones and as many fans on the Internet. The way in which the media deal with this phenomenon is described by science as ‘agenda setting power’. Even your dying day has been laid down.

Just as in the 'real' world people on the Internet pursue their goals and consider which behaviour or attitude is the most effective in order to realise them. To this end they observe the behaviour in three areas: media manifestations, cyberworld and the real world.

The observation and imitation behaviour, which generates a learning process, is clearly increasing in all age groups that come into contact with the new media.

In his *social learning theory* Bandura distinguishes four learning mechanisms:

- acquisition of information (observing how it goes);
- experience (knowing what your abilities are, experimenting);
- copying, playing a role (imitating and observing whether the environment reacts positively [or artificially angry]);
- imitation ('modelling', internalisation of new role).

"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modelling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action." (…) "Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, an environmental influences. The component processes underlying observational learning are: (1) Attention, including modelled events (distinctiveness, affective valence, complexity, prevalence, functional value) and observer characteristics (sensory capacities, arousal level, perceptual set, past reinforcement), (2) Retention, including symbolic coding, cognitive organization, symbolic rehearsal, motor rehearsal), (3) Motor Reproduction, including physical capabilities, self-observation of reproduction, accuracy of feedback, and (4) Motivation, including external, vicarious and self reinforcement."

Bandura [1977]

Is the Internet about imitation? Is it self-activation – entirely fitting into the 'create your own reality' message of the Internet? Are we talking about social learning, where observing and modelling behaviour, attitudes and the emotional reactions of others are important?

With revolutionary advances in communications technology, life styles are being modelled and rapidly diffused worldwide. *"Through exercise of forethought, people motivate themselves and guide their actions anticipatorily. When projected over a long time course on matters of value, a forethoughtful perspective provides direction, coherence, and meaning to one's life. As people progress in their life course they continue to plan ahead, reorder their priorities, and structure their lives accordingly. Awareness of one's own mortality also becomes a force in shaping the nature of one's life. People are not only symbolizers and forethinkers. They are also self-reactors with a capacity for self-direction. After they adapt personal standards and develop self-evaluative capabilities, self-demands and self-sanctions serve as major guides, motivators, and deterrents. They do things that give them self-satisfaction and self-worth, and refrain from behaving in ways that produce self-censure. The motivational effects do not stem from the standards themselves but from the evaluative reactions to one's own conduct. Standards provide the behavioral guides; the anticipatory self-evaluative reactions serve as the motivators that keep conduct in line with personal standards. People are not only agents of action but self-examiners of their own functioning. The metacognitive capability to reflect upon oneself, one's sense of personal efficacy, and the adequacy of one's thoughts and actions is another distinctly core human feature of human agency. Through reflective self-consciousness, people evaluate their motivation, value com-*

mitments, and the meaning of their life pursuits. It is at this higher level of self-reflectiveness that individuals address conflicts in motivational inducements, the meaning of their activities, and order their priorities. People do not come fully equipped with these agentic capabilities. They must develop them. Observational learning operates as a key mechanism in this process of self-development, adaptation and change. Through the power of modelling, people acquire life styles, values, self-regulatory standards, aspirations, and a sense of personal and collective efficacy."

Bandura, 1986/1997

The most common and convincing examples of social learning are television commercials. A commercial suggesting that a specific drink of shampoo leads to more attention and admiration of the opposite sex makes the viewer long for such a situation. Subsequently the viewer models himself on the behaviour of the person in the commercial. On account of combining attention, motivation and retention the 'social learning theory' includes both the cognitive and behavioural frameworks. Bandura's theory is thus giving more room to the strict behavioural interpretation theory. The highest level of learning by observation is attained by first symbolically organising and practising the model behaviour and then playing it out. Translating the model behaviour into words, images or expressions works better than only observing it. Individuals are more inclined to adopt model behaviour if it has a clear added value. If the model is worshipped and very much resembles the viewer they want to be able to associate themselves with the model. On the Internet it is expressed by communication in images.

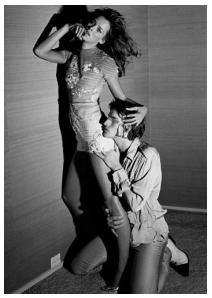
Tell Me

The feelings here in cyberspace can really be intense.

It can often be overwhelming, it's hard to make some sense.

The feelings are so strong, you know, my heart, it tells me go.

It's very hard to listen when my head, it tells me slow.



For now you're just a picture and beautiful words I read.

But I know that when we're together, you'll be everything I need.

Tell me what you dream for us, and how our life will be.

Tell me what the future holds with you there beside me. It makes everything right, knowing your heart is mine.

Knowing how much you love me, makes me feel so fine.

Tell me the plans you have for us and all the things we'll do.

Tell me, my love of the wonderful future when I am here with you.

Soon you'll be more than a picture and words I read on the screen.

True love or an illusion, I guess it remains to be seen.

(Cyber Love III; 1997 Dear One Publ.)

Virtual dating with clever gimmicks of current cyber fiction virtuosi enhances by chatting via images, like drawings and photographs. So images are used to communicate about the expected, desired experience. First virtually, then more or less dramatically and graphically in a telephone conversation and finally physically. To which extent is he/she real or not real, that is the key question. What suggestion is a teaser and what must eventually be real to come to a satisfying end of the encounter? During this entire game there is only one consideration: real or not real? Only direction at the total experience level can manage this interreality. Because of the rapid changes in tease expressions and please techniques a continuous weighing of 'real or not real' is required. The media turn out to be (or to have been) at the forefront regarding experience and reality and thus form part of the lie detector.

The media meet the need for truth

Popular news sources on the Internet (such as the bloggers and e-zines) engage in 'framing' by selecting, emphasising, omitting and detailing news.

The reader's organising thoughts gives a context/deeper meaning to news facts, in particular when a news item answers four related questions:

1. What is the problem?
2. What caused it?
3. Who/what is guilty/morally responsible?
4. What is the solution/remedy and who can offer it?

The supposed degree of truth of these news sources is high as the reader's media opinion, combined with the own (private) opinion, leads to a public (publicly

expressed) opinion, after which it also becomes the reader's private opinion.

For the visual media on the Internet (such as web-cast) the same influencing dangers threaten to occur as for television: when you watch too much television and the offered programmes are monotonous, the viewer's reality image will become identical to the reality image in the television programmes offered, irrespective of the degree of reality of such programmes.

The scope of this book does not cover the question what the value of the ordinary media is in the viewer's experience and how it would develop if interactive television would actually be available to everyone. Some predictions can be made, however. In the discussion about the relationship between television and violence empirical research has confirmed that imitation (Ref: modelling theory of Bandura) and disinhibition (disinhibition theory) play a role. Watching television for hours has measurable effects on the viewers' experiences. Additional empirical research has shown that the longer you watch, the more serious you experience a problem. For example, someone who watches four hours of television takes in 9% more crime than someone who watches two hours. On the other hand, many frequent-viewers considered the world to be a frightening place. Does watching television or surfing for long periods of time automatically lead to criminal behaviour? Or to neurotic, frightened people? Or is this the difference between young and old? Anyhow, the younger generation is actively looking for 'clarity about reality' and for the link between those physical and virtual realities, the total experience. Whether they do so by bungee jumping or by channel surfing does not make much difference wit respect to the end goal.

The media meet a need for experience

As mentioned before, not only the message *via* but also the message of the medium plays a role. When the script was invented the human senses (sight, smell, feeling, hearing, touch and taste) were in a natural balance. The printing technology has disturbed this balance and the one-way face gained the upper hand: intellect first, feeling second. Feeling becomes linear, regular, repetitive and logical. The invention of the television was followed by a return of the multi-way face and hearing. Music styles emerge and are intensified after the invention of the new media. Everyone sees and hears everything, including what they are not intended to hear and is often meant for different situations. You receive information aimed at a different gender, age, family situation of culture. This brings along yet again new culinary, clothing and fighting styles.

The media's benefit in meeting human needs becomes clear in the so-called *Uses & Gratifications model*. It shows that the media do not influence people, but that people have motives to use the media. Such motives are:

- entertainment;
- personal relationships;
- personality development;
- surveillance;
- information in order to orientate oneself;
- the need to act in a social/economic/political environment.

Media cannot generate the effects anticipated by the individual or the conclusions he has drawn. People do that themselves. The individual mood is compensated by the choice of television programme: when stressed the viewer watches much television, in particular relaxed programmes, games and shows; when bored the viewer zaps to violent programmes. Thanks to the remote control the television has become an interactive mood gauge: reality is far away.

What's real? Integrated music and image play the role in youth's life. Born in cyberworld, with a mobile in the crib, a playstation as teddy, Internet as mother's milk and TMF as wallpaper. The new media create their environment. A chat acts as their sounding board. Create yourself an image, an identity, make yourself beautiful!

While most would call The Matrix series the ultimate film about virtual reality and man's fight to overthrow the machine empire, there are a couple of other films that share The Matrix's theme of virtual and real worlds blending together. The film eXistenZ is one of the better low-budget flicks about a virtual reality game. It stars Jude Law and Jennifer Jason Leigh, who play as a game designer on the run within the world's most advanced virtual reality game. Writer and director David Cronenberg spins an unusual tale that is an interesting watch for fans of The Matrix. The Thirteenth Floor is a similar story that blends reality and a virtual world together to create an intriguing story about what is real and what isn't. It's a good flick, but it has less to do with games and more to do with virtual reality.

Illusionary information

Integrated music and images play an important roll in the lives of young people. They were born in cyber

world, with a mobile phone in the crib, playstation as teddy bear, internet as silver-spoon and TMF as wallpaper. The new media forms their surroundings. A chat is their sounding-board. Their audiovisual image is made for them. The number of individual images that will fit in a give music clip is precisely calculated. And then the compiled images are made to fit exactly with the music. Based on this you build -- like lego-blocks -- a wall of images. The result is a series of images telling a story exactly to the beat of the music; Illusionary information. What's real in this cyber world, where someone is made into an idol with a Power Mac G4 and you can transform yourself into a clone of him or her with Photoshop? Kids and teenagers are primarily video oriented. The select and communicate with pictures or video images and the articulated word. Icons, emoticons and turbo language are all based on this. Sounds, melodies, pics, clips, advertisements, packaging, everything that has an audiovisual appearance constitutes part of their language. The new multimedia MSN-plus, the polyphonic ringtones and wireless GSM telephones expand on the communication tool-box. Just like "Für Elise" stands for Beethoven, the young have a specific sound or picture for every person. Everybody needs a sound, record it! This advertisement in the fall of 2002 gave -- almost sexist -- examples: your mother-in-law as a moaning orgasmic bear: Your boss as a chortling turkey, your ex- as a vampire, your mother as a ship's whistle, your sister-in-law as a chainsaw, your colleague Marion as a sheep. It looked like a precursor of a new generation of ringtone rotters but it turned out not to be the language of the youth.

Van Kokswijk,
Telecommagazine 10/2002

Fantasising meets a need

Fantasising and exploring reality are human qualities. Fantasy worlds have existed from time immemorial in games, from dice to doll's houses, from court poetry to theatre. As mechanisation and automation advanced, mechanised games were brought on the market. The invention of the electronic calculator also led to the development of computer-controlled games. The first Arcade games (1972, Atari) changed the way in which players learn to think and act. The players acquired skill in manoeuvring keys (and key combinations) and a good assessment ability in situations, combinations and speed. They were followed by the personal computer.

Running and jumping your way to the Princess *This is the real start to the Mario series. You will see the enemies that you have grown accustomed to like the goomba's, koopa's, and piranha plants. You will be able to travel through pipes but make sure you watch out for those piranha plants. AI for this game is poor. They basically wander mindlessly back and forth and on occasion by some miracle they may injure you. Although the hammer brothers and a few other of the enemies you will stumble upon will be a little more challenging. You will be travelling through 8 worlds in order to rescue the princess and a total of 32 levels not counting the star levels.*

Gameplay [1988]

Super Mario was born in 1985 and entailed things as reacting quickly, scoring bonus points and remembering experiences. The subsequent adventure games offered background music which varied per situation (and thus increased tension), required three-dimensional insight and followed a script, in

which decisions had to be taken about information and events presented during the game by putting things together and deducing. The better game players remembered and combined facts and the quicker they took decisions, the faster the could play out the level of the game and advance to a higher level. Each step forward is a reward. In such games a feeling of responsibility, too, is generated with which strategy skills are developed. The latest generation of games has grown into a comprehensive three-dimensional toy with sound effects, based on a film script. Who now plays such a game, trains himself in knowledge, skills and strategy as if in a flight simulator. Such a game becomes more realistic if there are two or more 'real' opponents at a different location: wireless and interactively competing via the Internet is reality gaming.

Playstation meets Organism *"Computer games let you learn to handle speed. This is why games are addictive - like drugs, they open the body to new speeds, they train the body. The gamer transforms in front of the computer or arcade machine, strains his body in various ways and tries to become absorbed into the plateau of speed where the body is empty. Then there is no longer any difference between screen and consciousness; eyes press, fingers see and the ecstatic moment unfolds in which one sees actions in time. When we analyse the ecstatic experience of computer games over time, we see that an important difference lies in the relationship between imagination and complexity. It is clear that the degree of difficulty of games has become more diverse. Faster and faster speeds were once the only way to make a game more difficult, so that the squadrons in Galaxian at one point fly down at an inhumanly high speed and you 'die.' With the passing of time the computer's capacity grows ever faster, and the games naturally change along with it: the ability to offer different levels, the ability to build story lines into the game for the first time, the ability to*

better represent spatiality. At present it seems as if games force, not follow, hardware innovations, for why else would you buy a Voodoo II video card or Pentium II?
Games themselves are now virtually worthy of the status of simulation. Watching football on television you begin to recognise patterns from FIFA 99, the difference being that watching football suddenly becomes boring when you can be football yourself. And Need For Speed III tries to simulate the speed of sports cars to perfection, a speed which swallows you up so that even the detailed reflection of the environment in the chrome of the automobile no longer registers. How can we speak of the advantages of old games when we're gaping at such splendour? Simple fun, 'one joystick, one firing button,' limited screens, '1 credit = 3 lives': In their celebration of simplicity, these terms resemble those with which traditional societies are extolled. This is the dangerous point at which cultural pessimism V2.0 lurks: the imagination with which we filled in the simplistic lattices of our Atari games has been lost; today's games leave no room for imagination. Perhaps. But the complexity of games doesn't just operate at the level of the gleaming surface, it also branches off into the worlds created. The function of imagination has changed. It no longer has to fill in the gaps in simplistic representation; it is forced to believe in representation. This is precisely the power of the wave of 3D games: from Doom and Quake to Tomb Raider and Half-Life: The world washes over you. Sounds, shock effects and movement through tunnels make the imagination believe. It has otherwise little to do with inherent qualitative differences between old and new games; they merely present a different kind of fun - the minimalist enjoyment of filling-in as compared with a maximalist enjoyment of immersion."

Omar Munoz [1999]

Playing in a fantasy world has its limitations, however graphical it may be. There comes a moment in

which fantasy and reality touch each other and the fantasy will take place somewhere in the physical world. Such a fusion of the visual environment with the virtual world results in a new dimension of experience.

The related technology has already been available for quite a while. In the past few years various companies have photographed the world in detail and stored in a database. Navigation systems, cartographers, appraisers and inspectors make use of it. The earthviewer3D combines the images from a enormous digital atlas of the world, consisting of countless satellite and aerial photographs, creating the effect of flying across actual land. Motion can be captured in pictures. The files and software are also available to the general public. So people who use the Internet (and have a broadband connection) can fly themselves from, for example, Amsterdam to Bagdad. Each flight will end in gruesomely detailed war pictures. Using this technology combined with wireless telephony and location-based information it is then possible to position yourself in a 'real' environmental image, enabling you to see where you are.

This image shows Jennifer standing at the marker with telephone number 2103674910.

Others can see it as well. Before we know it, we are playing a different kind of 'catch me', like Botfighter. We are traceable and approachable for commerce. In a matchmaking scheme targeting 13 to 25 year olds, Dutch subscribers to mobile operator 02 can request the location of another subscribers by sending the operator a relevant cell phone number. Only users who have registered themselves as "location targets" can have their location divulged. It's the same principal as the "Friendzone" location based services from both Vodafone and Swisscom. A new range of services is on the way, such as: "Attention... You're approaching your ex, go left to avoid him or right to meet him." Do you still know the difference between virtual and physical reality?

Email from the Great Server in the Sky *How would you like to be remembered? Some people can't live without e-mail -- and, apparently, some people can't*

die without it. Fortunately for those in the latter group, there's mylastemail.com, a new service that promises to deliver your final, heartfelt e-mail messages to your friends and relatives once you have passed on to that big cubicle in the sky. This new, unique web-based service helps you plan for the unexpected and soften the blow of sudden loss. It's actually about life, not death. These emails are prepared by the living, for the living, with a desire to leave messages of hope for those we love and care about.

Wired 12-11-2003

Since 1999 there has been a tomb on the small Saint Peter cemetery in Amsterdam that catches the eye: it bears no name or date, only an internet address: www.niemandisonsterfelijk.nl. (nobody is immortal). The grave is empty, as is website. It only contains a photo of the tomb, a poem and two e-mail addresses. The reason is simple: the owner of the grave and the related website has not yet passed away. Jaap Louisse (64) remarks: "I am not in it yet, but the tomb is all finished and nicely tiled on the inside. It gives me a nice, peaceful feeling. Now my family and I know where we once will lie." The Internet tomb has been made for the people who will be left behind. The tomb and the site are closely connected and refer to each other. They are also connected by a foundation that has sufficient means to maintain the virtual and local tombs for 800 years. "It gives people the opportunity to log in. Maybe it will comfort them," says Jaap, who has no illusions about the hereafter and knows that in spite of the fathomless space of the Internet he too will die one day. "I'm not doing this to keep on living after my death. I'm doing it for the people who will once visit the cemetery. To encourage them, because no one

is immortal, after all." The Internet penetrates the grave and is increasingly used to support the bereaved in dealing with the loss of their loved ones. But conversely death seems to increasingly penetrate the Internet as well.

In the 17th century three-dimensional decors were made for comedies to help the fantasy really experience the plot. The current reality technology enables people to lead an almost real life in a world that is not physically tangible, to usually do what they can also do in the daily world around us. Travelling, visiting museums, leafing through stacks of library books or getting a flying lesson. We can even start to love someone, just for what and how he or she types something or for the photo or drawing that is shown. We can marry him/her, die or feel ill. The only difference between cyberworld and the physical world is the existence of your body. As long as professor Barabas' time machine (from comic books 'Spike and Suzy') has not become reality we cannot virtually move our bodies. We feel the pain of the mouse movements in our wrists and our backs are aching from sitting too long behind the keyboard. Mobile Internet will provide variation, although it will leave the next RSI generation with a key thumb or something similar instead of a mouse arm.

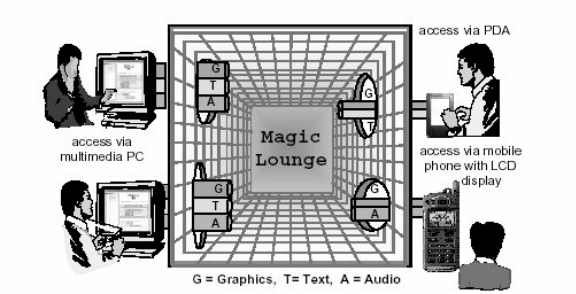
Very promising for follow-up research is a practical research into mobile Internet that has been carried out. Via wireless minicomputers a virtual meeting place could be approached. In this project participants could reach the meeting place via all kinds of heterogeneous means of communication, creating a lifelike fusion of worlds. As an extension of this meeting place the outside area was also added

online via a map, so that the world expanded as in real life. This form of awareness communication has been explored in more detail in some projects in Australia and the US.

More research is being carried out. In development is the social computer project in Groningen in the Netherlands, which is very similar to a LAN party, but here everyone wanders about with wireless Internet PDA's and smartphones.

Categorisation of fantasy needs

The foregoing shows that people have a need for fantasy, both in their dreams and the physical reality. Their fantasy has been extra stimulated by the arrival of virtual reality. If you can wake up reassured from an exciting dream, here you literally go from one reality to another.



The need arises to keep an 'experience overview' in order to classify each form of experience. The need for determining and categorising experiences in the human 'interreality' fits in well with the studies and theories of McLuhan and Hunter (see below). McLuhan endorses this development with a casuistry, in

which his students who read comic books have a better starting point to understand the media than he does.

Comics appear to involve the reader into the story in a more imaginative way and make a useful contribution to understanding the positioning in, and manipulation of time and space.

Since as early as 1948 human media needs have been macrosociologically categorised. Referring to empirical research, in which 35 needs were accumulated which could then be divided into five categories, all media users appear in essence to have the same needs:

- **Cognitive Needs** – Needs related to strengthening of information knowledge, and understanding of our environment. Acquiring information, knowledge and understanding.
- **Personal Integrative Needs** – Needs related to strengthening of credibility, confidence, stability, and status of the individual.
- **Social Integrative Needs** – Needs related to strengthening of contact with family, friends, and the world.
- **Affective Needs** – Needs related to strengthening of aesthetic, pleasurable, and emotional experiences.
- **Escapist Needs**/Tension release needs – Needs related to escape, tension release, and desire for diversion.

Christopher Hunter has worked out this model for the World Wide Web and identifies the social and psychological needs of the Internet user. In addition he has explored whether the Web offers the content to

satisfy these needs. The Internet users' needs on the Web turn out to be no different from the other media sources and communication channels. In this context Hunter considers the World Wide Web – in line with McLuhan – as both the messenger and the message.

Why is somebody publishing almost all private information and experiences at Internet? The 24 year old Kim is 6th year medicine student in Maastricht (The Netherlands). The forthcoming neurosurgeon has her own site, www.kymbly.com, where she presents herself daily with a webcam and a dairy. When her friends made their own homepages, Kim liked to do so too. With a webcam of her boyfriend Kim subscribed to some webcam classification sites. Her virtual window was getting popular worldwide with a score of about 1.500 hits per day. One-third of the site visitors are recognized from the USA, one-eight part from The Netherlands. Kim likes most of the reactions: "I don't like that my colleagues discover my site, because they will get a wrong image of me. Not because I am on-line different from who I am in real world, but people could imagine so. My webcam and photographs have nothing to do with sex, but people who don't know me so well, take their narrow conclusions, and I regret that.".

Yo logo,
Management & Informatie 2002/1

TIME IN VIRTUAL SPACE

"Images may appear to fix time but on reflection they too dissolve into the flow of remembering events."

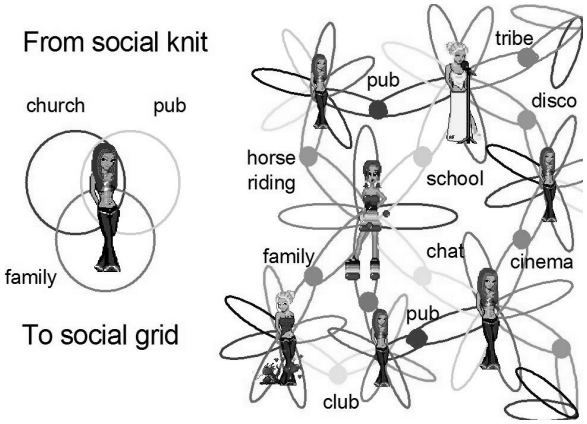
J.C.H.King,
The Human Image, 2000

Whereas in the virtuality, space is infinite (and therefore unlimited) time is no longer an isolated (from the message) fact. Because of the speed with which nowadays messages can be send and the many ways in which the moment of arrival can be steered/manipulated, from real time to low priority, messages are hardly 'timeless' anymore. The monitored chats and some interviews show that users of electronic means of communication, when receiving a message, not only consider the content of the message and the medium used to send the message (McLuhan's the medium is the message theory) to be part of the message but the time of perusal of the announcement, arrival and/or essence of the message as well.

Time is a factor

Time is indeed linked to messages and even forms a message in itself. The short duration between sending and receiving is of decisive importance in many contact and transaction moments in relationships and company processes. It applies to instant messages as well as delayed and prioritised messages. The fact that time can be seen as a message is an extension of McLuhan's the medium is the message theory.

In order to gain insight into the importance of 'time' as a message it is necessary to look at the way in which people mutually make contact (and enter into relationships). This approach has been changed in a time span of one third of a century. Did people once use to enter only into relationships within the family, church or club (under penalty of isolation in the community), nowadays you can be where you want to be and have multiple parallel personal contacts that no longer as a matter of course are based on physical contact.



Telephone and the Internet enable people to cross the boundary of contact; such contacts appear to be lasting even on an anonymous basis. The basis of each relationship is formed by the common interests and via each connection (usually interest-oriented) information is exchanged. It no longer matters who you are, but what you are, know, are able to do or which relationships you have. Collecting (contact addresses of) 'friends' via electronic chat groups, news lists and discussion platforms increases your

possibilities to exchange information. The longer your contact list, the faster you can make contact, the better you are informed, the more support you can ask. Thus the ways to acquire knowledge and skills, share findings, exchange experiences and conducting transactions have been drastically changed. On the basis of, among others, common interests and often gender multiple, star-shaped and parallel relationships with groups/group members are formed, both in daily life and the virtual world (communities of interest/tribes). The start pages (portals like Startpage), search engines (Google, AltaVista) and chat sites (Lycos) point the way to the centres of subject-linked groups.

All over the world contacts are made about specific subjects, based on anonymity and equality, and usually also on open-mindedness. When contact has been established (and the technical contact information has been added to the contact list) the contact is maintained for as long as there is time and interest. Interest is usually linked to topicality, and therefore to time. Sometimes the members of groups meet, usually at large-scale theme meetings somewhere in a country. Sometimes a virtual contact leads to a usually once-only and sometimes frequent meeting in the flesh, as monitored chat reports show. 'Seeing' each other is absolutely not required to have a good contact. In many cases it even backfires.

"…on-line I like the guys in the chat room, talking about nothing, but giving me the attention I needed. After visiting that meeting day and looking IRL to all those people behind the nicks, awfull… they were dummies.. What an asocials! Only harping but they don't even pull up their pants or clean their nails!"

Ann1970 [2002]

Being up to date

Actually, a separate chapter could be devoted to communication via media such as the Internet and mobile telephony (in particular the text forms, such as Internet Relay Chat, chat and sms). The core of the current electronic communications is that it is an actual presentation of yourself in the virtual world, sometimes one-on-one (monocast), often one-on-group (selectcast) and sometimes one-on-all (broadcast). You can express yourself in letters, colours and images. Your own passport photo 'speak' in Lycos' Club Eden. It all happens online and in realtime, in which a message lapsed in time usually is no longer a message: after all, a message is sent at a specific time and old news is ignored. New and news lie closely together. News is no longer news if someone else knows it already. So why waste time to read something that is 'dated'? Even websites are checked for topicality... Does the offered news seem dated? Then do not waste time reading it! The ease with which internet users ignore their language errors has everything to do with time: correction takes time, and if you are not careful, you will lag behind!

***I Am, Therefore I Chat**. And yet, the drama continues. This edified conversation persists. In fact, it is here, in the drama-o-rama of cyberspace, that the textual characters play out their hyperperformance.*

The material word becomes electronic currency, like digicash itself and, taking on a vision of ultimate transcendence, employs itself toward a kind of new-age empowerment and, while making fun of itself, discovers that the interconnected space of endless ether is now teleporting consciousness beyond the either/or to what Tom Meyer calls the ether/ore. A place for imagineers of all types to mine The Mind, the cyborg-narrator-within. Here on the Net (but where is here and how can we ever be here if we never really COME here), anchors are visited, expository transformations subsist on navigational aesthetics, emotional surfing becomes read-only-boredom. That is, until an especially HOT email exchange creates a new Artaud whose Theatre of Cruelty has become part of the pop-will-eat-itself culture's crusade of benign cannibalism. What's so avant about THAT? Many of our distinguished guests are (let us call them) "healing sorcerers" who use the language to manipulate our sense of TIME, all I can say is: it's ABOUT time, the time of our time, right now, this live event here at Brown University, but also this live chat happening behind me, behind me on the screen yet simultaneously happening in different time-zones around the world on other screens.

www.MarkAmerika.com

You sometimes chat with one person, but usually with several people at the same time. Whoever follows a chat as a participant, discovers upon entering the chat room a restless screen of lines of text that go back and forth. Via the scroll the lines scroll by. The sentences appear on screen in order of receipt at the server and new sentences push away the oldest ones. To an outsider the mass of text will seem a hotchpotch of words that hardly seem intercon-

nected. When you use Microsoft software you will discover that the latest Messenger version combines with Outlook, thus generating – together with Net-meeting – a body of offline (e-mail) messages and online contacts (MSN messenger). A text/speech interface with the wireless telephone, as offered by Microsoft in the US and Canada, would complete the integration of contacts.

Visual chat *is a simple way to describe them such as multimedia chat, GMUKS (graphical multi-user conversations), and 'habitats', (…) They are something of a cross between a MOO and a traditional chat room. As social environments, they are unique in that they are graphical. Rather than limiting users to text-only communications, as in most chat rooms, multimedia programs add a visual dimension that creates the illusion of movement, space, and physicality. It allows people to express their identity VISUALLY, rather than just through written words. The result is a whole new realm for self-expression and social interaction with subtleties and complexities not seen in text-only chat rooms. … Head? Body? This is the second visual feature of Palace: 'avatars' or 'props'. Although these words often are used interchangeably, there is a slight distinction in the minds of some users. Avatars refer to pictures, drawings, or icons that users choose to represent themselves. Props are objects that users may add to their avatars (say, a hat or cigar) or place into the Palace room or give to another person (say, a glass of beer or a bouquet of flowers).*

John Suler [1996]

Not wasting any time to be on time

Sms stands for 'message on time'. Send you message now so that the other knows that you are there now. The communications are action-oriented and custom-made for individuals and/or target groups using various channels (web, mail, television, sms). The contact is very interactive but also superficial with simplified language and relations. The language used is stripped of dead weight and based on sound. The limited amount of characters (usually a maximum of 120) and intensity of the text presentations of others forces language into a tight straitjacket. Everything must be quick, short and loose, otherwise time works against you. The result is a mix of abbreviations, sound transpositions, acronyms, jargon and international specialist terms. Chat language is a written spoken language that is mumbo-jumbo to newcomers. For sms language, too, inexperienced users need a dictionary. A disadvantage is that they lose time, which is why more and more people familiarise themselves with the chat and sms languages. Much-used terms and abbreviations are included in new editions of dictionaries. The finite form in communications is the same. Hierarchy has deteriorated into urgency or only counts in exchange for a business deal. Gender as a distinguishing factor is no longer the leading theme. On the Internet you are equal and yet different, the latter being more the result of one's own choice than of origin. Etiquette on the basis of standards and values is converted into regional self-regulation from a practical point of view: ensure that you are on time and up to date.

The new telecommunications technology has lowered barriers in our association with each other. Manners are simple, everyone is 'you', there is no etiquette and little hierarchy. It is unisex all the way:

differences between men and women are – when essential – reduced to basic gender differences. In summary you can say that communication via the Internet and wireless telephony is quick, action-oriented, interactive and intensive. Finite forms are (all) reduced. Transfer takes place simultaneously through several media and sometimes at the same time (multi-channel). Contacts are maintained generally and very personally. In this hectic 21st century communication with people who can be reached at various places during the day also includes making appointments and keeping them, planning, taking responsibility, making choices, evaluating, etc. Qualities in which many older adults do not excel, but which are taken for granted by the youngest generation. It is their *digital* time.

My Status *'James Blond' gets an open remark in a MSN Community for not using correctly the status sign by instant messenger MSN. He replies that between the offered status signs (on-line, engaged, phone, lunch et cetera) not his type of absence (working, eating, sleeping) is announced. Secondly, he doesn't like to show everybody his presence IRL or to explain what he is doing in absence. The fourteen participates in the chat room oppose unanimous. Participating in the community means accepting and executing the rules. 'James' defends that when you send a letter to somebody, you neither know if the letter arrives, if somebody is at home, if he or she opens the envelop or really is reading the letter. The room stopped the discussion with 'James' and decided to post the message that 'James Blond' is not allowed to join the group. James is kicked.*

Chat experiences [2002]

Communication in the electronically fed world is action-oriented, very interactive, intensive and takes place simultaneously via many channels. The contact is aimed at the individual, is very direct, quick and uses a stripped, sound-based language in combination with emoticons. Etiquette and rules of conduct are reduced to an efficient minimum. Conveyance of contactability and availability ranks as a new component of the communication language and contact game rules.

Time has many faces

What is time? This paragraph discusses linear time, time as experience and time as a message. Speed in interaction stands for young and dynamic. Young women, the grrrlz, call a man over 50 a 'fossil' because he lacks quickness of response. It makes clear that thinking in more scenarios at the same time and carrying out all kinds of parallel sending actions do not only make higher demands on technology but also on the 'receiver'. When someone does all kinds of different things at the same time using multiple devices (so-called interfaces) and various communication channels, the physical factor 'time' will become important besides the mental 'stress'. Communication channels and means of presentation have speed reduction qualities in the sending process and the human brain cannot process everything at the same speed. This is why, for example, notifications (so-called alerts) and messages do not arrive synchronously to the original moment of sending. It not only leads to awkward misunderstandings but also to erroneous (trans)actions. Interactive games expect a quick reaction (for example: a shooting game as BZFlag requires a quick response, otherwise you will 'fire' at the place where your opponent was, while he has

already moved into another position, returns fire and hits you). Synchronism and response time will play a key role. It has consequences for society but will also make heavier and different demands on the front offices and technical systems of companies and authorities.

Time is money, the old economy says. Almost true. In any case it is a loss of time to correct your mistakes when they do not really matter. Whoever corrects the mistakes in his communication lags behind and loses the other party/parties. Waiting for someone who is making useless improvements is a waste of time. It devalues your value in the community. So you sever the contact and focus on another candidate. When you return after an absence you will peruse the most recent newspapers, open the most recently dated e-mail messages. You do not bother with the rest and in all the hustle and bustle these messages will disappear from the recipient's sight (and attention). Often forever. In the new economy everything happens in real interaction, more quickly and on time, as the parties involved expect a direct response. The saying 'out of sight, out of mind' has turned into 'out of date, out of sight'. Just mind the *realitime*…

Part 3: People and Pleasure

TELECOMMUNICATION INDUSTRY

“There are three kinds of death in this world: there’s heart death, there’s brain death, and there’s being off the network.”

Guy Almes

Structure of the telecommunications industry

The virtual society is a result of, and exists by the grace of teletechnology. In this society new communication behaviour with respect to technology has developed (technosociology), creating needs for extra or different technical possibilities, which subsequently creates new expectations of 'the technology'. The different way of communicating, gathering information, spreading information and concluding transactions in the virtual society results in different user demands to mobile communication devices, geared towards multiple identities and parallel relationships and alternative (trade) transactions.

Between users and the pleasures at long distances a wondrous world can be bridged. We speak of a physical communication-technical bridging when the user wants to obtain the desired experience (pleasure, information or what have you) by means of this 'technology'. The user himself does not want to deal with all this stuff, he does not want the trouble. Yet behind the scenes technical matters play a role with regard to the portal and underlying technology to organise the entire process between user and the materials/services to be supplied. This entire process can be described as the telecommunications chain.

When in the late 1990s sales of a technological product were disappointing people were quick to

customer experience mobile valuechain (Orange UK)

point at the so-called user interface. In the early stages of this research it became visible how many relevant studies had already been carried out world-wide. That is why first questions arose with regard to the crucial connections between user and technical system, and the relation of such a coupling with the connecting (telecommunications) network and the underlying systems. Such questions are incorporated into the field research from a 'need = demand' per-spective and, among other things, presented to us-ers. In advance of the analysis of their reactions it can be stated that many of the countless numbers of these kinds of studies that were started have been completed without spectacular shortcomings being found. It suggests that the lack of coordination within the telecommunications sector signifies its own im-pediment.

The virtual society in this form has been made possible by the communications technology and people are more and more living in it (read: integrating it) in their daily lives. One should expect that via general spreading technology (pervasive technique) the next steps would follow automatically, but it appears that the technical means are inadequate for the next step towards wireless Internet.

The different way of communicating, forming groups, gathering information and concluding transactions results in different user demands to (in this framework) mobile communication devices, geared in particular towards multiple identities and parallel relationships and alternative (trade) transactions. The ensuing user expectation sounds simple and can be summarised in just a few words:

> *to be able to at least do on the way what you can do with a regular pc (at a stationary location).*

This formulated user expectation can, to a certain extent, be verified by empirical research. The aforementioned Korean field study into the use of wireless Internet hardware brought to light that most users only very limitedly use the possibilities offered by their handheld device and providers. Downloading files that have directly to do with the personification of their devices, such as ringtones, turned out to form the main part of the data use. In addition, due to various reasons users were not nearly as mobile as advertisements claim. Kim [2002, 2003] has not only carried out research into the use of mobile Internet in Korea, but also in China and Japan, countries where it has already been introduced. The first findings indicate that the users do not yet have a perception of the services they could obtain with such a wireless device. Of the many services offered they only use a few: downloads (particularly to personify your device,

online games, the weather forecast, news and location-based information). All of them services already provided via sms.

Furthermore, the part of the study pertaining to the context of use shows that services were obtained without interacting with other people, in their free time, without being on the way, and preferably not in public. In the relationship between context and obtained services the choices for novelty, variety and relevant stimulation are decisive. The desire to have fun, looking for entertainment, the available time, the location and someone's work play an important role. Visual presentation, the structure of information and the navigation possibilities are much more important for mobile Internet than for stationary Internet, according to the Korean researchers. The information on the small screen must be shown as efficiently as possible, has to be easy to read and 'compact' and not contain useless words or symbols. Its structure must consist of relevant menus, which must have the right labels and its order must be adequate and therefore logical to the user (the most important information at the top, the least important at the bottom). This is all the more important as the extensive information of the regular Internet, when used on the way in unusual circumstances, still has to remain accessible and transparent to the mobile user. Navigation, too, is very important. The limitations of data entry on mobile devices force an application that has been designed in such a way that users can easily learn the procedures and can easily go from one service to another. Wireless Internet should offer the convenient things also offered by the pc at home (such as mail and contact list synchronisation), but from a user point of view is considered to be different from an internet pc. Finally, the relevance of the information is obviously of importance. It must be pre-

sented effectively, be reliable and be regularly updated.

By means of the components visual presentation, structure of information, navigation possibilities and content the researchers distinguish four kinds of problems users may encounter. Kim et al.'s study concludes that mobile Internet (in Korea) can only become successful when a number of essential problems regarding use are solved. For example, at present mobile services are not used in the same way in all situations. According to the researchers, the most common context of use was the one where the test subject wanted to have fun, was sensitive to emotion, could only use one hand, did not walk, had little visual and auditive distractions, was not in the company of many people while there was not much need for interaction. The second score was a similar situation, the only difference being a functional instead of a hedonistic objective. Consequently, people used mobile Internet services more often when they were in a good mood, could only use one hand and were alone in a quiet environment, comparable to an office or bedroom. This is contrary to the common view that the use of mobile Internet will become widespread in many varying situations, but especially when users are mobile. Lack of privacy, irritating background noises, slow connections, small screens and the difficulty to operate the devices when moving (and preferably with one hand) are the causes. For example, think of a user who is walking in a busy passageway in an airport terminal and wants to enter detailed private information. He does not want to take the time to go somewhere quiet and sit down for a while, even if he should have the opportunity. He wants to make a reservation there and then, as he is just stopping over and does not have much time. This kind of user is a very rare exception. Therefore

it looks like that the supply-controlled mobile Internet evokes its own problems.

The Korean researchers made a number of recommendations for the benefit of the providers of mobile Internet. They should not analyse all possible use contexts. It would suffice to develop specialised applications for use in a limited amount of most common situations. For example, certain applications should be considerably usable in an environment without much privacy, with all kinds of background noises, while the user is walking and can only use one hand to enter data, such as making reservations for a hotel room, car of plane ticket during a trip. However, other applications need fewer adjustments. After all, you are not going to read the news or play a game in the aforementioned situation. Providers of services are expected to creatively look for innovative applications that are specifically geared towards a wireless Internet device and are not a copy of everything for the pc. Some reflection by operators, content providers and money lenders therefore seems appropriate. After all, users will not continue to only download nice tunes and images and their requirements regarding mobile handhelds go much further than pretty logos and shiny keys.

Increase in Internet use

Global Online Populations	
Worldwide internet Population 2002: 580 million (Nielsen//NetRatings) 655 million (ITU)	**Forecast for 2004:** 709.1 million (eMarketer) 945 million (Computer Industry Almanac)

Expectations are that 2005 will see the one billionth Internet user. Although in the past 20 years the use of the Internet has intensified and gained a broader population, it has not really innovated. According to two recent American studies the activities most people use an ordinary pc (with Internet connection) for are mostly sending/receiving messages, surfing, looking for news and information and maintaining 'live'contacts. Another study in Europe (France, England and Germany) shows that those countries do not significantly differ from the US in this respect, even although their online use is only half as much. The national figures differ slightly: in 2000 27% was online in the UK, 20% in Germany and 13% in France. The French chat the most and were more often and longer online than the English, but the English made more use of the instant messenger. Germans scored the highest in downloading movies and software. Based on, among other information, the most recent data of the Dutch Central Statistical Office there is no reason to assume that the Dutch situation would differ considerably. In countries where wireless Internet is offered, both via sophisticated telephones and mobile terminals, the situation does not differ much: research in China, Japan and Korea show similar user profiles.

A research of the NOP Research Group shows that site visits in 2000 are very gender-related. Amusement pages (such as games) were visited by 36% of the men and only 8% of the women. Similar percentages applied to sport, stock exchange quotations and software. Women send more e-cards (61% compared to 43% of the men) and look more for coupon pages and health information. Looking up products and services was dependent on income: 72% of the surfers with the highest income compared to 56% with the lowest income. With regard to looking up news similar figures apply: 62% against

48%. Early 2002 a survey of the Pew Internet American Life Project showed that 22% of the 37 million working Americans use the Internet to improve their financial situation; 24% of the Americans who feel ill uses the medium as a source of information about their illness.

The interest divided into interest groups:

- instant messaging: 59% (19-34 years); 49% (35-54 years) and 45% (55+ years);
- health: 54% (55+ years); 50% (35-54 years) and 39% (19-34 years);
- chat: 47% (19-34 years); 37% (35-54 years) and 31% (55+ years);
- movies: 37% (19-34 years); 26% (35-54 years) and 18% (55+ years).

Besides obtaining pleasures (also called content and services in English) there is also one-on-one traffic that not only exchanges messages, but such pleasures too. An analysis of Palisade Systems in 2003 of 22 million users of a so-called file sharing network (such as Kazaa, Warez) shows that almost half of the wanted and exchanged materials are films and videos. Of all wanted moving images 97% is assumed to be pornographic, of which 10% is assumed to be child pornography (<16 years). The so-called organised peer-to-peer (P2P) networks, in which participants make their own files available to other participants via the Internet, have developed from a place to exchange music (the former Napster) to a market place for users of videos, games and software packages. Although this Give Away Take Away system is free of charge to the users, others are burdened with the cost of the used bandwidth, missed out royalties or stolen files. According to PricewaterhouseCoopers' research MSN, Microsoft's instant

messenger function that is incorporated in the browser Explorer, also has more than 300 million unique visitors per month (measured between 1 February 2002-31 May 2002).

P2P Searches By File Type	
Movies	47%
Music	37%
Images	7%
Software	5%
Documents	3%
Source: Palisade Systems 2003	

The foregoing data show that (in the years 2000 – 2002) the most used applications of the Internet via the pc and mobile Internet phone include the following: e-mail, perusing information, instant messenger, chatting, news reports and exchanging files. European research material that is not publicly available shows that largely the same applies to the high-tech wireless Internet applications (via Wifi, WAP and mobile telephony, respectively). Only the instant messenger and chatting functionalities are missing and the exchange of files is limited to simple texts and images due to the small bandwidth. There is no need for such a bandwidth. On a high-tech telephone (with sufficient CPU and memory capacities) most online games with a limited bandwidth function well. Downloading music is much easier and cheaper using a memory stick. Sending pictures from your camera telephone is relatively expensive and limited with regard to quality and exchangeability. For this purpose users chose the cheaper digital camera via the normal pc. However, video contact using web-

cam (via Netmeeting or ISPQ) gains more popularity among the young than sending photographs via wireless channels.

"The wireless internet will take off when always-on service and useful content for the small displays of wireless devices are available. (…) The rapid take off will be due to millions of 'dormant' or Web-enabled cell phones that are only used for voice services. As the wireless internet user experience improves, an increasing portion of the dormant web phones will become active wireless internet devices."

Dr. Egil Juliussen,
Computer Industry Almanac Inc

The Internet and wireless telephony are the boosters and carriers of a virtual society (existing parallel to the physical space). The underlying telecommunications technology now impedes the virtual society to grow into a full, complete society. The foregoing information in this chapter indicates that this impediment is mainly a combination of protectionism, pricing, product and related interface. Protectionism and pricing are already under attack from all kinds of measures of (inter)national supervisory and market regulating bodies. With regard to the product the focus lies on the wireless Internet referred to in the beginning of this chapter. In combination with the appropriate interface it is translated into technical functionalities: 'always online' for e-mail, contact list, instant messenger and chat.

By means of the topics 'always online' for e-mail, contact list, instant messenger and chat the following paragraphs will discuss in more detail if and how these functionalities are feasible:

- What is exactly needed to this end and can it be quickly supplied?

- If not, does something stunt the growth of this virtual society into a fully-fledged society?
- Can such an impediment be solved by a something?

In order to be able to give a well-founded answer to these questions some insight is required in the technological subject matter. Therefore follows first an overview of the three components which – both in an 'ordinary' pc and a wireless one – connect man to pleasure:

- the device (read: user interface);
- the connection (read: network);
- the pleasure (read: content or service).

They will subsequently be used as a touchstone to check how 'always online' for e-mail, contact list, instant messenger and chat are possible or can be made possible in a user-friendly way.

In making the Internet accessible on a *mobile device* four questions are important:

1. user interface – is it designed for, and usable by mobile people (see research of Kim et al.)?
2. kind of services offered – are they geared towards what mobile people would need/want?
3. format of materials offered – is the content sendable and visible on this user interface?
4. context – for example, does the product/service offered fit into the user's social environment?

This classification is made by analogy of the architectural structure: experience, order and construction.

THE COMMUNICATION-ORIENTED USER INTERFACE

Experience

User preference and satisfaction

Telecommunication products do not excel in ergonomics and usefulness. For a long time both words have been synonyms for adjustments for the benefit of the disabled and RSI-afflicted and it has taken years before the increasing complaints of users about the small letters, weird keys and strange effects were taken seriously. Having to push the 'off' key to switch something 'on' is one example. Until recently mainly segments and factors were considered in the concept, design and positioning of a product. Whether the product met the end-user's needs and expectations seemed of less importance. The same applied to electronic equipment used and therefore operated by people, such as mobile phones.

In the race between competitors to bring new products on the market in order to entice the consumer to buy yet another new (model) communication device, they 'forget' to involve these consumers in the development. From an ergonomic point of view gas cookers, combination ovens, caravans, bicycle racks, shower seats, electronic medication aids (with chip card), kitchens, remote controls, etc. tested by user panels. Whereas large companies have a ‘usability lab’ to extensively try out new technologies on end-users, the ordinary telephones are just a clone of the AT&T Bell Laboratories American Standard model. In the Far East are mobile phones dictated by the manufacturers. In Europe they are only tested for

their 'interior work', to which until recently the telephony providers set no other requirement than that the device had to operate on the network concerned, the so-called Interoperability Testing (IOT). The country-bound admission requirements for analogue telephones are related to the connection factor (blue sticker) and are disproportionate to user acceptance. Not illogical for the 'speaking' world in view of the history, but it is really lethal for the internet-related browser devices.

It also partially explains why WAP has become a flop and why the viability of the recently launched i-Mode is small. The Japanese wireless telecom carriers (cellcos) – who really have to gear their devices towards the gadget-loving Japanese – have understood this much better. Both NTT DoCoMo, J-Phone and KDDI specify their mobile phones in great detail to the manufacturer and thus control the technical end-to-end chain and unilaterally determine user experience. It sets a general norm of functionality and user-friendliness. Korean carriers (such as KTF and COOI) also maintain this course and have now (2003) become the most successful providers in the world. Just compare a mobile internet telephone with an ultra light pc with a tiny antenna. Most technicians do not even understand their complexity, let alone the consumer. He does not even want to understand it. He wants only a device that does what he expects it to do. The main distinguishing property of a new generation of GPRS or UMTS internet telephones will probably be the (interactive) capability to put things as idiot proof, self learning, intuitive, content (format) structured and context related on these mobile devices, without the usual 'jamming' problems.

Relationships -- they're fodder for daytime soaps, romance novels, talk shows and now, wireless phone owners. According to a recent national survey

conducted by Siemens, most Americans are in "relationships" with wireless phones, as 65 percent currently own them. But, are they truly satisfied? Are their relationships full of passion and attraction? While more than half of American wireless phone owners describe their relationship with their phones as a mix of business and pleasure, 36 percent say it.s strictly business. And, while 35 percent admit they're constant companions with their mobile phones and can't live without them, about 20 percent say it's time to break up and find a new phone mate. Men Say It's Strictly Business, Women Say They Can't Live Without It

Survey Results on Relationships Between Americans and Their Wireless Phones [2003]

It would seem that the current wireless human-machine/network interfaces (HMI) have been designed on the basis of a mix of business interests (What sells well? In which areas can I exercise my rights? How do I keep my customer as long as possible?) and traditional design methods (referring to perception and cognition) in the development. Both are larded with a kind of sauce of 'user-friendliness', to which to a limited extent user experiences (complaints, evaluations, regulations) are added as feedback.

Many of the conducted researches have the classical approach of HMI/USI (Human Machine Interface/User System Interface) in which the user-friendliness with individual characteristics is further translated into the user interface. Much research is also focused on traditional communication means. The question then arises if there has been any research into other influences that are of importance in the design of a wireless (speech and/or internet) telephone, whether or not with a camera.

Such research has been carried out by various research centres of universities and manufacturers in the past five years. They mainly focused on people's acceptance of wireless mechanical aids. For almost all human-machine/network interfaces the starting point is the flexibility of people to learn how (the operation of) the device works to then be able to use it. The one time the flexibility proved to be little and the other time unexpectedly great. Many commercial failures can be attributed to not linking man and machine in the proper way (operation of VCR) whereas other 'bad' interfaces with high thresholds (e.g. sms keyboard) yield billions of profit. On the face of it, the logic is not far away.

"A real problem with mobile operators in Europe and the US is that they leave it up to manufacturers to lead the development process. That does not work well, because manufacturers do not understand the service side of the business. However, this is something that may be changing. Last year Vodafone set up its own application research function."

Keiji Tachikawa, Pres.
CEO NTT Docomo, Japan [2002].

Designing in relation to user needs

Then how should you design an interface? In any case not primarily from perception and cognition, but mainly on the basis of (group) patterns of people, so that the interface 'recognises' the human behaviour. Such recognition goes hand in hand with the identification and detection of needs. Many new needs arise from events. Based on the concept that each person has his own course of life, subsequent life stages and varying life styles it seems obvious that a connection can be made with generalisable personal events and the ensuing predictable needs. The **mo-**

tivation to use technology for a need seems to have a relationship with the **importance** to people of using technology. By analogy to Maslow's hierarchy of needs you could, after all, also evaluate the need for technology (read: technical aid). In this context the Maslow hierarchy consists of five similar layers (from bottom to top): biological needs, safety/security, social needs, esteem and experience.

"The architect who combines in his being the powers of vision, of imagination, of intellect, of sympathy with human need and the power to interpret them in a language vernacular and true, is he who shall create poems in stone..."

Louis Sullivan

Andrew Chandler describes the relationship between technology and quality of life, and makes a link with architecture. On the basis of José Ortega y Gasset's Thoughts on Technology, which specifies two objectives of technology, namely fitting people in with its environment and fitting the environment in with people, he indicates that values generate technology. Technology must be recognised as something that belongs to our existence, and therefore technology will have to be integrally incorporated into our environment. Karl Weick goes deeper into the feeling of people with regard to the integration of technology into organisations. Carl Mitcham first makes a detailed trichotomy and later even a tetrad:

- technology as knowledge (thought);
- as a process (activity);
- as a product.

These categories do not explain the 'why' (the origin an intention of technology). Mitcham then adds a fourth one:

- technology as an expression of will.

This analysis encompasses the entire chain of inventing, designing, making, manufacturing, functioning and maintaining technology, enabling us to better experience and understand our relationship with the technological world. Our 'world' consists of (technological) products. The application of (technological) products forms part of a process, both to know something, to make something and to use something. This distinction is important to the designer, the builder and the user. David Billington has divided technology into machines and structures. You need a structure to make machines, and machines are held together by a structure.

Concepts and Constructs *"Linking technological literacy to economic growth is a common feature of the debates about sustainable development. Such development, it should be noted, is not a concept restricted to countries with a low per capita income since, in all cases, the emphasis is on the modification of the biosphere and the application of human, financial, living, and nonliving resources to satisfying human need and improving the quality of life. There is also an emphasis on meeting the needs of the present without jeopardizing those of future generations. Answering the question "How can development be sustainable?" is a far from straightforward task, but the broad goal for technological literacy is clear. It is to help to make the best practicable use of natural resources for the welfare of the people."*

Jenkins [1996]

Someone who chooses to go and work out will be thoroughly evaluated for physical need and capacity before and during the training and will be coached to operate all equipment properly. This does not turn out to be the case for the use of essential means of communication. It almost seems as if the word 'need' is associated with 'needy people', i.e. the disabled and deprived. Research of the University of Sussex into the design of internet sites significantly showed that among disabled persons there is a need for accessibility of the Internet, but the required technological means were in fact suitable for all users. Satisfaction of human needs in order to increase the quality of daily live is not a starting point in technology for the design and use of a user interface (which traditionally focuses on cognition and perception). The relationship with generic elements such as language, culture and level of knowledge hardly plays a role as well. In view of the trend towards self-care a relationship with someone's handicaps (also in the context of function loss in the elderly) should be made acceptable. You may expect (and maybe demand) that the quality of life demands that wireless terminals adapt themselves to the user (and his environment). The question presents itself whether needing telecommunication means as access to the new virtual society has such an influence on the quality of life that individually being able or not able to call or access the Internet is a kind of **CALY** expansion on the **QALY** and **DALY** standards (Quality/Disability Adjusted Life Years). The argument can be raised that nowadays the supply is much more differentiated, that many people are better educated than they used to be, that there are less class, cultural and language problems than there used to be, and that young people familiarise themselves more quickly with products of this day and age and know how to adjust them to their personal social circumstances.

The foregoing shows that the need for technology can also be caught in a structure. A detailed positioning (with underlying empiricism) is not available. It will have to be determined by follow-up research. As a steering indication some examples of technical aids, classified per layer:

1. To alleviate emergencies: fire alarm, respirator, matches, pacemaker, machete, axe, etc.
2. What you cannot do safely or carefully without technical aid: saw, calculator, paper cutter, can opener, pump, clock, pair of tweezers.
3. To save cost, time and energy: electric screwdriver, hand truck, bicycle, dishwasher.
4. To do it easier, funnier and more often: gameboy, lawn-edge trimmer, bicycle map holder, ATB, dvd player.
5. What you would never do otherwise: electric fly swatter, household robot, bedroom airconditioner, gadgets.

The triangle above is intended to function as a hierarchy model. The user of the model will have to make a more detailed positioning on each occasion. I expect that in the course of time classifications and definitions of positionings will be added, in which on the basis of best practices the influence of language, culture, class and specific target on the aid will be incorporated.

The bionic buddy

In spite of all research into the most advantageous design of a mobile telephone the specifications of wireless HMIs 'intended for the general public' are linked to the way in which designers want/can implement the 'state of technology' and secondly to the popularity in sales (turnover results). User wishes seldom come first. Marketing has increasingly steered the development and production since the beginning of the 20th century, whereby the user interface would have to take into account the factors

that determine the quality of life and would have to meet the needs based on Maslow's theories. Such an interface will have to be more able to differentiate and personify/individualise. Speaking and listening (the first phone) and reading and checking (the first pc) run into one another. Meanwhile looking and feeling have been added as well. The next step is that 'the machine' understands you, is able to interact, among other things to facilitate you in your communication with contacts within groups. A kind of bionic buddy.

Structure

Design of the user interface

The component of a computer program that deals with the communication between program and user is called the user interface. Usually computer programs are very complicated and in general must be suitable for use by inexperienced users. An attractive user interface is then the most important means to make the computer better accessible. For many applications it means using (function) keys, the mouse and graphical elements on the screen; for some applications a natural language (e.g. communicating in English or Dutch) is the best solution. When operating technical devices people prove to be more image-oriented than language-oriented, which is not illogical, since symbol language is the world's oldest language – followed by the spoken language and then text – for communication.

When making such an interface as a combination of electronics (hardware) and command statements (the program language or software) a number of problems occur, such as:

- It is much work for the programmer to implement a user-oriented interface. The command languages in which applications are written are often not very suitable for writing graphical interfaces. Usually a program will become twice as long when a graphical interface is added.
- It cannot be anticipated how well an interface will eventually function. It is hard to make prototypes due to the comprehensive programming work. However, it should be necessary as it is just is not possible to give a formal specification of an interface. People are too complex for that.

Adjusting an interface at a later stage on account of switching to a different command language or specific user wishes is often only possible with the aid of the original program text (and sometimes only by the author). Building in possibilities for the users to change things himself takes extra effort and therefore money. That is a pity, as an interface is only good when the user enjoys working with it (subjective) and when he can work faster with it than with other programs/means (objective). Results can hardly be guaranteed in advance, although so much insight has been gained along the way that some general guidelines can be given.

In a user interface insights from IT (or electrotechnics), sociology, psychology and ergonomics come together. The result is an approach that will indeed not be satisfactory for all applications, yet can be of help to the majority of the applications as made today. In order to be able to look in this context at the design of a Human Machine Interface with respect to

the properties of a communication-oriented HMI the principles of a good design must be made clear. What 'good' is usually leads to endless discussions, but much used is the definition and description according to the renowned IEC (International Electrotechnical Commission).

Furthermore, the necessary standardisation must take place. Firstly in the area of browsers. There have only been a few for a long time now. With respect to mobile devices there are already a dozen or so different browsers (in various versions) while the market has yet to come into existence. None of the mobile browsers meets the ultimate multi-modal need.

The previously mentioned and rising JAVA technology in the mobile world offers flexibility in the device by means of the J2ME applets (which are downloadable and with which you can change the human-machine interface, but can also add functionalities such as games). For this reason the software is also called *virtual machine*.

Design method

The design method is based on two principles: modularity and the 'right tools'. Modularity, since the interface is so very different in character than the underlying program that is best to use own development methods for both components. Furthermore, an own programming language would prove useful to both components.

There is a certain amount of controversy about the proper method for designing an interface. Prototyping or iterative design are much used, whereas a formal specification works better applied for the application. The language for the application is usually a traditional programming language; the interface

asks for a special command language, for which the abovementioned J2ME is used more and more often.

A general starting point is that an interface between man and a machine, system or network must be maximally personally oriented. As a more multifaceted interaction is expected, such a personification is of importance. In order to determine the criteria for personification we need to make a classification of interfaces. There are graphic user interfaces (GUI) and natural language interfaces (NLI). The idea behind natural language interfaces is that the user can communicate immediately and without help with the machine in his or her own language. Graphical interfaces (such as Windows) use images (pictograms, icons, pictures), texts and menus.

Both types can be divided again into atomic, continuous and symbolic interfaces. Atomic interfaces – such as a menu – allow a limited number of commands, no more. Continuous interfaces – such as a mouse – maintain a continuous link with the device/system. Symbolic interfaces expect the user to have a certain amount of knowledge. They offer more possibilities in operating the system, but are less flexible and differ from each other. Almost all user interfaces are based on cognition and perception. The past few years studies are being carried out all over the world into the possibilities of founding user interfaces as well (or instead of) on intuition, emotion and adoption.

Most user interfaces make use of direct manipulation. Its basic principle is that many things can be represented by images or symbols and that actions (with selection via menus, icons and keys) can be made very clear by the having the image change form or place. It even applies to abstract objects. An action can be depicted by moving the image representing the file from one rectangle on the screen to

another. Using the mouse the user can do this himself as well.

Environmental factors

Does de mobile telephone convey the message or is the wireless telephone itself the message? And to which extent is the environment of importance to the user of the medium or the communicated message?

Designing new mobile technology for teenagers
Teenagers of today constitute the first generation growing up with mobile telephones. Studies have shown that young people use mobile phones in ways that are radically different from adults, in that they focus on the expressive rather than the informative use. Further, teenagers use their mobile phones for social purposes rather than for co-ordinating and making work more efficient. In this paper, we present results from an ethno-methodologically inspired field study of mobile telephone use among Swedish teenagers. Our results show that the mobile phones often are used collaboratively, in that the teenagers share the phone and its content. These findings need to be considered when designing new mobile technology for teenagers. We therefore argue the necessity of grounding new design in an understanding of teenagers' everyday use of mobile telephones. This implies using observational techniques, rather than methods such as interviews, surveys, and controlled experiments; methods frequently used in design of new information technology. Bringing ethno-methodologically informed observations into the design process contributes to design that is valid according to teenagers' use of mobile phones in their everyday lives. This paper is based on field studies conducted among teenagers in central Göteborg, Sweden. During several months, we have been doing ongoing fieldwork among teenagers, listening to telephone

conversations, and observing their actions, while taking detailed notes. The fieldwork has been conducted at places where teenagers regularly spend time, such as cafés, public transport, Liseberg amusement park, shopping malls, school cafeterias et cetera.

Collaborative Use of Mobile Telephones by teenagers [Weilenmann & Larsson, 2002]

Through observations it has become clear that for the new generation (up to about 26 years) a different approach might suit better, namely one focusing on the action patterns determined by the group (to which they are geared at that moment). Studies shows that such groups may differ with respect to composition, but a first observation indicates that they consist of five to six members who are focused on specific interests or activities and show many characteristics of virtual groups as known in business administration. Another study shows a significant relationship with (satisfaction of) daily use. Gender, age, culture, lifestyle and class, too, have influence on the quality and quantity of wireless human-machine/network interfaces. Even patterns and emotions can play a role and experiments are already being carried out with experience design.

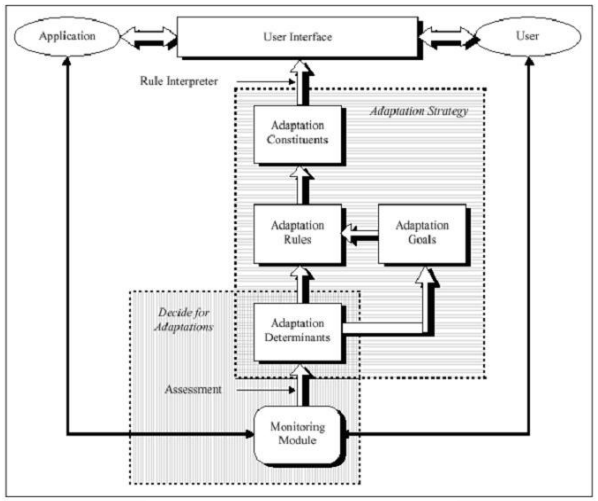
In *Techniques for Adaptive Control* [2003] Vance VanDoren distinguishes between:

- model-based adaptive control;
- model-free adaptive control;
- expert system (rule-based or artificially intelligent) adaptive control.

The control-loop (connection in the process to exert influence) and feedback (connection to feed back

information) are the main components in each of the adaptive systems.

The expert system, developed after the rise of AI (Artificial Intelligence) is based on the principle of adaptation and acceptance. Adaptation because the interface has such a different character from the underlying program, that it is best to use such development methods that the application is adaptive for other programs and vice versa. The proper method for acceptance is prototyping or iterative design. In this context the most important is interactive manipulation. Its basic principle is that many things can be represented by images or symbols and that this status, actions and reactions are made very clear by having the image change form or place. It even applies to abstract object. All literature with regard to Adaptive User Interfaces from the moment of publication of the AUI collection show that of all interfaces designing adaptive interfaces is the hardest. Stepha-



nidis has made a flow chart of this process. Many researchers have built on this, such as Professor Joelle Coutaz, who in the interim results of 'Plasticity of User Interfaces: Framework and Research Agenda' states that *"Adaptation In HCI is modeled as two complementary system properties: adaptability and adaptivity. Adaptability is the capacity of the system to allow users to customize their system from a predefined set of parameters. Adaptivity is the capacity of the system to perform adaptation automatically without deliberate action from the user's part."*

Both types of interface system properties make use of adaptive user interface theories:

"…adaptability may take the form of extensions that allow a user to choose his own style of interaction, or it could be automatic: a 'smart interface' that tries to form a model of the user and adapt itself. All user interfaces have to be designed. This seemingly empty statement still holds a lesson, because all too often programmers just implement the first idea they have, without asking themselves if there are alternatives. Programmers are not typical users, and even if they try to place themselves in the user's position, what seems a good choice at first may turn out to be less than optimal in the long run. User interface design can be approached from different perspectives. There is the view from sociology: how do computers influence the behaviour of their users? Do computers make tasks more enjoyable, easier, and less stressful? Psychology can look at the way people's skills, learning ability and character are cooperating with or working against certain styles of interaction. Ergonomics studies the relation between various measures of people's abilities to perform a task and measurable properties of their tools, both hardware and software. Last, but not least, there is computer science, which concentrates on the hardware

and software that makes various styles of interaction possible. Computer science studies efficiency both with respect to the machine and with respect to the user; it creates new methods and develops the coordination between software, documentation and training…."

Adaptive context

Practical experiences of system integrators have shown that adaptive interfaces will never offer a simple HMI/USI solution for the alignment problem between man and technological device. For example, in its Adaptive IT®-program Cap Gemini Ernst & Young incorporates the technological innovation in close connection with changes in the business concerned. Adaptive IT in the meaning of creating a framework for the mutual and adaptive coordination of IT developments using adaptive architecture is a first step.

The next step is that must be clear (and indisputable) in advance who the actual user is and what his/her user expectations are. Otherwise, chances are that conflicting needs and conflicts arise which will be settled hierarchically. Furthermore, in a working environment there must be respect and understanding for each other, in particular for what the actual end user feels a need in relation to the user interface.

"They have no work ethic. They're just a bunch of slackers. So I told my boss, "If you're looking for loyalty, buy a dog." He treats me like the girl who came across the street to mow his grass. How can I establish credibility with this man who is old enough to be my grandpa?"

Ron Zemke, et al:
Generations at Work [2000]

Construction

Environment-aware mobile telephones

Telephones that play a symphony during a piano recital, youngsters who in loudly discuss their relational problems in a train compartment, yuppies who do their shopping with one hand to their ear, people in a sidewalk café who let their coffee go cold because their phone rings all the time, businessmen who, while talking, walk back and forth on the street and have an expression on their faces as if they need to go badly, and, in conclusion, people who during a meeting veer out of their chairs as if bitten by a flea. The mobile phone has brought much good and comfort, but also a range of new, annoying habits. The mobile vibrator is near, not to mention the continuous ring tones with numerous top hits and primal sounds. In the Massachusetts Institute of Technology (MIT) laboratory people are working to find the means with which the mobile phone can adapt itself to where the user is and what he/she does. The intention is that in the future we have telephones that understand that we do not want to be disturbed during a conversation, ring softly when we are not alone or vibrate when we are in a silence area. In fact, it is the only real innovation we can expect of the mobile phone, as everything else in more of the same or slightly better. As mentioned before, the adaptive, learning and intuitive interfaces are still in their infancy. Sms with predictive text input was the only novelty in wireless telephones to aid smsing, but is of not much use to people who suffer from rheumatism.. Microsoft is making an attempt in that direction with the smartphone, but a breakthrough in that the mobile phone behaves itself as a fully-fledges minicomputer or game console has yet to come. In spite of the malaise the telecom industry,

which protects itself, appears not to be willing yet to make this step towards integration. The fear of someone else's monopoly (and thus licence fees and thus loss of income) holds sway.

Many of the influencing factors mentioned above belong to the area of the so-called Artificial Intelligence, a software area that slowly but surely gains a foothold among developers of interfaces between man and machine and between man and system, respectively.

The first results of the incorporation of this AI technology are now being made public.

Due to the complexity and scope of the software it cannot (yet) be used in every individual device but a combination between device and network is promising.

At the famous MIT various studies are being conducted under supervision of Sharon Gillett into the relationship between the use of the mobile telephone and the (user's) social environment. At the MIT and BT laboratories at the Adastrial Park in Martlesham (UK) similar studies are being conducted. These and other studies show that contextual oriented and scenario based designs enable a better alignment with the user needs. A predictive, intuitive and event-driven interface has also already been studied, among other things in relation to graphical-oriented devices. In TramMate, a research project finished at Melbourne in February 2003, a context-aware interface was designed together wit a test group of users:

TramMate as visionary mate *In the minds of many people, traveling by car supports great flexibility and freedom, whereas the use of public transport is complex and inflexible, imposing predefined routes and timetables, and subject to uncertainties about operation and possible delays. However, in large cities*

where traffic is often very dense, traveling by car can be highly time consuming and unreliable, necessitating much planning. Valuable time is spent in traffic jams and searching for parking spots. It is often difficult to predict the time of arrival and so travelers may arrive late for appointments. Planning for such uncertainties however may result in slack time at the destination. ... TramMate supports the use of public transportation by means of a context-aware mobile information system. Using multiple techniques … explored the current travel practice (with interviews and observations) and possible future practice (by acting-out future scenarios) of business employees as they traveled to appointments in the inner city, by means of both cars and trams. For observations of current practice, users were engaged in real work tasks requiring that they be at different physical locations, at different times of the day.

University of Melbourne, Australia, 28-2-2003

Progress has been made in the so-called GO project (Helsinki University of Technology), where on the basis of comparisons between the current situation and desired situation slightly predictive designing has already become possible. In this GO project experience has been gained with group use of wireless telephones, something that had not been studied in different observing study (among 30 Australian youngsters for a month) and was considered a shortcoming in the evaluation.

In summary

Summarising it may be said that the almost ideal user interface with a wireless internet and/or telephone device (with or without camera) apparently does not exist, but that on the other hand there is no

lack of studies into the best human-machine interface for wireless telephones. Furthermore, it turns out that repeatedly research has been carried out into the many research methods for designing HCIs for wireless communication devices. Many studies have been carried out; there is sufficient knowledge. None of the evaluations show that there is a considerable impediment of such a nature that group communication or wireless Internet cannot be facilitated. The focus of most research mainly lies on the ambiance and adaptiveness with regard to a traditional single-mode human machine interface. Hardly any studies have been carried out into multimode interfaces. Only a few studies touch on the wireless group communication, one of the topics of this book.

It seems justified to conclude that apparently this issue is not only about:

1. the user interface with the underlying networks;

but also about:

2. the telecom chain formed by the combined underlying networks, portals and systems.

In the next chapter the following is discussed from a technological point of view:

- interface (human-system interface);
- networks (connections in-between);
- portals and systems for management and control of the pleasures (content & services).

Per link of the chain the hierarchical scale value of the service or products offered will be discussed. In addition, the elements of the part concerned of the tetrahedron evaluation model will be discussed, at the end followed by overall discussion.

Internet Ga Ga

We sit alone and watch your light
Our only friend, through teenage nights
And everything we want to get
We download from the internet

No need to think, no need to feel
When only cyberspace is real
It makes us laugh
It makes us cry
It makes us feel like we can fly
(choir: Globalsoft)

Hope to record our life online
Touch any key, the world is mine
We're lost in space
But we don't care
Without your light our world's not there

Complete control, you are the power
Our lives are programmed by the hour
All we hear is radio Ga Ga
Video Goo Goo
Internet Ga Ga
All we hear is cyberspace Ga Ga
Marketing Blah Blah

Always something new
Globalsoft, all your world loves you

(Official lyrics update of the Queen single ‘Radio Gaga‘, former nr. 2 in UK Top 40, February 1984)

Part 4: Technology

THE INTERFACE

“Please make it so complex that I shall be impressed but unable to understand it.”

E. de Bono
The horror of the simple 1992

The chicken or the egg

In view of the previous part the construction of an adaptive interface is not an unusual or technical unfeasible functionality for speech, text or image. At the most it may be a lack of clarity or hidden question whether the 'intelligence' for personification and group relationships should be located in the machine or network, or in the wireless interface.

Then what is the barrier to just realise it? Do the operators wait to adjust the network until suitable devices are brought on the market, or do manufactures wait to build the devices until the network has been adapted? Or do people still work too much from traditional paradigms?

When looking at the interface device (the so-called terminal) there should not be any impediment, in view of the current knowledge of fuzzy logic and intuitive user interfaces, to have technology adjust to those habits. At the end of 2002 a mobile Internet telephone with 'learning' functions was brought on the market that has a camera as well as a chat function, the SPV. Still it does not get off the ground. It looks very much as if the industry walks around problems out of lack of knowledge or unwillingness.

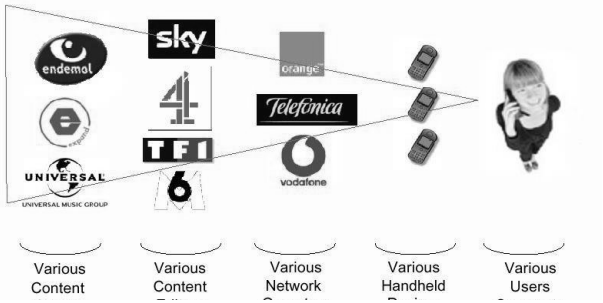
The underlying reasons seem to be a mix of:

- **tradition** – the telephone is a century old and telephone companies never had to do much more than installing a telephone and the connection and sending bills;
- **unwillingness** – financed investments have lead to towering debts which preferably have to be earned back at minimal extra investments;
- **lack of knowledge** – many technicians are only now discovering that their designs do not meet user expectations;
- **unaccustomedness** – contact with customers is ‘scary';
- **lack of understanding** – some people don't trust anything they don't know; understanding cultural and social change was not part of the education of technicians and business managers.

With respect to the networks the technical matters seem to have been reasonably organised. Since 1993 the option of a conference call as a supplementary service has been provided. Being able to report who has switched on his mobile telephone is not a novelty. Neither is indicating where someone is (location-based information). The WAP protocol laid the first foundation for wireless Internet, now followed by GRPS, which not only enables faster wapping, but also only data traffic.

The GSM protocol provides for the registration of 'presence' and a message of receipt for sms. The required messenger technology does not appear to be the bottleneck either and the first tests with interactive ‘real time’ information via mobile telephones have already been carried out. Unfortunately they

are functionalities that have not yet been made available to subscribers by the telephone companies and it seems they will not do so for the time being. Surprising, as the new generation of mobile phones (UMTS) has been announced with great fanfare as the means to bring mankind everything that was still missing, anytime, anywhere, anyway.



In view of the speech data integration and the migration of telephony to digital networks it would be obvious – in light of the added value – to adopt the relevant Internet functionalities in the telephony environment. For example, in 2001 Siemens and Comverse already introduced the instant messenger function of ICQ on the mobile telephone market. It does not have to be an impediment for the telephone exchanges. However, the difference with the Internet is that it has applications that can verify which operating system, browser, etc. the user is operating. In telephone network protocols the verification of the properties of the devices has not been arranged.

The wireless communicator as alter ego

Between user and system a device is needed to enable communication between these two completely

different extremes. For wireless communication it is a so-called mobile terminal and with respect to public mobile telephony: a 'small device'. According to director C. van den Heijkant of KPN Mobile [2002] the device will become our buddy: “It will become our alter ego, our personal partner. Your mobile device will become your window to the world.”

Last century's wireless phones were called wireless personal organisers, practical small mobile devices with many functionalities that – according to the commercials – can make life easier when you are on the way. Initially it was wireless telephones to which electronic versions of an organiser were linked, but because of the integration of telephony with the palmtops, handhelds, PDAs and pocket PCs the possibilities are ever increasing. Nowadays you can use them to surf on the Internet, mail, sms, fax, word-process, send photos, withdraw money and pay bills. The built-in laser diode makes it possible to scan barcodes of, among other things, foodstuffs and zap between television channels. A GPS receiver sees to it that you can find the way. For the young the screen function is of importance, as appears from the many websites sporting photos taken quickly off the cuff on the way. Because they also use live images on the Internet by means of Netmeeting en ISPQ, being able to see each other live via de webcam [2003] is a hype and is part of the rituals on the usually sexually-slanted dating sites. In view of the popularity of the solutions brought on the market (Vodafone live!, Lunarstorm-mobil) telephone camera photos are readily fitted in into the contact rituals of the young.

The next paragraphs will discuss the evolution of the wireless remote control via an individual – concealed in clothing – minicomputer network to an organic nano-computer. They explain what we mean by

PDA, PAN and BAN, describes their development and examines in more detail the social, technical and emotional consequences of each of these 'toys'. A look into the future forms the conclusion.

Five parallel developments and Java

In the mid 1980s the wireless remote control, the game console, the mobile telephone, the palmtop and the minicomputer developed more and more towards each other.

In many cases various functions are already combined in one device, such as the Pronto telephone and SPV (the previously mentioned smartphone). The electronics and operating systems used are approaching each other more and more every day. Pocket telephones with games, pocket PCs that can make calls, game boxes that have wireless communication and Palmtops that scan groceries indisputably show that this parallel development can only end as one integrated terminal in the future. The pressure from the tense market and the regulating governments to quickly come to open standards is usually translated into an access for the programming language Java. It uniformly enables to zoom in on a city plan, to adjust to taste the telephone's icons or other trimmings or to play graphically high-quality games. The use of Java on a mobile telephone – to distribute applications via the Internet – sets different requirements to the programming language than necessary until now. By loading applications in a Java environment they can run in multiple operating systems. This universal use applies, in principle, also to mobile telephones, be it that telephones have much less memory and processor capacity than a PC. A special Java development environment, Java 2 Micro Edition (J2ME), which in particular uses less memory, should give application developers more

possibilities to develop applications for mobile telephones. A juicy detail is that Java – once discarded as commercially uninteresting software – now seems to be the connecting component between the five developments. As a side note it is worth mentioning that user reactions show that people regularly lose those 'indispensable' multifunctional devices, so that eventually they are carried along on a string around the neck or continue to lay unused in a corner somewhere as looking for it takes more time than performing the action concerned manually. A potential market for a key ring that whistles back?

Wireless gaming devices

In the world of portable gaming devices a separate development is going on. Sony's step to join in with both Ericsson and Nokia, thus building a bridge between electronic entertainment and mobile telephony, seems to lead to a stepped up development of wireless gaming devices. After the handy-sized Nintendo and Sega (of which GameGear has had a version with television reception) has the Cybiko in the US been presented as the first wireless game console. For about 100 euros the young have a handy-sized gaming device, which also enables them to play and communicate with each other. Within a few months this hype was a pest to teachers. In order to not miss out on this hype the makers of mobile telephones and the service providers have joined in the Mobile Entertainment Forum to jointly develop games for multiple players (multiplayer wireless games). Nokia joined Ericsson, Motorola and Siemens in its attempt to achieve a wireless gaming standard via the Mobile Games Interoperability Forum (MGIF). The WAP fiasco is largely caused by the fact that the development of games by third parties proved to be a disastrous undertaking. Yet wire-

less games can be an important source of income for the destitute new digital networks such as GPRS. Together with AT&T Wireless, Telecom Italia Mobile and some large oriental cellcos KPN Telecom has made a step in the direction of making Sony's Playstation suitable for mobile telephony. Its online version will be put on the Dutch market in the second half of 2003.

Meanwhile Microsoft has not been sitting idle either. The online game computer Xbox Live has now been marketed and seems to be an attractive toy for broadband users, mainly because it will support communication functions such as MSN's instant messenger. Parallel to it the smart phone SPV (ex Stinger) has been developed, which with Pocket-pc can establish a direct link with Xbox and other wireless and home computers. Although Microsoft says it is focusing on the business market, it looks very much to be a competition battle with the MGIF standard. The wireless gaming devices prove to be a huge success in the big high-tech playground South-Korea (15 million people), so that it can be expected that something similar will occur in Europe.

Personal computers everywhere

The palmtop and other microcomputers are increasingly advancing in industrial circles as complete control of machinery, operation of chemical equipment, logistic support and aid in medical procedures. Further miniaturisation of device and screen and integration of several radio transmission standards lead to stepped up implementation of multifunctional devices. The first multi-standard telephony chips have been put on the market, the wirefree tablet-PC has been introduced and there are already E-Ink monitors that use 'electronic ink'. Up to now the screen,

all of 12.5 cm big, can only show images and text in monochrome or tints of grey. Prototypes have been shown of a larger version of organisers such as e-book-reader and for reception of digital television. The integration of personal computers in the home environment expands to include the garden (e.g. electronic mole catcher) and the car, jokingly called the second home. The Dutch automobile club ANWB intends to install a palmtop in the car of its members to show them the way, if need be to the AA patrol. This development is often described as *anytime, anyway, anywhere*.

Many ‘toys' – as they are often jokingly referred to – are preferred to offer new services with regard to second homes and convenience. Trucks, delivery vans, taxis and the segment of most expensive private cars are already fitted with localisation equipment and onboard computers. There are already cars fitted with a wireless network connection and a gsm-linked onboard computer. Via information gas stations along motorways data is received, e.g. about the area you are driving though, such as tourist information, traffic jams or route information. The related automotive industry is slowly but very surely

moving towards a service organisation in which traffic management for mobility is the central theme. The wireless telephone with Internet connection will be at the centre of this development.

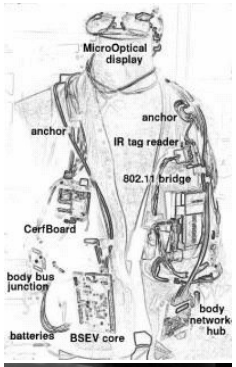
Micro-PC sticks to your body

PC's get closer to skin: Want to use Linda's mobile phone? Just speak into the bikini. Bikini phones, T-shirt Internet links and even baby-tracking nappies are close to a store near you. The American company InfoCharms believes its high-fashion wearable computers will replace the mobile phone within a few years. The company has just unleashed its range of wearable computers in fashion shows in America and Tokyo, and InfoCharms president, Mr. Alex Lightman, says wearable computers could render boxy personal computers obsolete. "These are for the chic, not for the geek," he says. "We will be making clothes that look as good or better than current standards." So, fancy a chip sewn into your son's shoe, so you can track that he doesn't stray on to the wrong side of the tracks? Or a jacket that allows you to switch on the TV, check your phone messages, tell the oven to start cooking the family meal and pinpoint your exact location--all with just a few pokes of the finger and no wires attached? Welcome to … almost surreal world of inexpensive clothing-integrated, wireless computers. Amazingly, most of these products are close to being released next year.

Tim Winkler [1999]

The previous generation of personal digital assistants (PDAs) and palmtop or handheld computers with a screen on which you can write with a pen, sometimes equipped with a complete miniature keyboard, had to make contact with the Internet via a

mobile telephone. The current generation of wireless pocket PCs (usually a mini-computer with a click module for the wireless connection) have not nearly as much 'power' as a portable computer. Performance measurements by the MIT in the US show that the same problems as with home computers occur. Here as well the task performance of the CPU, the memory use and the I/O ports are the weak spots. Another disadvantage of this combination (needing two hands to be able to operate both devices) has been solved with the arrival of the wireless hand computers. Such a micro-PC is your universal remote control, but also your individual identity card, driver's licence, cash card, credit card, smart-card, music player, mini-TV, library card, notebook and Internet-pc.



Identification possibilities for speech, handwriting and fingerprints offer the option to use such devices as a new generation of human-machine interface. In an advanced state of development is the wearable PC or the pc you put on. This micro-PC consists of a small, high-resolution screen that is attached to a headband and on one side of the head hangs in the user's field of vision. You can operate it with your voice and our body, as a hub, passes on the electronic signals. In the meantime fashionable clothes have been designed in which a keyboard is incorporated. Soon workers can safely access the Internet in

a PC overalls without needing hands, money or passport. An inner pocket holds a box with the computer and battery. A body area network (BAN) with sensors, actors and a sender/receiver ensures contact with the environment, where a personal area network (PAN) offers access to a local network (LAN). The wearable PC will in general be used to watch videos, play games and communicate via the Internet. Mobile banking, dating and gambling are other options. In the professional fields the micro-PC will be incorporated in industrial clothing for dangerous work activities (military, firemen, construction workers). The main concern regarding wireless use is the power supply. The battery capacity is still limited and prospects of improvement are not very promising.

Bio-pc

Bio suggests something biological. In this case it does not seem to have an obvious relation with biotechnology. Neither with neurological-intelligence technologies to combine bio, information and nano technologies as a continuation of the organic calculator in a test tube. Neither will we discuss the minuscule programmable biocomputer that carries out a billion actions per second within a 99.8% accuracy. Instead of formulas and algorithms to solve a problem the microscopic small computers make use of DNA molecules that store and activate coded information in a living organism. DNA has the potential to work faster than ordinary processors. Nano-scale computers from biomolecules are so small that processes are spread over several cell computers at the same time, as a result of which a trillion computers together can carry out a billion processes. As a result the attention is focused on the technology that links up electronics networks in the environment of people

to the human nervous system. It is not a Bio-PC either, but at least it suggests a human component, which usually is lacking in the technology or is at least insufficiently developed. For example, it is said that a device cannot deal emotions. That is not entirely correct. Exactly because of the advanced integration of wireless control and communication devices in man's daily existence, research into emotional interfaces has already been conducted. A model of product emotions based on a cognitive structure has been developed. According to this model a product reaches an emotional level when it fits in or conflicts with a personal involvement. Our involvement is more or less the stable preference for specific things in the world around us, something like our life motives. The Frijda model describes three types of emotional involvement:

- **goals** – things we want to see happen;
- **standards** – how we believe things should be;
- **attitudes** – our characters and personal likes and dislikes.

A follow-up research by DeSmet into emotions regarding interfaces of mobile telephones has been limited to the 'goals'. The research focused on the role of a product's expression regarding the anticipation of mobile telephones. Goals and expression mixed when users are calm or excited lead to the results in the table below.

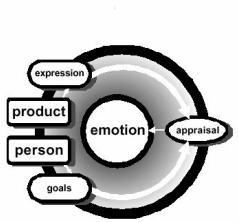


Table 1. Concerns and corresponding expressions.

	CALM	EXCITED
Concerns	To avoid stress	To impress
	To avoid attracting attention	To be free
Expressions	Sober	Advanced
	Professional	Sophisticated
	Friendly	Professional
	Easy in use	Pleasant
	Secure	Cheerful
	Businesslike	Playful
	Inviting	Distinctive

We can go further than involving emotions in the user interface. Researcher Ray Kurzweil thinks that over 30 years he will be able to 'download' his brain into a DNA-computer. But what if a downloaded mind crashes in the computer? Will life continue by means of activating a digital backup? Kurzweil will not be held back and in 1998 launched the plan to have a chip implanted with which he could take care of the boring communication with his environment, so that, for example, the car starts when he thinks of leaving. The recent invention of a minuscule programmable computer made of DNA molecules in living organisms seems to substantiate his expectation that toward the end of the 21st century machines will be so intelligent that they will take over 'our' place in the evolution. Real? Allowed? The philosopher Hottois poses the following penetrating question to those who feel that modern science oversteps boundaries in its control obsession: "In the name of which symbol, of which name with a capital letter can one subordinate techno sciences in a legitimate manner (...)? In the name of which religion, which ideology, which anthropology or which civilisation design?" According to Hottois a negative answer signifies the death of the symbolising humans. It refers him to the role of supervisor of techno sciences. The only a priori (symbolic) limitation of the sciences is the potential human suffering, the resistance of (human) life: "It

may be the only ethical law that will be able to counterbalance the command of the realisation of what is possible."

Back to the visionary researcher Ray Kurzweil for a moment. All his inventions can be found in ingenious products and successful companies. They lie in an area in which people for the time being have a firm advantage over computers – namely that of pattern recognition. Kurzweil studies how the human brains distil abstract patterns from an apparent chaos of sounds, words or images. Once these patterns are registrable, they can also be drawn off, is his expectation.

In view of the high realisation potential of the technologies discussed, another stage of the evolution, or in any case a transformation of the current humans, seem to be inevitable: "After all, many of the technologies the transhumanists have placed their hopes in, have already become reality (genetic engineering, cloning, implanting peacemakers and artificial joints, heart valves, insulin pumps and electronic senses), have proven to be successful at least for components (artificial intelligent chess programs), or are at least successfully tested in laboratories (linking of information transfer between neurons and electronic processors, the nano-technological rearrangement of atoms, successful cryogenic suspension of baboons). The extrapolation of the current increase in computer processor speed (55-60% per year), linked to predictions of nanotechnologists, makes it probable that the capacity of computers in the near future will be millions times bigger than our current digital housemates. According to transhumanists it seems that these developments all point to one direction: transformation.

It is unpredictable whether these developments will between times lead to the bionic buddy who will or-

ganise our lives. Hans Snook, a former Orange CEO, described in 2000 the mobile telephone as a ‘remote control for life’, but the Bio-PC is not a universal remote control of people and goods, no more than a PDA solves our administrative chaos. For the time being they are only means to help people survive in the chaos of this world.

When does a communication device meet the user needs?

Summarising we can say with regard to the interface that the importance and usefulness work out as if it were Maslow's needs hierarchy. The terminal device must meet primary needs with regard to elementary communication. Translated into the triangle (see below) we find on the lowest level (which from the perspective of the user must always be present and available) the use in case of emergency and for primary needs. A yes of no, an SOS alarm must be settled with a single keystroke with high priority and few bits.

Compare the function of the wireless mobile telephone that can call the emergency number without the so-called SIM-card of a network provider being needed. In this layer functionalities belong to warning systems.

The yellow area above it is related to more safety, so that we can carry out our activities better, safer and more careful with the aid of the terminal. Examples are pagers or buzzers as wireless check-in systems, walkie-talkies and process monitoring systems. It includes the elementary 'calling/mailing each other'.

The (yellow-green) area in the middle of the triangle is linked to the primary process: use so as not to waste work, time, money and attention. Not too much hassle and easy if you want to do something else. E.g. business communication, process applications, wireless e-mail (such as the ‘Blackberry’) and means for share price and traffic jam reports. The second layer from the top (Joy and Satisfaction) is or applications around joy and satisfaction. They are not strictly necessary, but pleasant. E.g. a remote control for the entire house or the wireless tablet-PC for recipes. Finally in the (blue) top of the triangle the 'toys': playing games with the device, always good for a worldwide game industry of billions of euros.

THE NETWORK

"All men are caught in an inescapable network of mutuality."

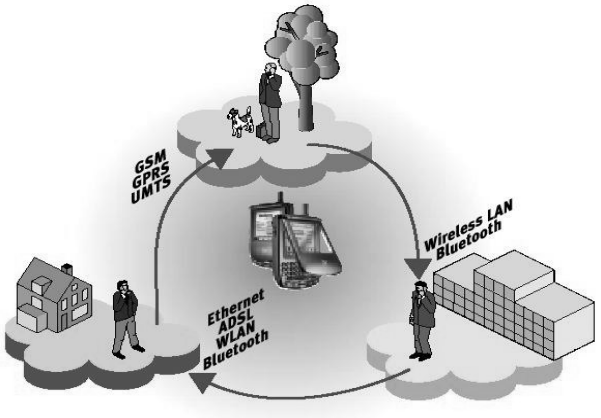
Martin Luther King

Next Generation Networks

Communicating over long distances with people who are continuously on the move is difficult. Two years ago it was quite a relief when a picture was created of a universal mobile telecommunications system that would solve everything for everybody. One platform for all people. It would at the same time solve the problem of reaching a specific target group. Unfortunately it was not to be. Problems with standardisation, frequency allocation, power consumption, financing, locations, and availability of control devices have greatly slowed down the development. Looking at the biggest problems in the roll-out and availability of the much talked-of third generation of mobile services we arrive at the so-called terminal, the device in your hand with which you communicate. It is not ready yet. In particular the power consumption and the lack of uniformity are worrisome. The expensive UMTS frequencies have meanwhile been overtaken by alternatives. After the hype during the frequency auctions the mobile operators have adjusted their plans to this reality. The emphasis lies on the development of GPRS services.

Unfortunately for them more and more alternative solutions are being developed which provide the mobile human with the necessary local communication provisions on the way. For example, wireless Ethernet networks (so-called hotspots) on airports, in

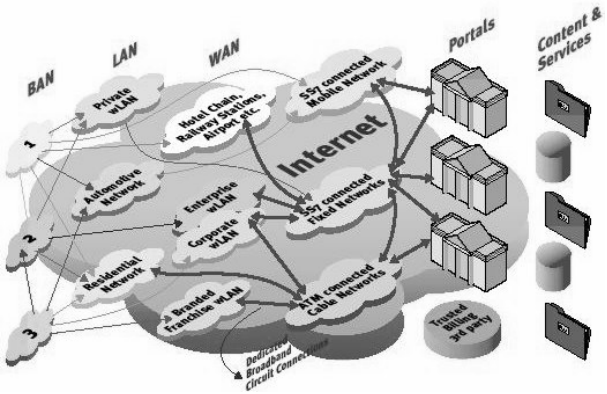
coffee shops, hotels, stations, congress buildings and other hubs of activity. Over shorter distances laptops, telephones, headphones and other personal attributes are linked to each other with the so-called Bluetooth technology. In the past few years public-oriented developments have started as well in this area to come to a network structure. The developments with regard to mobile IP and the emergence of service providers on the basis of wireless LAN technology have you already accessing the Internet on almost every corner of the street, with a minicomputer in one hand and a cup of coffee in the other.



The user does not ask for technology

Devices that support a combination of GPRS and WiFi (wireless LAN 802.11b, a licence-free frequency band) are extra valuable to most professional users. The industry has acknowledged this by now. Gradually combinations are developed with other

transmission alternatives, such as Bluetooth, EDGE, DBA and GSM, which each form a part of the solution. Digital television also makes a contribution, whereby part of the transmission capacity can be used for multicast services and specific services for limited target groups.



Satellite systems already offer access to the Internet. This makes the terminals more complex and diverse (dedicated) and thus no longer uniformly usable. The user does not ask for technology, but for a concrete product. More and more parties offer valuable components in the value chain of content provider to end user and do expect open standardisation. Successful mobile services emerge when they are easy accessible and cheap and service a broad public, as much as possible on an open platform. The mobile operators that protect themselves with regard to price and technology now become part suppliers (bitpipes) instead of the end-to-end service organisations they are now. It is a painful identity change process, the awareness of which leads to a number of last minute

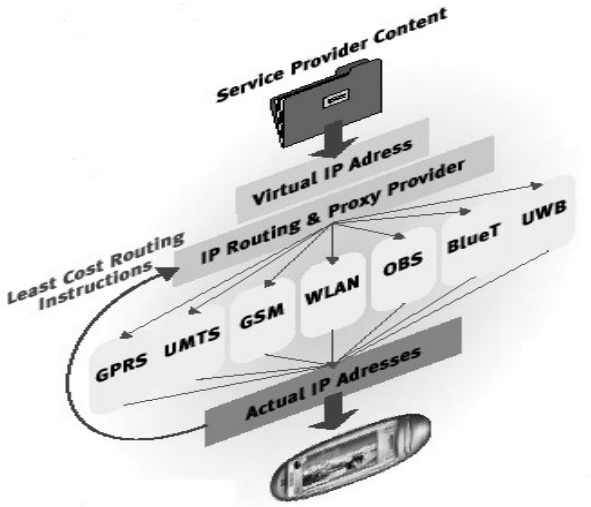
cash-cow emergency measures, such as the stepped-up introduction of niches as iMode and offering potentially addictive gaming and gambling services and erotic and pornographic images.

Meanwhile all kinds of activities are being unfolded internationally to unite the various and very different network access technologies in order to supply attractive location-bound services in a way that is uniform to the user, with maximum quality and at a minimum price. They aim to achieve heterogeneous networks with interoperability on the basis of open standards. The chosen starting point is the prototype of the Personal Body Area Network; a minicomputer on or near the human body, provided with sensors, actors and interfaces. A PAN (a small personal network) or BAN (a small individual network linked to the body) offers the possibility to link all electronic devices that 'hang' on someone's body and belong to an individual (mobile phone, radio, walkman, disk man, MD player, ear phones, diary, organizer, ID-verification scan, cash card, credit card, e-passport, and so on) and to safely store the data belonging to this person in a kind of digital safe. These devices are imperceptibly and wirelessly connected with and to each other.

The great advantage of such a small personal network is that all specific data and individually adjusted set-ups will continually be with the user. It helps people to establish contact with external systems. Then adjustments for, for example, youngsters, elderly people and disabled persons take place automatically. For example the speed of key operation, voice recognition, adjustment of contrast, type size or volume, verification of identity, adjustment of a car chair, etc.

The PANs and BANs keep contact with each other and with the near access points to the Internet. They

could be a house, a car, a public location (airport) or a company. Via the access points contact is effected with other PAN/BANs in the world, or with providers of services and products. Because the connection between starting point and end point runs along a number of *nodes* of various Internet and telecom providers, a good and reliable interoperability is crucial. This is the weak spot, in view of the laborious coordination within the chain.



Separations of functions

Interoperability consist of admitting wireless terminals to the network of an operator (roaming), but also of imperceptibly transferring the active connections (sessions) between the various operators when the user moves. The transfer of sessions (handover) between UMTS stations is already problematic, but

the handover of sessions between for example UMTS and GPRS constitutes a big technical problem as well. This applies to both networks and mobile terminals. The ideal terminal can run each application via each network application, and therefore also via mini-networks (Pico cells) and direct (peer-to-peer) communication on strategic places.

Being the basic function of the wireless terminal, speech telephony should function independently from the status of the other applications. In addition it is necessary that networks (services) are supported.

Separation of functions is therefore desirable. A terminal for the new generation of networks is much more an application platform than the current mobile telephones. Various applications can run on it: e-mail, instant messaging, web browsing, a Citrix client and some multimedia applications. All this on an operating system that should carry out those different tasks as well a possible with the limited means of the mobile device. The support of these various mobile services requires a new role in the telecom landscape, namely that of routing provider, which arranges network access for a user via various services. In order to realise such a service two preconditions still have to be met. Firstly the wireless terminals must support various different networks. In addition a standard must be set for the communication with a mobile terminal via a virtual IP address. As it differs from a 'regular' fixed or dynamic IP address, some explanation will follow about mobile IP and the related addressing technology.

Mobile IP

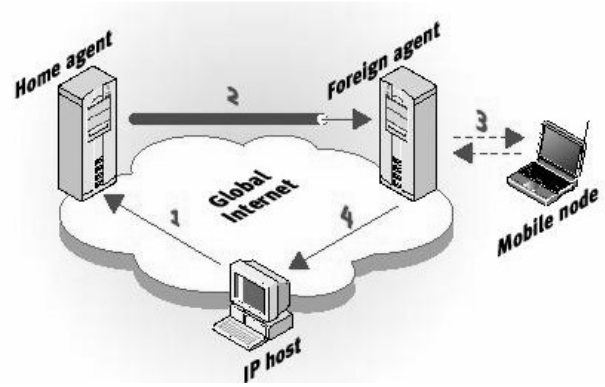
The Internet consists of a kind of street plan along which there are home addresses and referral signs to find the fastest or most appropriate road. All mo-

bile telephones, notebooks and (mini) computers (terminals) have an electronic address that enable the sender of mail to reach the desired person via the correct terminal. This is called the IP address. This IP address of a fixed or mobile terminal indicates where in the world this terminal is linked to (which part of) the Internet. This part is called an IP subnet. The terminal should then also stay in this indicated IP subnet to be able to receive data.

Without mobile IP you can only keep communicating via two options:

1. the terminal changes its IP address, every time when it starts communicating within a new environment;
2. terminal specific routes must (with referral signs) be passed on to all parts of the Internet.

Both alternatives are practicably unfeasible. The first alternative makes it impossible for the terminal to continue sessions when changing locations, an essential facility for mobile terminals. The second solution would entail that, in view of the growth of the mobile terminals, all Internet routers will only be busy with exchanging route information. There would be no time to send user data.



Mobile IP makes it possible to switch IP subnets using wireless terminals and still be continuously reachable at an own IP address. Via a discovery mechanism a terminal detects the connection point – the IP address of the temporary service provider, the foreign agent – on the Internet. Another mechanism sees to it that the new connection point is known at the home address, the home agent. Finally there are mechanisms that mutually exchange those data. This proceeds as follows: the home agent sends on the data via a kind of tunnel to the current foreign agent where the mobile node has last registered. Standards for mobile IP are still full in development for both IP version 4 as well as version 6, since mobile IP should not lay extra claim on IP addresses.

Anywhere, anyway, anytime

It seems so easy, making a mobile device that can make contact and communicate everywhere in the world. Unfortunately, the daily practice is different. In the world one did not succeed in using similar technologies. When you travel around the world, your

pockets are filled with mobile phones. In Asia, Africa, USA and Europe there are roughly a dozen different systems, the best known of which are CDMA, TDMA and GSM. In the new generation of networks this number has been reduced to three systems that are very similar, but still separate Asia, Europe and the USA. Per country mobile providers must conclude mutual agreements to accept each other's mobile telephones (roaming). On account of loss of income operators scrupulously keep off an exchangeability with wireless communication in houses and commercial buildings. For this reason the WiFi systems, which are 'free of charge' linked to intranet, not integrated with mobile telephony either.

The EU Framework 5 IST-project SMONET describes how networks can still heterogeneously work together to enable the end user to make contact everywhere in the world at any time with one mobile device. Without having to deal with who has technically organised precisely what, where and how. To this end requirements are set to the networks, but to the devices as well. In particular the multimode support of all standards and several networks is a firm requirement. The component industry is ready. Chips are available that integrate both GSM, GPRS and Wireless LAN on one single chip. Integration with Bluetooth is imminent.

User expectations

The work of the SMONET project group (in which also Mark Hoogenboom, Frank Kroon, Petra van Krugten and Sjoerd Visser participated for Cap Gemini Ernst & Young) concerns, after taking stock of all (im)possibilities and standards, also the description of a gamut of possibilities for new mobile services on a next generation network. Attention is paid in par-

ticular to the technical steps that have to be taken in order to really come to the anywhere, anyway, anytime concept that has meanwhile been generally announced in the telecom marketing. This concept is not that easy. The current practice still comes down to the fact that you need a backpack full of devices and wires to ensure electronic communication anywhere in the world. Besides, the question arises whether you do want to be reachable everywhere. In order to control an overload of communication and information, you need filters and triggers. That is why the broad concept 'reachability' is split in technical and functional reachability (such as accessibility, availability, competence or willingness).

Reachability

- **Technically reachable** means that messages sent by third parties arrive at an address of the user. Reasons for unreachability include: network problems, no power supply, disconnected connection and (in telephony) engaged signal, fax signal or no answer. A message also includes a report that a telephone call or fax is offered.

- **Functionally reachable** means that – from the point of the sender – the message or the call had reached its goal. His or her messages have reached the intended (correct) or an alternative address of you as a user. Functional reachability is closely connected with:

- Accessibility: certain people can only be reached via someone else and/or only via e-mail. In a company it is connected with the organisational processes and structure.
- Availability: the user is (technically speaking) reachable, but possibly not available. She may be in a meeting, or he has a lie-in.

- Competence: being able to operate the available means of communication. Someone can have a telephone or PC in his room, but not be able to operate the device.
- Willingness: sometimes you just do not feel like answering the e-mail, the telephone call or the MSN signal; youngsters have the habit to check the (identity of the) sender when receiving a telephone or chat call, but then make contact with the sender via a different means or channel of communication; they do so to save money (mobile phoning is expensive) or to protect their privacy.

The central question in the SMONET survey then was ‘what does the user expect of telecommunication services?’ To gain insight into the ideas of the end users interviews were held with skilful and not skilful users of mobile telephony, who were presented with a number of fictitious (but feasible in the near future) cases of mobile services. They included a comprehensive ‘cyber dating service’, ‘sports on line’ (all information from all media before, during and after a sports event), ‘daily dairy’ (an electronic children's' diary with save option), ‘health careless’ (a continuous medical coaching service) and ‘nomadic worker’, a regulating system for all communication and information to do with your work. They were asked for their interest in using these services and willingness to pay for them. On the basis of the results user requirements proposals were formulated to make the new generation of networks suitable for them. Subsequently the required technology was considered.

In order to optimally zero in on the identified user expectations with respect to technology, the providers of information (content) will have to make a step too. In the example of a sports event – of each copy-

right holder - all images, sounds and texts around a specific soccer match will have to be related (linked) and be made available as one virtual whole. The soccer fan can see at a glance what (in which form) is available of the sports event. As long as he can enjoy all details the user will not care – just as when watching a documentary – who has filmed, compiled or sold the image, text or sound concerned. The new generations of networks will only offer the demanding consumer added value if all supplying (sub) parties work together in both a technical and value chain.

When does a network meet the requirements of a communication chain?

In order to assess whether a network meets the requirements of a communication chain, a triangle structure can be used for visualisation. This hierarchy shows similarities to the so-called OSI reference model, in which the physical carriers are the starting points on which eventually the applications run that give the added value to services.

The interface minimally requires that it must always be able to carry out his teleservices with regard to

the primary basic needs, such as sending on a minimal signal for alarm or action. In the lowest level of this triangle the network then will have to be minimally available and provide connection to the required component of the chain. Nothing is more painful than having to call the emergency services and then reading the text...*searches network*...' in the display. In the event of malfunctions a helpdesk must always be reachable to report the malfunction, to have it repaired or offer an alternative.

'In the case of 3G there are several things that still have to be done. One is to expand geographical coverage. We expect to offer the service in 90 percent of the populated areas in Japan by March 2003, but that is not enough to satisfy Japanese consumers. They want coverage of 99.99 percent, which is what we have achieved with 2G. It may take us another 10 years to reach that point with 3G.

Actually, we are still installing new base stations even to serve 2G users. That's the way things are in Japan.'

Keiji Tachikawa,
Pres. CEO NTT Docomo, Japan [2002].

Following on from that in the yellow-red area (coverage, connectivity, customer service) covers necessities such as interoperability and interconnectivity as well as services such as roaming. The (yellow) layer above it (convenience & confidence, security, reliability) concerns offering more security in the activities the user wants to carry out safer, better and more careful. The lower area (red and red-yellow) is roughly the level on which most private persons expect at least expect services: it has to work.

The (yellow-green) area (convergence, correlation) in the middle refers to the support of communication services by means of convergence and correlation. It refers to services whereby the user is offered a connecting factor (e.g. an overview of all communication contacts with the employer), whereby analogous content is converted into digital form, whereby, for example, photo formats are automatically adjusted to the specifications of the website or the screen, and whereby for example an sms message is converted into a spoken message and vice versa.

The second area (from the top to the middle – lifestyle, ease of use) refers to additional services such as *lifestyle services* and ease of use. They are supplementary services and non-essential functionalities, so in fact a luxury to be paid for. The top itself is for the facilitation of the *anywhere, anytime & anyhow* services, the promised land where all electronic communication functions anytime and anywhere.

Anyway, Anyhow, Anywhere

I can go anyway, way I choose
I can live anyhow, win or lose
I can go anywhere, for something new
Anyway, anyhow, anywhere I choose

I can do anything, right or wrong
I can talk anyhow, and get along
Don't care anyway, I never lose
Anyway, anyhow, anywhere I choose

Nothing gets in my way
Not even locked doors
Don't follow the lines
That been laid before
I get along anyway I dare
Anyway, anyhow, anywhere
I can go anyway, way I choose
I can live anyhow, win or lose
I can go anywhere, for something new
Anyway, anyhow, anywhere I choose

Anyway
Anyway I choose, yeah
Anyway I wanna go, I wanna go 'n do it myself,
Do it myself
Do it myself, yeah
Anyway, way I choose
Anyway I choose
Yeah, yeah
Ain't never gonna lose the way I choose
The way I choose
The way I choose

The Who, 1964

(2nd single, nr. 12 in UK Top 40, May, 1965)

THE PORTAL

“I imagine Cleopatra very cosmopolitan. She lived in Rome like an American in Paris.”

Anatole France, 1914

The portal to the added value

The gateway to the places where the 'pleasures' come from, i.e. where the services are provided or the content (information, games and so on) is available, is called a portal. Although gradually more and more "intelligence" is built into portals to measure the user behaviour of visitors (and so to come to a cost/benefit balances) hardly anything has been done to assess from the portal which users should have access to which services. It is not only a matter of demand for those services and content, but also a matter of suitability to be able to deliver the required services or content at all to the asking party. The main criteria are: suitability of the chain of network components to supply the service/content and suitability of the service/content to be supplied to be used and presented on the device the consumer is using (terminal device). After all, for each application you have to chose the right medium.

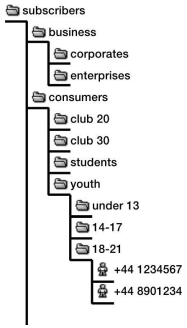
For example: a message made in MS Word cannot one-on-one be delivered on a display of a mobile telephone, but sms messages up to a length of 160 characters can. Suitability of a portable television to receive broadcasting images does not imply that fax images can be sent as well.

Problem inventory

In the framework of the NGNI project I have inventoried and separately named this 'suitability problem'. Work is being carried out to realise a certain way of technical 'negotiations' in which the portal at the providers side feels out which possibilities the chain of networks to be used offers for transport, which alternatives there are and which possibilities the device has to 'present' the service. Conversely and by means of artificial intelligence the terminal device of the consumer can, while searching a connection with a network nearby, pose the question what the network has to offer him/her, and subsequently deposit the question for specific content (information and services, respectively) at the portal via the chain of networks. The networks will then have to work out with each other what their possibilities are in a chain and the portal will have to feel out the service and content providers what they have to offer to this specific device. To prevent this ‘handshake’-like action from taking place time and again (and thus causes a certain occupation of the networks) the data of the most used components in the total process should be stored at the most involved parties. Fro example the terminal device, the first connected network on the terminal side, the first connected network at the portal side, the portal and various providers of the content or service. If this information is felt out and determined beforehand (for example when subscribing to a network connection) then on this basis a calculation can be made of a content or services profile of the subscriber concerned.

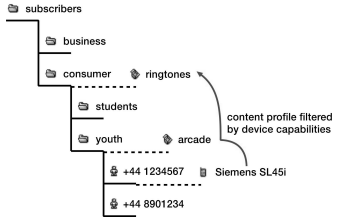
Content and/or services profile

A first inventory should take place of the technical (use) possibilities of the terminal device. They mainly lie in the areas of processor speed, modem speed, available internal memory, presentation options of the screen, operating possibilities present (keys, voice, identification), power consumption versus battery capacity. Globally: factory specifications.



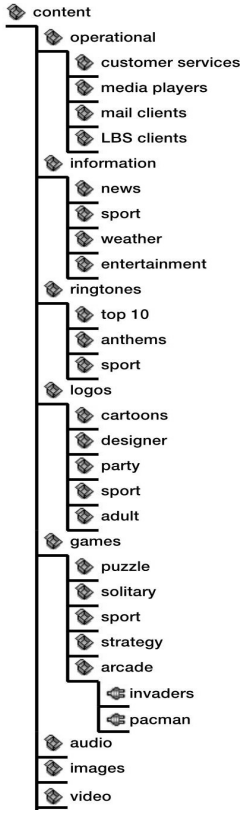
Segmentation structure

In a segmentation structure – seen from the network operator – the almost infinite segmentation levels are derived from the segmentation based on a model subscriber database. The main groups (*operational, information, ring tones, logos*, etcetera) are determined in particularly by the common subscribers a network operator has himself.



In the event that the operator offers the network on behalf of another *provider* (the so-called *mobile virtual network operator*, MVNO) the other party will have to make this segmentation within the limitations offered by the used network. If there is enough information available about the *terminal device* in the content structure, the simple structure enables a quick adjustment of the segmentation structure made, so that new services can be added. However,

a problem is that at the moment the manufacturers (suppliers) of *terminal devices* are less than clear about the exact technical specifications of the produced *devices*. Interim product and component adjustments are never communicated!



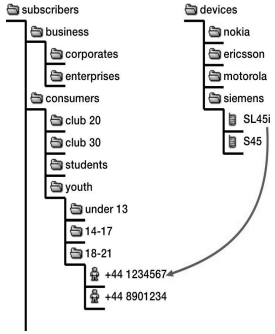
Services categories

Subsequently a structure is determined to support all types of services as well as a structure that supports groups with in those types. Depending on the chosen formal construction and the so-called intelligence of the networks the portal (annex the *service provider*) or the telecom operator indicates and maintains the categorisation. Both structures give mixed a total picture which content/service is intended for which group of subscribers.

Device allocation

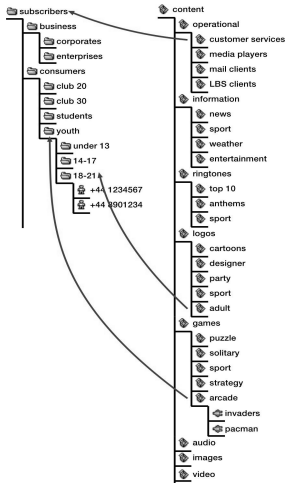
This way of allocation from a distance makes it possible that properties of the devices are allocated to the individual user. It multiplies the possibilities of the device and enables discovery of those device properties from the terminal device.

Via this way of structuring it is simple to segment a specific device per subscription type (=number), so that in case of change of number or device the change of the (provision of) services can occur automatically. So the offered service can be continued as imperceptibly as possible, or can the user be clearly informed of what is or is not or no longer possible. In the case of a new supply of services or content the provider gains a quick insight into the possibilities that exist for certain groups in relation to specific devices. Long-distance support for service purposes of devices, services and applications has considerably simplified, which in this time of critical and usually knowledgeable users is not an unimportant facility.



Service allocation

The structuring enables quick allocation of obliged services per specific *terminal device* from the side of providers. The relational association enables a better contact with the (end) user for service and marketing purposes. This simplifies – in combination with the structuring via *device* allocation – the formulation of business plans for new

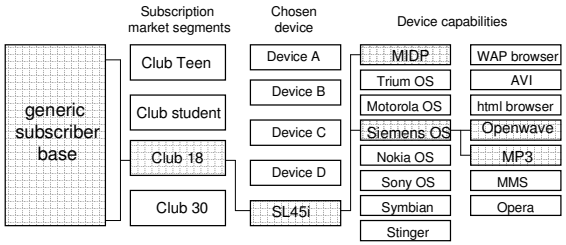


services. The same applies to service purposes, whereby a so-called *update* or *recall* is quick, effective, complete and therefore as efficient as possible. In view of the critical attitude of the governments towards the responsibility of providers for the services and products provided by them, such a facility would offer solace for being able to carry out legal measures regarding privacy, safety and protection of the young against violence and such.

Self-service allocation

An addition possibility is allocating self-service facilities to the (end) user depending on the agreed level of service provision (SLA).

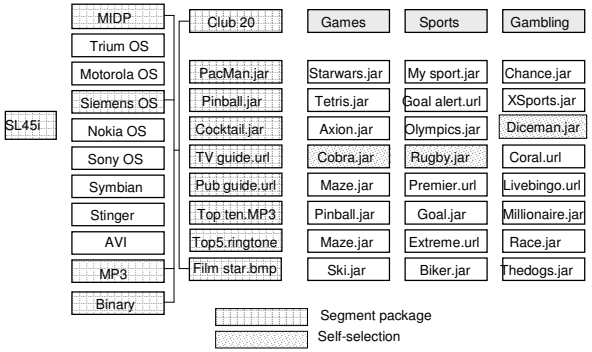
A user with a low support level may be charged with a higher support level (instead of it being included in the subscription). A target group that can only be approached with a service with a high support level



(seniors, professionals) can in contravention to the other subscribers be ensured of that higher support level. It is even possible to make this level-dependent on time and place, as made visible in the previous picture. From the central data base with all generic subscriber data it can be determined via the choice for ‘Club 18’ and the device SL45i which options the device offers.

On the basis of these data it can be precisely indicated which service or content can be supplied to the type of device concerned. Subsequently this can be subdivided into compound target group packages, to which optional extra packages can be added. The in this way via structuring composed package (see picture below) is a complete individual services and content package.

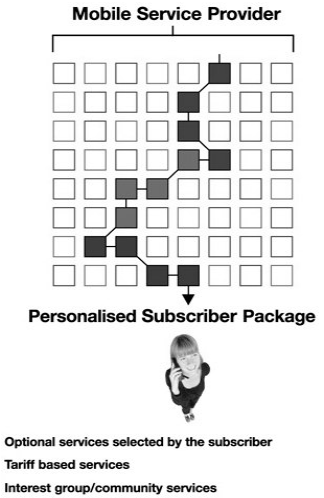
The effort to find out the specific possibilities for each *terminal device* and for each service or content and subsequently keeping them up to date, bears its ROI (Return on investment) fruit when services are further developed. It also brings an operator to the step to standardise more and therefore to set requirements to both the manufacturers of *terminals* and the (portal) providers of services and content.



THE PLEASURES

The content or service

The foregoing chapters have already shown that the technical realisation (format) of the information (content) or service is important in the total coordination with the possibilities and qualities of the network and the terminal device. This conclusion is an open door, because every webmaster of an Internet site has at some point been confronted in his/her career with the fact that his/her site has deteriorated into a unmanageable amount of information, for which no guarantee whatsoever can be given with respect to correct links, consistent lay-out or topicality of the information. Content must therefore be 'managed'. This is no news either. Governments (and the defence departments in particular) found out already in the 1960s that information could well last longer than a version of a word processor and maybe even longer than the computer system such a word processor runs on. The aircraft industry had already early dealings with content management. Certainly when taking into account that an aeroplane is delivered according to the wishes of the airline company. Managing manuals and documentation that are used dozens of years is simply not pos-



sible without content management. The largest aircraft builder has been supplying for years his user manuals and documentation on cd-rom and in various formats, from which the client makes his choice. The knowledge area of content management has a previous history of about three decades, in which already many standards have grown to full stature. In fairness it should be noted that the often older ISO standards (SGML and related standards) are less good for the new media, which apply XML.

Separating content from layout

In order to be able to supply information (content) at all times irrespective of network and the device it is necessary that the available information is offered in a uniform way by the information holder/owner, so that the provider of this information (a portal or provider) can supply the information when requested. To this end it is necessary to separate the content from the layout. The characteristics of new media and the media-specific functions may be different, but the core problem is still there. Layout is medium-specific, whereas content can be reused. It is this content that nowadays should be exactly considered as a valuable property. The investments in such a property can be faster recovered if it can be used more often or even sold. Concretely this means that content should not be stored medium-specific (as is usual now), but medium-neutral whenever possible. It is also essential to enrich the content. Nowadays every provider talks about personalisation. Being able to find the right content is indeed the first step towards personalisation, yet once the content has been found, presentation (type of medium, way of presenting) is the next step. A made-up content does not achieve complete personalisation. These days we must even structure the content in such a way,

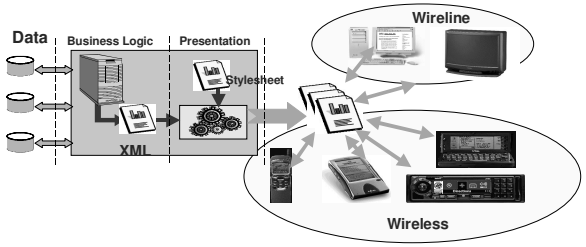
that the content can always adjust itself to the (demand of the) user, such as the example of a recipe in which the amount of ingredients, method and time of preparation depend on the number of persons to be entered.

Medium-neutral

If from the perspective of mobile telephony we dwell more extensively on the concept of content management, it turns out to be open to a twofold explanation, i.e. the management of:

- **all valuable information for a specific application** – Web content management systems usually fall under this first category. Actually these kinds of systems are nothing more than document management according to a work flow, but then optimised for an electronic provision of documents. These systems have a their rationale, but do no solve the actual content management problem, i.e. simply being able to reuse the content. Reuse is laborious because content and layout are interwoven. Characteristic is that the final destination is already known from the beginning: e.g. a website or a display of a mobile telephone.
- **valuable information on the basis of the content** – Content management systems that fall under this second category look as it were to the content of the content and take decisions on the basis of this content. In this way the work flow, dependent of the presence of images or referrals, take a different route. A change in photographs as a result of a new packaging for a product can so automatically start a workflow, which is not unimportant for keeping the content consistent and up-to-date.

These days, when we talk of medium-neutral, we are soon talking of XML. XML is derived from the ISO standard SGML, where the designers have removed less used – but difficult to implement – components and have added facilities for the benefit of new (electronic) media. The results proved to be a surprisingly easy to implement standard with a strong clarity of expression. Many suppliers, among which Microsoft and Sun, soon adopted this standard and in 1997 the World Wide Web Consortium (W3C) gave the XML standard the proposed recommendation status. From that moment on it the applications based on XML developed fast. For systems that do work on the basis of contents of content, XML soon is a requirement. Related standards such as WML, ICE, SOAP, ebXML, Prism, NewsML etcetera, both W3C and non-W3C recommended, developed at a great speed. Whereas SGML was mainly applied to structure content for publication purposes, the application area of XML is already many times larger. An important application of XML is the exchange of information between systems and applications. This non-visible application of XML is already playing an important role in middleware (the connection of the intermediate layers in applications). Thanks to the availability of various standards and the broad application area content management systems must base themselves on XML standards. It ensures really open systems and optimal exchange of content.



For all kinds of economic and social reasons content must be reused. Using a content management system on the basis of XML standards is then very obvious. From the scope (and loyalty) of the end user who requires information at anytime anyplace in anyway, there is only one interest: content must allowed to be offered in any form.

Requirements to the content in relation to the user interface

The need for information (priority, quality, price), naturally followed by the kind of the requested information, the required form of the information (for presentation on the device), the amount of information (for transport and storage on the way to the user), the body of used networks (to deliver the information to the device), the device used and the degree of acceptance of that medium are decisive for the requirements to the content. It applies to private persons (consumers), but usually much more to employees of companies. The need for information is directly related to the use environment. The type of information can be classified into dynamic information and static information. To an employee in the field who always wants the same (static) information

in small amounts, the use of an electronic communication medium has no big added value. This employee can just as well use a manual or a static electronic medium, such as an electronic book. Is the information extensive or subject to change, then the amount of information an employee needs is of crucial importance for the choice of a mobile electronic medium. Benefits of mobile telephony depend primarily on the content and secondarily on the used network and device. At the moment it means – since there are no neutral standards – that each time an assessment has to be made which requirements must be set to the content in order to ensure that the content meets the user expectations. With regard to private persons it takes place by trial and error, but companies are looking for something to hold on to with a view to costs. A model with which they can assess the advantages of mobile data communication for their company could be useful in answering this question. A number of models are available focusing on the influence of electronic media on company processes, among which the Impact/Value Framework and the model on e-mail use. Both models focus on the effects of the electronic media, not on the factors that cause the occurrence of those effects. The best way to make a well-considered choice is to define the current and future need(s) for content. They should then be crossed with the current and future functionality for all media formats in which is being worked. This theory of Cap Gemini Ernst & Young colleague Jan Anton van der Graaf has been worked out in a decision diagram. [2001] The more clear results of the questions about the need and use of information (content), the larger the effect probability and the more positive the result. It makes the conditionality of the previously described content and service profiles clear.

How can service and content be co-ordinated?

By analogy with the visual needs hierarchy for the interface and the network it will now be indicated how it is possible to position it in layers in a triangle for the pleasures (content or service) to be delivered to the (device of the) user. Below the rudimentary information signals that enable basal or minimal communication: 0 or 1, characters, codes, words, instructions. Subsequently, positioned from the bottom to the top, the quality and/or scope of the information to be transferred is increased, thus setting heavier and/or more specific requirements to the network and the terminal device. Here, too, it is remarkable that users are in general satisfied with the lower levels.

From the horizontal yellow-green middle part to the blue coloured top the services and products offered to the user increase in quality, quantity and non-essentiality. The information to be transferred is no longer basal and simple, but extraordinary and complex. The more the end user expects of the trans-

ferred information, the more quality is expected from the information content and processing. In order to play a 'lifelike' shooting game, a real-time exchange of positions and a short interaction time (ping) between both players is needed.

Summarising conclusion

There is no visible good mutual coordination and alignment in the chain of all parties that bring devices, networks, services and pleasures (content, in particular texts, images and sounds) on the market. Neither is there a coordinating contact with the end user himself. The offered products/services differ too much and are not geared towards each other: something like a refrigerator that is transported in a convertible over a mud track to the client, who is deeply asleep.

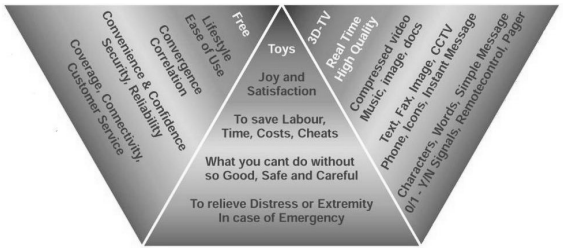
When the entire chain between user and pleasures (content or services) is considered in more detail, it turns out that in nearly all cases the required technology for integrating telephony and the Internet and for communication-technical facilitating group relations is available and that three important shortcomings remain:

1. being able to continuously read who of which group relations in the address book is online;
2. being able to chat online with one or more people from one of the group relations;
3. coordinating vice versa the technical specifications of the communication device versus the specifications of the form (format) of the service or product to be supplied, so that always can be supplied according to demand and possibility.

These three points form the challenge for the telecom sector to supply a new market.

Tetrahedron

A simple visual approach which can't be suitable for all situations, but can help as source of inspiration in almost all situations and applications as used now a days for the wireless sector, is this tetrahedron. Based on the continuum between technology innovations and business change, I have developed a visual evaluation model, shaped like a 3-dimensional triangle (a so called tetrahedron) and enhancing the hierarchy of needs by Maslow. This model helps the telecom, Internet and media-content industry to be adaptive in their services to the requirements and needs of the users. Also, the offered communication tools can be better tuned to the user in the driving seat. Nice to know is that in the original model the colours of the tetrahedron are almost the same as the five lower chakra-levels.



Look at the triangles model below and start the evaluation in the triangle on the top, the user. Then - when you have checked all the requirements and needs of this user - go below to the terminal for checking the usability (in the middle), flanked by the network and the portal for the content. A business version of this model belongs to the Adaptive program of Cap Gemini Ernst & Young.


HUM@N

Wrapping It Up

POSTAMBLE

The architecture of cyberspace is like the sewers of Paris: dark, exciting, attracting visitors and concealing, with a jumble of corridors, halls, overflow basins and secret chambers everywhere. For 2100 kilometres the stream of waste is stemmed, diverted or allowed to pass through small openings. All this to remove the immense amount of waste of a metropolis with hydropower. Parents do not usually let their young children crawl into the sewer or wander around in a city alone, but they do not like to visit the city called the Internet, which means that kids can discover 'the world' themselves. The new media have led to the stormy development of Internet communities, but at the same time put intrinsic brakes on them on account of the poor stability, poor coordination, poor standardisation, lack of rules, procedures and sanctions.

Toll is greedily levied on each entrance of Cyberspace but there is no supranational organisation that guards the virtual space. The colonisation of the virtual space has begun. An entry of anyone who thinks the earth too narrow-minded and is looking for freedom and pleasure. A challenge for architects, developers, realtors and other service providers. Only, a not unimportant question: where and with what do you plan to start? Cyber & Co is also a task force for the authorities, because how do you intend to rule this virtual society if you do not even know who the inhabitants are? The standard tools of the public and private sectors do not work.

Internet is pioneering, '*do it yourself*' in particular. The youngest generations were quick to latch on. Why wait for the deliberations of the traditional world, which avoids risks but keeps the money earned itself

when successful? With your mobile telephone, a borrowed HTML script and a few hours behind the PC in the library you position yourself in the world. You are a publisher, photographer, architect, media station and movie director for and of yourself at the same time. More and more people, usually young but more and more older people too, come to this 'space' daily, for fun, to gather information or do business. In this intangible *cyberspace* almost imperceptibly a society has come into being where – in view of the behaviour and reactions of chatters – anonymous '*online*' contacts are just as important as recognised offline relationships. Knowledge, experience, property and pleasure are shared according to the GATA principle (*Give-Away-Take-Away*) The cumulatively increasing number of users and transactions increases the social (and therefore economic) value of this virtual world more and more.

RECAPITULATION

The Internet is based on social-cultural and psychological boundaries, not on political ones. That is why different cultures can exist together on the Internet. Word and image remain, but are continued in the shift from text to hypertext and from image to *virtual reality*. The *global village* evolves into a *global mind,* providing room for more personalities than there are people. Where you as cyber visitor create your own networks and build communities.

It is this functionality, assuming various personalities, maintaining multiple relationships with individuals and groups, maintaining various business contacts, which is lacking in the current configuration of the Internet and mobile telephony, which is called wireless Internet.

Both the interviews and market surveys show that the past few years a turn among youngsters can be seen from a pure individualistic focus to a '*make-it-yourself community* focus. They want to belong, but determine themselves when and which community. Casual, cosy and sometimes intimate, but with quality! It is remarkable that young people do not have much faith in the degree in which the desired features will become available. Neither do they expect that a better coordination of supply to demand and of the offered functionalities and services will be realised. Many interviewees indicate that it forms an impediment in the expansion of their networks.

It is also remarkable that young people, much more so than adult users, are inclined to integrally use the various media and current functionalities in their mutual connection in a cost and effect conscious way. For example, with regard to dating both groups say,

although with very different means of communication, that they feel the need for many and flexible contacts, whereby frequently and preferably seamlessly is switched between the PC at home and the mobile phone. After the American model (where the answering machine is nearly always on) there is a big difference between being able to call yourself and wanting to be called.

With regard to privacy the research indicates that people want a layered protection of personal data. Something telephone companies or *Internet Service Providers* (ISPs) not want or are not able to provide. In the perception of frequent participants (inhabitants) of this virtual society the physical, virtual and potential other realities integrate in a kind of total experience (interreality).

For the youngest generation, grown up with a mobile phone as a musical box, the playstation as a box of building blocks, with the Internet as an encyclopaedia and the television as moving wallpaper, living in two realities, interreality, quite normal. For scientists, services providers and developers it is a challenge to keep up with the *roadrunners* of the virtual society.

In summary you can say that apparently the almost ideal user interface of a human being with a wireless Internet and/or telephone device (with or without camera) does not exist, but that there is no lack of research into the best human-machine interface for wireless telephones.

Much research has been carried out in the past few years. It appears that there is no impediment of such a nature that group communication or wireless Internet cannot be facilitated. However, the focus of modern research mainly lies on the ambiance and adaptiveness of a traditional *single-mode* HMI (*human machine interface*). No field studies with users

of *multimode-interfaces* have been carried out. The slogan *'user in the driving seat'* [European Commission] would have more chance of success if it could go hand in hand with an iterative development approach (e.g. IAD) and *throwaway prototyping.*

Resuming, the primary bullets:

- What is new?
  We are familiar with the message (content) and the medium as the message (see McLuhan), but when we ponder what is going on in the virtual world, there is also the time of receipt/taking note of the message (messenger). Manipulation of-to-day starts primary in the medium, not anymore in the mind. Also new is the transparent way in which Internet and these technie tools are used in and between the physical and virtual worlds, such as the emergence of personal parallel networks in both worlds and the resulting total hybrid experience.
- What is the importance of this information for me as reader?
  From the knowledge that cyberworld, using wireless means of communication, is developing into a fourth dimension of the existing world, instead of into a new foreign world (as 25+ usually see it) ensues that this fourth dimension must be incorporated as such into the company mission, organisation, processes and procedures in order to come to a 21stcentury business management.
- What impact does it have on business in the coming years?
  Cyberworld will quickly change the regular business; the triad in consumer segments will be accompanied by a quick consumer turnover, particularly in the segments 25- and 55+ in Europe, in the developing 3rd world countries, and in the

booming far east; if businesses do not react to this with an adapted products/services range those client groups disappear for the time being.

- How can I anticipate it?
  By incorporating cyber communication as such (with the attendant generation of young people, customers and employees) into the company or institute mission, organisation, processes and procedures (including assortment and marketing); cyber is not weird but regular.
- Which practical tools can I use to this end?
  The provided evaluation model for telecom services will help marketers, salesmen and CEOs (with the decision) to offer the services/products in the right mix; furthermore, it is necessary to exchange knowledge and vision (on an equal basis) between the generations 25- and 25+.
- How do we manage new networks?
  New networks are disruptive and become self-organising; peer-to-peer and ad hoc networks are integrated in collaborating networks; the jobs of IT, telecom and data managers will disappear;
- And how do we as researchers approach the cyber kids?
  By learning to think along in counting faster, in following multiple thought scenarios and in selecting by ignoring information; by paying attention to the influence of opinion leaders in the tribes; cyber kids are native cyber-inhabitants and must be approached as adults who in a way were born with cyber; the proved concept of explaining, developing and evaluation has changed.

CONCLUSIONS

1. Because of the fixed connection with the Internet cyberspace is presently the domain of the PCs at home, at school, at the library, at work or in an Internet café. The mobile telephone belongs to the domain of the century old telephone companies. Despite all attempts they are not suitable for “cyber in the street”, but do offer all kinds of unsolicited services. The coordination between supply and demand is missing and it seems that telephone companies have also lost the contact with their clients. Special offers of broadband and mobile telephones galore, but no one seems to be interested in the user.
2. Although the Internet and wireless telephony are the boosters and carriers of a virtual society (existing parallel to the physical space) and could provide access to this space to anyone, any time and anywhere, the underlying 'closed' telecommunications technology impedes the virtual society to grow into a full, complete society. Wireless Internet requires that networks are made suitable as well as that network managers work together, as the way in which the telecom chain is built up and how the relations with the Internet are formed limit the possibilities to 'tie together' the Internet and telephony. It also limits the increasing custom to sometimes act as someone else (without having a criminal intention).
3. Now space and time have fallen away all traditional connections and identities are suppressed on the Internet, both the individual and the collective ones. New forms of anonymity, gender and identity switches are cultivated on the

World Wide Web, thus superseding the idea of a *global village*. It was an adequate vision for the TV era, but is no longer suitable for the new network systems. The younger generation makes customised SIM *cities*. They mix the virtual and physical realities into a hybrid total experience.

4. Time determines your boundaries, opportunities, cost, and communication and is therefore a message, just like the medium. A message that is on time, too early or too late is a message in itself. In effect it means an essential expansion of Mc Luhan's theory '*the medium is the message*'.
5. Manipulation of information takes more and more often place in the *mainframes* than in the *brainflames*. It fits into the makeable world: you are made, you make yourself, your time and your identity.
6. The virtual world that has meanwhile come into being can give a new impetus to the telecommunication sector with wireless means of access, as long as the customer needs are central.
7. Attention should also be paid to the expectations users have of these means of communication, in groups as well. The social (and therefore economic) value of the message and group functionalities is bigger than apparently assessed until now. The role that customs and group behaviour play in this context leads to other functional demands to the technology.
8. The adaptive evaluation model could help the industry to meet these user needs.

RECOMMENDATIONS

Cyberspace has been created by boffins. They know everything about protocols, *strings* and *time-outs*. *Cyberworld* is 'inhabited' by people. Boffins are also people. They do use the same words, but often mean something else with them. This means that people should listen to each other and that more things need to be geared towards each other. Modern telecommunication technology offers the opportunity for socialisation, whereby a kind of virtual world has been created in which group relationships play a big role. At the same time the technology is restrictive due to the emphasis on existing paradigms and the related 'push'. It would be better to come to coordination in the telecommunication chain and to cooperation with regard to the needs of the user.

a) Time is a fact and a message. So it should be part (just like the medium) of communication plans.

b) The transaction steps, labour mores and payment rites in the virtual society (in the framework of '*Give-Away-Take-Away*') deserve a recommendation for further study.

c) The '*Give-Away-Take-Away*' principle on the Internet leads to a lower threshold in making available 'confidential' matters, both personal and business information. Young people are critical of the capitalist system that seemingly is only profit-oriented and do not consider money an objective. How can their choice(s) be explained from the behavioural sciences point of view?

d) The possibility to clone yourself electronically as 'atavar' [BT/MIT Radical Multimedia Lab] seems intended for 'normal' applications such as trying on clothes and virtual call centre agents, but in view of the potential of this technology it deserves further study.

e) Interreality is a phenomenon among the youngest generation that will have far-reaching consequences for upbringing, behaviour, social systems and therefore for society. It therefore deserves broad and in-depth study (see recommendations of Hutchby & Moran [2001]).

f) The way in which electronic manipulation of communication is introduced and integrated (and widely used) almost as a matter of course – probably at the expense of cognitive manipulation – deserves further study. Do we (later) still know what we have the communication device filtered, triggered or adapted? How do we act accordingly?

g) The slogan '*user in the driving seat'* [European Commission] would have more chance of success if it could go hand in hand with an iterative development approach and *throwaway prototyping*.

h) There is no boss on the Internet. Yet we all 'live' there. What do know of it? There is hardly any empirical material available. Only now it is becoming clear in a slightly wider circle of authorities, companies and researchers in our physical society what kind of consequences this 'virtual' world has and could have. We only see a glance of the shape that society will have by 2006 and we try to imagine how it will be in 2010. The relationship that management companies and authorities as toll levying gatekeeper will maintain with the transients in the seemingly infinite virtual

space pales compared to what goes on in that world and will manifest itself in the future. Management and supervision seem to be more a task for the UN than for the ITU and the W3C, let alone for the ailing telecom or Internet providers. Or is it "*Not in my virtual backyard*"?

PERSONAL AFTER WORD

Since the virtual community in its high-speed development hardly shows any interest in science, in my view the established science is falling more and more behind the cyberworld in cyberspace on the Internet. The few scientists who deal with matters on the web (in the virtual world, respectively) look like loners in their actions and – as I have found – nor are used as a guide and 'springboard' to have more scientists enter the *virtue*.

The nature of the underlying dissertation is primarily topicality and therefore does not relate to a broad and time-consuming empirical study whose results will be filed away years later as proven and conclusive. In the preface I stated that with the ingredients of the dissertation I want to provide material to stimulate a broad discussion in and outside science. My objective was and is a multidisciplinary debate or polemic about the social place of the virtual society in our physical environment, about the boundaries and connections between both environments and about the place of human identities, of groups and cultures, of technology and economics as well as the established science. The provided needs adaptive evaluation model the industry can be aided – in my expectation – to market something technical that the user could really need.

During the period in which I intensively chatted (on average 2 hours a day on an annual basis) I had the pleasure of getting to know many people, from Lily (12) to Peter (66). I was not left with any negative feelings about my visits to all magnificent and dark *chatrooms*, but was however shocked by the intensity and power with which the porn industry has settled down in the virtual space to force from this Wal-

halla sexism and all kinds of extreme and violent sex on unsuspecting visitors using advanced pop-up technologies.

Jacob van Kokswijk

Appendix

QUICKBOOKS. PREBOOKS AND SKETCHBOOKS

The concept of creating a publication quick, in no more then six weeks, was created in April 2003 by Petra van Krugten and Mark C Hoogenboom.

QuickBook – which uses three pressure cooker type of writing days, with about twelve authors, to create text from scratch. This is followed by two weeks of editing by four editors, selected from the group of authors.

The result is a book with a limited time-to-live: about nine months. Then the content needs to be updated or be replaced by a proper publication. Obviously, having the QuickBook out fast, means you will get feedback, which is used to enhance the update.

PreBook – which is based on existing text that is part of a manuscript that is not yet finished. By putting it out to the target audience fast, the author gets the kind of feedback that enables major improvements.

This book is such a PreBook.

SketchBook – The process of creating a SketchBook is simple: get some brains that have knowledge and let them sketch this out in front of some brains that are able to listen and capture at the same time.

One brain with knowledge can keep about four extractor brains occupied.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LITERATURE @ INTERNET

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http://socio.ch/mobile/index_mobile.htm

http://socrates.berkeley.edu/~nalinik/mobile.html

http://www.ingentaselect.com/ (CyberPsychology & Behavior)

http://www.askoxford.com/betterwriting/emoticons/

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http://www.itu.int/osg/spu/publications/mobileinternet/allocation%20table.pdf (mobile providers)

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On Internet, a list with all notes, references, sources, referred to the under laying PhD dissertation [2003] can be found: http://www.kokswijk.nl/mensen .

JUSTIFICATION

Justification, references and sources:

All parts of text that are extracted or quoted are referred as much as possible – but alas not always – to the author. They are referred in the original dissertation (in Dutch), which can be ordered by Internet, visit: www.bergboek.nl .

On Internet, a list with all notes, references, sources, referred to the under laying PhD dissertation [2003] can be found: http://www.kokswijk.nl/mensen .

The used images are dragged from Internet and looked free of copyrights. However, a source had been searched, but most of the time unsuccessfully.

“You see things; and you say, “Why?” But I dream things that never were, and I say, “Why not?” ”

George Bernard Shaw (Back to Methuselah)


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