

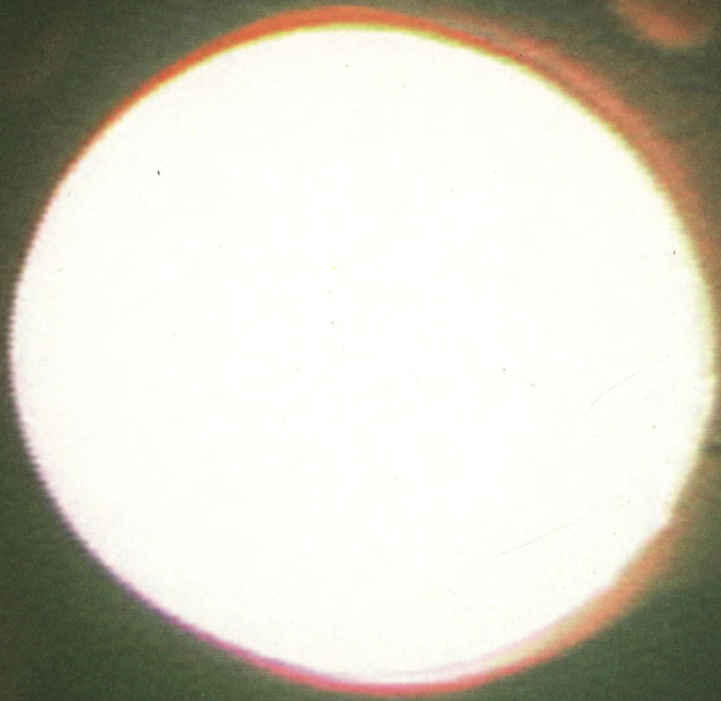
vision of the future

Let's make things better.



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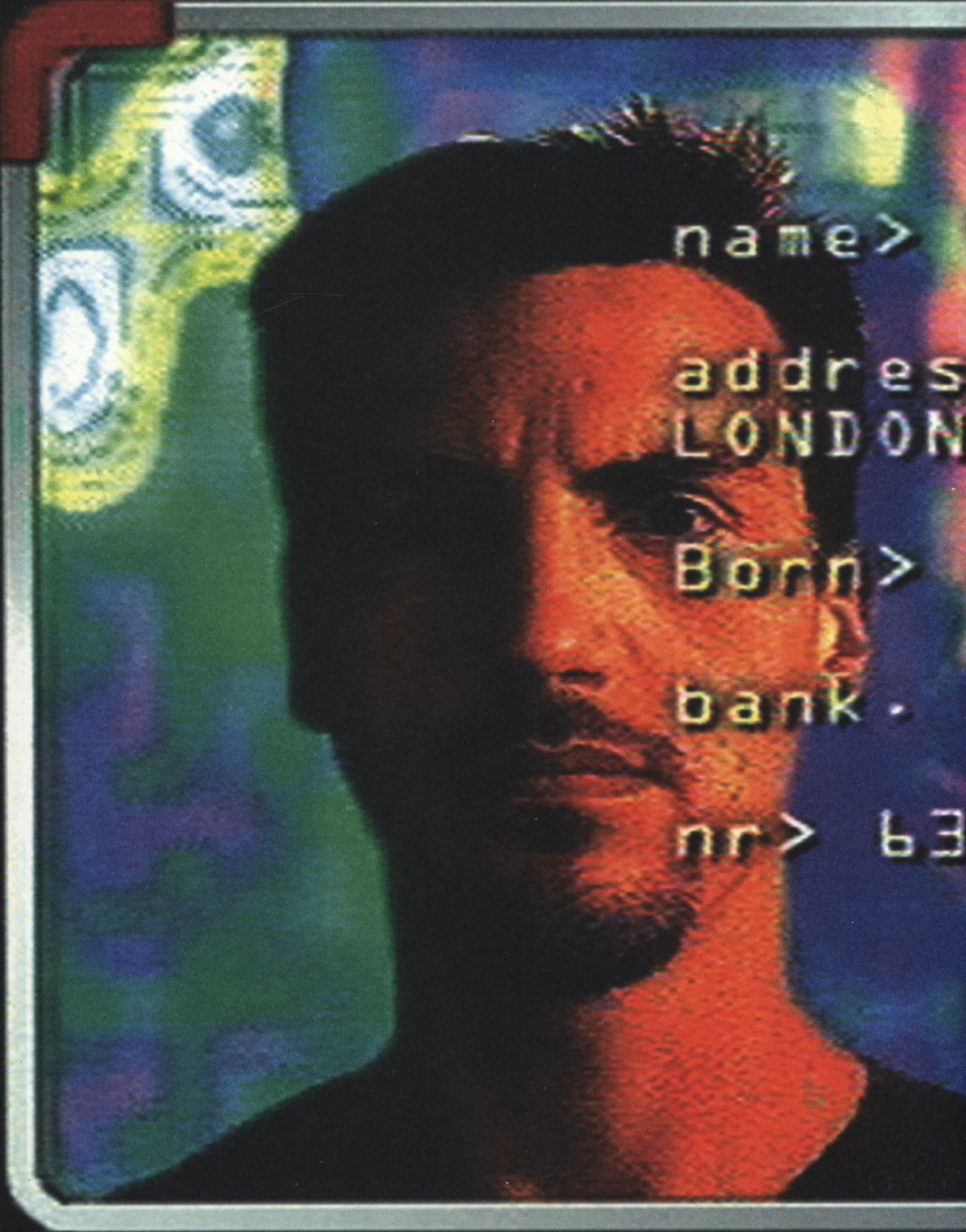


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vision of the future

Vision of the Future

© 1996 Philips Design, Eindhoven, The Netherlands

© 1996 V+K Publishing, Blaricum, The Netherlands

Fourth edition, 1998

ISBN 90 6611 591 2

NUGI 926

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13	foreword a new modernity
17	introduction searching for balance
29	the socio-cultural horizon
37	technologies in prospect
53	personal domain mind and body
97	domestic domain home and family
141	public domain the wider world
165	mobile domain on the move
185	validation and assessment
195	communicating the results



foreword a new modernity

Since the fall of the Berlin Wall in 1989, our perception of the world has changed. Before that, for most of us the known world was limited to our side of the Iron Curtain. True, we were aware of life on the other side, but we knew little about it. Now, we are learning to see the world as a single system.

However, that system seems in many ways out of balance. Every night, through the medium of television, we become eye-witnesses to what is going on around the world, both good and bad. Our knowledge of events creates a mental environment from which we can never escape for long. At the same time, though, it stimulates us to look for ways of improving the situation.

Perhaps if such instability on a global level were balanced by stability on a local level, it would be easier to deal with. But life at home and at work are also changing at an increasingly rapid rate, the individualisation of society having loosened national and family ties.

Increased mobility has weakened our sense of community, of belonging to a particular place. And work calls for flexibility: nowadays, few people can expect to stay in the same line of work all their lives. All of this means that the search for new models and new qualities of life is never-ending.

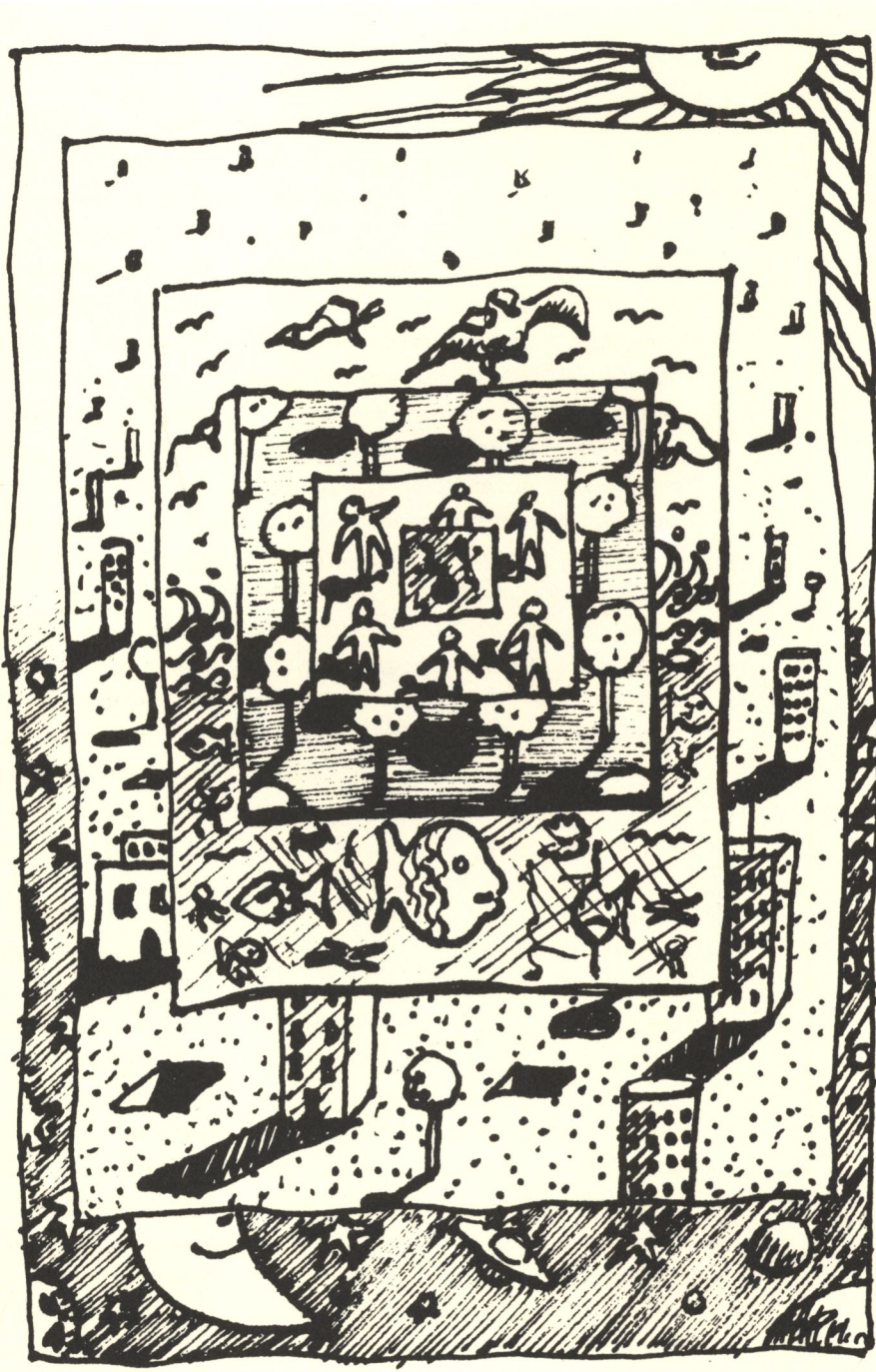
Maintaining a sense of identity and stability through all these changes is not easy. Yet that is what we must do if we are to retain our equilibrium, our self-respect and, above all, our humanity. Despite occasional lapses, in advanced societies we are gradually coming to our senses. We are realising that it is time to concentrate on the important things in life, on basic values

and qualities. There is a growing awareness that the society of the future will need to be more ecologically and socially balanced – in other words, a sustainable society.

We have grown up in a world based on the Modernist vision of relentless industrial progress. We are now beginning to appreciate that we need to take a more holistic, more global view of progress. A sustainable society would be one capable of developing new and renewable sources of energy, conserving finite resources and respecting the natural and man-made environment. It would also be a society with the human being at the centre, one in which everyone would be able to climb the 'ladder of needs' indicated by the psychologist Abraham Maslow. By satisfying first physical needs, then intellectual and finally spiritual needs, people can attain the ultimate form of self-fulfilment – what Maslow called 'self-actualisation'.

This society would be one in which our psychological need to expand our experience and to achieve goals would be fed and met. It would be a world where 'travelling' was as important as 'arriving', where the process of making a cup of coffee was as important – and enjoyable – as the cup of coffee itself. It would also recognise that, as social creatures, we place a high value on qualities such as peace of mind and community, happiness and fulfilment, and it would accordingly further their realisation in everyday life.

It is, of course, unclear exactly how such a utopian society is to be attained. There are different possibilities open to us to achieve balance. Simplistic scenarios which call for massive



backtracking and the surrender of many of the conveniences industrialised society has come to depend on would probably also require the surrender of many individual freedoms. On the other hand, gradual evolution will almost certainly bring change too late.

Perhaps a viable answer is actually staring us in the face. One of the most striking phenomena in the world today is surely information technology. Information technology is a natural development within industrial society. It basically continues the process of automation which began many centuries ago, though it does so in a way that takes it along a radically new path and at a vastly accelerated pace. It has been growing, like a natural system, in a scattered, unstructured fashion, without any overall motivation to give it direction.

But if we now place the needs of a sustainable society alongside the opportunities offered by information technology in areas such as communication, health care and entertainment, we see a number of points of convergence.

Firstly, imaginatively exploited, information technology can answer many of the environmental requirements of a sustainable society through its highly efficient use of energy and materials. It can therefore reduce our impact on the environment considerably. Thus, miniaturisation, made possible by chip technology, allows us to cut down on the use of material resources. Software, by being upgradeable, means that each improvement does not automatically entail new hardware. And when linked to

telecommunications networks, this technology reduces the need for travel, transportation and, through the electronic rather than physical storage of data, even space.

Secondly, information technology can offer solutions to many of the social, cultural and intellectual needs of people in a sustainable society. Computer networks, such as the Internet, belong to a world without boundaries, a world in which news travels faster than gossip in a village, with new 'virtual' communities, where everyone can chat over the garden fence and have their say.

In this light, the interaction between the needs of a sustainable society and the possibilities offered to us by information technology can be seen as something of a 'holy alliance', a coincidence of historical chronology which can give rise to a 'New Modernity', an age in which we can continue to believe in the idea of progress, but progress based on quality instead of quantity.

The future does not fall from the sky like rain, but is made by the actions of those who take responsibility for it today. The more we become aware and can make others aware of technology's potential to advance the arrival of a New Modernity, the more we will be able to direct our work and accept our responsibility – as expressed by our corporate theme 'Let's make things better' – to further this goal. Vision of the Future is our attempt to provide a glimpse of a better tomorrow.

Stefano Marzano
Senior Director, Philips Corporate Design



introduction searching for balance

What will life be like in 2005? What will people want to do in the future? What will interest them and make their lives more fulfilled? Companies like Philips, wanting to help shape the future, are in a position to propose ways in which new developments in technology could improve the quality of people's lives.

It is difficult to predict the future because people's perspectives are changing and technologies are developing and merging. Traditionally, new products have been introduced mainly through technological innovation. Today, however, to make products and services which will come closer to meeting human needs and desires, we need to redress the balance, looking more carefully at this increasingly complex relationship between people and technology.

The Vision of the Future project was initiated to investigate possible developments over the next ten years, because we have to look far enough into the future to be able to see the steps we need to undertake next.

The broad aim of the project was to explore what people will perceive as useful, desirable and beneficial in the future and to create a technological roadmap to realise this goal. This required a new approach to discern what the latent needs and aspirations of people are, and in particular, what qualities they would value in future products and services.

making the future real

It is difficult to forecast what the future will bring. Who, for instance, would have foreseen microwave cooking, CDs or mobile phones? By looking at

emerging trends in society – the first signs of how people will live and interact in the future – we can formulate scenarios to better express what these possibilities could be.

By showing people these ideas in the form of realistic objects and the context in which they could be used, we give them a chance to provide us with feedback, not only in general terms but also about specific issues. This feedback may contain a lot of useful information which can help us offer more appropriate products and services in the future.

scope and objectives

We could not hope to gain a complete picture of what people will need in the many diverse societies around the world. We therefore looked at socio-cultural developments only in societies which lead in the adoption of new technologies, such as North America, Europe, Japan and Australasia. We also limited ourselves to areas of focus within Philips. Within this scope, the Vision of the Future project was set up to meet four specific objectives:

– to demonstrate Philips' commitment and ability to make a positive contribution to the future by offering products, services and software that enhance the quality of people's lives;

– to further stimulate the imagination and creativity of the Philips community as a whole;

– to explore the opportunities provided by merging technologies and the significance of socio-cultural developments in determining how they can be used;

– to show the benefits of shifting from the model of quantity and complexity towards a greater focus on quality, simplicity and customer satisfaction.

research

Having defined the scope of the project and its specific objectives, we then began to plan the research itself. What did we need to do in order to develop a vision of the future? Extensive research was needed in two main areas: socio-cultural trends and developments in technology.

In order to gain an insight into how people will live in the near future, information was gathered from trend-forecasting institutes such as the Research Institute for Social Change (RISC). This information described emerging 'sensitivities' – new attitudes, preoccupations and concerns within society.

Research into technologies was carried out both within the Philips organisation and with reference to global forecasting done in Japan and Germany.

the creative process

The next step was to set up multidisciplinary teams consisting of cultural anthropologists, ergonomists, sociologists, engineers, product designers, interaction designers, exhibition designers, graphic designers, and video and film experts. In a series of creative workshops these teams developed more than 300 scenarios based on the socio-cultural and technological research.

These scenarios (short stories describing a product concept and its use) were developed using five basic

parameters: people, time, space, objects and circumstances. They were then refined and filtered using four main criteria. Would they clearly provide people with genuine benefits? Did they fit with Philips' major areas of competence and interest? Would they be technically feasible? And would they be applicable to the social and cultural area we had defined?

As a result, the original 300 scenarios were distilled down to 60 well-defined concept descriptions. However, in view of the extensive nature of the project, further grouping was necessary to break this wide scope down into more manageable pieces. A simple structure, focusing on people rather than technological categories, was used to represent all aspects of everyday life – the four 'domains':

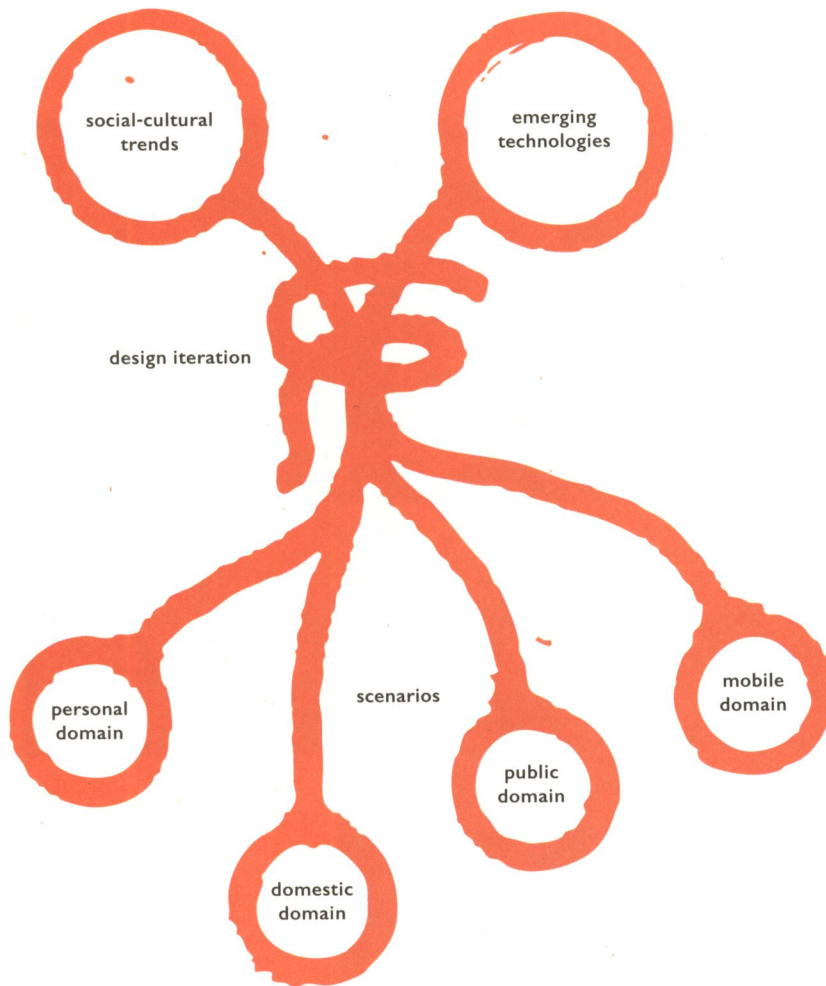
- Personal
- Domestic
- Public
- Mobile

In order to get feedback at this stage, the 60 scenarios were presented to a panel of leading futurologists from Europe, Asia and North America for their comments and advice. The scenarios were also reviewed to assess their potential ecological impact.

making the concepts tangible

The next stage in the project was to develop and enrich the basic concepts and make them more easily understandable to a wider audience. To do this, the ideas for future products and services had to be manifested in the form of tangible models, simulations of interfaces and short films.

A simple, harmonious design language was developed for the product



models. To support communication on both a functional and an emotional level, extensive use was made of visual metaphors, relating the designs to familiar objects – e.g. watches, books and picture frames. However, for some new products there were no obvious metaphors, and for these, new original identities were created.

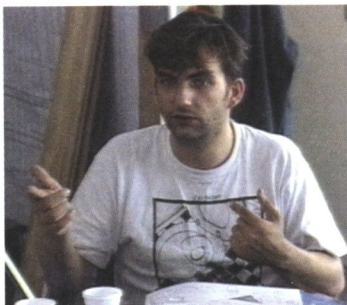
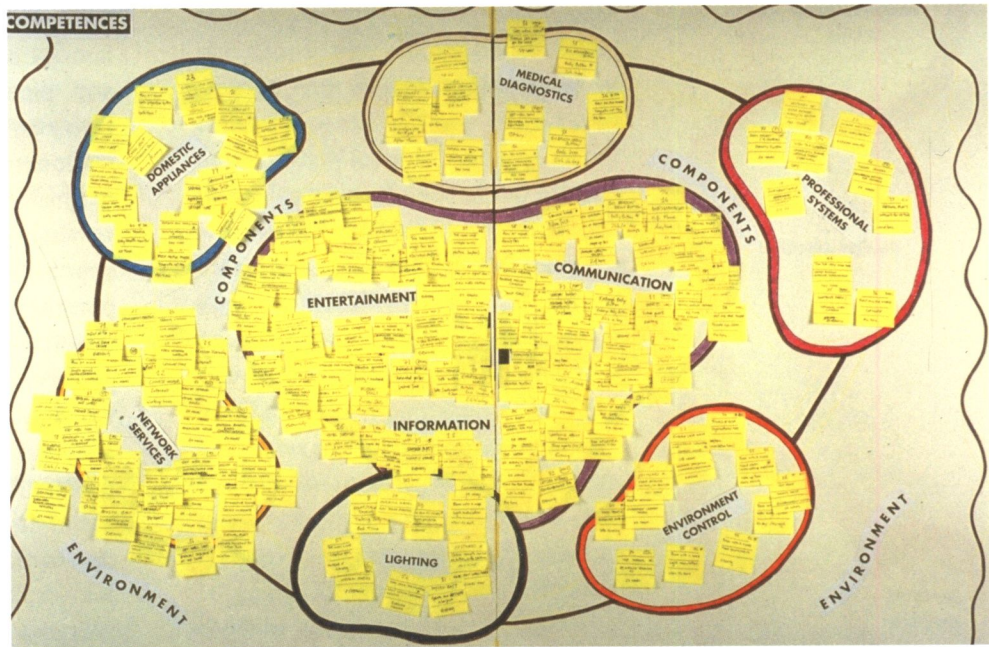
Integral to the concepts was an approach to interaction design, incorporating natural modes of communication such as speech, writing and gesture, which would allow the use of the products and services to be easy and intuitive.

Short films were made of each scenario, depicting the products in relation to their context of use. The clips provide brief glimpses of people's everyday lives – natural scenes in which the proposed products or services are being used in realistic future situations. This medium also allows the dynamic aspects of interaction design to be presented.

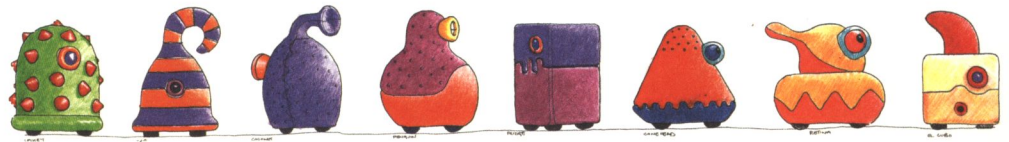
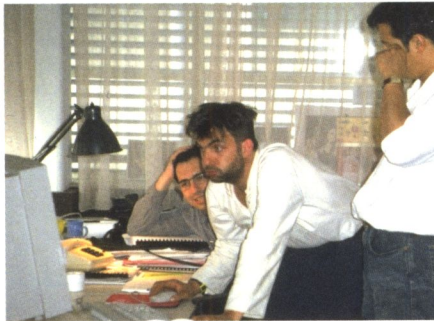
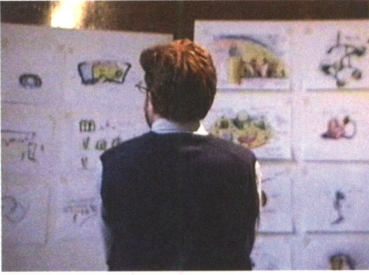
communicating the results

To achieve an important objective of the project – getting feedback – the results will be communicated to as broad an audience as possible. Using this feedback we will be able to gain a clearer picture of people's needs and desires. The project is being presented using a variety of media including an exhibition at the Evoluon in Eindhoven, the Netherlands, a series of communication events, a video compilation and a Web site.

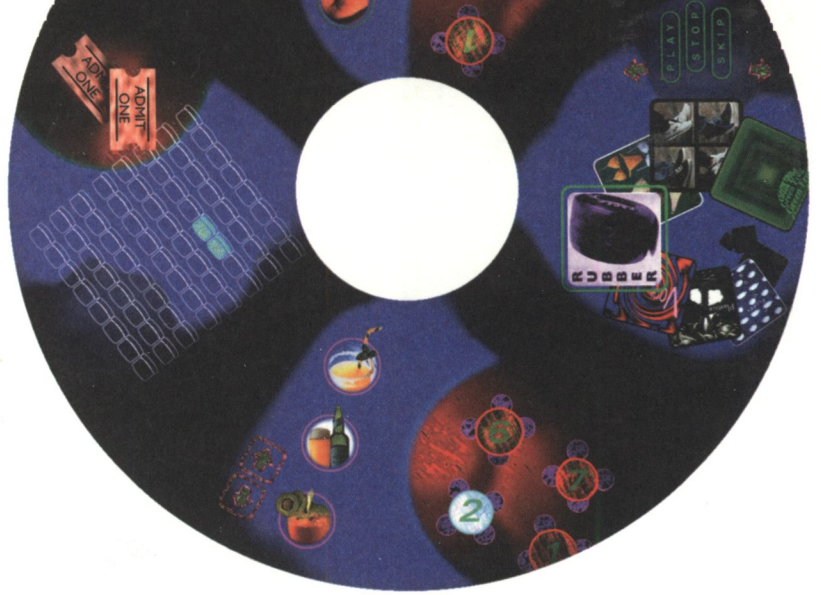
workshops



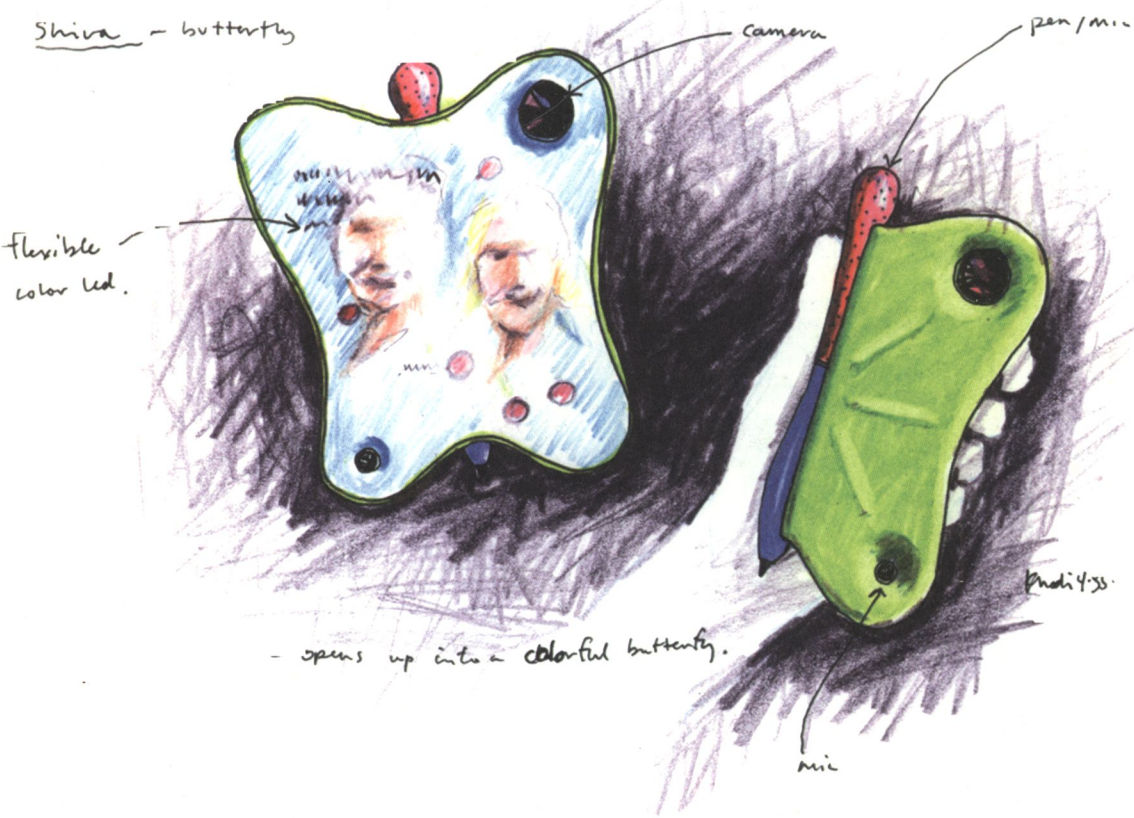
concept creation and design



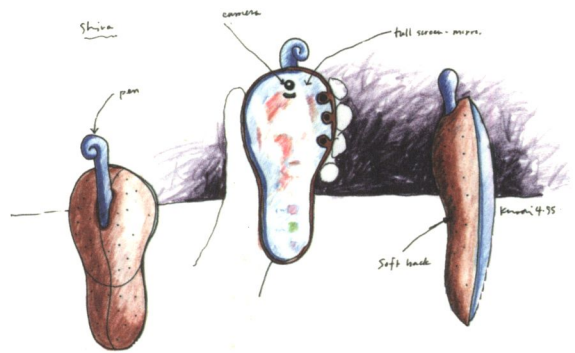
interaction design



Shiva - butterfly

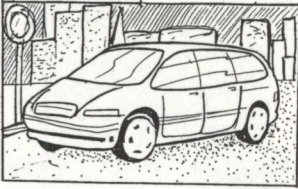


- opens up into a colorful butterfly.

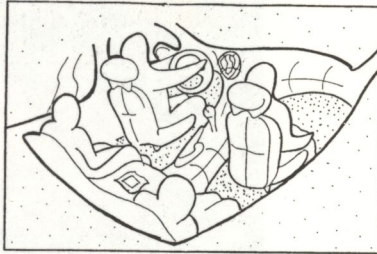


CAR-IN NAVIGATION

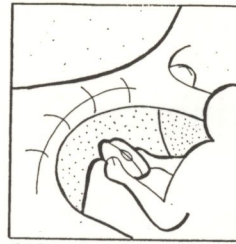
FLEXIBLE HAND HELD SCREEN, CAR IN NAVIGATION SCREEN, SHIVA MONO.



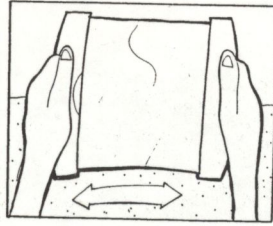
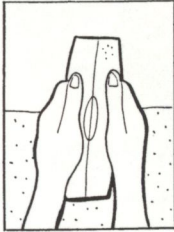
A FAMILY OF FOUR IS GOING ON A TRIP TO SEE GRANOMA. THERE CAR IS A 'SMART CAR' IT CONTAINS VARIOUS MULTIMEDIA DEVICES ALL CONNECTED TO EACH OTHER AND THE REST OF THE WORLD THROUGH DIGITAL NETWORKS



THE CAR CONTAINS A 'CARIN FUTURE' SYSTEM WHICH GUIDES THE DRIVER. THE FAMILY SOON TAKE OF THE MOTORWAY AND DECIDE TO CHANGE ROUTE.



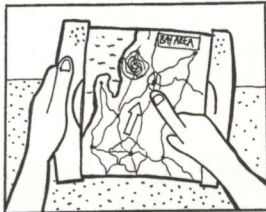
THE PASSENGER TAKES OUT THE 'SCROLLING SCREEN'. IT IS SMALL AND CONDUCT.



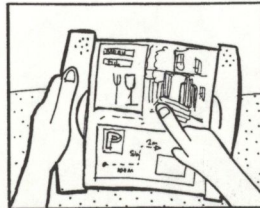
THE SCREEN IS OPENED TO REVEAL A FLEXIBLE LCD DISPLAY. ONCE THE SCREEN IS FULLY OPENED IS BECOMES RIGID.



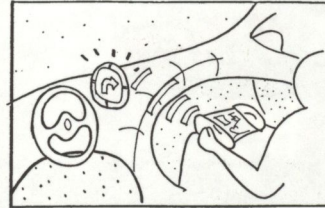
THE DISPLAY IS TOUCH SENSITIVE AND CAN BE USED ON THE LAP OF THE PASSENGER.



USING HER FINGER TO INTERACT WITH THE DISPLAY, THE PASSENGER ACCESSES THE MAP AND DECIDES ON A NEW ROUTE.



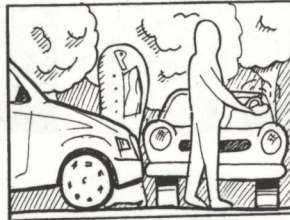
SHE IS ALSO ABLE TO SELECT A RESTAURANT ALONG THEIR ROUTE WHERE THE FAMILY CAN STOP FOR LUNCH.



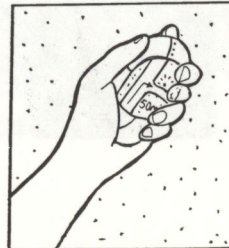
THE COMPLEX MAP ROUTE IS TRANSLATED BY THE 'CARIN FUTURE' SYSTEM INTO SIMPLE DIRECTION INSTRUCTIONS WHICH APPEAR ON THE DRIVER'S CARIN DISPLAY.



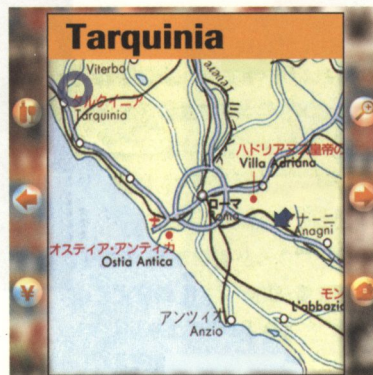
THE CHILDREN IN THE BACK OF THE CAR ALSO HAVE A 'SCROLLING SCREEN' WHICH THEY CAN USE TO WATCH WHERE THEY WILL BE TRAVELLING TO.



AFTER THE FAMILY HAVE PARKED THE CAR, THE CARIN SYSTEM DOWNLOADS THE DIRECTIONS TO THE RESTAURANT TO THE PERSONAL SHIVA.



THE PERSONAL SHIVA HELPS THE FAMILY TO FIND THEIR WAY FROM THE CAR PARK TO THE RESTAURANT.

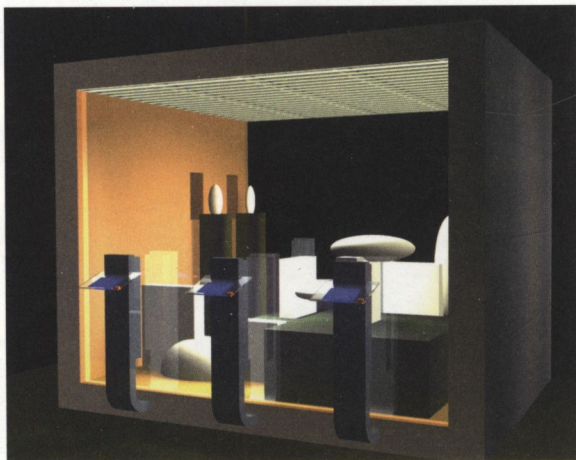
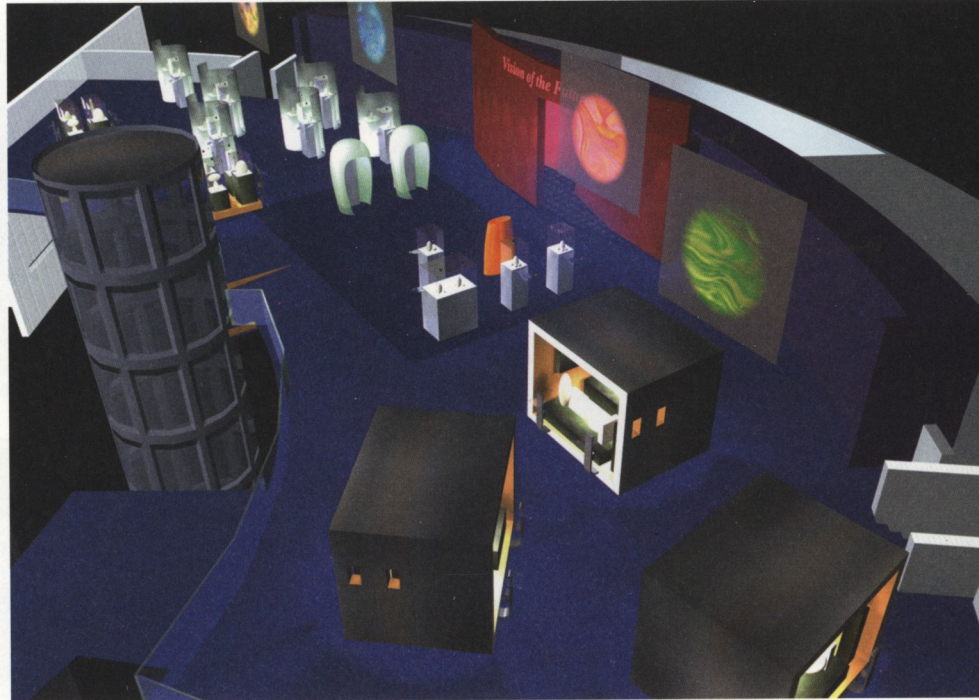
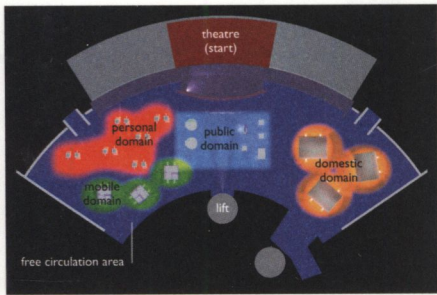


model making

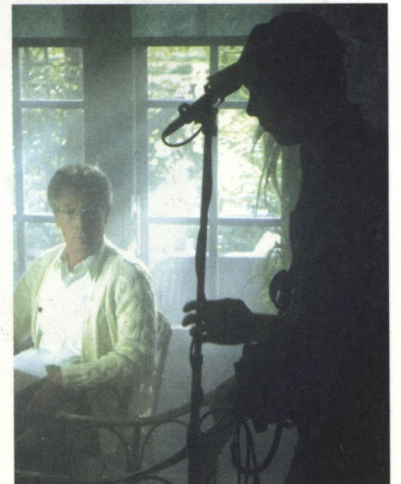


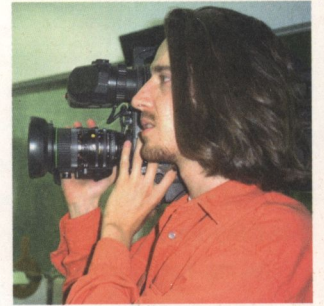
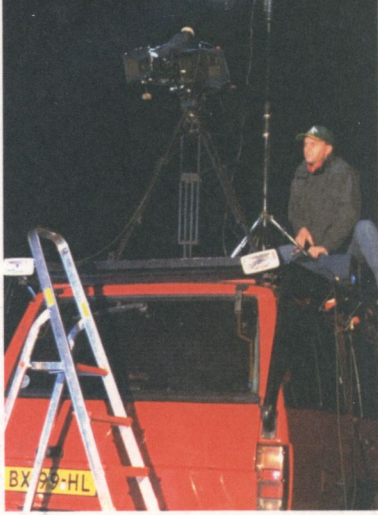


exhibition design



films







the socio-cultural horizon

"The trouble with our times," wrote the French poet Paul Valéry, "is that the future is not what it used to be." Once we seemed to be evolving gently towards the future. Now the pace of change is accelerating exponentially and the future seems to be racing towards us. Time itself is becoming compressed. And not only time. Communications networks are squeezing distances and bringing us closer together: space, too, seems to be contracting.

The ubiquitous chip, the integrated circuit, is largely responsible for these dramatic changes in our experience of these two primary dimensions. Many homes now contain more computing power than was available in the whole world fifty years ago. In minutes, we can gather information from almost anywhere in the world that armies of clerks once needed months to find. Each year, real-time video telephony and electronic mail are becoming more widespread.

One psychological result is that we no longer see ourselves as static in relation to time and space: we feel time is accelerating and we must keep up with events occurring in the world around us. Another is that as we become more mobile physically, and more connected 'virtually', space too seems to enlarge, making us 'virtual nomads' with few fixed points of reference.

It is this development that seems to underlie many of the emerging and latent trends in industrialised societies. Based on extensive research on cultural change, and taking the dimensions of time and space as our basic parameters, we developed an abstract

model which was then applied to specific real-life situations in order to pinpoint potential trends in society. These were then compared with the views of an international panel of experts. Throughout, we sought points of convergence with the work of respected futurologists such as Toffler, Naisbitt, Gaudin, Popcorn and others. The result was, we believe, a relatively clear picture of socio-cultural attitudes and preoccupations in the year 2005.

time

There are at least two ways in which people perceive time today. One is as an ever-accelerating rate of living. People have a sense that a lot is happening at once, that they are doing many things at the same time, that they never have enough time, that they are constantly struggling to keep up with the demands of modern life. Another contrasting way of perceiving time is as essentially non-existent. Those are the moments when time seems to stand still: moments of rest, meditation or wonder. They are also the moments when we become aware of our relation with the past, our heritage, and when we see ourselves as part of a continuing tradition.

These two modes of perception sometimes appear to be opposed and even incompatible: the pressing demands of the present and the immediate future often prevent us from appreciating the larger picture. The sense of time as rushing along, as frantic activity, seems to be a phenomenon of our present age, whereas an awareness of our timeless links with a larger whole seems to be rooted

deeply in human experience of many earlier periods and cultures. People are finding a need to reconcile these two modes, which, interacting as trends alongside each other, are giving rise to new patterns of behaviour.

faster and faster

In many advanced societies, the worlds of work and play, education and entertainment, industry and the arts, and the public and private sectors are no longer strictly separated; at home and work, this is leading to the disappearance of the 'break'. We rush from one appointment to another, from one activity to the next, with hardly a pause for breath. Transactions and communications continue around the world at the same pace, whether it is day or night and whether we are awake or asleep. Businesses are forming alliances, international borders are becoming more diffuse, and the industrial, financial and commercial systems are becoming globally integrated. At home too, we perform many activities at the same time. We cook while watching television, monitor children sleeping in the bedroom while entertaining friends in the living room, and work while listening to music.

Technology enables us to perform these simultaneous activities (multi-tasking). It can feel as if it is no longer natural, human rhythms that determine the rate at which events succeed each other, but rather the accelerating pace of technology. Individuals may reject, endure or capitalise upon this phenomenon, but it unquestionably forms part of the experience of a growing number of people.

quality time

Since time can no longer easily be defined in terms of the alternation between periods of activity and rest, people have started to restructure according to new criteria. One of these is the depth of meaning it gives to their lives.

As the present moment becomes crowded with activity, there is a danger that in the relentless rush to be busy we will lose sight of ourselves and become severed from our roots. To try to restore the balance between activity and rest, between being swept along and being anchored, people are starting to seek meaning by looking at their own personal or family histories, trying to bridge the gap between past and future. The current interest in the past, in our roots, and in what, individually and collectively, we have been and will become, is an expression of our need to find that dimension of quality and depth of experience which we fail to find elsewhere, either in the rapidly changing present or in an unpredictable future.

space

As with time, there are two ways of perceiving space. On the one hand, people are defining space in narrow, local terms; on the other hand, they are eliminating as many boundaries as they can.

a sense of place

We, as people, like to have our own clearly defined space. We need to be able to trace its borders, to make it comfortable and recognisably our own. This is particularly the case when the 'outside world' threatens to

become confusingly complex and difficult to control.

This is a development that can be seen on many levels. With the break-up of former Communist states, we have seen the resurgence of many national and ethnic identities which had been suppressed for decades. Religious fundamentalism may be considered a similar assertion of group identity, albeit less geographically defined. On a more personal level, we see a tendency for people to withdraw into the security of their own home and social group, rather than participate in community activities and projects. This trend is often referred to as 'cocooning', the sense of feeling comfortable in one's own territory. Personalising one's own space like this leads naturally on to the personalisation of other possessions as a statement of identity.

no borders

However, while some identities are being reasserted, in other contexts they are being merged. On the political level, we see increasing cooperation, as shown in the gradual integration of Europe and the establishment of large free trade areas in the Americas. On an individual level, cooperation and integration is also increasing. Thanks to telephony, e-mail and remote technologies, we can effectively be present in places far away. We can communicate over vast distances with an immediacy and ease that were unthinkable only a few generations ago. We can also join together in 'virtual' communities while remaining members of our own local physical community. As a result, our subjective experience of distance has changed, and physical borders no longer

limit our ability to communicate with people in distant places.

socio-cultural trends

These perceptions of time and space are two major parameters which will determine how people act and think in the coming years. However, these perceptions will interact with a number of other, more specific trends to give rise to a wide variety of behaviour patterns. We identified a number of these, to which we gave the following names: Subjectivity, Sociability, Exploration, Connectivity, Ethics and Holism.

subjectivity

In the present age, more than in any previous age perhaps, people are searching for identity. Recent developments in society, a falling-away of certainties and the destabilisation of monolithic power blocs and sources of authority have created in many people a sense of doubt about their own position. In addition, the rapid pace of modern life is leading many people to take time out to reflect more on what the 'true' values of life – specifically their own life – might be.

sociability

In order to truly be ourselves, we need other people. The traditional source of reaffirmation and support has always been the family. However, this unit has been fragmenting steadily over recent decades. As members of the family rush in and out, on their way to and from activities outside the home, occasions such as family meals and even holidays are tending to happen less frequently. Pursuit of employment often leads family members not only to move out of the home, but also away to another part of

the country or world.

Naturally, people have been trying to stay in touch with each other. Traditional means, such as letters, notes and the conventional telephone, are now being supplemented by answering machines, mobile phones and e-mail. As a further development in the near future, families may evolve in two directions: both will lead to a reinforcement of relationships. Firstly, we may witness the reappearance of collective activities within the home. Sing-songs around the piano are not likely to return, but using the computer, for instance, which is generally an individual pursuit, may become more sociable if the functions of television and computer are combined. Secondly, we are likely to see the emergence of products and services which link up people living far apart in much more emotionally satisfying ways than are currently available.

exploration

A sense of curiosity and exploration has always been an important part of the human spirit, but the manner and the extent of its expression may vary from period to period and from culture to culture, depending on the prevailing social, political, economic and technological circumstances. Today, technology is offering us ways of exploring a new world – that of 'cyberspace', the 'virtual' world – as well as finding out more about our 'real', physical world.

This new spirit of adventure is most clearly visible in the current interest being shown in the Internet and virtual reality. The idea of 'surfing' around the globe, hopping from one World Wide Web site to another, e-mailing to people you have never met and arranging

meetings in cyberspace, has surely captured the popular imagination in much the same way as talk of the New World of the Americas must have done in the sixteenth century.

Geographical exploration was not the only manifestation of the Renaissance spirit: science, theology and the arts were explored as well. Today we see a whole range of activities which also express a mood of adventure and exploration. Probes and extra-terrestrial telescopes explore space, while microsurgery and genetic engineering investigate micro-environments. On a more everyday level, the quest for 'extreme' experiences such as those provided by dangerous sports and drug-use may all be seen as part of the same trend.

connectivity

People are increasingly viewing the world as a place in which all the various parts are connected with each other. Improvements in satellite links, the advent of digital broadcasting, the emergence of cellular telephony and the rapid growth of computer networks are heightening this sense of connectiveness. And, for businesses, global markets are making it necessary to take into account what is going on outside their home territory.

There is an appreciation that getting in touch with someone else is not as difficult as it may once have seemed. Even world political and business leaders are 'accessible' on the World Wide Web. Greater media coverage of celebrities and flatter corporate structures have also meant that the psychological distance between people operating in different spheres has shrunk dramatically.

This development is reflected in a variety of individual behaviour patterns. One of the more obvious of these is the increasing use of telelinks: telephone, pagers, tele-text, fax and on-line computer connections. Many of these provide immediate feedback. This is important in a complex society in which we need to manage the different aspects of our lives. We can do this if we can link up rapidly with all sorts of 'experts' or sources of information. These may be official sources or they may simply be colleagues or members of our family who are in possession of information. This explains why mobile telephony is spreading at a tremendous rate, and it also suggests that new on-line services via Internet or interactive television will proliferate in a similar way.

ethics

The search for new rules and values is becoming apparent in various fields, from politics and business to the environment. In many countries around the world, political and judicial authorities are conducting campaigns against corruption. And many people and companies are responding to appeals made to their personal responsibility to respect the environment and are actively working to conserve energy and minimise waste. The individual and the family are becoming more pro-active in their own ethical codes and values. With developments in the fields of communication and networking, there is a need to stimulate the creation of new rules which support these developments.

holism

Holism deals more specifically with the search for environmental balance, with the trend towards seeing ourselves, the natural world and the man-made environment as constituting a whole. We are increasingly becoming aware that treating the environment carelessly in one country can affect the health and well-being of the inhabitants of another. And the global threat posed by the depletion of the ozone layer and its link with matters as diverse as the use of aerosols in the home, commuting by car and the felling of trees in the Amazonian rain forests has reinforced the feeling that 'we are all in this together'. In addition, the migration of individuals from poorer to richer countries is directly confronting people with the needs and attitudes of others.

This leads some people to be 'green activists' or to work for human rights and civil liberties around the world. Others simply modify their behaviour, avoiding environmentally questionable products in the supermarkets, buying lead-free fuel, or not wasting water. Though eco-awareness may vary from place to place and take many different forms, it will undoubtedly have a far-reaching effect on everyone's lives in the near future.

This holistic attitude is no longer simply reflected in conservation, however. On the contrary, it is developing into a tendency towards the elimination of all boundaries between ourselves and our environment in the widest sense. It even extends to the mind and the body. There is a growing appreciation that health and well-being depend not only on physical

fitness or taking medication. They also require a balanced lifestyle.

emerging sensitivities

By combining the variables of space and time and the socio-cultural trends described above, we were able to develop an idea of how people will behave in the future. Specifically, we identified a number of socio-cultural 'sensitivities' which would serve as useful input to the design process.

These sensitivities are potential or latent trends affecting human behaviour, psychology and culture. They are the outcome of a social 'chemical reaction'. How they develop further will depend on how society in general reacts to them. They may be accepted, rejected or simply ignored. If they are accepted, they may ultimately develop to become well-established trends.

clouds, showers and hailstones

Neither the content of a sensitivity nor the speed or path of its evolution is pre-determined. However, we can distinguish at least three phases through which it may potentially pass. A sensitivity, like a cloud, may disperse, remain nebulous or become heavier. In other words, if a sensitivity is ignored or if circumstances discourage its further development, it will either disappear or remain in embryonic form. However, if it is picked up by society and is sustained, it will begin to spread through the community. Finally, given the right conditions, just as raindrops may solidify and fall to earth as hailstones, so sensitivities can become sufficiently substantial to penetrate society and eventually become the norm.

The fact that society is increasingly unpredictable makes any strictly deterministic approach difficult: the best we can do is indicate the existence of these potential or latent developments. The final stage of development they will reach can only be discerned in hindsight.

The following examples are three of many sensitivities which are used to illustrate the maturity of a trend.

living apart together

A sensitivity which is currently at a very early stage is the tendency for certain people to be willing to enter into a close relationship which, because of geographical distance or because of a reluctance to be confined in a conventional relationship, is lived out in alternating periods of separation and togetherness. The periods of togetherness may be only sporadic but they are experienced intensely. It is difficult to know at the moment whether this type of 'living apart together' relationship will become more or less widespread or whether it will simply remain the occasional phenomenon it is at present.

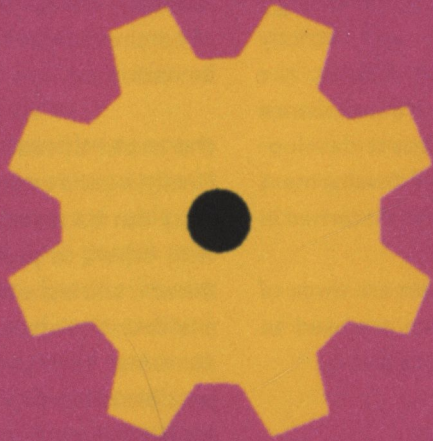
virtual communities

A sensitivity that has been absorbed by broad segments of the population in advanced societies but which is not yet entirely reflected in consumer behaviour is the tendency towards 'virtual' communities. This involves establishing relations via computer networks with other people (individuals or small groups) with whom we feel an affinity, wherever they are in the world. In the past, we could only form communities with those who lived in the same

locality. Through the widespread use of communications technologies, that limitation can now be removed.

the multi-dimensional consumer

Finally, a good example of how a sensitivity can be sustained and combined with others to produce a well-established trend is the recent rise in industrial societies of the multi-dimensional consumer. Until a few years ago, it was possible to identify clear-cut groups in society whose members could all be expected to show the same behaviour in a variety of respects. However, we now see that the consumer's behaviour is often quite unpredictable. People are adopting a flexible, pick-n-mix approach to their lifestyles and habits, and there is little pattern to the variety that occurs.



Predicting the potential of a technology is difficult because its success depends not only on its intrinsic value as an innovation but also on a wide variety of 'real-world' variables. These include commercial viability, social need, governmental policies, international standards, and often other technologies which may boost its widespread acceptance.

In reviewing technologies which now exist or look extremely promising, we decided to concentrate on those which have the most realistic chance of success and which are most relevant to Philips' field of operations: electronic engineering, software, materials, lighting technology, telecommunications and medical systems. We concluded that the most far-reaching changes in the next decade are not likely to be the result of dramatic new innovation. Rather, they will almost certainly result from the focusing, refining and merging of existing technologies and their extension to more areas of our lives.

computing power

Silicon chips – small pieces of silicon on which large numbers of electrical circuits are integrated – have been doubling in power every eighteen months for the last two decades. Exactly how long this process can continue is uncertain, but many people believe that it will go on at this rate at least until the turn of the century, and probably beyond. Indeed, it is possible that by the year 2000 we will be able to store more information than we currently either want or need. In addition to this massive processing and memory capacity, chips are also becoming

physically smaller and more functions can be accommodated on the same surface area.

voice recognition and synthesis

The recognition and synthesis of human speech requires vast amounts of memory and computing capacity because everyone's voice is different and every utterance is acoustically unique. Recognition systems currently available can only cope with either limited vocabularies (as with some telephone information services) or input from a limited number of users (as with computer instruction programs and speech-to-text dictation systems). As chip capacity increases, these limitations will be overcome.

Speech-synthesis chips which turn text into speech will soon be possible and could, for example, be incorporated into fax machines to read messages aloud to blind or partially-sighted recipients.

software agents

Software developments are increasingly enabling systems to 'think for themselves'. Artificial intelligence is now reaching the stage where systems can be programmed to predict situations and outcomes based on previous experience, and then take action accordingly. By using 'fuzzy logic' (reasoning and acting on the basis of approximate data), systems can continue to operate efficiently where accurate data is either not available or not strictly necessary – in much the same 'rough and ready' way we ourselves often work.

Currently, computers and other devices only respond to direct com-

mands or instructions from the user. Nothing happens unless these commands are entered by keyboard, mouse, touch screen or button. The device is passive and offers us no help unless we ask for it. However, software companies are currently developing what are called software agents.

These are software programs which 'know' what the user wants to do and can act autonomously on his or her behalf. The user will put a problem to the agent, and the agent will then monitor events and perform tasks which meet the user's goal. It will search for information the user needs regularly. It will monitor changes, and even represent the user where necessary. It will learn from experience, automating regular patterns. At any one time we may have a number of these agents working for us: they will be able to expand their knowledge base by learning about us from each other.

It will be rather like having a small community of personal 'helpers'. This is a development which is almost certain to change the way we interact with other devices around us. We will begin to view them in a more personal way, as devices which work together with us. And this, in turn, will make it increasingly natural for us to communicate with them through human channels, such as speech and gesture.

virtual reality

In combination with sensors which detect our movements and devices which convey the sensation of touch to our bodies, software programs can rapidly generate computer images and reactions which give us the experience of being in another, 'virtual' reality.

There are many applications in the area of games and amusement. And virtual-reality devices can also be used to allow us to experience dangerous or otherwise difficult activities in a realistic way, such as training people to cope with hazardous situations or perform complex operations.

smart materials

Seemingly inert materials will become intelligent and start interacting with their surroundings. They will develop their own 'senses' and, chameleon-like, change their characteristics depending upon their environment. Old materials will combine their individual strengths to create powerful new materials. But as well as 'improving' on nature, we are also discovering how much we still have to learn from it.

Smart materials modify their behaviour under specific circumstances, changing their shape, stiffness, position, natural frequency or other mechanical characteristics in response to changes in temperature or electromagnetic fields. Such materials are already in use in the aerospace and engineering industries.

There are several different types of these materials. Shape-memory alloys, for instance, are metals which, at a certain temperature, will return to their original shape after having been stressed. Piezo-electric materials expand and contract in response to an applied voltage, while magneto-strictive materials expand in particular magnetic fields. There are also liquids which increase in viscosity in response to a stimulus. These materials display a kind of intelligence which makes them seem 'alive'.

plastics become active

Once plastic was only used as an insulator. However, by creating a structure made up of several layers of plastics, each with a different electrical charge, it will be possible to simulate the effect of touch. In this way, a robot's hands could be made much more sensitive; or we could develop sensitive prostheses for disabled people.

It is also possible to make materials alternate between being transparent and opaque. We are all familiar with the sunglasses which become darker as the sunlight becomes stronger. The same principle can now also be built into windows or textiles.

The colour or transparency of materials can also be made to change under the influence of an external stimulus such as touch, temperature or light of a specific frequency. The handle of a toothbrush, for instance, can be made to change colour after being held for two minutes, encouraging children to brush their teeth thoroughly by introducing an element of 'magic' into the process and providing parents with a way of checking.

advanced composites

Much research is being done at the moment on combining materials to produce others with improved properties. These are known as advanced composites or hybrid materials. Glass, for example, has certain excellent properties, but is very brittle. Some plastics, on the other hand, are very flexible, but lack the hardness of glass. It is now possible to make molecular matrices into which the best characteristics of a number of different

materials can be embedded. Advanced composites which are as strong as steel but are one-fifth of the weight are already being used in the construction industry.

back to nature

Natural materials change under the influence of use and age. In comparison, plastics change very little. Yet the ageing of natural materials, although detrimental for the functioning of objects made of them, is nonetheless often perceived as imparting a certain beauty – the noble patina of age. Old plastic, on the other hand, is rarely admired. It would be ideal if plastics could be enhanced by giving them certain properties of natural materials. One line of experimentation in this area is to make new 'plastics' from natural materials such as cellulose.

In another development, known as 'biomimicking', scientists are increasingly looking to nature to find new ways of improving artificial materials. They are building into them extra properties or functions, in much the same way that nature builds many functions into a single material. Human skin, for example, incorporates sensation (nerves), cooling (perspiration glands and pores), heating (hair), protection from the sun (melanin formation), and so on.

sensing the world

Important advances are also being made in manufacturing. Using 'nanotechnology', the micro-electronic techniques developed in chip technology, researchers are creating a variety of microscopic devices which go beyond

merely switching electronic circuits. New technologies make it possible to produce what are known as micro-electromechanical systems (or MEMS, for short). These are constructions built on the scale of chips, one-millionth of a millimetre thick. They make it possible to link up micro-electronics (both hard- and software), mechanics and chemistry. One type of micro-electromechanical system consists of a pillar on which a tiny beam is mounted. This beam can move or vibrate in response to some external stimulus. By measuring that microscopic movement, we can 'sense' the presence of the stimulus.

MEMS are already used to detect the degree of deceleration that a car undergoes during a collision to make the airbag inflate at the right moment. The deceleration sets the beam in motion and the extent of the motion is what is 'sensed'. But this application, significant as it is, is only the beginning. MEMS also make it possible to sense smell. Smell consists of molecules, and if a molecule of a particular weight settles on a beam which is continuously vibrating, the rate of vibration will change due to the weight of the extra molecule. Detect the extent of that change and you have detected the smell.

new light technologies

The field of lighting will see exciting new developments in the near future. These include technologies for the transmission of light over considerable distances, along glass fibres or light-reflective tubes. Light will also become flexible, with the introduction of light-emitting polymers.

remote-source lighting

Remote-source lighting allows light to be produced at one location, transmitted along a pipe with minimum loss, and then released at particular points. An entire underground car park, for instance, could be illuminated from a single source using this system. Besides offering the possibility of 'tapping off' light anywhere, it also facilitates maintenance.

light-emitting foils and polymers

A quite different type of lighting currently under development is one which allows thin, flexible 'sheets' of light. These involve the use of phosphorescent layers on polymer foil to which electrical charges are applied. This flexible light 'sheeting' could be used to provide backlighting for control panels and could also be used in emergency contexts, being incorporated into clothing, for instance. It is completely safe and can be touched without danger.

Another development is light-emitting polymers which involve multiple layers of 'doped' plastics (plastics which have been made conductive). Light is created by electrons jumping from one layer to another.

fibre optics

The technique of transmitting light along glass or plastic fibres is known as fibre optics. It can be used for applications as diverse as exploratory surgery and animated billboards. In more familiar realms, we will soon see fibre optics appearing in the car, with lighting generated at a single source and relayed through the entire lighting

system – headlights, rear lights, interior lights, and so on. Not only will this make maintenance easier, it will also save space.

faster data transmission

The principles of fibre optics also allow a highly efficient method of signal transmission using a rapid series of light pulses. Fibre-optic networks are now used to transmit voice, video images and data. They are up to a hundred times faster than traditional copper wiring. The voice, video and data are translated into digital signals (in this case, light signals).

Fibre-optic transmission can be made even faster. Every time a light signal has to be converted into an electronic signal for intermediate switching or processing purposes, the rate of transmission is slowed down. To solve this problem, fully optical networks are currently being developed. These eliminate all such conversion moments, so that the only time light signals are converted into electronic signals is at the very end of their 'journey', when they enter a computer for final processing.

Speeding up the transmission process will create greater capacity for data. But increasing speed will not be enough to cope with all the signals we will want to send. Real-time video with realistic movement, for videophoning or video-conferencing for instance, requires a lot of signals to be transmitted in an uninterrupted stream. New ways of compressing data and of sending more at one time will therefore be needed. One method that is currently being investigated involves treating the light signals rather like radio sig-

nals, transmitting them on a particular frequency and then receiving them by tuning in to the same frequency. Non-video data, which does not need to be transmitted in a continuous stream, can be transmitted in 'packets', i.e. messages can be split up into small parts which can then be transmitted separately along whichever route is available and reassembled at the receiving end.

telecommunications

Global telecommunications is big business, and wireless telecommunications is its fastest-growing segment. Analysts' predictions made in 1983 as to how many Americans would be using cellular phones by the turn of the century have already been exceeded twentyfold. Annual growth in North America is now running at 50%, and the figure is even higher in Western Europe, Australia, Asia and parts of South America. This great demand is forcing regulatory bodies to make more spectrum available and service providers to make more efficient use of that spectrum by using digital technology.

digital assistant

The first development beyond the mobile phone is the personal digital assistant. This is a wireless handheld computer which can handle text, graphics and audio. It is essentially an enhanced mobile phone with extensions for video and fax. It is quite possible that within ten years, faxing and videophoning from handheld equipment will become commonplace.

Such sophisticated operations need not be difficult, since much of the work

will have been incorporated into the network and will be done for us automatically. Calls will be forwarded to us in the car, the office, or wherever we may be. Numbers will be linked to people rather than places, and satellite positioning systems will pinpoint our location.

medicine

New developments in electronics and telecommunications are already having a considerable impact in the medical field, and this trend is likely to accelerate as the technologies are applied more widely.

networks

Medical computer networks will become more sophisticated, so that patient data will be available immediately, not only within the hospital, but also, via local, national or international telelinks, to doctors in other hospitals or paramedics attending the scene of an emergency. Specialists will be able to diagnose, treat and even operate on patients at a distance. Historical data will also be more accessible for analysis, so that medical staff can learn from each other's experience.

imaging systems

Digitalisation of medical imaging systems will become cheaper and more widespread, permitting more accurate analysis and teletransmission of images. By linking imaging to computer systems, surgeons will be able to plan surgery more accurately and then be guided interactively through the operation itself. Miniaturisation will result in the development of small dedicated scanners which can complement and

relieve the pressure on expensive full-body scanners. The next step will be portable equipment for use in the field, linked by communications networks to a base hospital.

ethical implications

Many new technological developments will raise ethical questions. Take the smart card, for instance. For people, these are mainly used for identification purposes in banking. But, in the form of electronic tags, they are used to identify cattle and pets. Electronic tagging is also used to keep track of, for example, prisoners on parole. But the next step is implantation of an electronic identification device into the flesh. This is already being done with animals. Could we accept implantation into humans?

The increase in personal computing power, access to the information superhighway, and so on, all have the effect of spreading knowledge much wider than it has been spread before. Until now, those with knowledge have had power. Companies have had hierarchical structures, with those at the top having access to all the information and able to make the decisions. New developments may change all that. Corporate structures are set to become more horizontal and more 'democratic'.

Similarly, the rise of software agents will provide many more people with the equivalent of an extensive support staff, hitherto the prerogative of those in power or with the resources to pay for them. This may lead to a considerable 'democratisation' of power structures. Also, we should not forget that, despite price erosion, technology does

not come cheap. The question is: How much is the consumer prepared to pay for new developments? Will people be prepared – or even able – to pay the extra to have a fibre-optics line enter their living room for a videophone or hundreds of channels on their cable TV? Will manufacturers, for their part, be prepared to put vast sums of money into research, development and production if they cannot be sure of recovering their investment?

And finally, the issue of the impact particular technologies have on the environment has to be faced. Will we, as producers and consumers, be able to resist the temptation to avail ourselves of benefits provided by technologies which are less than eco-friendly? To what extent will governments take a hand in guiding development? To what extent will well-intentioned companies be supported by the consuming public?

Predicting answers to such questions is every bit as difficult as predicting other social attitudes. Yet these answers will be crucially relevant to the success of any technological innovation: ultimately, it is social acceptability, not technology, that determines what happens.



















personal domain mind and body

People are becoming more 'multi-dimensional'. They are developing a wide range of interests, taking in old and new ideas, exploring their own and other cultures, and participating in a variety of lifestyles. In line with this trend, products will become more personalised. We will start interacting with them in more natural, human ways. They will be able to learn from us. At the same time, miniaturisation will result in tiny objects that can almost become part of us, worn as a 'second skin'.

Thanks to computer networks and the information superhighway, our social and working life will no longer centre around one place. We will take part in new, 'virtual' communities with people around the world who share our interests. Families will disperse as people become more mobile, and 'living apart together' may grow into a way of life for some.

People will do many things at once, multi-tasking both at home and at work. Time will be at a premium, and managing information efficiently will become a major concern. Software agents will help us organise our time.

Given so much activity, we will seek ways of relaxing and finding stability. We will look for a balance between living in the present and appreciating our past traditions. Personal and family rituals will establish patterns that help to structure an increasingly fast pace of life.

Acknowledging that we are only part of a larger whole, we will want to care for the natural environment. Recycling or upgrading will become a familiar aspect of a product's life cycle.

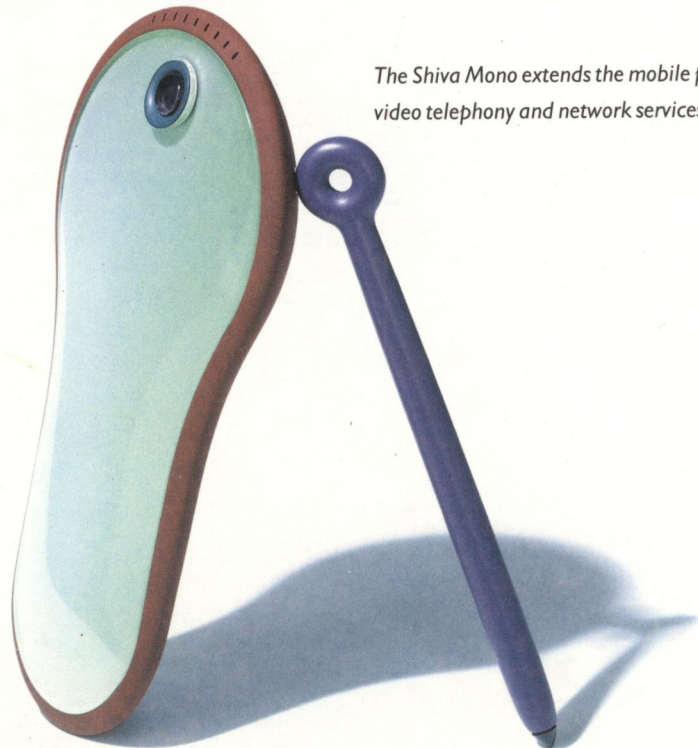
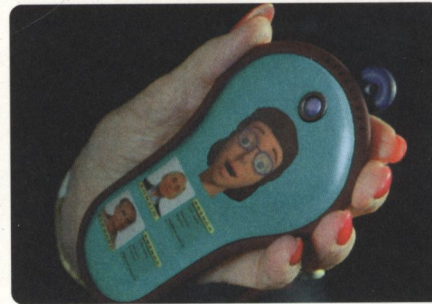
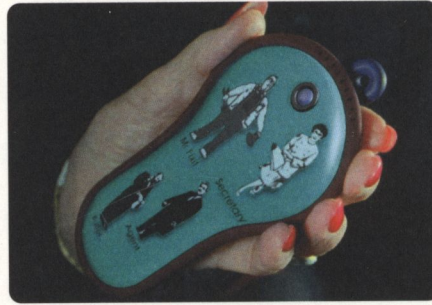
shiva

Increasingly, we are having to accomplish many tasks simultaneously. Contemporary life is characterised by our constant need to access information and to be in touch with each other.

Named after the many-armed Hindu god, Shiva is a personal multi-tasking tool which integrates communication, information gathering and entertainment.

Responding to input via intuitive, natural interfaces such as speech, touch and writing, it can help its user to become more efficient and productive. Not only will the hardware take many different forms, the software interfaces will also vary from one user to another. These devices will adapt to their user's way of working and will learn and grow with use, establishing their own distinctive identity. Shiva can also block all communication and information flow to give its user time to meditate and relax.

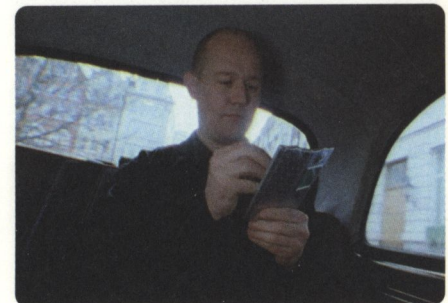
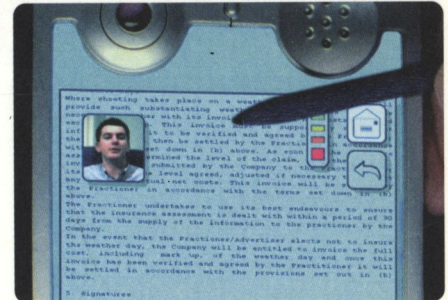
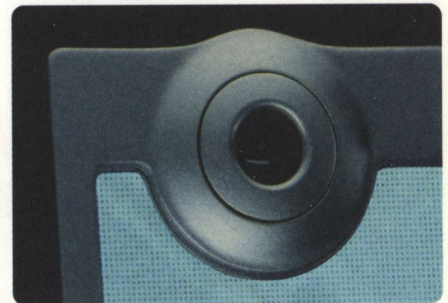
In the field of communication, Shiva offers video telephony, pen-based electronic mail and simultaneous voice translation. It also provides access to networks. Agents filter and organise relevant information in ways that best suit the user. Personal banking, on-line shopping and monitoring of home and car security can be done via Shiva. Entertainment media such as music, film, books and magazines can also be accessed on demand.



The Shiva Mono extends the mobile phone with video telephony and network services.



Shiva Notebook is an enhanced personal digital assistant for professional use.



Shiva Butterfly embodies the same functionality as *Shiva Notebook*, but has been designed in a more playful, colourful style.

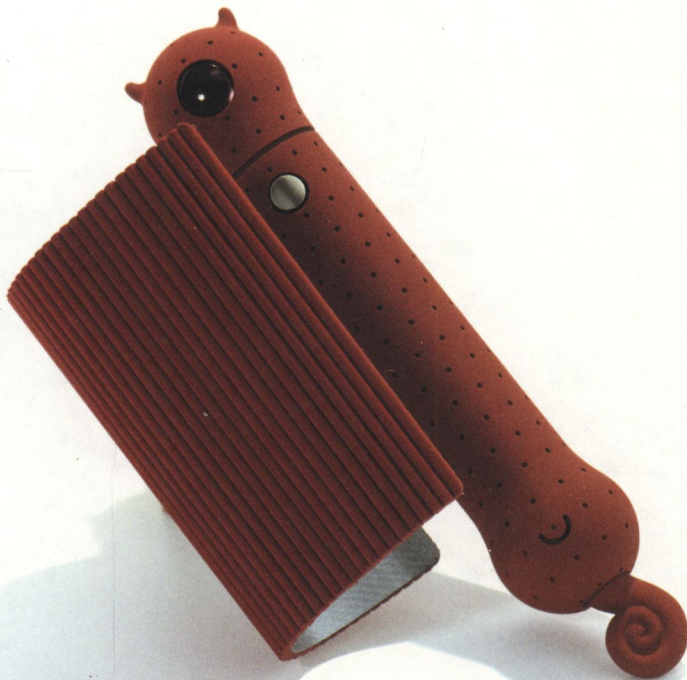
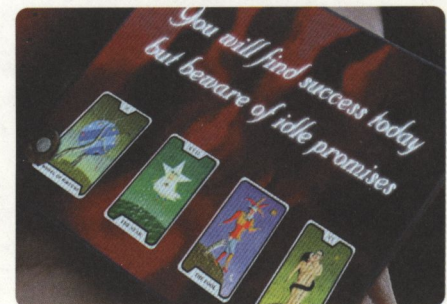


Shiva Compact is a miniaturised and intimate *Shiva* in the form of a make-up compact.



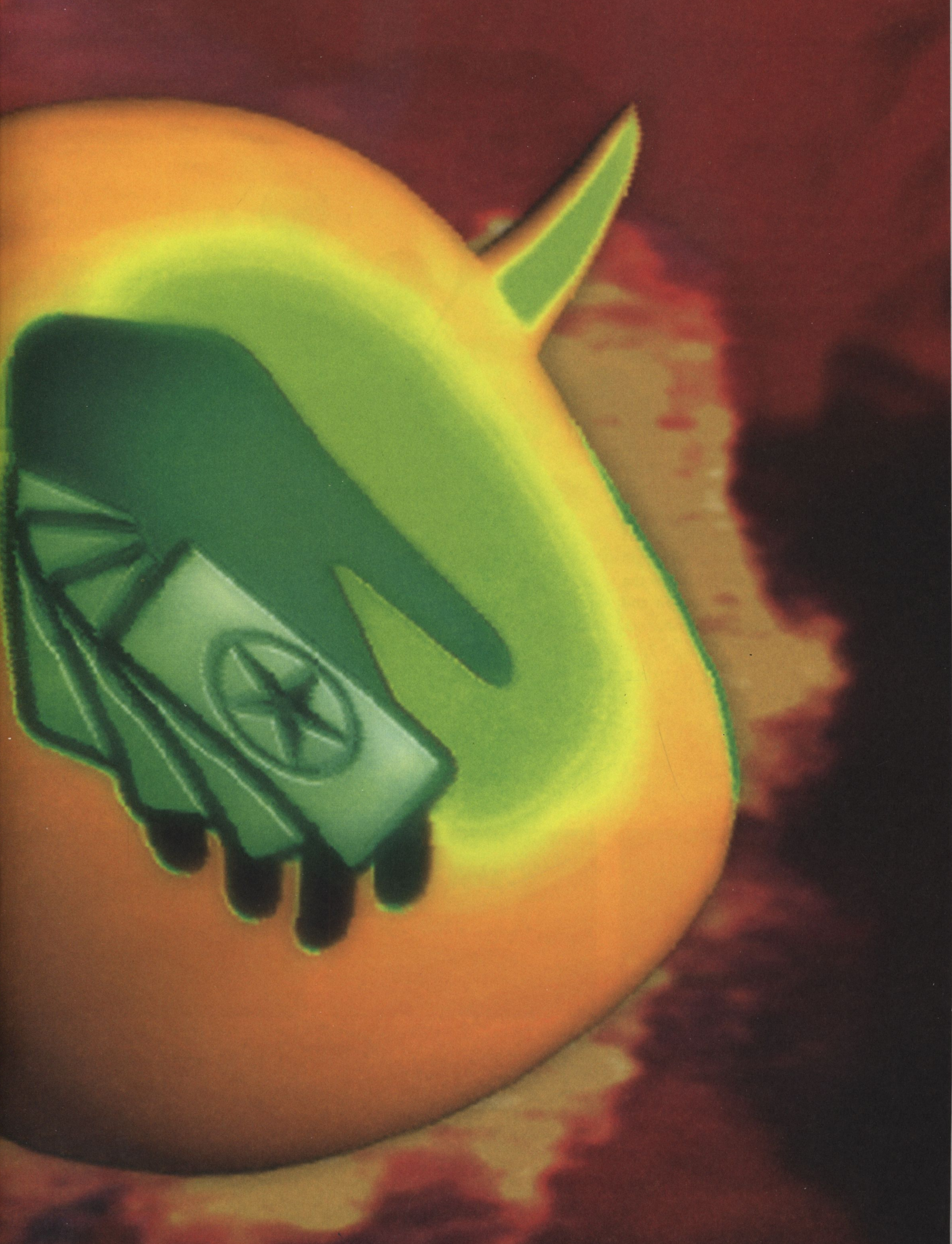
mystic east

The networking capabilities of a device like Shiva will not only be used to access factual data. As modern life becomes ever more complex and demanding, many people will want to satisfy their needs for escapism and fantasy. They may also wish to explore astrology, palm reading, tarot cards, rune stones and other 'alternative' interests. Mystic East is a site on the network where users can meet real or 'virtual' mystics to predict their fortunes. The service is based on two-way communication via videophone, and each application has its own agent to guide the user



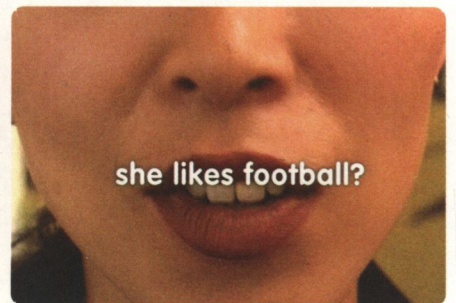
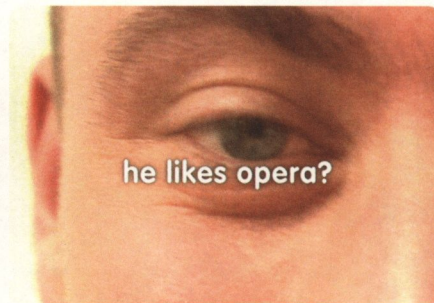
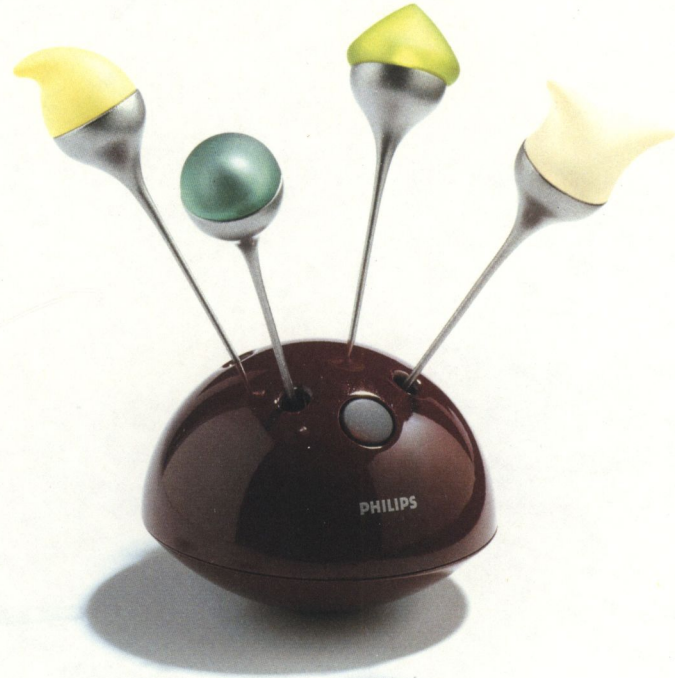
Shiva Devil has a highly distinctive, playful appearance and features a flexible roll-out screen.

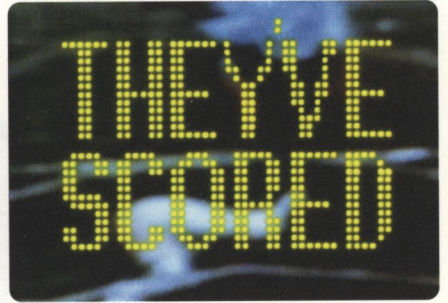




hot badges

Increasingly, the pace of life and demands of work mean that there is often little opportunity to make social contacts. Hot Badges are simple short-range communicators which will facilitate initial contact between people who have similar interests. Hot Badges store and transmit information about the wearer's interests and receive similar information from badges worn by others. When two people with Hot Badges meet and their interests overlap, the badges will signal to each other, telling the wearers that they have something in common. This makes it easier to 'break the ice' and begin talking. Hot Badges are loaded by the user with personal information and charged at home in a special dish.





multimedia clothing

Miniaturisation means that technology can now be integrated into clothing, so that products move beyond being portable to being wearable.

music t-shirts

Although many multimedia products in the future are likely to be versatile and aimed at a broad range of consumers, there will also be a need for more focused, highly personalised products.

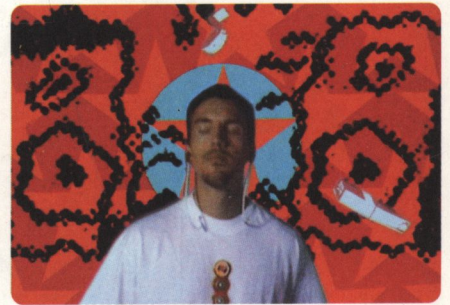
Music T-shirts allow you to listen to your favourite music by simply plugging in the attached ear pieces.

The Radio Shirt can be tuned in to your favourite waveband or radio station, while the Chip Shirt plays pre-recorded chips containing your own selection of music. These shirts are washable garments incorporating miniaturised in-ear speakers and solar cells to provide energy. The technology required is woven into the fabric, making it invisible. The trend toward miniaturised components is allowing many functions to be almost 'built in' to our bodies, creating a 'second skin'.



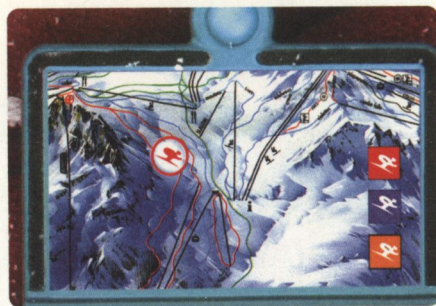


The Chip Shirt plays pre-recorded chips containing your own selection of music.



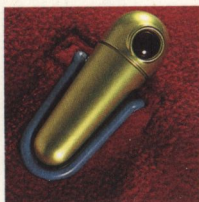






ski jacket

This Ski Jacket features embedded technology for navigation, emergency rescue, communication and entertainment. For navigation purposes the touch screen displays your position on the resort and additional information such as the weather, open slopes and levels of difficulty. While skiing, the microphone and earphone allow you to keep in contact with other skiers. In an emergency the skier can activate the Help Button to alert the rescue service. Finally, the clip-on camera allows you to capture special moments from your holiday.





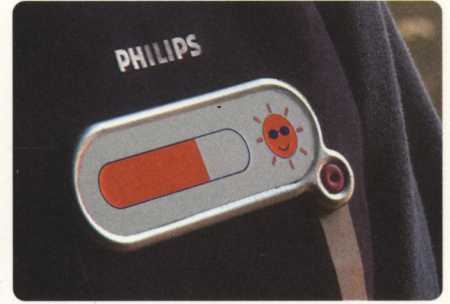
recharge jacket

Using solar cells woven into the fabric, this jacket features a combined recharge and storage area for personal multimedia products. Being able to keep your products charged supports extended use and allows the creation of smaller, lighter and more intimate objects.

The scenario presented here is a child's jacket on which 'tools' are stored, such as a camera, a touch-screen display, a printer, a microphone, a pager and a loudspeaker, providing possibilities for fun, creativity and communication.

For example, the child can prepare a 'film reportage' about nature, an interview with friends including snapshots, or print drawings created on the touch screen.





virtual experience

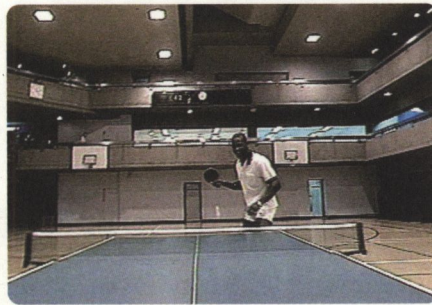
Improvements in computer power and display technologies will offer the opportunity to experience many activities as virtual reality. The availability of this technology will become widespread, allowing individuals or groups to immerse themselves in another environment, activity or game from their own living room, overcoming the limitations of time and space.

immersion goggles

Immersion Goggles are a display system covering the whole visual field. Responding to head movements, they create a near-real simulation of 3D space. Combined with spatial sound and body-motion sensors, this will give the feeling of real experience. The lack of any connecting cables allows full freedom of movement.

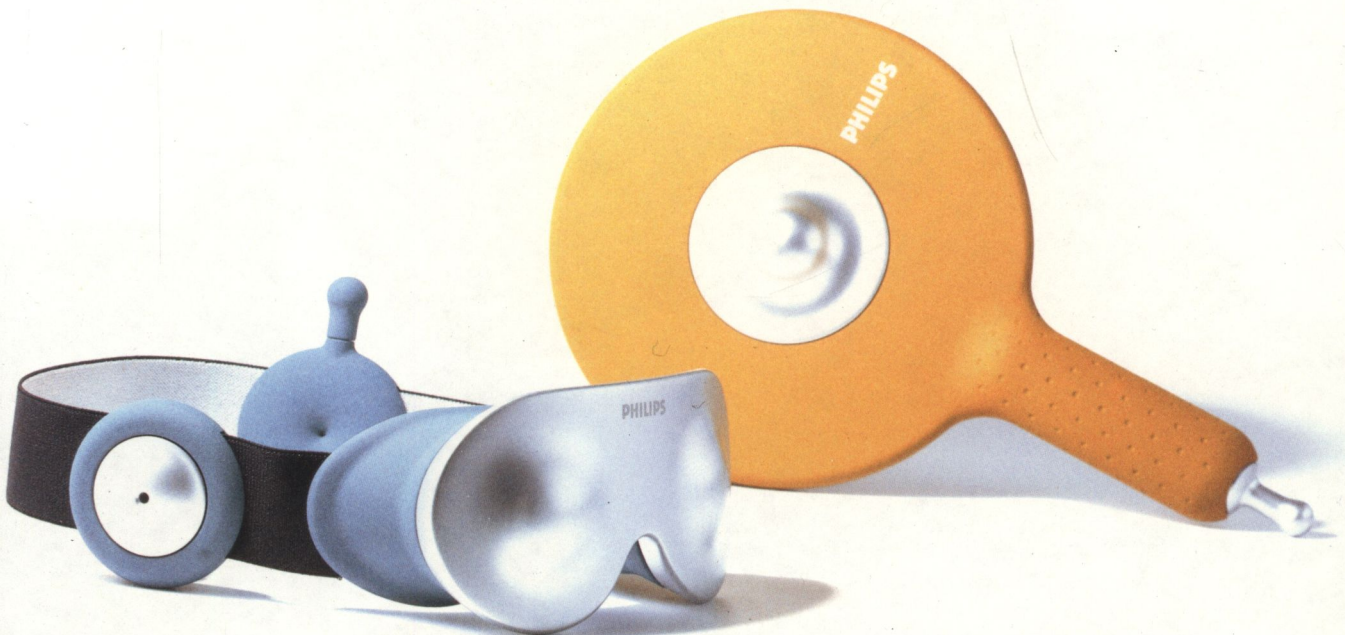
Immersion Goggles could have two broad areas of application. The first is entertainment, in the form of enhanced interactive games, discovery programs and 'edutainment' packages. The second is the field of work, such as simulation programs for training, architectural tools and control of robotic systems.

Miniaturisation will allow smaller, lighter headsets to be created. The images will also be of higher resolution than at present. Combined with faster computing, this will create a seamless 3D space.



ping-pong for one

Ping-Pong For One is played and experienced by wearing virtual-reality head gear and an interactive table tennis bat which includes motion sensors. The player can choose from various levels of difficulty, from beginner to expert, and can even receive expert coaching while playing. Ping-Pong For One enhances the physical aspects of game playing, compared to existing video and computer games. It can be played on your own and may improve physical coordination skills that are directly related to the real sport.



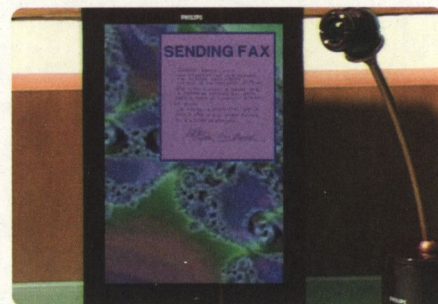
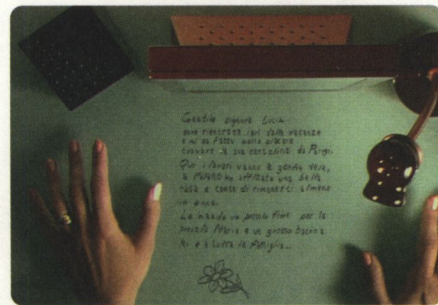
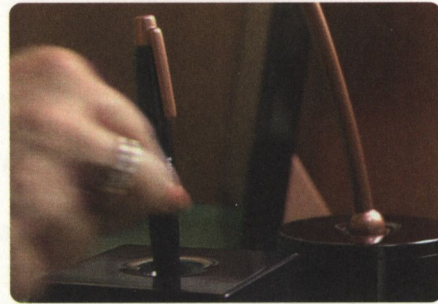


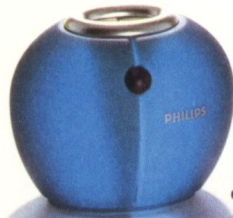


magic pens

magic pens

The Magic Pen is an intelligent input device. Information generated while writing and drawing is recorded. It can be downloaded later from the pen, via the 'ink well', into the computer. It can also be used to record speech, using voice to text dictation. The simplicity of natural interfaces such as writing and speech, combined with the simple metaphor of a pen, allows the development of a product which is easy to use and highly personal.



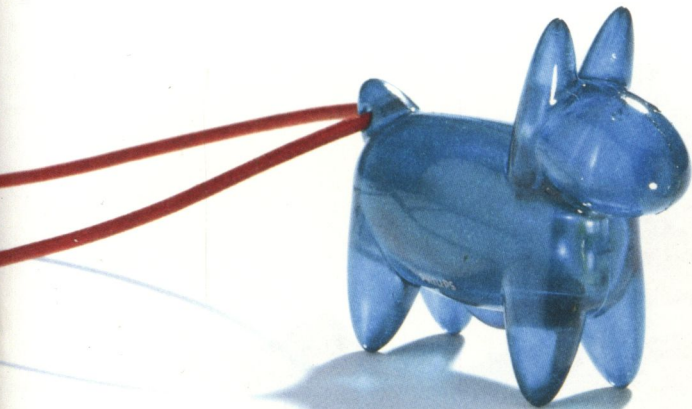
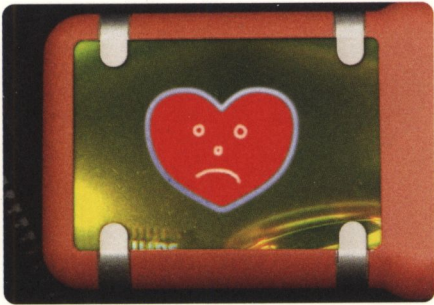


emotional communicators

Emotional Communicators allow people to communicate an expression of love or support to a loved one or friend. That expression may be communicated in a variety of ways: through sounds, visual signs, animated graphics, fragrance, colours or by tactile means. Its purpose may be to give reassurance, recall a memory, or reinforce a bond. The Emotional Communicator is a very personal object and will be highly treasured, rather like a ring that is offered or exchanged as a symbol of emotional commitment.

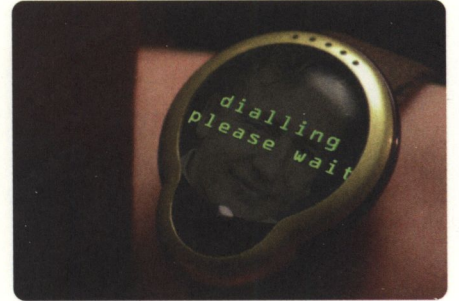
The Emotional Communicator is based on pager technology and intelligent materials. The signal transmitted by the sender and received by the Emotional Communicator is transformed into a stimulus to trigger a change (e.g. of colour or temperature) or an event (e.g. vibration or release of fragrance) in the material. Such simple devices, with a limited but highly personal and non-rational function, form a welcome contrast to the many multifunctional, highly rational communication devices that will also be on the market.





videophone watches

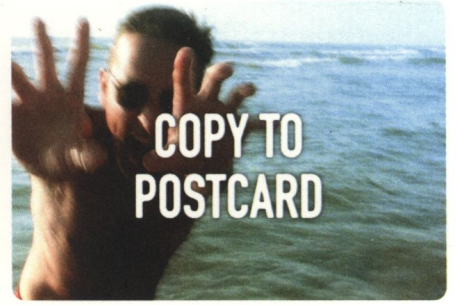
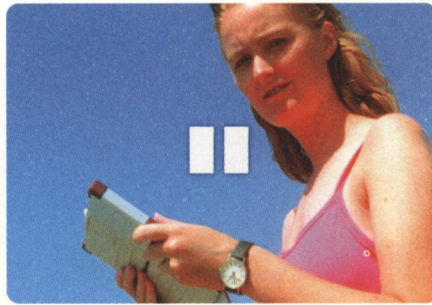
The Videophone Watch is an enhanced communication tool which allows you to stay in touch in a personalised way. It combines the functionality of an analogue watch with cellular video telephony. Appropriately enough, the face of the watch is of an adequate size to display a passport-sized video image of a person. The transition from analogue watch to videophone is made possible thanks to switchable LCD technology (from transparent to active display). The Videophone Watch is worn on the wrist like a conventional watch. The interface concept is based on scrolling through images of people you want to contact, as opposed to dialling numbers or going through lists of names.





video postcard

The Video Postcard is a flat, postcard-sized piece of film in which a chip is embedded. The chip can store a short clip (5-10 seconds) of sounds and moving images. It can be treated as a postcard and sent via conventional post, or it can be used to store short messages for friends or relatives like a photograph today. To load the card, the user selects a short clip of a special moment from the 'video grabber camera'. The clip is then downloaded and stored on a flat memory chip embedded in the postcard. Once the postcard is received it can be activated to playback the message. A link to faraway friends and family, the product is an enhancement of the normal static image into a 'living moment'.

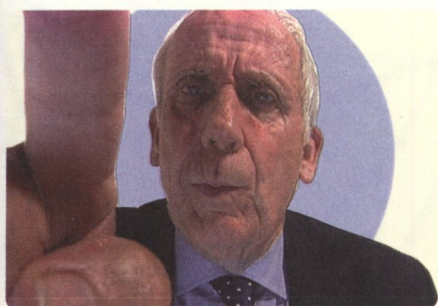
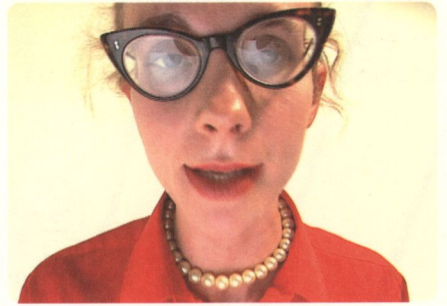
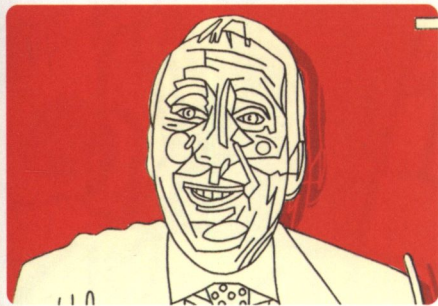
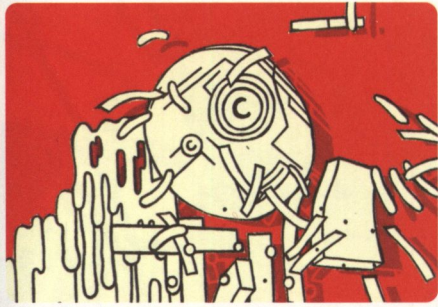
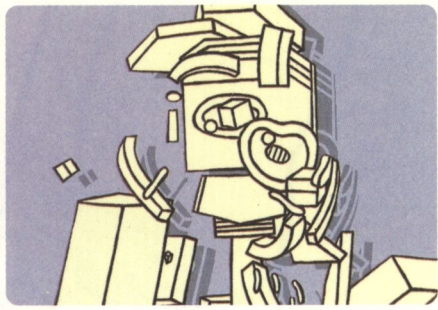




make-up box

When making virtual links via computer networks, there will be times when we wish to retain our privacy and mask our identity. With the Make-Up Box, we can change our appearance by 'morphing' our features and voice to become someone else or to modify the background of our video image so that we can appear to be somewhere that we are not. The product will allow people to live out their fantasies or to play games. The user can feel uninhibited, remaining anonymous or assuming a new identity.









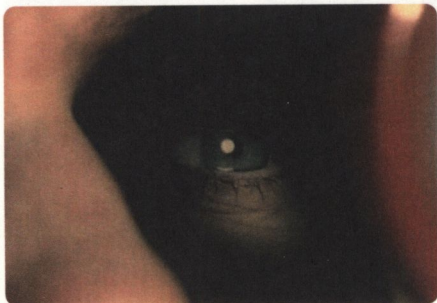
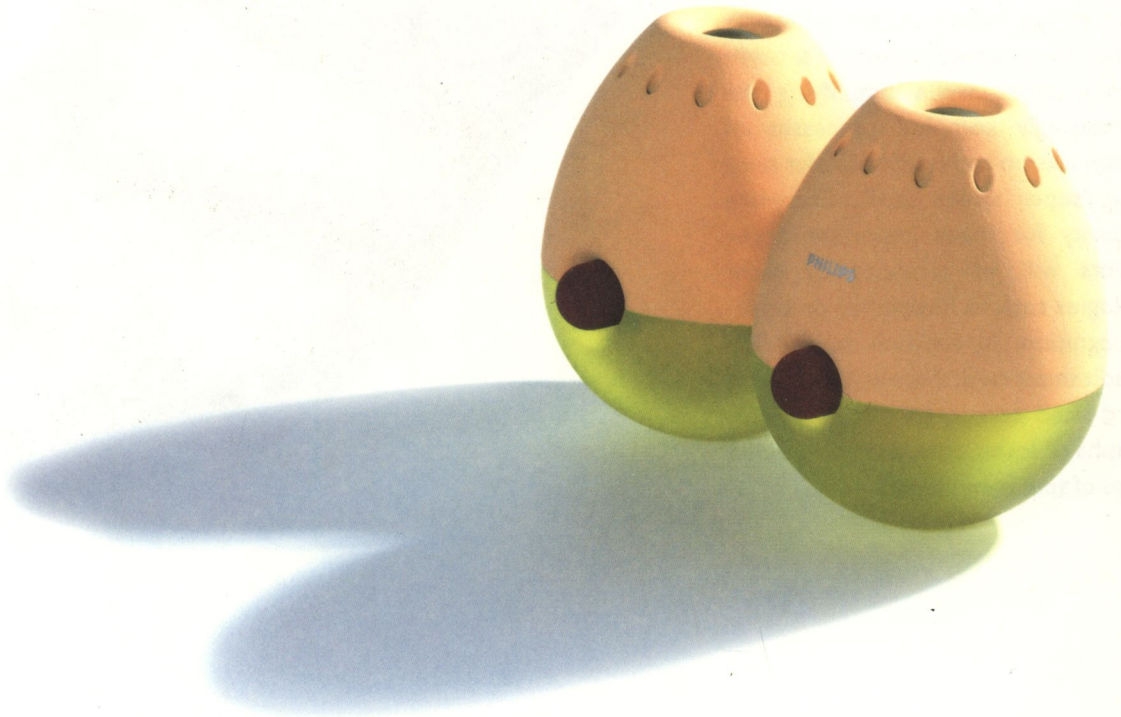
emotion containers

Emotion Containers are small personalised multimedia products, designed to be given as special presents. They have a small screen, a loudspeaker and a scent compartment. The screen can show still images or a video clip, with sound.

Emotion Containers come in various versions to allow people to choose the one they feel would be most appropriate to give. The products are made of rich materials and are meant to last and be cherished by the recipient.

Emotion Containers offer a more sensory way of giving. They are attractive on two levels: as objects in their own right, and as carriers of messages of special significance.

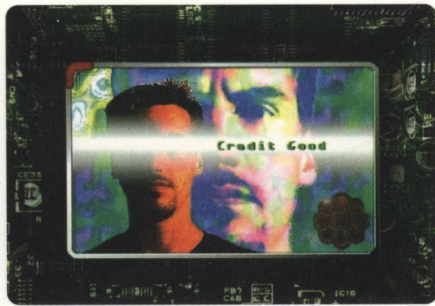
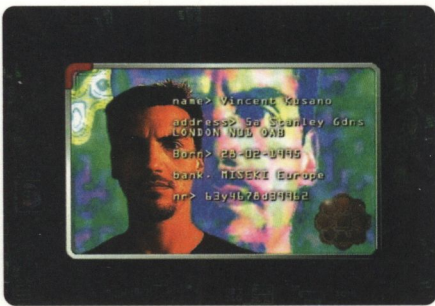




new wallet

The New Wallet is an adaptation of the wallet of today: a container for identification, credit access and emotional or sentimental objects. It retains the personal and intimate nature of a traditional wallet, while simplifying the increasingly complex processes of identification and credit transfer onto one 'super smart card'. Complete security for these important documents will be provided by technologies such as fingerprint or voice-recognition. In addition to the ID/credit smart card, there will be a credit card-sized screen to display photographs of loved ones and short video clips of special moments.



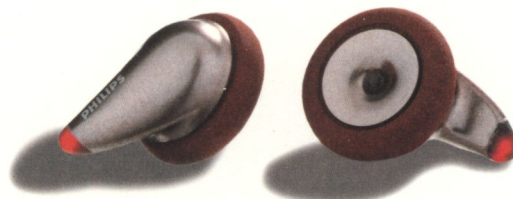
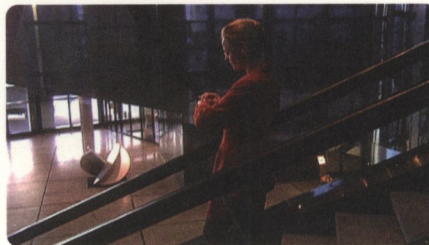
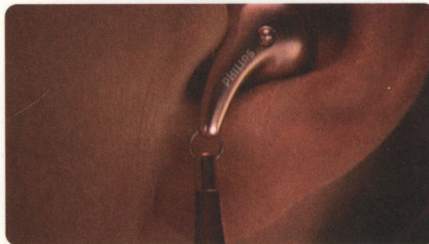


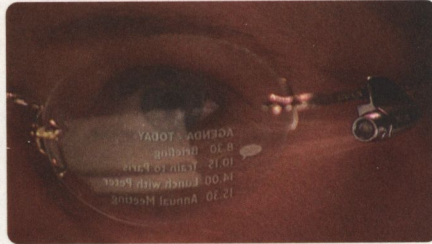
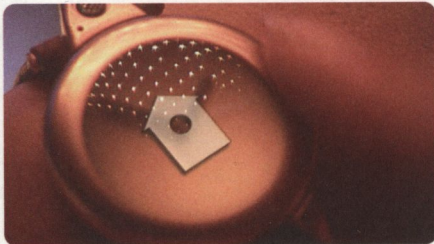
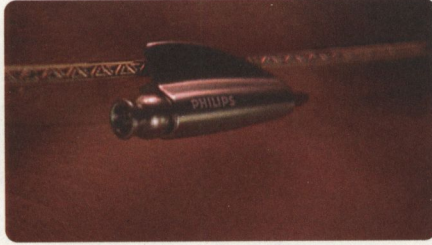
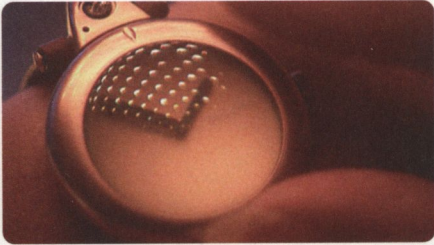
enhanced jewellery

As miniaturisation continues, it will be possible to embed functional technology into jewellery and body accessories such as rings, necklaces, earrings, glasses and watches. This responds to two needs – for body adornment and for more intimate and discreet communication, information gathering and entertainment.

ear-ins

Ear-ins are small cordless earphones which discreetly receive and relay messages from our agenda or paging service, to remind us of appointments or things to do during the day. They can also provide simultaneous translation from another language into our own. Made from flexible 'memory materials', they adapt to the shape of our ears for optimum comfort.





display glasses

Display Glasses complement normal sight with a projected layer of information. This allows the user either to look normally through the glasses or to refer to a text display. Controlled via a watch interface, it is possible to be connected to personal agendas or messaging services. This can discreetly remind us of important information, names, addresses and appointments.

AGENDA - TODAY
8.30 Briefing
10.15 Train to Paris
14.00 Lunch with Peter
15.30 Annual Meeting

AGENDA - TODAY

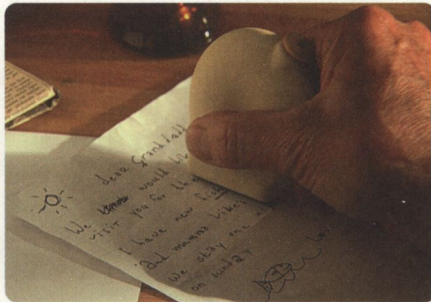
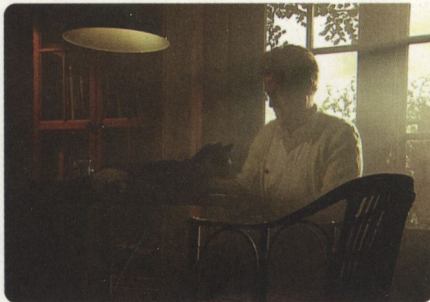
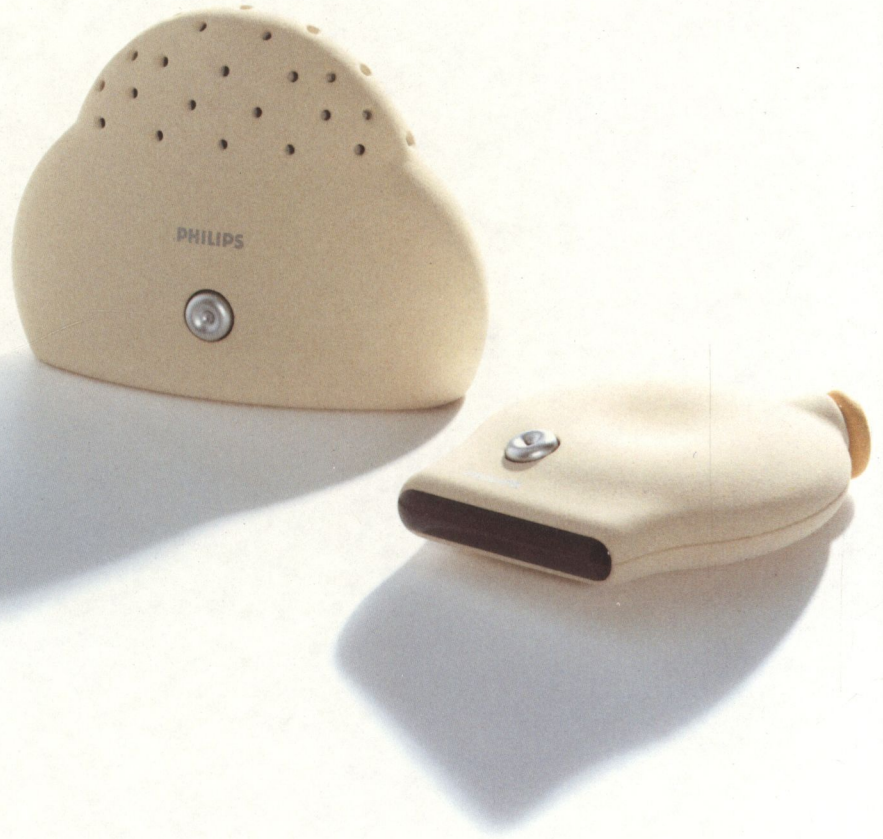
- 12.30 Annual Meeting
- 14.00 Lunch with Peter
- 10.15 Train to Paris
- 8.30 Briefing



see me, hear me

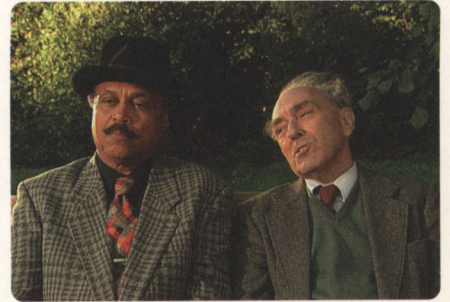
see me

As processing power grows, handheld products based on technologies such as speech and text-recognition are conceivable. People whose ability may be impaired by age or disability can be empowered to accomplish tasks more easily. For people who have impaired eyesight, a reading aid can be imagined. Based on a hand scanner, this unit acts like a portable eye, translating textual information into spoken words. It can be used to read letters, newspapers and even screen displays.



hear me

An adaptation of this could also be used for deaf people: a handheld device which uses speech-recognition technology to turn spoken words into text. This is ideal for use in public places such as shops, or when travelling. This technology could also be added to videophones used by deaf people to provide a simultaneous translation of spoken words into subtitles.





domestic domain home and family

The home will become more multi-functional. We will be able to change its layout and ambience depending on what we are doing, who we are with, and how we feel. Products around the home will become more adaptable, able to respond to our varying moods and individual requirements. One benefit of this flexibility will be that objects and the way they are used will become highly personalised. Products will learn our preferences and follow our habits, and as a result we will cherish them more dearly. Some domestic technology will disappear from view: some we will choose to make highly visible to complement our interiors. The impersonal 'black box' in the corner will become a thing of the past.

In a world of global contacts, information overload and multi-tasking, we will value privacy and occasional solitude at home – we will sometimes want to escape into our own 'cocoon'. At the same time, the home of tomorrow will be 'interconnected': from our home, we will work, keep in touch with absent family and friends and explore the wider world.

In order to fully understand the implications of multimedia in the home, the general divisions within the house were examined: the living room, the kitchen, the parents' room, the children's room and the bathroom. Within these rooms there are different requirements for multimedia, but common to all is input and output, defined through control interfaces and sound and vision.

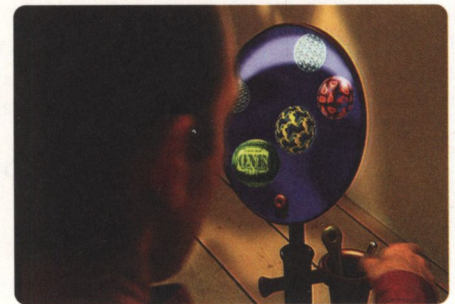
As new communication and network possibilities enter our homes, we are confronted with the necessity to control and filter the vast amounts of information.

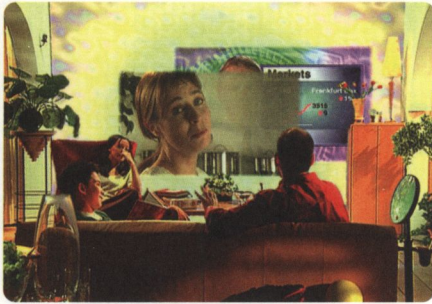
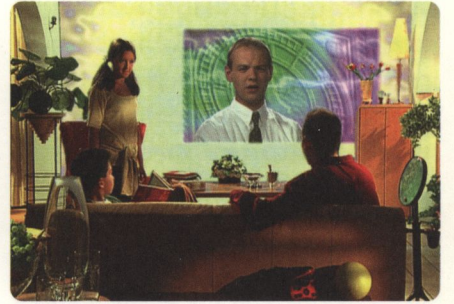
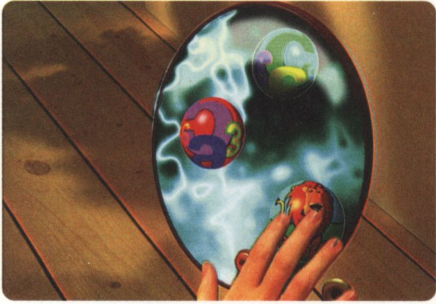
the living room

As technologies merge and miniaturise, we will have flatter displays and sound systems, thus creating a living room with less clutter, where there are no black boxes, but only the sound and vision we wish to experience.

In the living room we can imagine a 'living wallpaper' of sound and vision, controlled by personal interface tools which access your favourite programmes and music.

With the desire of both consumers and producers to receive and offer new and more wide-ranging services in the home, there will be access to far greater amounts of information, including video-on-demand, home shopping, Internet access and video telephony. To be able to understand, enjoy and navigate through these services, we will need to have special tools to filter and control them.





There are two main interfaces: Hearts and Wands. The Heart controls all entertainment and information services in the living room. It is operated through a touch-screen display or by using a personal Wand, a small, rechargeable handheld device which works using voice commands. The Heart also controls all major multimedia activities in the room and also the management of home functions such as lighting, temperature and security. It is a learning device which begins to understand different users and their preferences. This helps individuals filter what information they need, such as preferred television channels, videophone numbers and favourite 'video magazines'.





socialising on the net

Networks will provide people with the possibility to break the physical boundaries of time and space and meet 'virtually', enhancing the traditional tools of communication. As homes and families become connected to the Internet, links via the home multimedia screen and camera with any other home or site on the network will become possible. This will make it easier for family and friends to keep in touch. We will be able to be present 'virtually' at parties we would otherwise miss. The elderly can keep in touch with relatives and friends who no longer live close by and so feel safer and less alone.

connective dining

There will be a greater need for products and services that allow us to link up with family and friends back home. Greater mobility means that we will want to carry on our normal home life even from a distance. Someone away on business can join the family for dinner using the connective dining service provided by the hotel. In effect, the home dining table is virtually extended into the hotel room via enhanced video telephony.

This service enhances communication and connections between people who are physically far apart. It provides a richer link than is possible with today's telephone.





remote eye

Remote technology will allow products to be placed freely in the domestic environment. The Remote Eye is one such product. Once charged, the product is nomadic, the only limitation being the signal-transmission range. These cameras are ideal for security applications, remote monitoring of young children in the playroom, or checking the progress of the meal in the kitchen while in the garden. The applications are numerous. For children, it is a fun and engaging toy to play with. The domestic environment will contain a number of these small, wireless cameras. The user can select and view each one on a hand remote or on fixed screens in the domestic environment via simple commands.



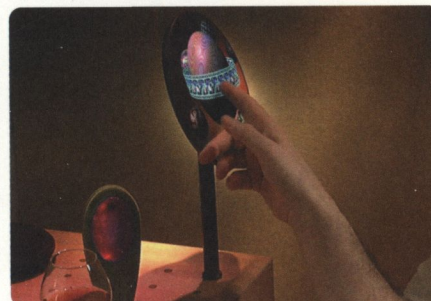
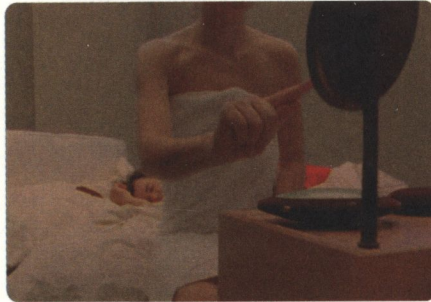


bedroom

The bedroom is a personal and intimate space. It is a place of relaxation, rest and meditation. Multimedia can enhance comfort, entertainment and the feeling of security.

There will be a special control interface – the Bedroom Heart. Similar to the Living Room Heart in function (responding to voice and touch commands), it physically resembles a bedside table. The integration of extra functionality in furniture softens the impact of technology in the home.

Through the Heart it is possible to create the desired atmosphere in the room by controlling the lighting and temperature, as well as selecting ambient sounds and images. It is also possible to monitor other rooms in the house. For example, a parent could check on a sleeping child. The Heart is also connected to the vast amount of media available on the network, making it possible to select a movie or listen to your favourite music.

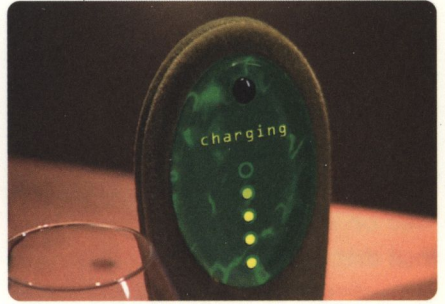
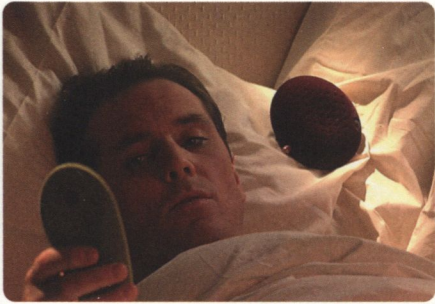




**cushion screen, videophone and
loudspeakers**

For personal listening and viewing there are small, soft, cushion-like products, such as a screen, a speaker and a videophone. These are all cordless and can be recharged by placing them on the table-top of the Heart.





kitchen

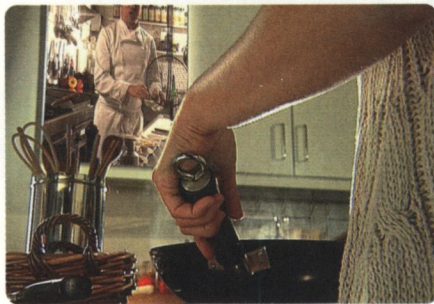
The kitchen is a working environment, where everything has its place. Therefore, objects such as flat panel displays or loudspeakers should integrate unobtrusively into the existing kitchen infrastructure. As hands are often wet or sticky preparing food, it is vital that the interface with these systems should be hands-free and voice-operated.

intelligent garbage can

The kitchen is often the centre of waste management in the home for the many types of refuse we need to dispose of.

The Intelligent Garbage Can could optimise domestic waste disposal. It separates natural waste produce from man-made materials such as paper, metals, plastics and glass. The natural waste produce will be dried, compressed and cut into granules to be used for fodder or compost. The man-made materials will be sorted and compressed into manageable bundles, which can be taken directly to a recycling centre or collected by a recycling company. The Intelligent Garbage Can also has a deodorising system that removes unpleasant smells. As the problems of waste increase and landfills become less attractive as a solution for waste management, more pressure will be placed on individuals to sort their waste into its constituent parts so that these may be recycled more easily and more efficiently. The Intelligent Garbage Can will aid this process by making sorting more convenient.





expert chef

New on-line services, such as shopping on demand, will take some of the hard work out of food preparation, while interactive programs such as the Expert Chef will make cooking itself more enjoyable.

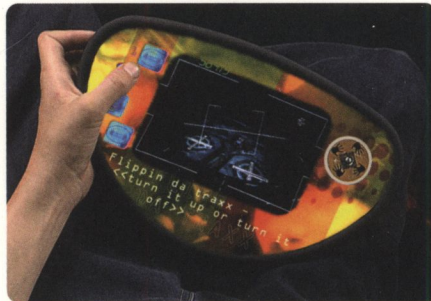
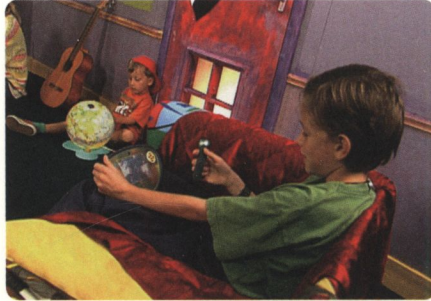
Expert Chef is an interactive tool which enables the user to learn various cooking skills and experiment with cuisines from around the world. Master chefs show us how it is done. We can look up recipes and find information about the history of dishes and the culture they derive from.

Searches can be made for recipes which are appropriate to the amount of time available, the skills of the cook and the ingredients to hand.

If so desired, the Expert Chef will take the user through all the stages of buying and preparing the ingredients, and then cooking and serving the meal. The information and guidance can be given in real time, as we cook.

the kids' room

For children, the expanding world of multimedia will offer both exciting entertainment and challenging learning opportunities. Children adapt to technological progress readily and will have access to more sophisticated information and entertainment media than ever before. Miniaturisation of electronic components will mean that many of these products can become very personal and be worn like a 'second skin'. Other products will take more traditional forms, like books, game boards or pens, but their functionality will be greatly extended and enhanced.





kid shiva

Due to the rapidly changing lifestyles of teenagers (fashion, music, role models and the search for their own identity), they feel the need to be constantly in touch and up to date with current youth culture and their peer group. In the past, this was done through direct contact with friends at school, through television and youth magazines. With the advent of networks, much of this type of interaction will be done via home computers and personal multi-tasking tools.

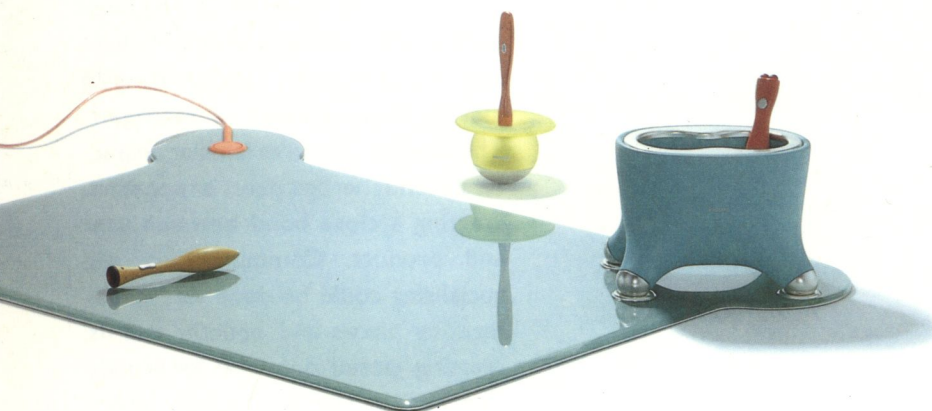
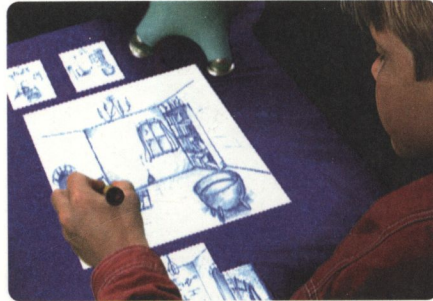
This Shiva is intended for teenagers. Like other Shivas, this tool combines and enhances communication, information gathering and entertainment. The emphasis with this product is on communication and play between friends via the network and on entertainment – music and video. Aspects related to learning will focus on school activities, homework and information retrieval (library services). This tool can be personalised to be able to adapt and respond to the rapidly changing lifestyle requirements of teenagers. The interface features familiar characters, such as heroes, peers or pop stars, creating a close bond between user and product. Communicating and socialising could be done via 'virtual' meeting places and bulletin boards, creating 'closed' networks for friends. There will be a strong emphasis on fantasy, fashion, tribalism, peer grouping and popular culture. Children's need for portable multimedia (music, telephony, electronic mail and the Internet) is growing because of their desire to be mobile.

creativity mat and wands

To enhance children's creativity and productivity there will be a special interactive work surface that can be placed on an existing table-top. This surface has two main functions.

It will provide a control interface for the other multimedia devices and services within the child's room, accessing networks for games, films, music and communication links, assigning these to products within the room, such as the projector, the game board or interactive books.

The touch screen is also used as a work surface to write and draw on, or to compose multimedia presentations. On the work surface is a recharge pot for wands (personal preference remote controls) which can be programmed via the work surface to personalise and pre-select media around the house.



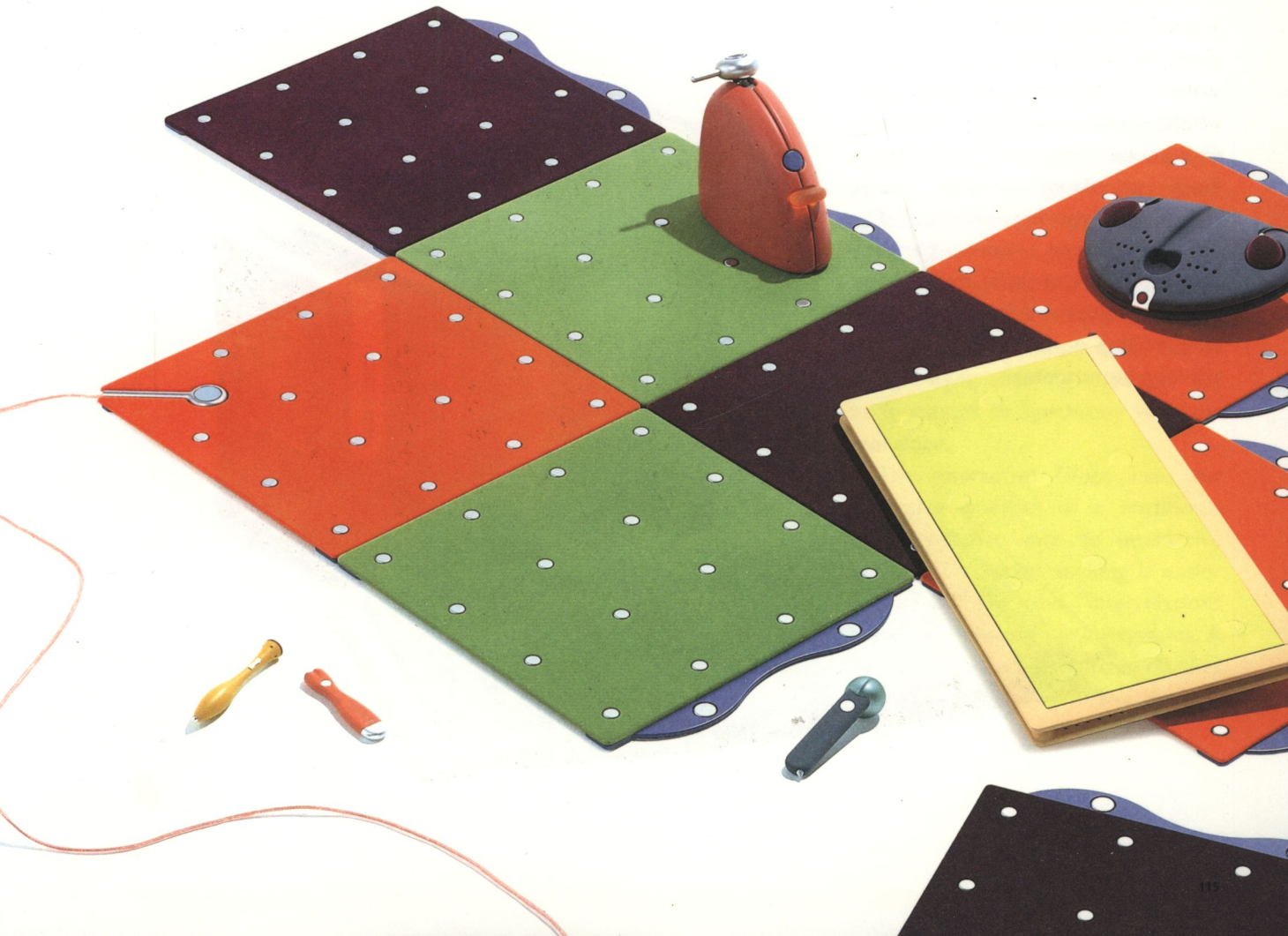


kid's projector

This playful LCD projector provides a flexible way of viewing films, animations and children's multimedia presentations. Receiving its power and signal from the recharge floor mats, it will project onto walls and ceilings, and its image size can be adjusted to suit the audience.

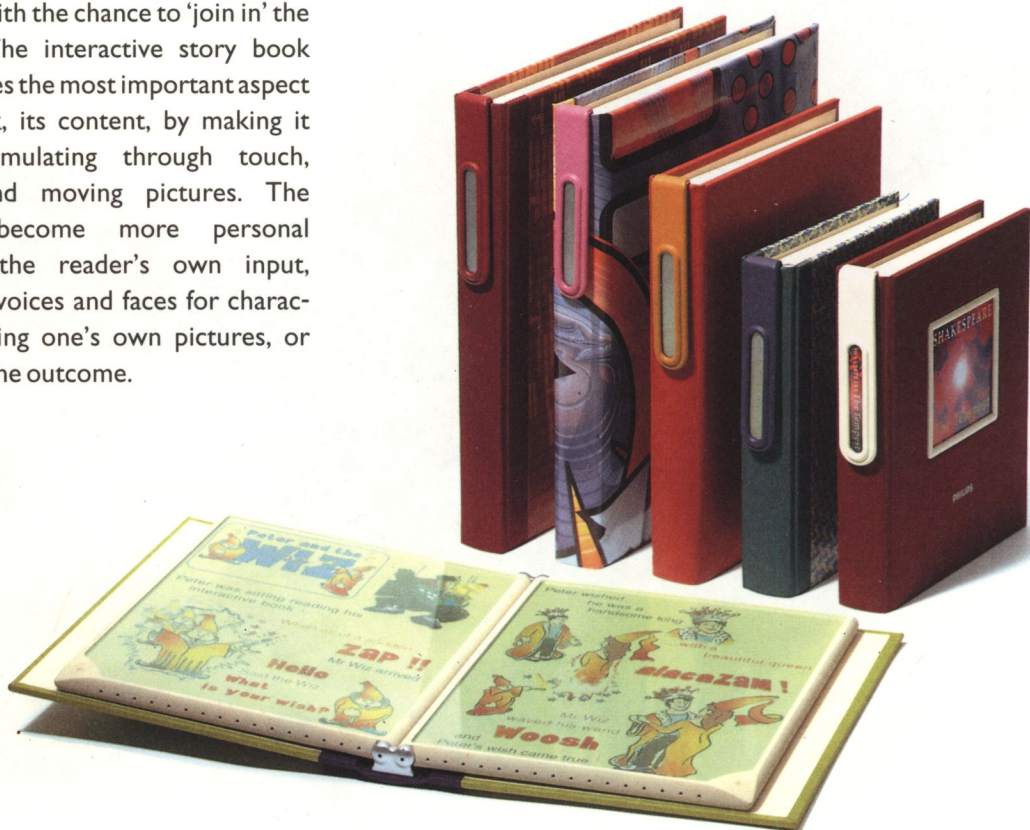
recharge mats

These playful interlocking mats not only brighten up a child's bedroom, but also provide a surface with power and signal to bring other electronic toys and games to life.



interactive books

Interactive Books combine the traditional intimate and personal qualities of books with interactive touch-screen technology. Text, moving images and sound can be downloaded to provide a never-ending variety of stories. The books are made of high-quality materials. They will last and remain attractive. However, they will continue to excite because of the newness of their content. The books will grow up with their readers, taking them from the simple telling of stories with pictures, through learning to read, to embarking on learning another language. The stories combine text, voice, animations and still images. They also provide readers with the chance to 'join in' the stories. The interactive story book emphasises the most important aspect of a book, its content, by making it more stimulating through touch, sound and moving pictures. The stories become more personal through the reader's own input, choosing voices and faces for characters, making one's own pictures, or affecting the outcome.





interactive globe

Combining the traditional qualities of a globe with interactive display technology offers the opportunity to experience the world's fascinating macro systems. The user interacts with the globe by speech and touch. Ask a question or touch the surface and the response is shown on the globe, accompanied by a narration to explain what you are seeing.

The display allows many sorts of information to be shown. For example, the world's political systems, the world's languages and the location of natural resources could be displayed. Historical information might include how the continents came to be formed, where dinosaurs lived, where the human race started and how it spread. Time zones could be shown, indicating in graphic form how the light passes across the world as it rotates. Linked to a weather service, the Interactive Globe could show the weather around the world at that moment, with clouds moving across the globe. When not in use, the Globe could act as a night-light, showing night and day as it rotates in synchrony with the real globe.

The Interactive Globe uses the attractive qualities of a traditional globe together with an interactive multimedia display, making it easier to understand the interrelations between the world's many systems. A narrator or storyteller further clarifies the visual explanations and demonstrations.







game board

The Game Board is a large foldable display, which, depending on the software, has limitless game possibilities. Traditional board games such as Snakes & Ladders can be played.

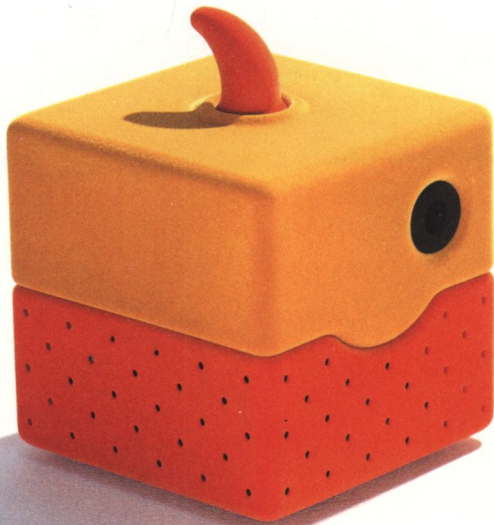
The interface is represented by both physical and screen-based objects. New games can be purchased on chips which clip onto the Game Board. Each game has specific physical game pieces which accompany the software.





ludic robots

Not all children's products will necessarily be based purely on functional requirements. Some may respond to more emotional needs. Ludic Robots are small, unpredictable electronic friends which respond to voice commands, touching and gestures. Through sensors they begin to learn about their surroundings, its occupants and their physical presence. They can be taught to accomplish simple tasks, and through this interrelationship they may become objects of affection for their owners.



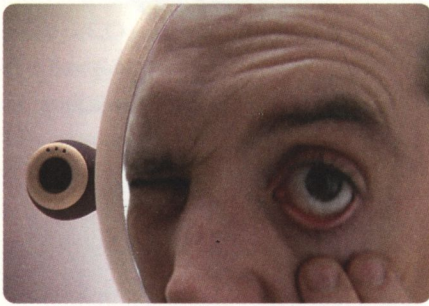
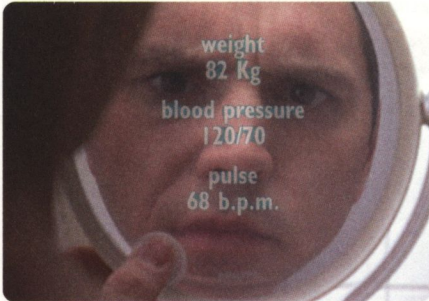
hand-powered toys

A projector and an interactive storyteller which use hand-generated energy introduce children to multimedia as well as ecological power generation. The energy needed to power these products is created by cranking a handle. The amount of energy stored is displayed on a meter. The interactive storyteller tells stories via a small LCD screen and loudspeaker. The bedside projector projects stories or ambient images onto the ceiling. The stories and images for both are contained on smart cards and are inserted into the products.





bathroom

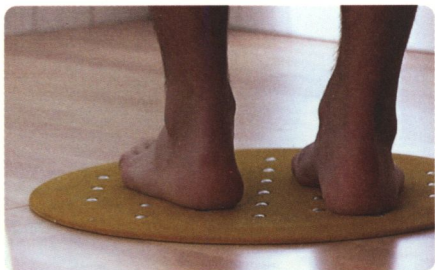


The bathroom is the place in the home where we are most likely to be alone and be concerned with our physical appearance, as well as our physical and mental health.

pull-out mirror and weighing mat

For personal care and grooming, the Pull-Out Mirror and Weighing Mat offer daily health checks such as weight, pulse and blood pressure, together with a magnifying camera for body inspection. The flexible arm for the display and camera allows correct positioning for individual users.





wall mirror and recharge shelf

For entertainment and information while washing, brushing teeth or shaving, the Wall Mirror also offers a 'window on the world', allowing a choice of television programmes or information channels.

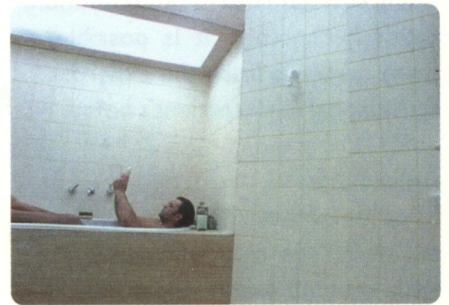
Under the mirror there is a recharge shelf and container. This recharges not only products such as shavers and toothbrushes, but also Wands which store your personal preferences for music, TV and lighting, room and water temperatures.





portable screen

For personal viewing, when taking a bath for example, there is a cable-free, waterproof screen through which TV channels, magazines and books can be accessed. When not in use, it is stored on a recharge hook on the wall.



home medical

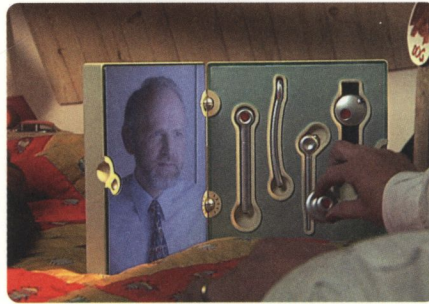
Information and communication technologies will allow many medical services to be accessed from home. When people become ill, it is sometimes not convenient, or even possible, for them to travel to the doctor or hospital. Using new information and communication technology, it is possible, in many cases, to bring the expertise of the hospital to the patient's home.

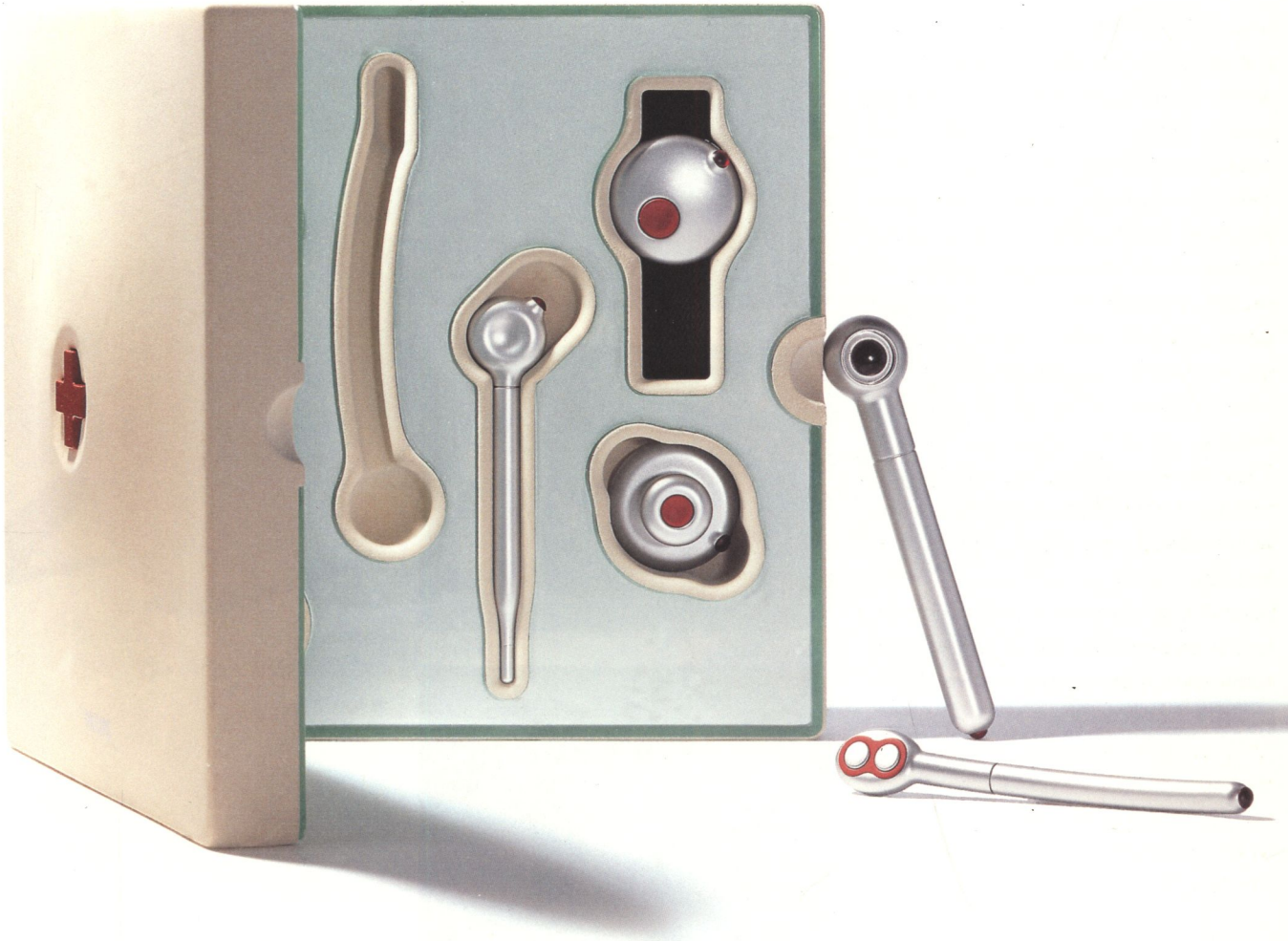
medical box

The Home Medical Box can function as an interactive medical encyclopedia, with in-depth explanations and simulations, and it also provides access to your doctor via a video link so that he or she can check your symptoms and give advice about treatment. The Medical Box contains simple diagnostic tools such as a stethoscope microphone, an electronic thermometer and a blood-pressure wrist band, which are accessed remotely, via a wireless link, by your doctor.

hospital home link

For patients recovering from illness it is usually more pleasant to be at home. With the Hospital Home Link, it is possible for the patient to be remotely monitored or examined by experts and systems. To this end, smaller, portable diagnostic machines will become available which monitor the patient at home and transmit the data to the hospital.

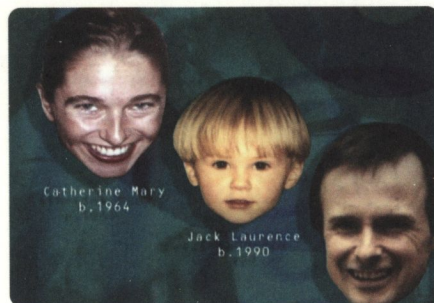
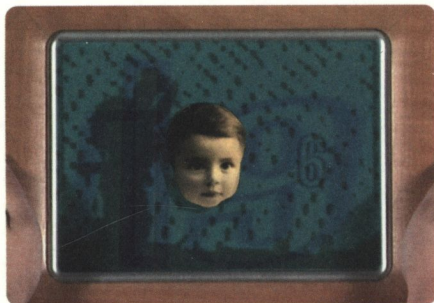




interactive family tree

Greater mobility means that families are becoming more fragmented. As family members move away from home there can be a feeling of separation and isolation. The Interactive Family Tree addresses this problem by creating a networked 'family' link. Information can be shared, making family members feel closer and more in touch.

The Family Tree is an interactive picture frame which brings together existing archive material: videos, photographs, letters, names and dates, with current information about the family. It organises all the material and presents family relationships. This is received and updated through the family network. It can also act as a reminder for birthdays, anniversaries and special occasions.







Joan E
b.

George Alexander
Smythe b.1907

James
b.



Elizabeth

38



Federick

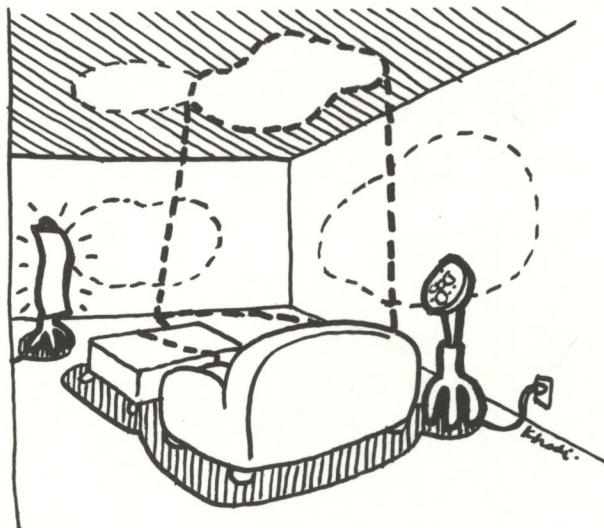
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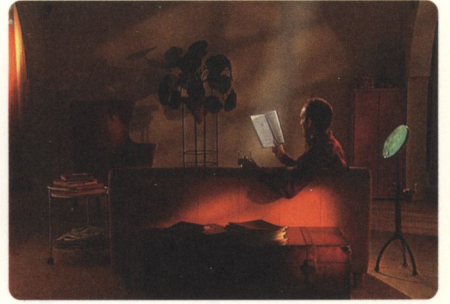
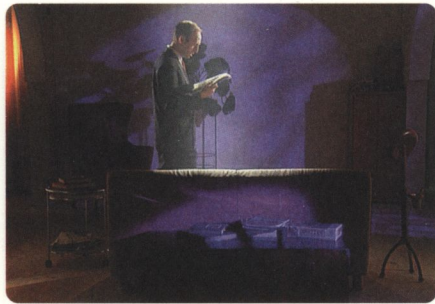
home management

Home Management functions are part of the whole home system, which also includes home multimedia. The Home Management system centralises and provides a control and monitoring platform for all the systems in the home. This control platform allows the possibility to program, operate and monitor not only more mundane tasks such as heating, water and air quality, but also the whole home security system and the ambience of the home. The home security system has intelligence and can, for example, recognise an intruder or a fire. In such cases, the system can immediately contact the owner remotely and alert the emergency services via the network.

For ambience in the home, the system can be used to control lighting and sound. They can be tailored to the individual's needs, for instance with 'follow me' sound and light, localised sound and light, and sound cancellation.

The advantage of this type of home management system is that it can provide a single, simplified control platform for the increasingly complex systems in the home. It offers an environment which is tailored to each individual and the flexibility to quickly adapt the ambience to suit any occasion. The system offers security to the family while away from home by taking care of the running of the home and providing protection from theft and fire.



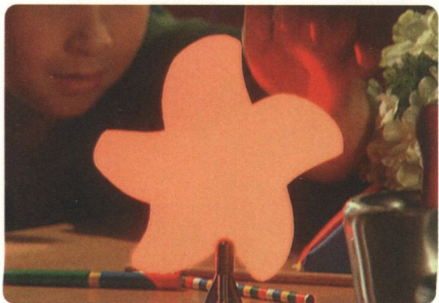
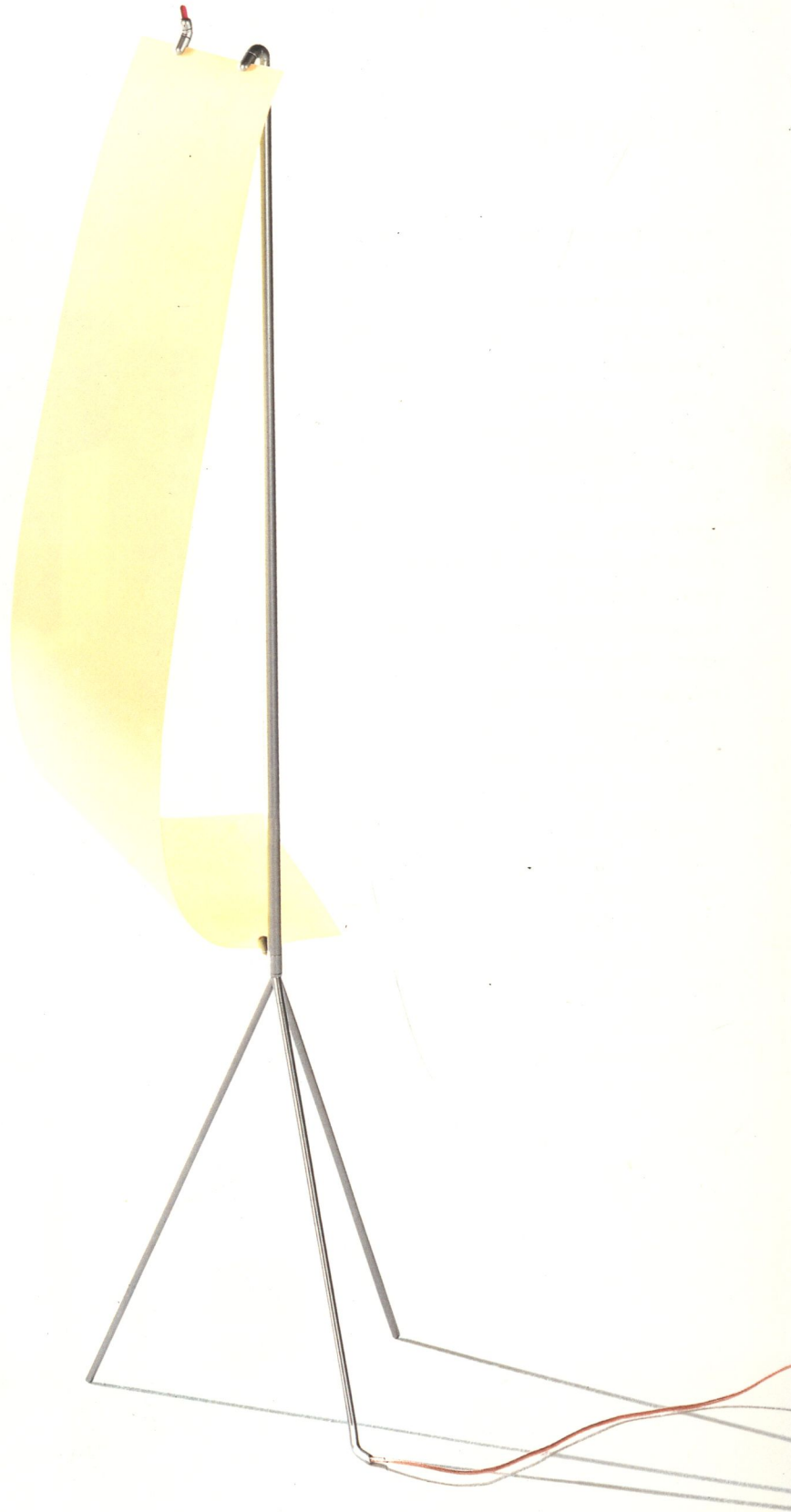


flexible lighting

Environments are increasingly multi-functional as users multi-task. This trend places demands on the quality and versatility of light. Its colour and intensity are fundamental in creating suitable environmental mood-setting.

Light-emitting polymers will evolve to become as flexible as fabric and as thin as paper. Formed or flat, applications in the domestic, mobile, office and public environments will place 'spread' or 'task' lighting on ceilings, walls, floors, or free-hanging. Light plug-ins will allow maximum flexibility in application.





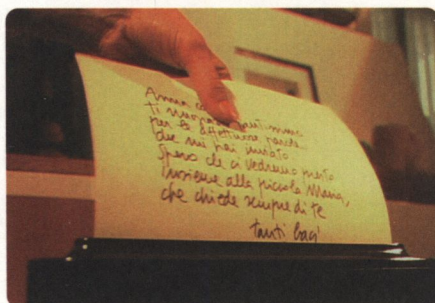
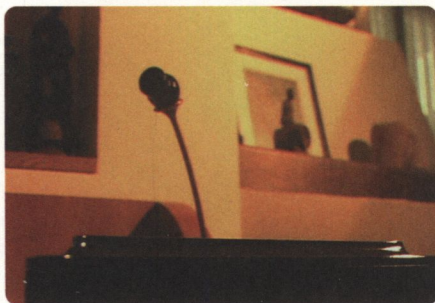
home work

In industrialised societies around the world, computers and other office equipment such as fax machines and printers are becoming commonplace in the home. These will increasingly be linked to the growing amount of services and information accessible on the network, making it possible to work directly from home.

However, the office products of today fit uncomfortably into our living space: they are often bulky and visually designed for a more sterile and impersonal office environment.

This work desk brings back the traditional furniture qualities of old writing desks or bureaus. The surface of the desk is an interactive display which recognises the physical tools placed upon it. These tools consist of a vertical display for video telephony, a camera, a printer, a speaker and an 'intelligent' pen. These can be placed anywhere on the interactive surface, and the relevant icons for control will appear around them.

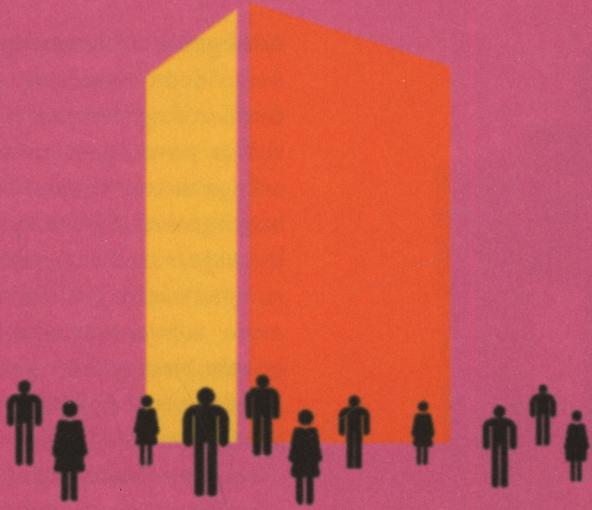




new gestural language

As video telephony and video conferencing become widespread, it will be possible to communicate not only with sound but also with body language and gesture. A new gestural language will develop, making communication via electronic media more subtle and expressive. Two people placing their palms on their screens could be the equivalent of a handshake.

Another development may be the use of gestures to communicate with machines which can recognise them. Instead of voice or direct physical contact, a simple gesture could turn on the lights, lower the music or open a door. When communicating with a computer, these gestures could be combined with text, sketches and voice as shortcuts.



public domain the wider world

Variety and flexibility will characterise our working and public lives. We will not keep one job for life, and we may pursue several careers at once – perhaps even in different places. And periods of work may alternate with periods of education or travel. Time will no longer be seen as ‘free’ or ‘bound’, but as a valuable resource to be exploited as fully as possible. The distinction between work and leisure time will become blurred. And the place will no longer be fixed. The objects that we use will at one moment be tools to work with and at the next toys to play with. Public places such as shops will become more convenient and engaging. Public squares, enlivened by electronic technology, could once more become places where people gather to socialise, play games or practice their hobbies. Computer network links and multimedia will move out into the streets, providing people outdoors with the information and entertainment services they have come to regard as normal in their indoor lives.

work office

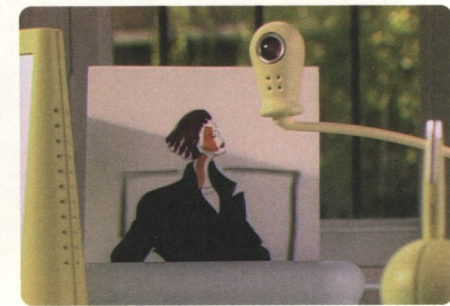
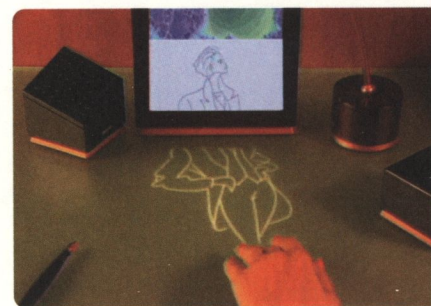
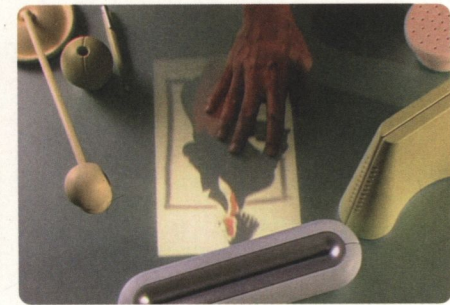
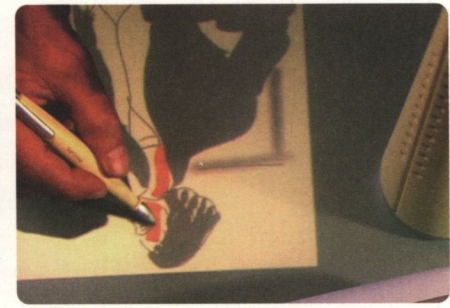
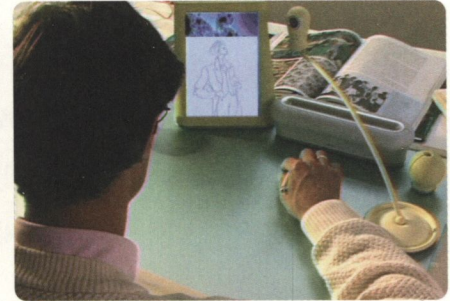
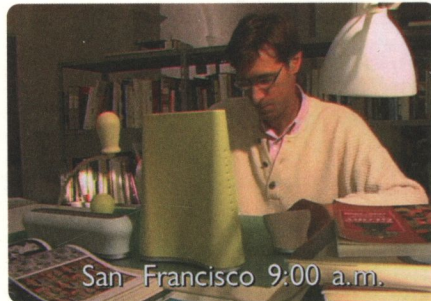
Networked computers are commonplace in the office environment today and have greatly improved the capabilities of the individual to work in a more productive and efficient manner.

Communication and access to information, through the network, make it possible to work together with a person or office located on the other side of the world. But there will always be the need to meet, communicate and discuss in groups as work becomes more multi-disciplinary.

Digitalisation will allow many forms of media to be used in seamless combinations, enhancing interaction and communication.

The desktop metaphor used with computers today can become a physical reality in the future. Interactive surfaces can make existing hardware such as monitors and processing units redundant, merging them into the desktop.

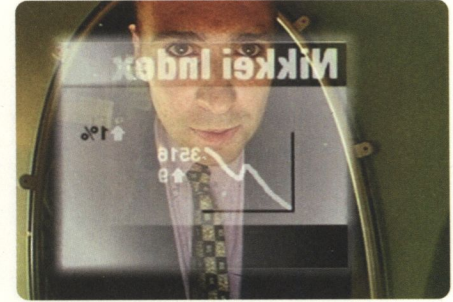
These interactive work surfaces will be available in different sizes to suit individual needs. The appropriate tools can be selected for the task in hand. These tools, which consist of a vertical display for video telephony, a camera, a printer, a speaker and an 'intelligent pen', can be placed anywhere on the interactive work surface, and the relevant controls will appear around them. More natural and intuitive interfaces, such as handwriting and speech, will complement the existing input devices.

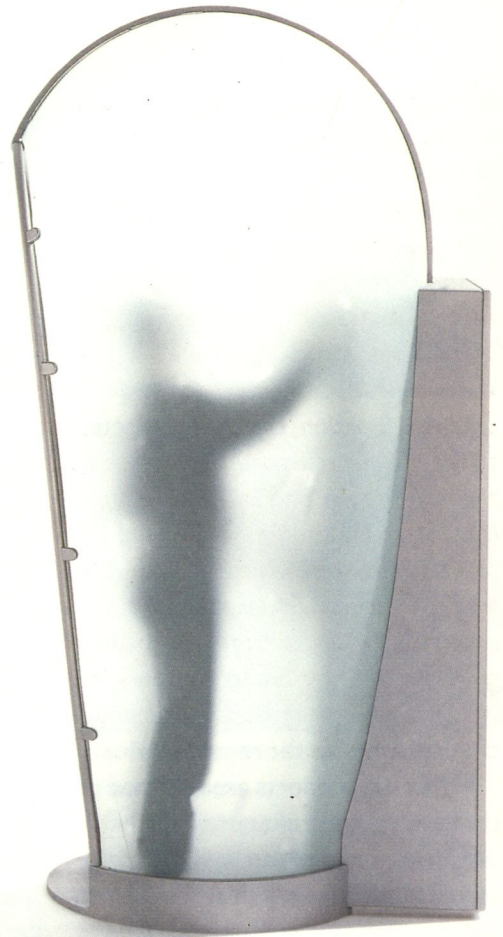
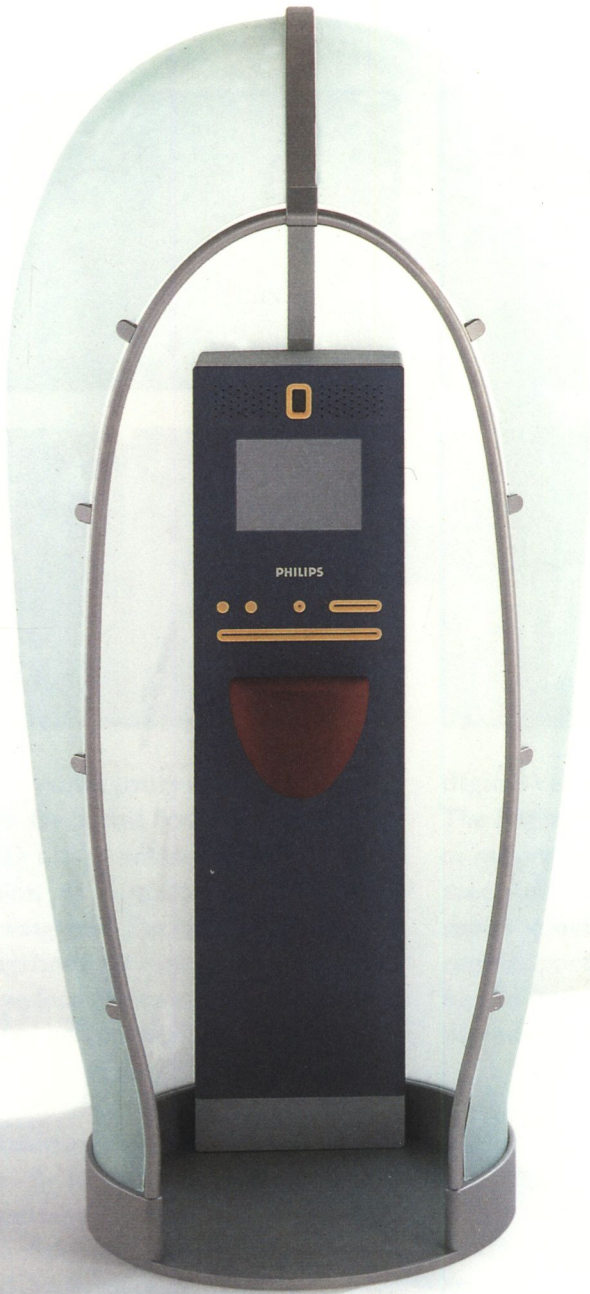




multimedia kiosks

Using the existing telephone cable infrastructure, phone booths can easily be replaced with enhanced Multimedia Kiosks. These will be offered as a public service and will have a new identity, recognisable as a place for communication and information access. They allow the user to perform various tasks simultaneously in a private and secure environment. Time spent in the kiosk, and services used, can be charged and directly debited from your bank account. Via a large-screen videophone it will be possible, for example, to book a holiday through a travel agent, arrange for credit, payment and foreign currency from your bank, and make an appointment at the doctor for necessary injections. The most relevant information can be printed out and taken away with you.



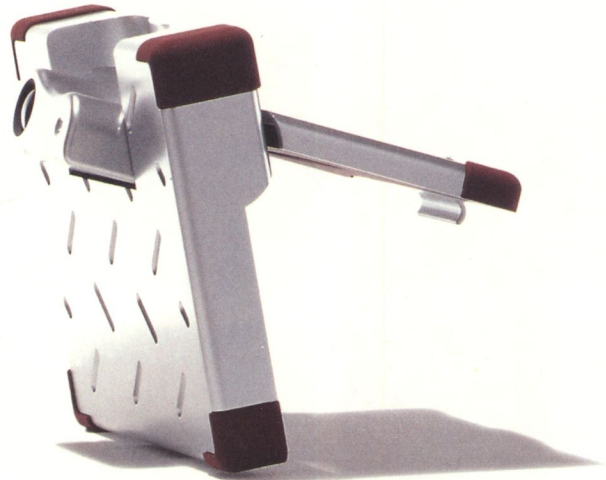


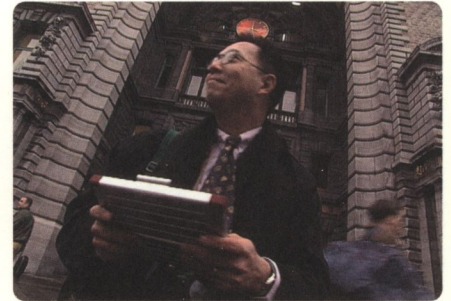
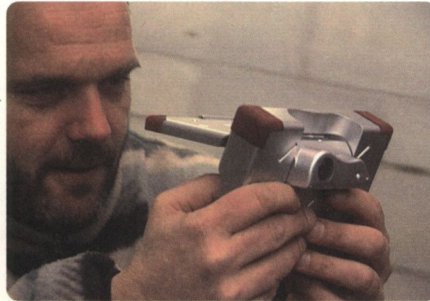
multimedia rentables

People use rented products more intensively than products they own. This means that at the end of its life, a rented product will usually have provided greater service than an owned product – with the result that its overall environmental impact is lessened.

The Multimedia Rentables are a series of products made for hire. In line with this function, they are protected by a highly durable outer shell made of pressed aluminium. In keeping with their portable nature, they resemble travelling cases in appearance. The sturdy shell eliminates the need for other packaging, providing sufficient protection for the delicate electronic controls and screens through which the user accesses the rented service.

When the products are returned to the leasing agency after use, their hardware and software can be easily maintained and upgraded. This allows more efficient technologies to be installed as they become available, avoiding the waste of resources involved in manufacturing completely new products and components.





electronic journal

The Electronic Journal is a flexible LCD screen which can be rented on trains, at airports or from local newsagents. Electronic newspapers, magazines or other media can be downloaded into it. At home or work, it can be connected to the network, allowing greatly expanded access to the wider world, while preserving the comforting ritual of reading a newspaper. By replacing printed paper, the Electronic Journal will save vast quantities of timber during its lifetime and reduce the use of chemical inks.

digital camcorder

The Digital Camcorder captures still or moving images. It can be leased for special events, such as a birthday party, sports event or a holiday. Like all rented, portable products, it is returned to the leasing agency for upgrading, repair, recycling or disposal.

travel mate

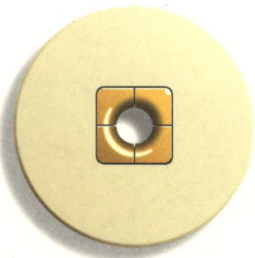
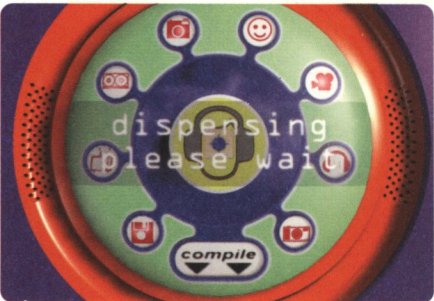
The Travel Mate is an electronic map which can be rented from tourist offices and travel agents. It combines a map for navigation in unfamiliar environments with tips on how to travel and enjoy the area with minimal ecological impact.

multimedia dispenser

Having access to vast databases of archive material and operating in a manner similar to today's vending machines, Multimedia Dispensers will allow people to record a personal compilation of sound and video clips on a chip.

The interface with the Multimedia Dispenser is represented by a segmented ball which is spun on the touch-screen display to select the area you are interested in. Pressing on the chosen segment opens the ball at this point, revealing the software options beneath. After all the selections have been made, they are recorded onto the chip, which is then dispensed. Payment for the selection is made with a credit smart card. At concerts these dispensers can be used to give audio and video recordings of the performance you have just seen, together with the current 'audio-video albums' from the artist.





interactive billboards

Billboards made up of very large flat panel displays can be used as multi-media advertising sites, incorporating moving images, graphics and text, or as interactive displays, showing coming events, clips from movies, restaurant lists and other information. Tickets can be ordered and reservations made via touch-screen. Networking these displays makes it possible to overcome problems of time and space: adverts or messages are shown instantly over a group of billboards. The message is totally up to date and can be aimed at a particular target audience.

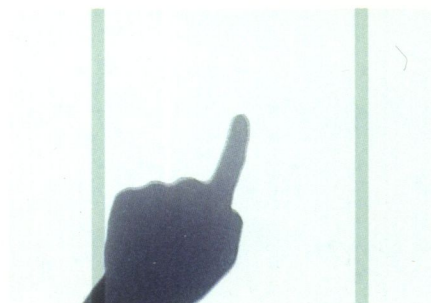
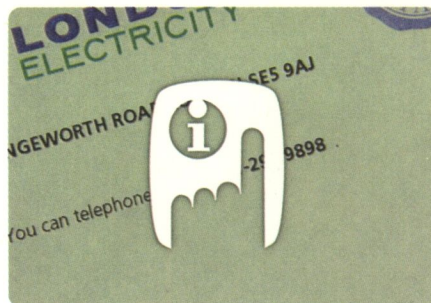
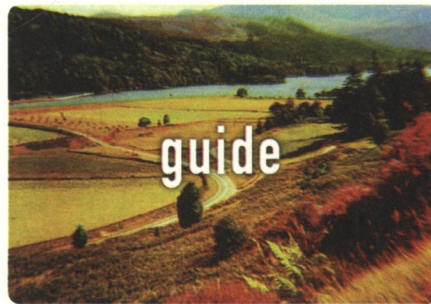
Other applications include City Window: for special events such as New Year's Eve, a live link can be created between two cities, allowing groups of citizens to interact with each other.





data zones

Data Zones enhance traditional information boards found in local environments. They are free public access points to information networks such as Yellow Pages, local maps and services. Through the interactive touch-screen interface it is possible to search, select and confirm a reservation in a restaurant and then get a map printed out to show you the way. Found in town squares, near shops or on street corners, Data Zones have a simple iconic image and illuminated sign so that they can be easily spotted.



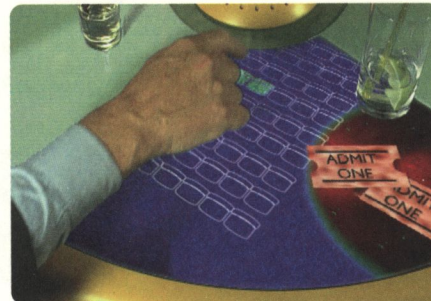
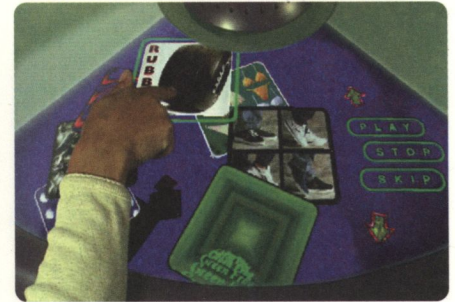
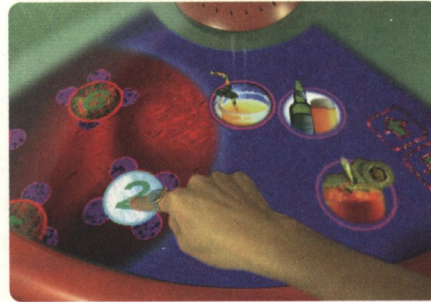
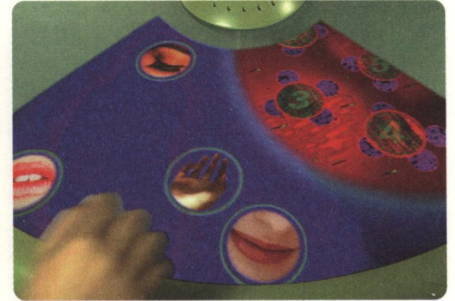


new bar

The New Bar will have the same atmosphere and human qualities as bars today, but the socialising and entertainment aspects will be enhanced. These new qualities could be centred around the table you sit at. The Bar Table offers the customer new communication and entertainment options.

It is possible to order drinks from the bar, to contact another table, or to have a guest join you 'virtually' from home or from another bar. This communication can be done either face to face, with the use of the videophone, or in a more private way using electronic mail. Ordering can also be done through these interactive table-tops: a barman agent can take your order.

Entertainment services will become more localised around you and your group. These will include individual computer games and group activities such as card games. Each table has its own music and video 'on demand', replacing the traditional jukebox. Other activities such as karaoke will be enhanced with video sampling, superimposing the singer in the bar on the original band. The performance can be recorded and taken home afterwards. Payment for drinks and entertainment is done through the table or at the bar via the New Wallet.









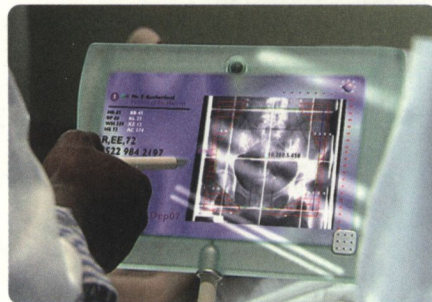
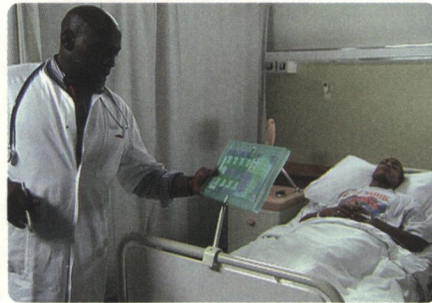
hospital network

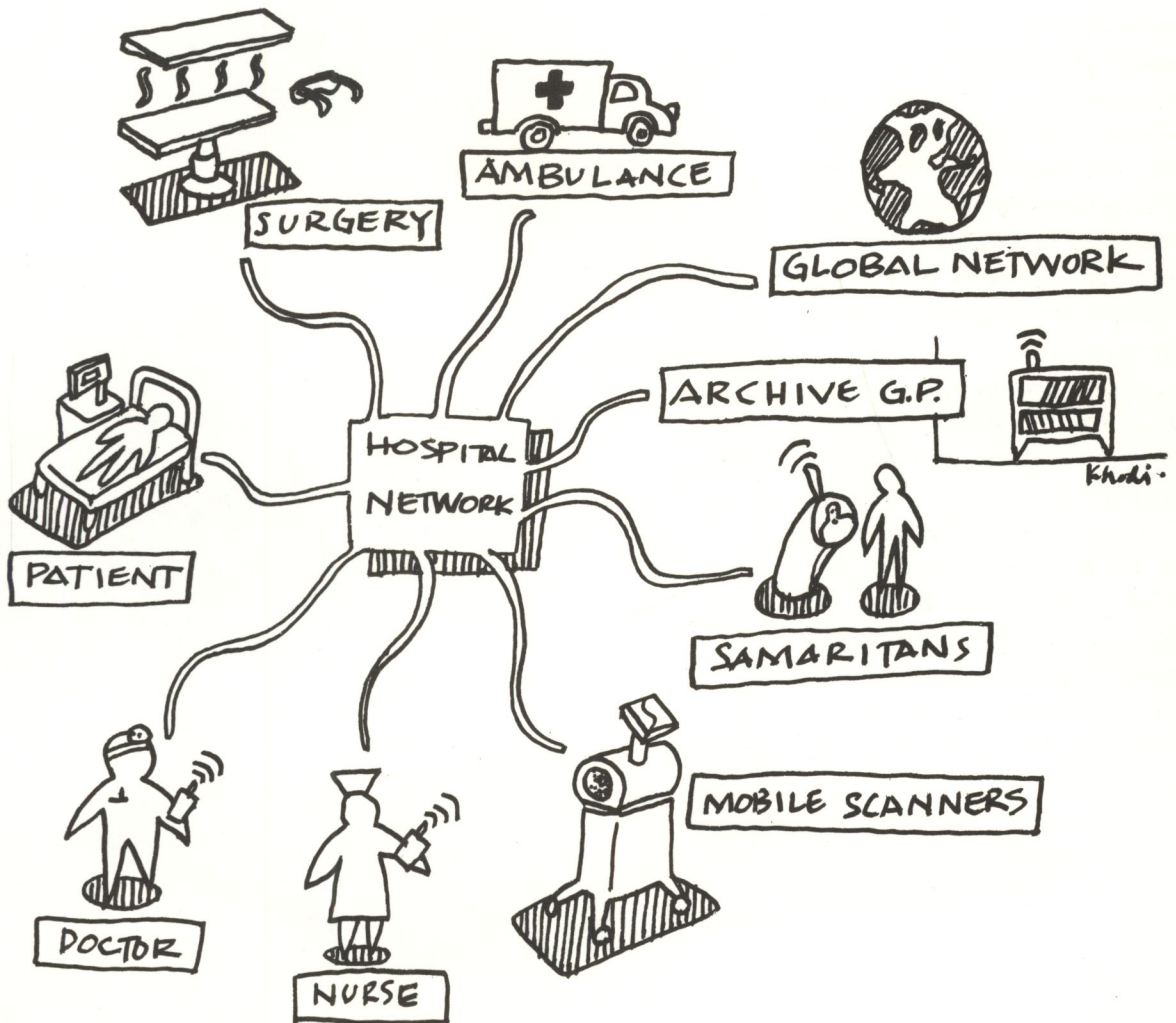
In the future, hospitals will be networked environments. Aspects relating to the patient, medical staff, operating rooms, ambulances and other hospitals are linked together, creating a single infrastructure. The Hospital Network is the heart of the system: it ties into the patient's bedside for monitoring and comfort. It also provides tools for communication, information and entertainment.

The medical staff are linked via specific tools such as digital assistants for information, communication, on-line monitoring and paging. The operating room is linked up to provide tele-surgery possibilities, on-line diagnostics and monitoring. Scanning, monitoring and diagnostic equipment will be linked for data retrieval and remote viewing. The Network links ambulances for real-time patient diagnostics, speeding up the process during the critical period of transportation. The Network's archives and records will also be accessible to the patient's own doctor.

Further possibilities can include Digital Samaritan Services. Via pre-recorded archives, first-time patients can be reassured and comforted by other people who have gone through the same procedure. The last link would be into the Global Network, where access to specialists, data and other useful information can be obtained and shared.

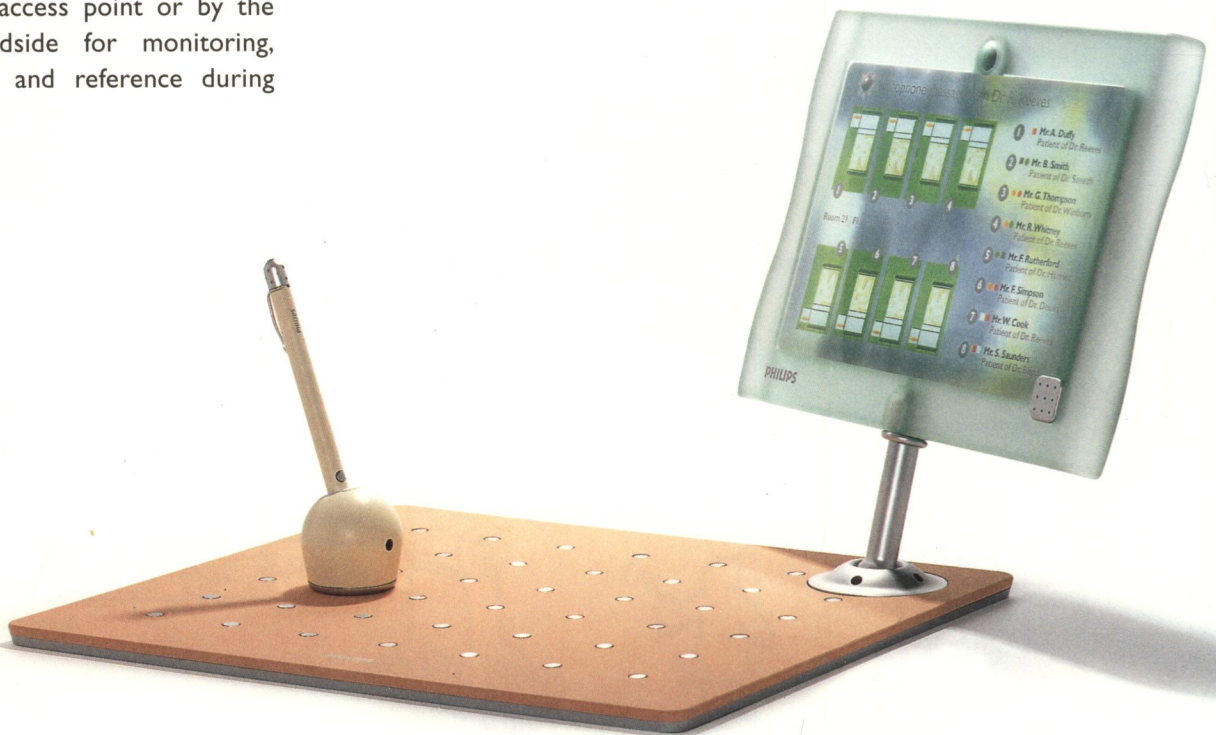
This advance in the Hospital Network will also be complemented by the service-oriented hospital where the emphasis will be on patient comfort and welfare. The adoption of new multimedia technologies in the hospital will provide a major improvement in areas such as logistics, diagnostics, patient welfare and communication, making the process more efficient and increasing the hospital's capabilities to provide comprehensive health care.





nurse workstation

Within the hospital there will be a need for many portable information devices. These will not only be used by doctors and nurses on the move, but also in Work Areas where portable products can be recharged and used. Work Tablets are similar to Shivas functionally, but have a much larger display. They will offer video communication and information access, replacing the clipboard charts used today. They will bring together all patient information such as scans, notes and medication with up-to-the-minute monitoring. Hygienically enclosed in transparent plastic, they are touch-screen displays which are used either at the Work Station as a general information access point or by the patient's bedside for monitoring, conferencing and reference during examination.





doctor shiva

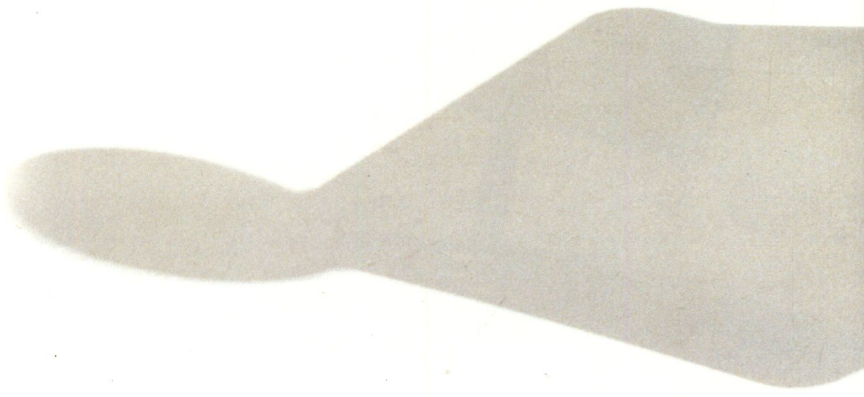
The modern hospital environment is a place where patients, staff and information are in constant flow. Medical staff work in different areas of the hospital and are responsible for many tasks. Doctor Shiva allows them to communicate with each other and the Hospital Network, offering instant access to information and enabling them to be up to date and in touch at all times. With Doctor Shiva, medical staff can monitor patients remotely or video-conference with each other from wherever they happen to be.

Like a notebook, this Shiva offers a flip-over page in the middle; it allows, for example, videophone communication on one side and a display for more in-depth information on the other. As with other Shivas, the interface is via voice, handwriting and touch.



wall scanner

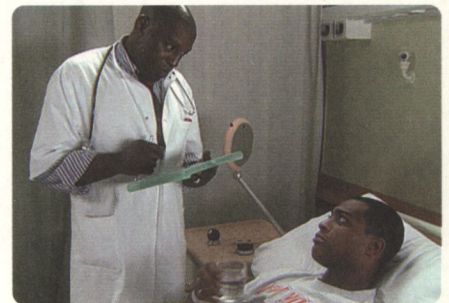
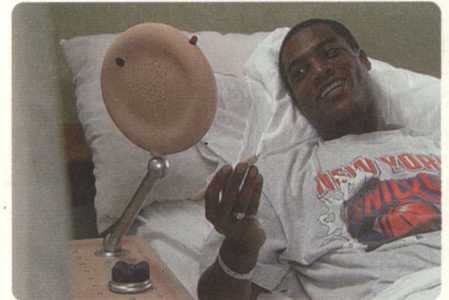
Developments in scanning technology mean that imposing machines such as magnetic resonance scanners can be further integrated within the hospital infrastructure. The Wall Scanner is a flat scanning surface which protrudes from the wall: patients simply stand or sit in front of it for imaging. This is less intimidating than today's scanners which must completely surround the body.





patient bedside unit

The Bedside Unit offers patients the benefits of multimedia, such as video and audio on demand, video telephony, access to the hospital network for information, and direct contact with medical staff in an emergency. The convenience of grouping all these functions together next to the bed gives each patient their own private and personal choice of services. The display screen is set on an adjustable arm and is also detachable for more interactive functions such as writing or playing games.





mobile domain on the move

Travel in the future will be both physical and 'virtual'. Virtual-reality equipment will allow us to experience places we would otherwise never see – either because they are too difficult or dangerous to reach, or because our physical presence would harm or destroy them. When we travel physically, we will be more in touch than ever before. Mobile telephones and other communication devices will become standard in cars. Satellite links, combined with the continuing miniaturisation of portable equipment, will mean that we will always be in touch, wherever we are. We will seek to make the most of travel time, using it for learning, communicating or relaxing. Multimedia will make physical travelling more pleasurable. The car will become a 'home on wheels', with flexible seating arrangements and enhanced entertainment facilities.

In-car navigation systems will make sure we reach our destination as comfortably and efficiently as possible, saving two precious resources – time and energy. Electronic sensors will make cars more secure from theft and safer to travel in.

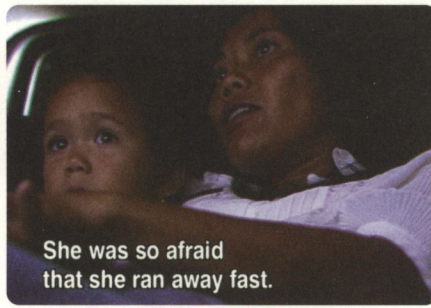
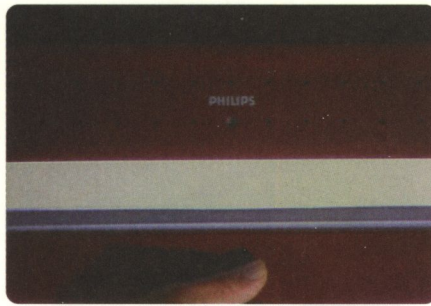
home on wheels

As information and communication networks become more prevalent, access while on the move will become more desirable, as the time spent in the car is often perceived as wasted. We can envisage two major developments in this field: the Home On Wheels, where the interior is personalised to further enhance comfort needs, for example with Roll-Down Displays, which divide the interior into personal spaces; and the Car With Senses, in which, for example, a roof-mounted camera allows us both to capture sights while travelling and to remotely monitor the car for security.

Time spent in the car is transient, and different journeys have different meanings. Travelling to work is very different from returning home, and both are different from travelling to a holiday destination. There is therefore a need to have a variety of highly flexible multi-functional tools which adapt to our changing requirements.

Concentration while driving is essential; therefore interaction must be as simple and as intuitive as possible. Voice recognition and voice input, together with head-up displays, can ensure a safe and secure mode of interaction. Enhanced information for navigation enables the driver to arrive at his or her destination with greater efficiency and comfort. Having access to information and communication networks in the car makes it possible to make advance bookings for hotels, restaurants or shows and to gain more information about the destination or places en route. You can also have a 'virtual' tour guide as you drive around a city while on holiday. Passengers can be entertained through multimedia: games, video on demand or study.





pull-down screen

Made from flexible polymer displays, these pull-down screens come in a variety of sizes, offering flexible viewing options. These screens can be used as personal space dividers: for example, the children can study or watch cartoons in the back without disturbing the parents in the front.



in-car camera

For communication and security, the interior camera provides hands-free video telephony while driving and a peek into the car while away.

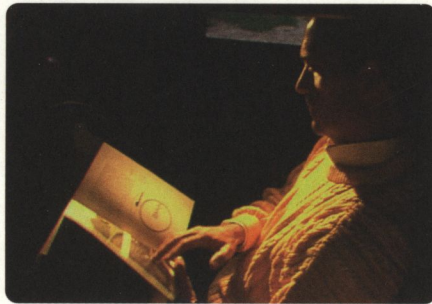
cushion screen

A soft product for the car allows passengers to access multimedia in comfort for studying, entertainment and communication while travelling.



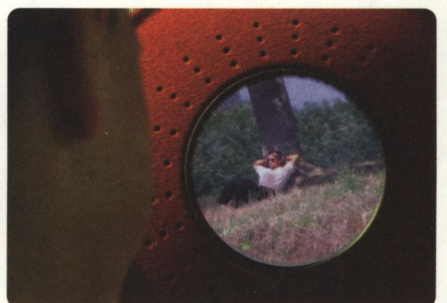
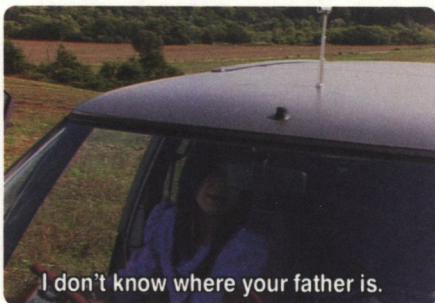
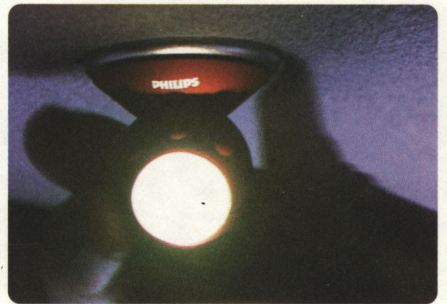
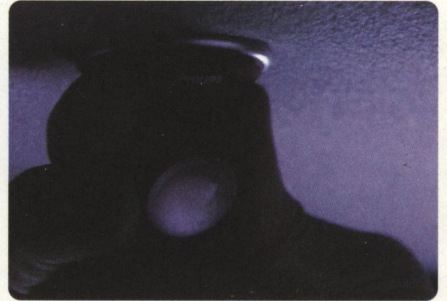
light roof

Flexible Lighting integrated into cars creates spaces which are both personal and comfortable.



movable lights

These in-car lights can be conveniently repositioned to provide focused areas of light.







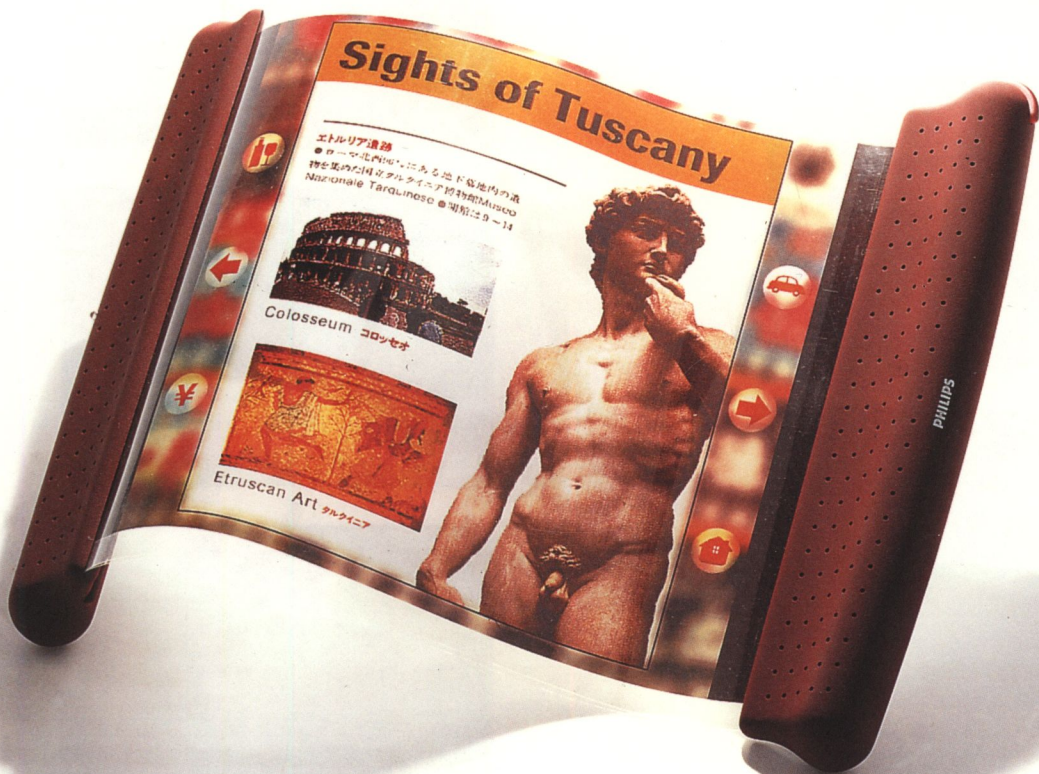
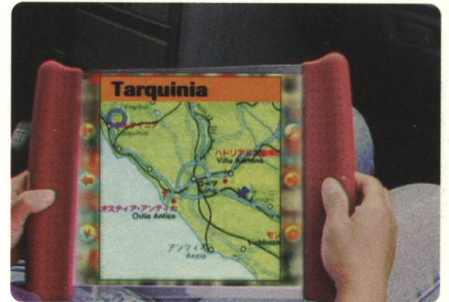
dashboard navigation screen

In-car navigation systems offer simple directions and enhanced travel information.



pull-out travel guide

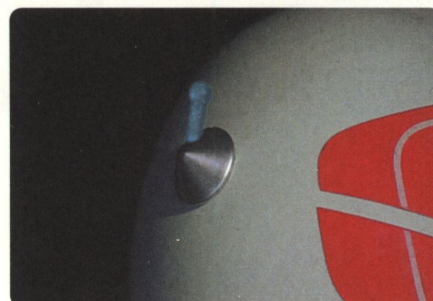
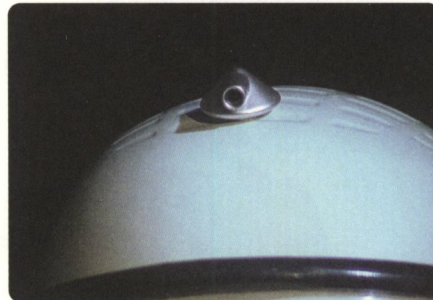
The Pull-Out Travel Guide is a flexible screen that acts as an interactive travel guide and destination planner in the car.

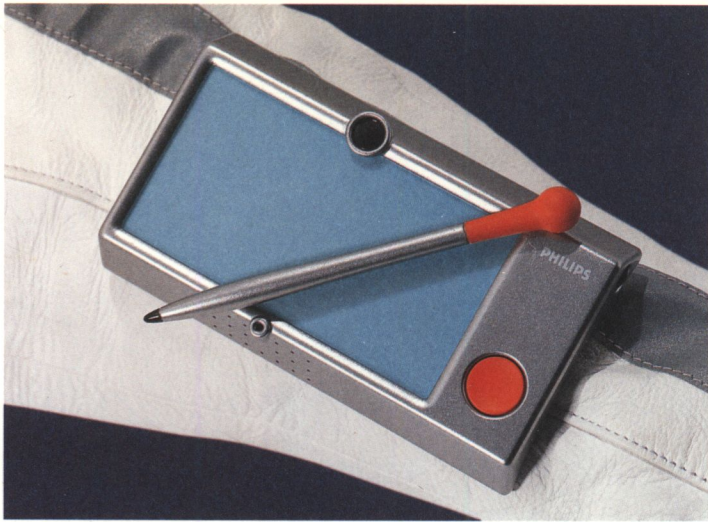


work wear

For the emergency services, the availability of miniaturised, body-worn multimedia devices will greatly improve their efficiency and safety.

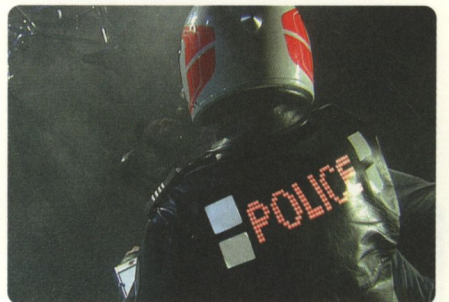
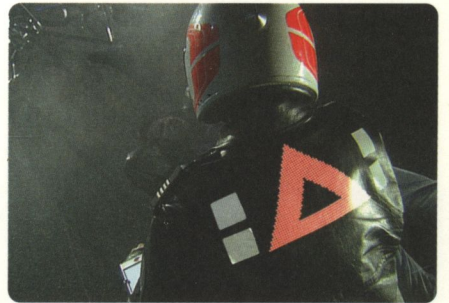
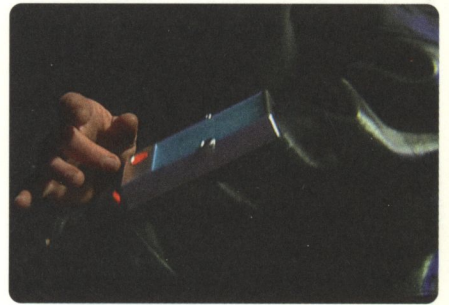
For motorcycle police, a Helmet-Mounted Video Camera will offer recording and remote viewing of incidents, while a Visor Display will give navigation and background information while riding.





Input via pen or touch is done through an Arm-Mounted Display, further enhancing networking possibilities.

Light-Emitting Fabrics will also be integrated into uniforms, both for the safety of the wearer and to signal warnings and messages to others.

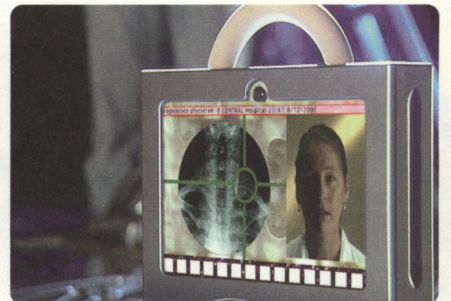


mobile diagnostics

As vital diagnostic equipment such as magnetic resonance scanners become smaller, they will be made as portable units. This allows diagnosis and treatment of patients in the field or in the ambulance, saving valuable time. A network link provides ambulance paramedics or mobile hospital staff with direct access to experts and medical data from their home base. These mobile units may also be able to treat and release some patients on the spot, relieving pressure on hospital facilities and cutting the costs of unnecessary hospitalisation.

These 'mobile hospitals' can also act as self-sufficient units, travelling to remote places to provide assistance in the case of emergencies or to provide periodic screening facilities.





biko games

Children can learn about the importance of energy generation while biking, powering their mobile toys and games as they pedal along. With these Biko Games, they can track each other, navigate and communicate using a short-range signalling system.



home pager / navigator

Using simple pager technology, the Home Pager gives young children the opportunity to stay in touch while cycling. The Navigator Game uses communication technology to link children together, allowing them to play simple games such as hide-and-seek and follow-the-leader. The radio signal also detects traffic, warning the child of a potential danger and the need for caution.





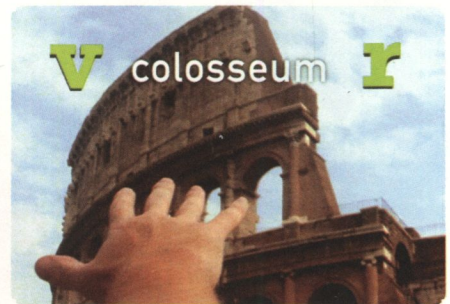
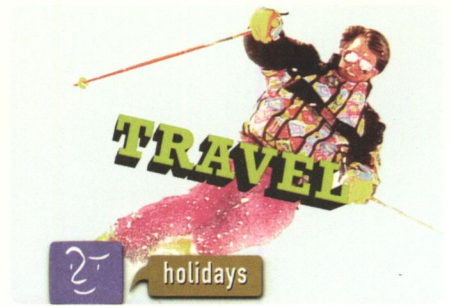
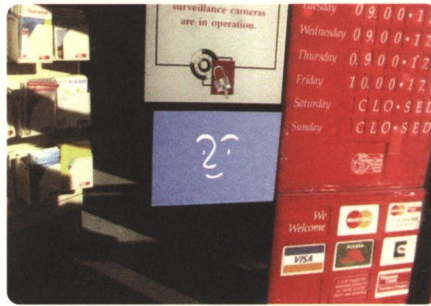
virtual travel

oscar guide

The proliferation of the Internet and other electronic networks in the home will create the need for 'experts' or 'agents' to navigate through information.

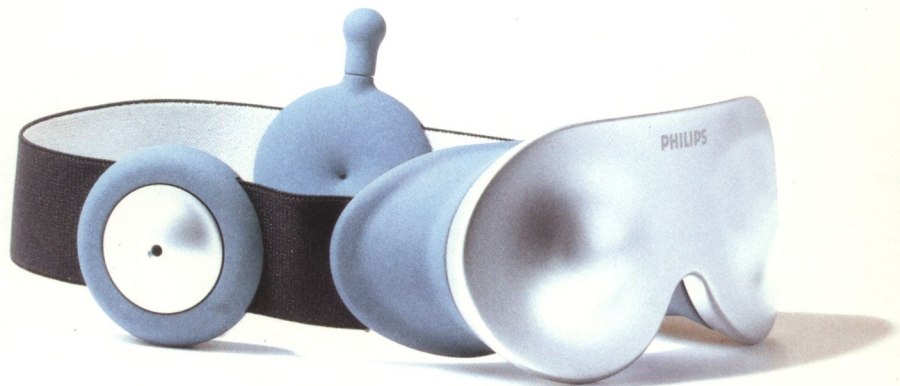
Oscar is an agent on the network who enables you to experience another environment or a particular country. His in-depth knowledge of local conditions, language, geography and culture provides a richer experience. The system can be used either by looking over Oscar's shoulder from your own environment to get a taste of another culture, or to get advice when in another country.

With the use of agents and experts on the net, users can feel more comfortable or secure when navigating and accessing data.



thematic holidays

Thematic Holidays allow anyone to experience – in groups or individually, via virtual-reality and immersion technology – any holiday or adventure experience. Once the headset is on, the user can experience any activity: walking through the rain forest, climbing Mount Everest or diving in the ocean. The choice is restricted only by the software.







validation and assessment

To test the general validity of our findings, we submitted them to an international panel of leading futurologists and trend analysts. In personal interviews, they commented on our hypotheses about imminent socio-cultural change, as embodied in the 60 initial scenarios, and sketched a picture of life in the year 2005 as they saw it developing. Their observations ranged widely, covering private and social lives, and the fields of work, leisure, home, education, the media, transport, the environment and consumption.

Of course, given the limitations inherent in any future-oriented sociological study, it is unlikely that our analysis, even when expanded and refined by the contributions of our panel, will have brought to light all the sensitivities currently present in society. Nonetheless, we believe the model adopted allowed us to pinpoint the most significant directions of change in sufficient detail to give us an idea of what life will be like in the coming decade and to provide crucial input for the concept-generation phase of our project.

We were also keen that the products and services proposed in the Vision of the Future project should make use of relatively 'harmless' technologies and materials. Naturally, it is difficult to be certain about the effects of technologies and materials which are still in development; and we do not know what beneficial or detrimental effects may yet be discovered about those in general use today. It is also difficult to know what may or may not be socially acceptable in terms of the trade-off between the efficiency offered by a technology and its environmental impact. But within those limits, we have tried to make our proposals better than existing alternatives or those which could soon become available.

validation

The results of our research were evaluated by an international panel of futurologists and trend analysts comprising:

North America

Derrick De Kerckhove, Canada, *technology futurologist*, McLuhan Program, University of Toronto
Christine MacNulty, USA, *scenario builder*, Applied Future
Ian Morrison, USA, *forecaster and strategic planner*, The Futures Institute
Shizu Munekata, USA, *strategic consultant*, Enhance Inc.
Nicholas Negroponte, USA, The Media Lab, MIT
Charles Perrottet, USA, *futurologist*, The Futures Group
Watts Wacker, USA, *futurologist*, Yankolovich Associates

Europe

Thierry Gaudin, France, *engineer*, Fondation 2100
Pascal Weil, France, *strategic planner*, Publicis Advertising Agency
Alberto Abruzzese, Italy, *sociologist*, University of Rome
Sebastiano Bagnara, Italy, *psychologist*, University of Sienna
Claudio De Mattè, Italy, *economist*, SDA Bocconi
Giuseppe De Rita, Italy, *sociologist*, Censis, CNEL
Isao Hosoe, Italy, *designer*, Isao Hosoe Design
Oliviero Stock, Italy, *mathematician*, IRST
Pat Lonlande-Dade, UK, *trend forecaster*, Brand Synergy Value
Adam Lury, UK, *strategic planner*, HHCL Advertising Agency
Clive Sinclair, UK, *inventor*, Sinclair Research
Neil Stewart, UK, *technology futurologist*, Stewart Associates

Japan

Toshimo Kawahara, Japan, *computer graphics designer*, PolyGram Pictures
Yasuhide Miura, Japan, *futurologist*, ODS
Sotoro Miyagi, Japan, *designer*, Miyagi Design

The following quotes are a selection of relevant comments from the expert panel.

Sebastiano Bagnara

TRANSPARENCY: *"The one area of concern is electronic transparency. The feeling is that we risk being totally transparent and visible to everyone, and so there is an incapacity to safeguard your own space. It's as if we're always standing in 'piazza'."*

Giuseppe De Rita

RELATIONSHIPS: *"Interpersonal relations will be increasingly important. Subjectivity is not enough, it doesn't give you identity, and so we have to begin again. It doesn't give you a sense of collectivity, of belonging. 'I am me' is no longer enough. You need something more – a renewed rapport with another."*

Toshimo Kawahara

SCULPTURE OR INVISIBLE: *"We can have a transparent telephone. But I don't mind having a telephone which looks like a table-top sculpture. Nice to have it! So then this is the choice: I can have a choice to have beautifully sculptured machines or transparent machines."*

Derrick De Kerckhove

INPUT: *"I think in the future we'll have a lot of gesture-controlled instruments. There is no better illusion of power than that of just making a gesture and making something happen. And people like that. Voice-operated recognition is improving right now. Good-quality recognition will be in every machine we've ever seen, even on your bicycle. I think that handwriting is going to come back to the fore again, the fact that you've got this presence of your own. Also I think better conversions from handwriting to print are going to come around."*

VIRTUAL EXPERIENCE: *"In private transportation people will travel virtually; they will still travel physically but they will travel virtually by a much larger proportion. And my example is: the Mona Lisa was made available to everybody by mechanical reproduction, the world will be made available to everybody by virtual reproduction. We will be getting the Taj Mahal virtually because it's a lot cheaper and it's almost as efficient and perhaps more educational than going to the real Taj Mahal where you don't have the right person, the right guide, you don't know the background, you don't go through the motion of learning about it. So you see very well that visiting the wonders of the world will be done by many people virtually simply because they cannot afford to do it physically."*

ENHANCED JEWELLERY: *"It's a great idea and it's a use of miniaturisation and of friendliness, as long as it's easy to use. There is a little bit of magic there. We've always had childhood dreams made on fairy tales and power at a distance. Anything that has no visible connection that exercises some kind of power is likely to have a very big success."*

SIMPLIFICATION: *"The more technology becomes complicated inside, the more it has to be simple outside."*

TELEWORKING: *"People will actually stay at home and do the jobs for which they have been paid on their network and then they go to the office two or three days a week where they socialize, deal with matters, make new friends, make their presence felt, protect their interests."*

MAKE-UP BOX: *"Right now it's become very serious because you can lose your gender on the net, you can just be a voice or a script. The fact that you can lose it all means that you can build it all and building it all is also a part of what you could call the network stylists or designers or couturiers who are giving you the tools to appear in a different way: you can appear as a chimera, as an angel, as a devil, as a woman or as a man."*

Pat Lonlande-Dade

FRIENDLY OBJECTS: *"There are machines as servants, and machines as friends. I am not sure I want my kettle to be soft and cuddly. There will be elements of machines which I call my friends because that is going to be the relationship you have with the task and if you feel the task is human. But I am not sure that I want my TV, which is my window to the world, to be anything other than a window. Don't give it to me with pink stuff on it, it's a window and windows are made of glass."*

INTERACTION: *"Everything has to be tactile. We are missing this totally at the moment. It's like we start with the outside and you put something around it to keep the inside safe, so it is hard. We are going to have to use more senses."*

MEDICAL BOX: *"Why do I need to go to the doctor to tell me whether I have high blood pressure or not? I will have a book or CD-ROM that tells me what blood pressure is about and I will be able to measure it directly."*

Christine MacNulty

INTERACTIVE BOOKS: *"I think I'd rather have a book, a real book. But I could well imagine kids (using interactive books) especially if we're talking ten years' time. I was just thinking I have nieces and nephews who certainly take computer games to bed with them in the way that I used to take books so I can well imagine that those sorts of things will probably catch on."*

Sotoro Miyagi

NEXT STEP TECHNOLOGY: *"The machine replaced human labour and now human brainpower. But I think technology's next step will be to work for the spirit, the heart."*

CONSUMPTION: *"I think the consumption of products will decrease for two main reasons. One is the environment problem. The consumption of many products leads to the problem of waste and damage to nature. Another factor would be that via the computer you can enter the virtual world, which allows you to choose products, to choose a book and also to read it. So you will have a better selection of the products you want to buy and by entering the virtual world you won't need to have the product itself. So the consumption of products as objects will decrease. But we were talking earlier about the spirit and the heart and there will be more consumption of nature."*

TELESHOPPING: *"It's not very interesting for me to go and buy toilet paper so I'd want my computer to do that. But for my suits and my clothing I'd want to do that myself, to speak with the salesman, be able to touch the fabric. So there's a difference in level, but yes, technology would be of a great help."*

EDUCATION: *"For now education is centred on knowledge and facts and one has to educate the senses by himself. In 2005 the position will be reversed. You can input the knowledge and the facts through the computer but education will be mainly centred on how you can express yourself, how you can educate your senses."*

Ian Morrison

BALANCE: "Everybody's going at 1000 miles an hour and I think there's going to be some inevitable sense of questioning – of why, how much faster can I go? Can we really keep this up? The word balance keeps coming by. That's going to be the big deal, you know, to try and get some balance back."

Shizu Munekata

VIRTUAL COMMUNITIES: "People want to feel more close, and how can we do that? A 24-hour window on the Internet is maybe one mechanism. Virtual togetherness, a virtual family, is becoming possible."

Nicholas Negroponte

INTERACTIVE BILLBOARD: "It's the only intrusive form of advertising that will be left. None other will exist. You want to sell soap – you have no place to do it except billboards. TV's not going to be thousands of channels. It's just going to be your channel when you turn on. And it's going to be what you want on it. And I can't believe that you want soap adverts!"

SOUND AND VISION WALLPAPER: "First of all it'll be integrated; in the sense that screens will be painted on walls. You're not going to have TVs sitting on tables and you're not going to have computers like we have them today."

Clive Sinclair

SOLID STATE: "I believe we will have a solid state – a non-moving replacement for the CD for audio purposes. At the moment, when you want to play a record, you have got two forms – you can do it on tape or CD. But in both cases, you put something on and it spins round. Well in 2005, it won't. It will be totally static and electronic. The advantage is that there will be nothing to wear out and it will always play just as well."

Neil Stewart

DIGITAL NEWS: "At the moment, the person that owns the medium owns the message. The two go together and you buy your Guardian. When that power changes, I may prefer to have an article from the Guardian, an article from The Daily Telegraph and the crossword from the Financial Times. I will be able to do that, because I will take what I want from those various sources. Which means I receive my paper 'The Daily Me'."

DEPTH: "Let's cut out all those fringe areas and let's just read one thing in-depth and do something with it. So I think by 2005, we will have learned that more information does not mean more meaning, and we will have focused on ways to bring out more meaning from perhaps more limited information."

Watts Wacker

HOME: "Home is no longer a location, home is a concept. I want the feelings of home wherever I am."

EMOTION CONTAINER: "The future is you're watching an old movie 'Casablanca' and you remember your best friend who you went to see 'Casablanca' with 14 times and instead of calling him up and leaving him a message you send him 30 seconds of your favourite scene from the movie."

assessment

If the world is to achieve sustainable development, its technological, social and commercial systems must be organised in such a way that the quality of the environment will, at the very least, be maintained at its present level for future generations. That means that the impact of human activities on the environment, including those involving products and services, must be kept as low as possible.

Obviously, technology cannot take us from where we are now, in which almost everything we do has some questionable effect on the environment, to a dream world in which the human race and its environment are in perfect harmony – all within the space of ten years. Within the limitations, however, products and services that are developed should have the least harmful impact on the environment.

environmental impact

Evaluating the concepts with respect to their eco-friendliness is not an easy task, given the wide differences between them in terms of technological complexity. However, several ways of estimating their environmental impact suggest themselves. One way is to identify the functional trends reflected in them and then assess the impact of the technologies and materials involved in these trends. Another way is to look at the technologies and materials proposed in the project as a whole and compare their impact with that of the technologies and materials that might have been used instead. Both methods provide a general impression of the degree to which the proposals are environmentally friendly.

functional trends

The proposed products and services cover a vast field, from children's games and personal communicators through electronic clothing to updated telecommunications kiosks and portable medical equipment. Not surprisingly, the functions and technologies involved are correspondingly diverse. Nonetheless, we can discern at least the following trends.

miniaturisation

One of the clearest functional trends represented in the concepts is the extensive use of miniaturised information technology. Products are becoming increasingly information-intensive as information processing and transmission takes up less and less space.

This trend is manifested in the integration of chips into the Music T-Shirt, for example. It is implicit in the complex processing power required for the Navigation Screen. And it is also apparent in the versatile software used in the Multimedia Mirror.

portability

Portability is a trend which reflects a desire for lightweight electrical products that do not need to be connected to an external power source. Almost inevitably at present, this implies the use of batteries and battery rechargers. Hand-Powered Toys may be an interesting alternative.

Portability also means that the weight of the product needs to be kept down through the use of highly energy-efficient circuits, so that fewer or smaller batteries can be used. It may also be achieved through the use of lightweight, miniaturised components.

The proposed Videophone Watches, for instance, assume that technology previously contained in a portable telephone can be compressed into a wristwatch; and the Portable Scanner makes use of portable scanning technology yet to be developed.

cherishability

Many of the concepts strive to be highly cherishable so that they will be treasured and kept for a long time for their personal symbolic and sentimental value. Cherishable quality is evident in the Shiva personal multi-tasking assistants, in which the software adapts to fit the user's habits and wishes. It is also found in the little Ludic Robot, whose software learns to recognise its owner's voice and behave with an endearing unpredictability. And clearly, the Emotion Containers, because of their highly personal content, have a high degree of cherishability.

comparing technologies

Technologies often affect the quality of the natural environment and the health of people in a variety of different ways. The challenge when evaluating environmental impact is to arrive at a balanced analysis which takes all these effects into account.

A product's effects may be different at different phases in its lifecycle. Ideally, a thorough analysis would require assessment of the effects generated at each of the following phases:

- extraction of raw materials,
- processing of the elements to be used,
- manufacture of the product or service,
- distribution of the product or service,
- use of the product or service,
- disposal of the product.

However, in the present case, we have too little information to perform such a comprehensive assessment. Instead, we have tabulated the frequency with which the specific technologies are used in the Vision of the Future proposals (see page 193). This provides an indication of the overall technological bias of the whole project. If we compare the environmental impact of the technologies used with that of the technologies (extrapolated into the future) which could have been used, i.e. for the most likely alternative, we can draw some tentative conclusions about the load imposed by the proposals' environmental impact. To illustrate the principle, let us consider briefly the relative merits of the two most often used technologies and their alternatives.

rechargeable batteries

Almost all the proposals for portable products involve the use of rechargeable batteries. One rechargeable battery provides power equivalent to that provided by 1,000 disposable batteries. Rechargeable batteries therefore constitute a significant step in the direction of sustainable development. The major obstacle to more widespread use is the inconvenience of the recharging process. The concept of the Recharging Mat is designed to ease that problem, as is the Recharge Jacket, which recharges the batteries of portable products which are stored in the pockets.

The problem of the use of environmentally undesirable heavy metals such as cadmium in current rechargeable batteries is likely to be partially resolved in the near future through the use of nickel-metal hydride and

lithiumion rechargeable batteries. It is important that these advanced types of batteries become reliable, cheap and widely available.

low-power components

Consumption of electricity typically accounts for at least half the ecological load of most electronic products. Although more efficient electrical conduction through the use of high-temperature superconductors will, by reducing electrical resistance, eventually make electricity up to 15% cheaper, it is important for sustainable development that increased energy efficiency in products should remain a major priority. In battery-operated products, energy efficiency is needed to extend the life span of batteries and thus reduce the waste disposal problem they cause.

To make future generations of portable electronic products such as Shivas, Interactive Books and the Electronic Journals feasible in a sustainable society, the emphasis will need to shift towards energy-efficient, information-intensive microprocessors. But as this circuitry becomes more energy-efficient, as reflected in the greater use of smart cards, voice recognition and video image transmission, the relentless pressure to increase the number of functions a product can perform will result in the same amount of energy being used to do more. One of the challenges manufacturers face is therefore to develop products which provide only the required functions (perhaps in a modular system so that others can be added and removed as required) and consume less energy than competing products.

more complex cases

The above considerations give a general indication of the relative load imposed on the environment by the technologies involved in many of the concepts in the project. However, proper assessment of the overall benefits of other concepts would require more complex and subtle analysis. For example, the Intelligent Garbage Can would need to be evaluated by comparing automatic and manual waste separation; and its energy and resource requirements would need to be measured against the environmental load imposed by the non-separation of waste. And, in evaluating the Video Postcard, one would need to compare its emotional benefit and ecological impact with those of the traditional paper postcard. Furthermore, to be complete, such analyses would need to integrate environmental assessments with assessments of marketability.

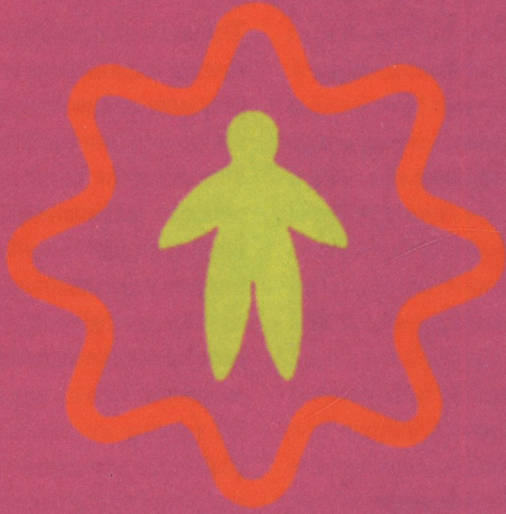
continuing development

Although, inevitably, a number of questions about overall environmental effects and benefits remain, it is nonetheless clear that many of the concepts address ecological issues directly. Many of the technologies they share hold considerable promise for sustainable development as a result of their lower environmental loads.

The extent to which the proposals made in the Vision of the Future project could contribute to sustainable development depends on how they are ultimately realised. Those concepts which are pursued further will be subjected to intensive analysis, and recommendations will be made as to how their ecological impact can be reduced.

<i>technology</i>	<i>concepts</i>
<i>light-emitting polymer screens</i>	68
<i>rechargeable batteries</i>	63
<i>small speakers</i>	51
<i>microphones</i>	31
<i>computers</i>	29
<i>random access memory (RAM)</i>	29
<i>video cameras</i>	27
<i>ground-based transmission / reception</i>	17
<i>chip players</i>	14
<i>earphones</i>	10
<i>large speakers, movement sensors, smart-card sensors, solar electric cells, printers, small motors, primary batteries, audio recorders, voice recognition, short-range FM radio, microprojectors, software</i>	5-10
<i>dynamo, still camera, material separator, medical scanning technology, weight / temperature / blood-pressure sensors, scent production device, LCD projector</i>	< 5

The path of rigorously pursuing incremental improvements in all aspects of products and services is central to the philosophy underlying the project. Improving the contribution such products can make to sustainable development is part of this effort. It implies the need to pay continued and close attention to ecological issues as these proposals are developed further.



communicating the results

The ideas and concepts of the Vision of the Future project are presented to the public in a number of different ways.

The principal vehicle is a permanent exhibition staged in the Evoluon, Philips Competence Centre in Eindhoven, the Netherlands. In addition, this book explains the background, philosophy and details of the project; a CD-i encourages active exploration of the content; and a Web site is a way of obtaining direct feedback and generating discussion with people all over the world.

Visitors to the Evoluon include actual and potential clients of Philips from around the world, Philips employees, and parties of adults and children interested in the latest developments in technology and Philips know-how.

Given the different age and backgrounds of the visitors, care has also been taken to ensure that the exhibition is both simple enough for children to understand and challenging enough for adults.

With this in mind, the Vision of the Future exhibition has been designed to allow a great deal of flexibility. It allows visitors to experience those elements from the exhibition that they find most stimulating. It also allows visitors to experience the exhibits in a natural, intuitive way, with no confusing instructions or complicated routes to follow.

the exhibition

As visitors enter the exhibition they are invited to a small theatre. Here they are shown a short video presentation which introduces them to the exhibition. It explains its purpose and structure, together with a selection of video clips which describe the individual scenarios. This video presentation is flexible and may be adapted depending upon the group of visitors involved. Narrations between the clips explain in a few words the essential characteristics of each story.

the four domains

The idea of the four domains is also used within the exhibition to group the individual exhibits, give them context and make them easier to understand.

The Personal domain has small glass display cabinets surrounded by curved shields. These are intended to be viewed alone, giving the visitor a very personal and intimate relationship to the objects and supporting videos.

The Domestic domain is made up of large open-ended cubes relating to rooms in a house: the living room, kitchen, children's room, bedroom and bathroom.

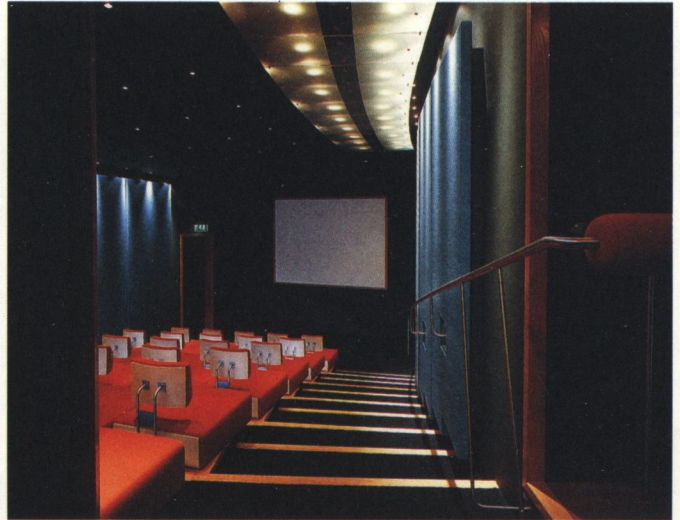
The Public domain is represented by an open space with a stone floor. The exhibits are free-standing, allowing visitors to wander freely amongst them.

The Mobile domain is an extension to the public space. Large platforms display, for example, a bicycle, to illustrate the potential of multimedia while cycling.

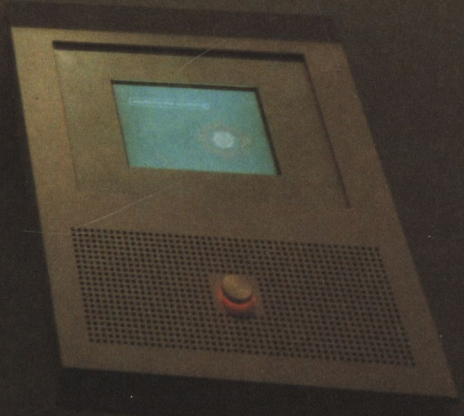
ambience

Ambient images, suggestive of the domains, are projected onto screens suspended above each area. The screens are designed to provide a landmark for all the separate exhibits underneath. When visitors look round the exhibits they will also hear ambient sounds reflecting the characteristics of each domain. In the Personal domain, for instance, the visitor hears a variety of sounds produced by people – someone whistling, the murmur of a conversation, a baby crying in the distance. And in the Public domain, the sound of footsteps, a church bell, and a busy office provide reference to the real world.

Finally there is a refreshment corner next to the exhibition space. This area has been set aside for visitors to meet and discuss what they have seen after their tour.







1

acknowledgements

Philips Corporate Design Stefano Marzano (Project Art Director), André Rotte (Project Manager)

PCD core team Roland Bird, Francis Chu (Project Leader Exhibition), Khodi Feiz (Project Leader Content),

Graham Hinde, Bertrand Rigot, Roger Swales **PCD fluidity team** Michael Bains, Jeanne de Bont,

Clare Chance, Helen Charman, Margit Coomans, Sebnem Elings, Lorna Goulden, Dingeman Kuilman,

Robert Lambourne, John Lippinkhof, Eric Mattijssen, Angus McAra, Irene McWilliam, Paul Moore,

Sandra Nicholson, Ron Oosterholt, Oscar Peña, Georg Rakers, Karen Reddering, Tonnie Saanen,

Gerard van der Veen, Marion Verbücken, Jan Paul van der Voet, Paul van Vorstenbos, Govert de Vries,

Philip White, Mirjam Wouters **Philips Project Centre** Bert Tordoir, Cees Jansen, Joop Sterk

socio-cultural research Francesco Morace, Josephine Green (Trends Lab, Milan), Fabrizio Valente

model making Kemo bv, Tim bv, Bruns bv, Gielissen bv **film studios** Studio Azzuro (Milan),

Eye Candy (London), Live From Bermuda (London), Inizio (Amsterdam), Lohman Binkhorst

and Crew (Eindhoven), Simple Productions (London)

colophon

editorial team Andrew Baxter (Andrew Baxter Associates), Roland Bird,

Khodi Feiz, Kenneth Gilbert (Philips Translation Services), Graham Hinde,

Stefano Marzano, Angus McAra **graphic design** Angus McAra, Bertrand Rigot

cover illustration Paul Thursfield (PCD) **photography** Liliane van Kol (Studio Koenders),

Rens van Mierlo (Korff & van Mierlo) **production coordination** Cees de Jong,

Jan Johan ter Poorten, V+K Publishing, Bussum, The Netherlands

colour separations NederlofRepro, Heemstede, The Netherlands

printing by Kunstdrukkerij Mercurius, Wormerveer, The Netherlands







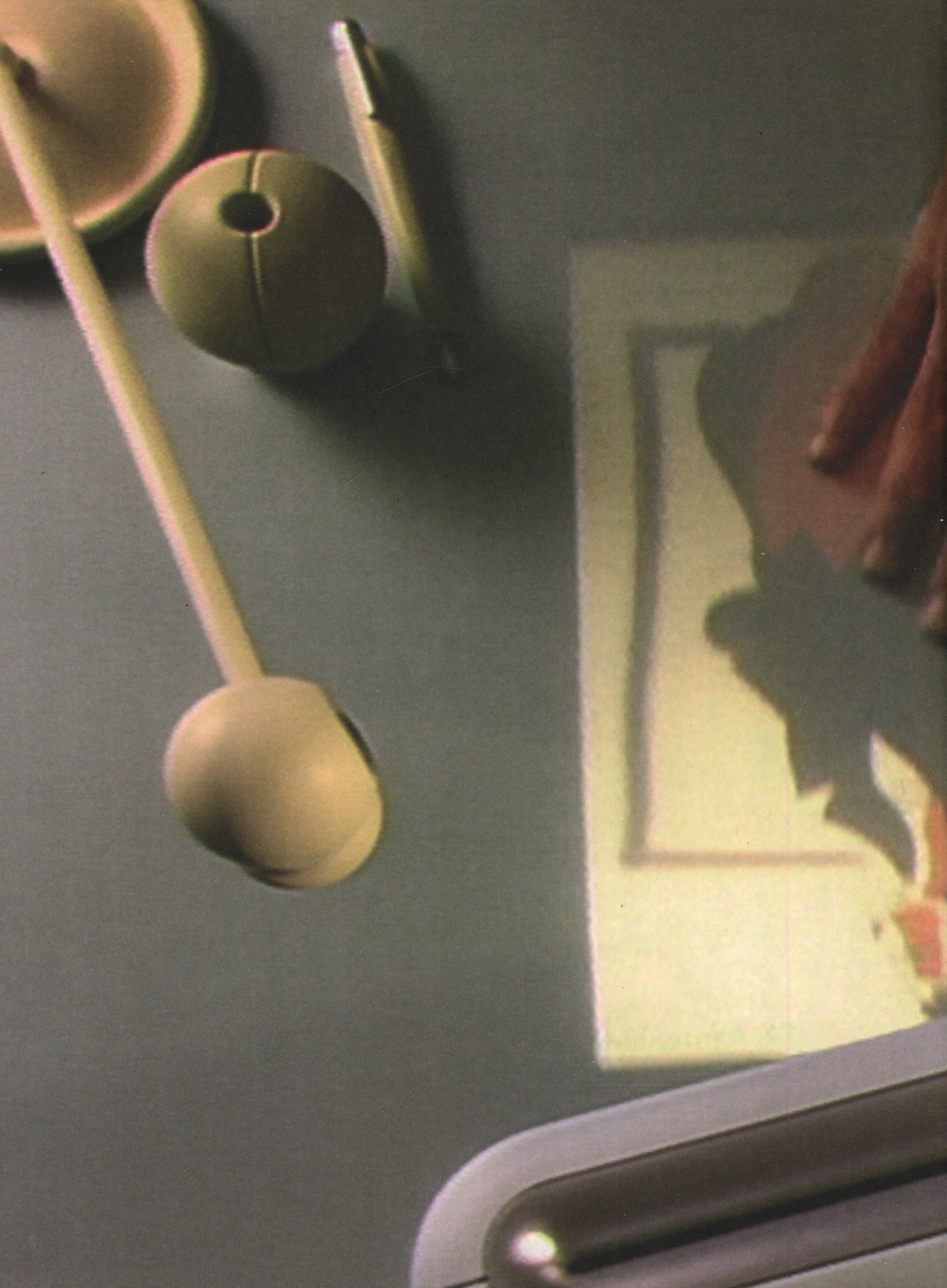
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A pair of hands, one blue and one green, are shown from the wrist up, holding a large, white, three-dimensional word. The word is "CONTACT" in a bold, sans-serif font. The hands are positioned as if they are presenting the word. The background is dark, making the hands and the word stand out.

CONTACT

