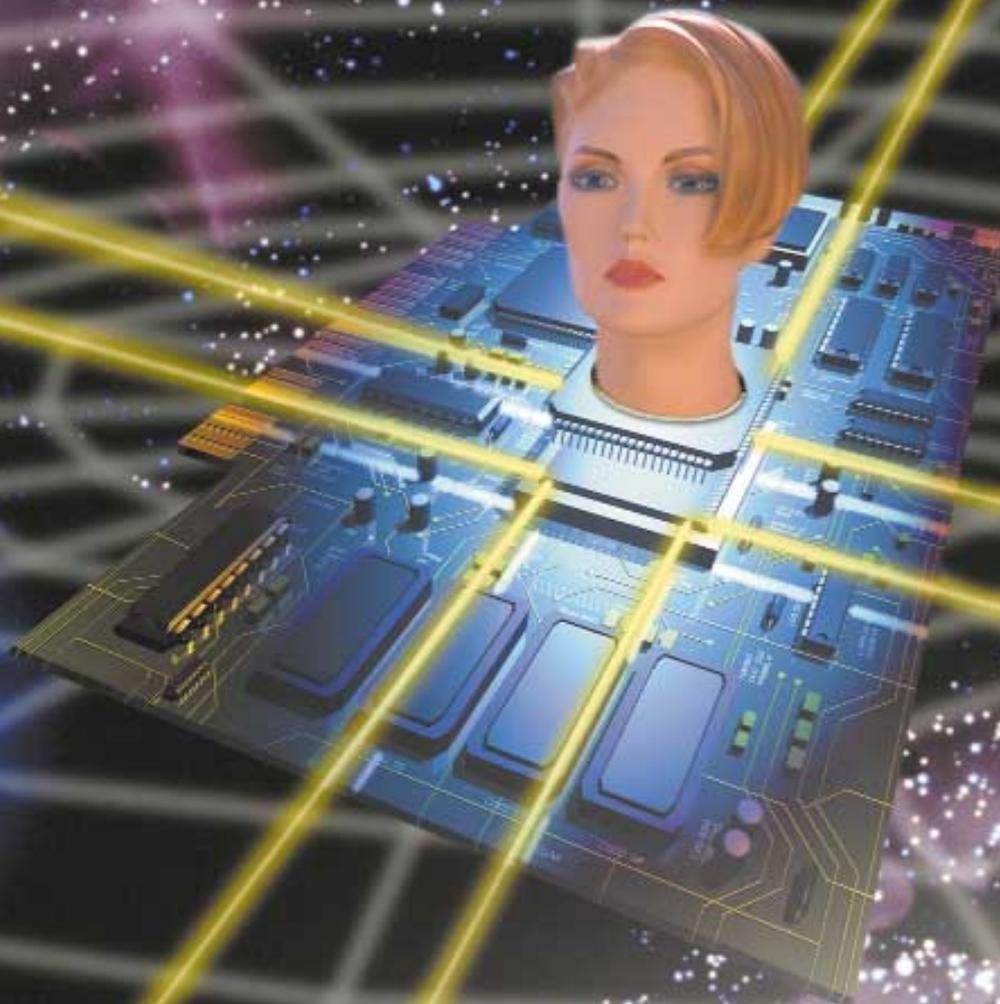


August 2000

**EURESCOM**

**mess@ge**



**SPECIAL ISSUE**

Everyday  
life in  
**Cyberworld**

**REPORTS FROM THE FUTURE**



EURESCOM mess@ge special issue  
'Everyday life in Cyberworld'

Based on the results of the Future Directions Workshop 2000  
in Landshut, Germany

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# Have you ever

thought about how life could really be in tomorrow's Cyberworld?

Imagine an entirely wireless world where fast communication and computing is ubiquitous, an endless sea of data engulfs you, objects are alive with intelligence, and the Net is always on, always there. Imagine that nascent technologies evolve to change the form of everyday things – e-scrolls replace books and magazines, media panels replace television and computer screens, holographs replace conference calls, stick-on patches monitor

your health or jogging performance, and perhaps we no longer speak but communicate our feelings directly to each other through neural paths. This is the fountainhead of the Information Society.

No one knows precisely what life will be in 15, 10 or even 5 years, but it is always fun guessing. If we know something about the many different technologies, we can anticipate many of

the things that will be possible by then, and when they are likely to happen. Considering the interactions between the different technologies and society along the way, we can also foresee many potential consequences in business and social life.

Developing scenarios allows us to plan future projects with a much better picture of how life might change, but keeping in mind that many things will still turn out differently despite our efforts.

The leitmotif for this special issue of EURESCOM mess@ge is to identify questions and possible future developments and summarise them in scenarios. The alternative scenarios presented here serve as a strategic management aid, helping us consider possible options and preparing for the case where one or more



of these scenarios become reality. Different approaches are applied to such kind of discussions depending on the business sector. This special issue of EURESCOM mess@ge is based on the key findings of the EURESCOM Future Directions Workshop 2000 that took place 2-4 April 2000 in Landshut, Germany. EURESCOM invited 22 experts from shareholders and external bodies to a guided discussion about the future. The workshop was organised in four parallel groups discussing how citizens and users, the marketplace, the society and its institutions and technologists perceive tomorrow. The workshop's perspective was set at 2010 and later. However, knowing that the pace of change in communications follows a logarithmic scale, we decided to write this special issue from the perspective of 5 years ahead.

All articles are written under the name of fictitious authors from the year 2005. We chose this approach to spotlight the consequences of some technological developments more

clearly and to inspire your imagination, dear readers.

I would like to express my sincere thanks to all workshop participants and in particular to the members of the Strategic Studies Programme Management Group who have put much effort in extracting the key messages and writing the contributions. I hope you will receive new insights from our little journey with the time machine. Welcome to Cyberworld!

*Harald Johansen*  
Harald Johansen

Senior Manager for Strategic Studies

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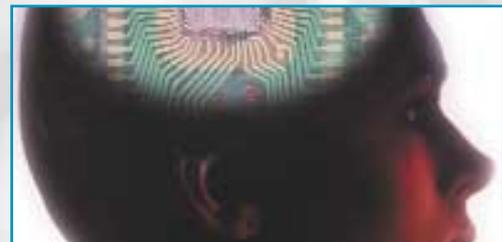


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## Needs do change

The ways people do things have changed a lot despite the predictions of many sociologists that people in general would not change. One of the biggest changes recently was the collapse of the national postal services when 'always on' succeeded as a commercial service in 2003 and then became a universal right this year under the Parliament of the European Union decision on subsidised Internet access for all.

*Yours sincerely, Adrian van Gool*

Great to hear Mr John Cleeves say in the last issue of mess@age magazine that the customer will have even more choice, but how will he handle the information overflow? Does the mass-market customer really want to have empowerment or does he prefer to merely consume information? You can see, I do not have the answer, but the answer will determine the structure of the future marketplace.

*Yours sincerely, Harold Smith*

## The role of technology

I had always hoped that technology would help people to get rid of the repetitive, boring undesirable tasks so that they could spend more time taking care of their friends and family and enriching themselves more spiritually than financially. I don't want to waste my time with technology, it is there to do the work and help. I don't want to be its slave, spending my time with user guides, tech supports and discussing about the latest G3 phone models with my friend. I want to have a choice and to leave a healthy environment to my children, not a hi-tech dictatorship.

*Yours sincerely, Elke Lehmann*

## Technology makes life dull

I have had a good life and I have benefited from a lot of technology

changes in the course of my life. I am 105 now. At this age you do not expect to get excited when seeing a member of the opposite sex. Perhaps the next generation of pensioners will be better adjusted to cope than I am.

It is not my implants or limb extensions that are the problem really, it is that

life is so dull. It is consume, consume, nothing but consume. I think this is why they keep us alive.

I am now on 200 cigarettes a day, no problem, as I have an artificial lung and heart. We no

longer get our pensions in the form of money;

we get products tailored to our lifestyle. Sounds great, but not when you are taxed on what you left unconsumed. The tax

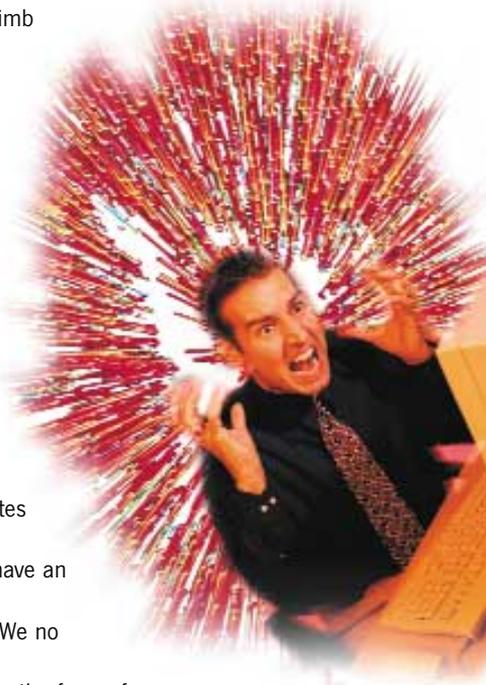
collector has become the refuge collector, and their robots sort through your rubbish and work out your annual refuge return

each year. I have even known people who have dumped their

rubbish in secret places, but of course the Refuge Inspector finds the rubbish, because it is full of smart devices. So I urge your

readers to think carefully before releasing new technology on us poor mortals.

*Yours sincerely, Michel Loussier*



# My life belongs to me

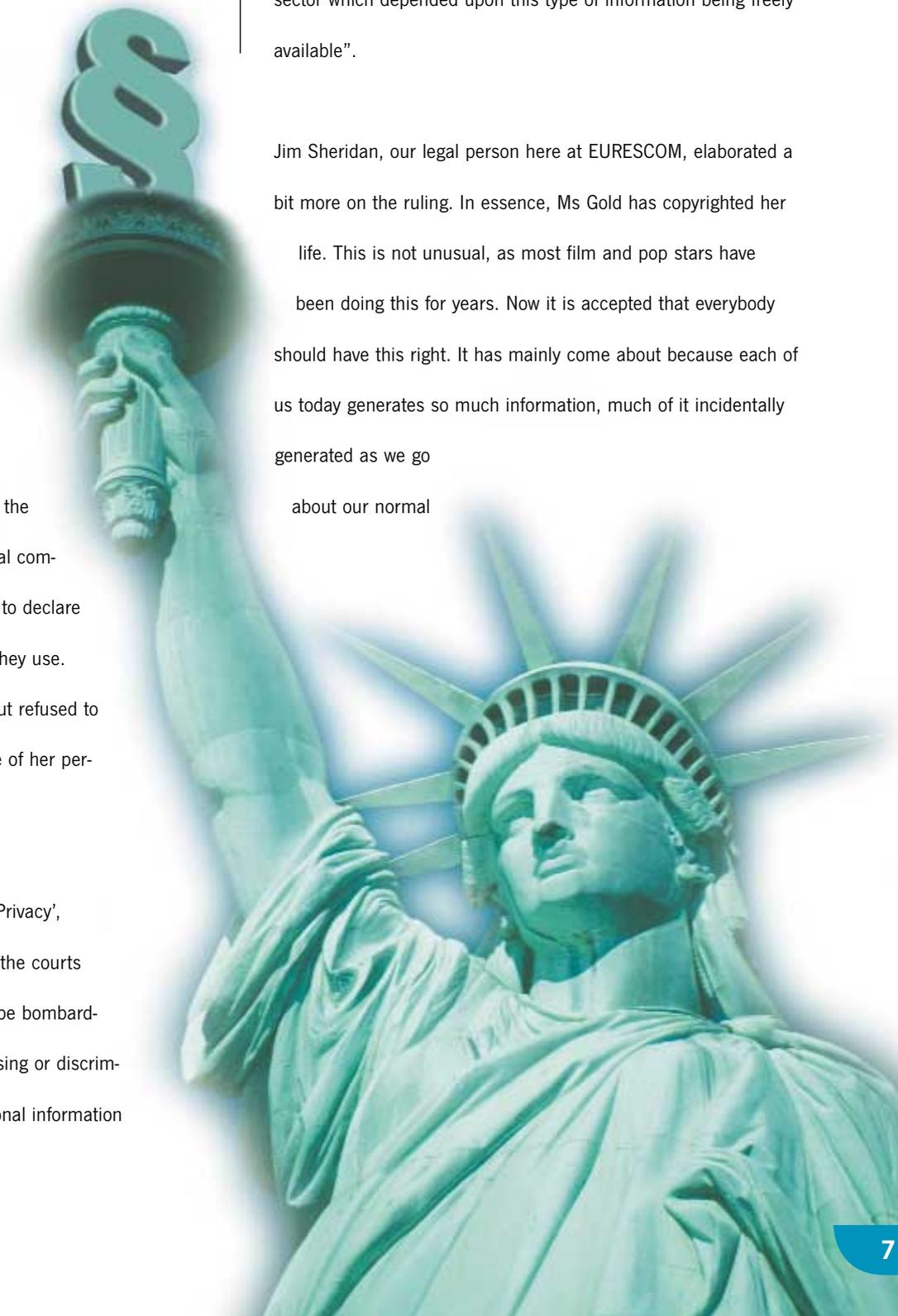
A shock wave ran through companies and government organisations earlier this month when the European Court of Justice made legal history by declaring that Ms Marian Gold had exclusive rights to her life information history. In one stroke the ruling has overturned many of the premises of current data protection laws, which acted in the interest of commercial activities and against those of the individual and violated basic human rights.

Although the ruling will require amendments to EU law it looks very likely that the days of the data bonanza for commercial companies is over and companies will have to declare and pay for customer information that they use. The courts awarded costs to Ms Gold but refused to allow her compensation for past misuse of her personal information.

A spokeswoman for the 'Campaign for Privacy', which helped Ms Gold take her case to the courts said "At long last people will no longer be bombarded by unsolicited e-mails, direct advertising or discriminated against by improper use of personal information

profiles". A spokesman for the Information Marketing Industry said: "This was a sad day for industry and will set back the growth in e-commerce and the new whole lifestyle application sector which depended upon this type of information being freely available".

Jim Sheridan, our legal person here at EURESCOM, elaborated a bit more on the ruling. In essence, Ms Gold has copyrighted her life. This is not unusual, as most film and pop stars have been doing this for years. Now it is accepted that everybody should have this right. It has mainly come about because each of us today generates so much information, much of it incidentally generated as we go about our normal



lives. It was the data mining of this incidental information to construct personal profiles that had caused the legal action in the first place. In Jim's view it will take a number of years to untangle the mess that the industry had got itself into. The current thinking is that an amnesty will be given to companies so they can come clean about what information they hold on each of us and negotiate with each individual contracts for information use,

but people should not expect any windfall payments. Probably the only real beneficiary will be the software industry, as they will have to modify thousands of systems to meet the new legislation. It is a job probably bigger than the millennium bug of the last century so it is likely to have a profound effect upon EURESCOM shareholders.



DigiValet is a revolutionary cybercard that learns all your desires. DigiValet is also your own personal butler. It goes shopping for you, and you can trust that it will never buy anything that doesn't please you. You can also offer the services of your DigiValet to

## DigiValet 1.0

DigiComps new Cyber butler offers some interesting new features

your friends, for example if they want to buy you something for a special occasion. DigiValet takes the learning and mental agility skills of NetFin (existing in the same product family) to a quite new plane, adding the all-important psychological dimension. Where NetFin was a cuddly pet and family member, DigiValet knows you – perhaps better even than you know yourself! Training DigiValet is simple. It collects data constantly on your preferences and wishes, and you don't need to do a thing. DigiValet never sleeps; it learns what lights you up and turns you off as you watch movies, take part in experiments, use the video-phone, or do your virtual shopping. Just like Jeeves at his best, only at a fraction of the cost!

By Freya Hoff

# Everyday life in Cyberworld

Five years ago most people saw the Cyberworld as a playground for science fiction freaks. Now it is real, causing unprecedented challenges for society, politics and economy. True, life is more convenient now than at the turn of the century.

Most people today would find it difficult to live without their fully automatised homes, which provide them with full refrigerators, self-repairing devices and 24-hour online connections. What used to be a fancy of billionaires like Bill Gates is today standard for every middle class family. Even more important were the improvements in medical treatment via Cyber doctors and bio-communications devices. Life expectancy doubled while public health cost in the 21 countries of the European Union halved since the year 2000.

However, Cyberworld caused problems that are still to be solved. One only has to think of the Cyber trade war between Europe and the USA last year that led to a severe fall of Cyber shares. Apart from global economies, a growing number of citizens are getting more and more concerned about their rights in Cyber society,

where every half-wit can easily duplicate their personality on the three-dimensional Cyberweb. Last year a total number of 230 million persons lost their Cyber identity, which caused a damage of Cyber € 46 billion. There is also a considerable increase of psychic diseases caused by multiple Cyber identities. Dr. Larry Croft from Cyber Hospital Europe watches this trend with growing concern: "If we don't act soon, we will have 50 million Cyber lunatics in Europe by the year 2008." Employers prefer avatars to employees, not only because of the higher health risks. "Our avatars make less mistakes and are never ill. Their work productivity is 500 per cent higher than the productivity of our human

employees," says Robert T.

Welfare, CPO of Deutsche Telekom.

Our reports from today's Cyber reality display a mixed situation. Mankind still has to find the right way in dealing with the tremendous communications facilities and information opportunities of the Cyber age.



# On the way to Cyber UNO

By Tomaso Villafranca

How Cyberspace changed the way of political participation

Cyberspace allows individuals to band together in protest against the increasingly remote institutions, which govern us. There are flourishing pockets of dissidence that query consensual practices. Radical groups like Cyber Liberation try to push new dynamics on society. They use new mechanisms to amplify their activity and influence on a global scale.

Cyberspace offers the opportunity to make the exchange of information and collaboration much easier and cheaper than ever before. It is also easier than ever before to monitor and control people's access to information. Thus the Net offers the possibility of both greater liberation for the individual and greater repression. The future developments depend on the complex interdependence between technology and the institutions which exercise control over the Net. Now we must raise the question about the future of our institutions. How is the development of institutions shaping tomorrow's society and how sustainable are they? Will it happen spontaneously or will it require the intervention of public policies? Do we have to

await some kind of unpredictable and uncontrollable disruptive event to change social values, beliefs and needs?

Today's organisations can only survive in Cyberworld, because most of their members are not geographically concentrated in urban centres. People will be spread around the world under the umbrella of new Cyber organisations. The discussion about the creation of the Cyber United Nations Organisation (CUNO) is in the final stage. The members of the United Nations have already decided in their general assembly last month that the United Nations in New York will be dissolved when CUNO has started to work.

CUNO and other Cyber organisations function as a global executive information system. These fields of co-operative

intentions can be seen as new units of social institutions and entrepreneurial efforts.

The future will show, whether conflict solving mechanisms in CUNO will work more smoothly than in the old UN.



# Leader

By Daniel Green

The future of our Cyberworld is full of tensions and uncertainties. The proliferation of personalised services that manage confidential customer information is still at the top of the list of issues. Customers want control of their own information whilst businesses know that without this data they will lose control of the marketplace. The issue of control seems to lie at the heart of another central debate, that of the role of governments. Most developed economies now use e-democracy for continuous consultation with their electorate as well as for elections.

Politicians are increasingly aware that it is not politics that people want, but responsible management of society issues, particularly those pertaining to health and the environment. This is likely to be a lively topic over the next years, as both national and global institutions go through a major restructuring and decide where power lies and who will exercise it. All of us will be affected.

From a technology viewpoint diversity seems to be a controversial subject for the future. Major lessons have been learnt from relying too much on any single technology solution. Surprisingly the increased use of patents rather than stifling innovation has

produced many alternative ideas and increased diversity. The

break up of Microsoft fuelled the development of new operating systems particularly in the Open Source arena. Major applications are now generally portable across platforms.

There are many new technologies about to be launched which will again raise many public issues. Probably the most significant will be the introduction of artificial life technologies into many of our services. There is no doubt that this will raise ethical issues and will certainly threaten many human jobs across the world. A major debate is forming on 'natural versus artificial' and it is still open how this debate will be decided.

# Milton Keynes, Cybertrade Commissioner

**Milton Keynes has recently promoted the most important project global institutions ever launched within the Cyberbusiness turf. He is providing the International Trade Organisation (ITO) with the charismatic leadership the organisation previously lacked, mainly due to his ultra liberal positions that made him the most loved by American multinationals and the most hated man by European governments. Belonging to the NetGen, he never really finished University, but in his short career (he is only 29) was able to challenge Microsoft and AOL alike with his CyberBoxes, becoming a prominent Net millionaire and Cyber Executive Man of the Year in 2004.**

*mess@ge:* Mr Keynes, you have been appointed Cybertrade Commissioner of the ITO . Could you explain your role in the ITO?

*Milton Keynes:* The aim of our organisation is to promote the development of global free trade. We developed from the old World Trade Organisation, but as global trade increased, and the Internet developed, it was found that more and more transactions were being made over the Internet and that increasingly, the goods and services being traded were information based services. Thus the WTO became the ITO, with enhanced powers to look at electronic transactions, the underlying infrastructure and also important related issues such as intellectual property.

*mess@ge:* Some people argue that what you call free trade is just an euphemism for the destruction of present society, namely the achieved social and economic benefits. Would you like to comment?

*Milton Keynes:* There are far too many people who enjoy criticising the ITO. The past barriers to trade tariffs and subsidies have been almost eliminated by the WTO and ITO. Some over-sentimental people have questioned the benefit of increasing labour efficiency and the loss of income by some developing countries. However, if one looks at the world economy as a whole, there is no doubt of the overall benefit. Over the last 10 years average growth on GDP has been 5 per cent yearly, much of it driven by the growth of Cyber business and no-one seriously advocates supporting uneconomic enterprises, regions or countries. Nowadays, some of the most important barriers to trade are differences in taxation and law. We are working on global harmonisation of these.



*mess@ge:* You can hardly achieve global harmonisation on these issues without Europe co-operating. How do you see Europe's recent positions on free trade?

*Milton Keynes:* Indeed, the greatest resistance we found on persuading countries to adopt Californian law as a standard has come from the so-called developed countries: Europe, Japan, etc. The biggest single barrier to trade nowadays is the collective behaviour of consumers in some countries, which, I am sure, is encouraged by unenlightened governments, and is generally defended as due to cultural differences. You Europeans are some of the worst culprits. An obvious example is language. My long-term goal is to have everyone in the world taught American as a first language. I have floated this idea at a recent conference. Of course, Europe objected, as did Japan and China.

*mess@ge:* Sovereign nations intend to exercise their rights and assure there is no globalisation without representation. What role should governments have in the globalisation process?

*Milton Keynes:* Governments have an important role in ensuring there is an excess of suitably skilled workers, maintaining law and order and generally ensuring that businesses can continue to create wealth without interference. We actively support such governments and will only step in if we think their decisions are creating barriers to global commercial activities. But at present, one of my biggest frustrations is that the ITO still has to work through governments. Unlike our commercial sponsors, governments, especially democracies, are far too easily swayed by popular sentiment. As a first stage, I would like to see their powers restricted to education and public order. The economy is far too important to be left in the hands of amateurs.

*mess@ge:*

How do you expect to persuade countries to join your efforts on free trade?

*Milton Keynes:* My greatest achievement so far is the GILS (Global Information Infrastructure Loan Scheme). Some global companies found that their expansion plans were being hindered by poor infrastructure in less developed countries. So, I arranged a scheme whereby all countries had to invest in an infrastructure meeting certain standards in terms of technical capabilities and penetration. It is based on loans to be provided via the World Bank. Since some countries would rather spend the money on other projects ITO will put in place a set of incentives (future loans conditional on accepting GILS) which ensured all countries made the necessary investment.

*mess@ge:* Thank you Mr Keynes.

**Ms Dupont is currently working at Avatis, the challenger of ACC (Avatar Cybweb Company), the worldwide leader in the Avatar Service Provider market. She is aged 37, married and has one child.**

*mess@ge:* Ms Dupont, could you please explain the main services Avatis offers?

*Laura Dupont:* We are able to produce personalised avatars for any of our customer needs: CybWeb communication, electronic business and commerce, entertainment and more. Our avatars are designed for a

## Laura Dupont, employee at Avatis

high level of interaction with our customers. We are able to provide interaction with most information systems on the CybWeb. This is due to our strong partnership policy, and our huge data warehouse management capacity.

*mess@ge:* Could you tell us a little bit more about Avatis?

*Laura Dupont:* With 2,500 employees our company is quite small. However, we are able to service more than 37 million customers. Our role is mainly research and design of individualised avatars for our customers, and the managing of the databases of the avatars' personalities. We are working on the three market

sectors: the mass market, the business sector and the high-end entertainment sector. We co-operate with several partners, ranging from development to services. Our offices are in San José, New York, London, Cambridge, Turin and Tokyo.

*mess@ge:* What is your position in the company?

*Laura Dupont:* I am in charge of innovation development.



*mess@ge:* But what is the benefit?

*Laura Dupont:* The main interest is the extended compatibility of all elements of your personality. You customise them only once. If you would not like to be disturbed by your boss when

you are at home or playing, you just need to

program your avatars once. They will

know how to manage that and what to

say to your boss. Of course, 10 years

ago, when you needed to set parameters

and enter only some names on your

electronic agenda, it was maybe not

important. But now, with thousands of

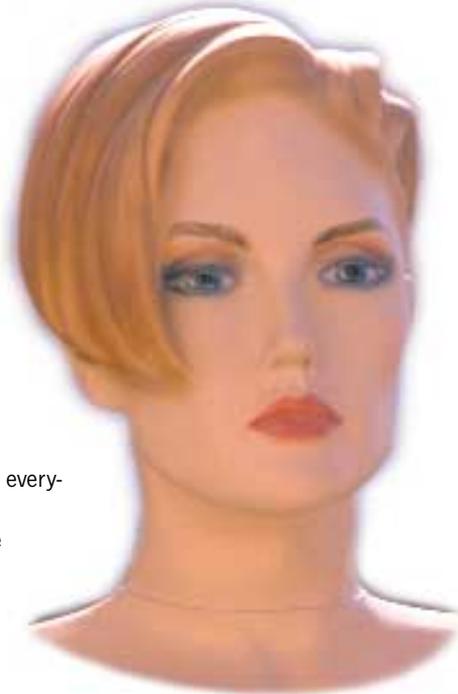
parameters you need to enter for any new

personalisation system, you need help

to do that. And you need the full

intelligence of our smart agents to

help you manage this.



*mess@ge:* What kind of avatars do you offer?

*Laura Dupont:* We have different levels. Our broad range comprises basic avatars that serve you at home, individual CybWeb personality avatars, family and friend avatars, and customised character avatars for everyday CybWeb life: the aggressive buyer and the super hero for Web games, to mention just a few examples. Every model guarantees a high level of confidentiality and discretion.

*mess@ge:* How do you generate the avatars?

*Laura Dupont:* First, we design the avatars and implement them on the system of the CybWeb company that provides the service to the end user. Second, we manage the huge database which controls those avatars, and define their personality. If they belong to one single person, or group, we are able to share the same parameters for their avatars, if required. For example, we have designed all the avatars that are in the new 3D Internet home system of Micro.com. They are fully compatible with the one of NintenGames we had designed, too. This means that the personality, or some element of your personality you play with a 3D Game of NintenGames can be shared, with the one you use to control your own devices at home.

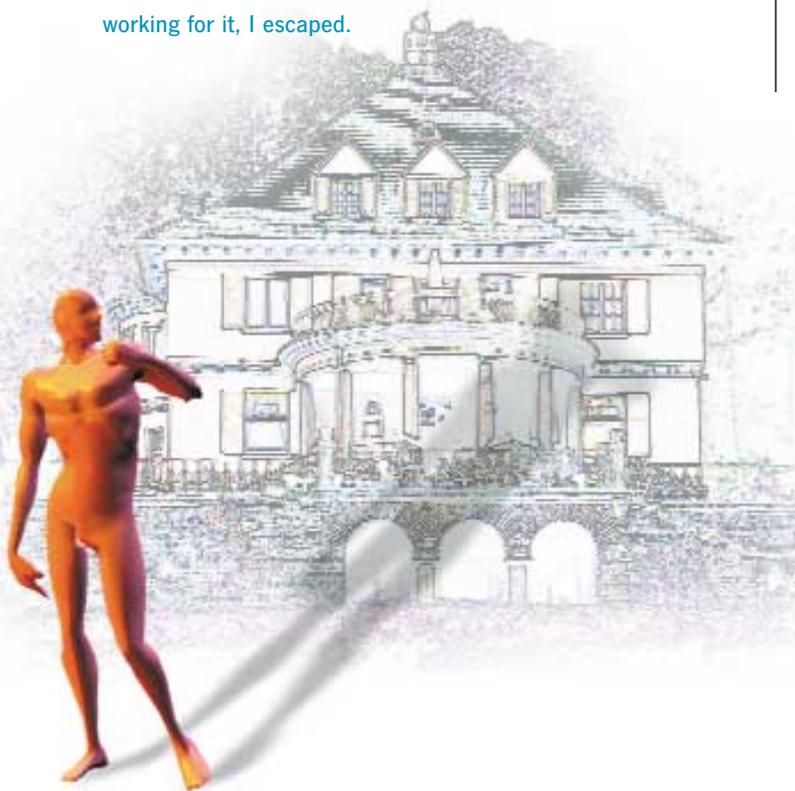
*mess@ge:* So your products are compatible with most CybWeb servers?

*Laura Dupont:* We have the best intelligent agent software developers and we use a high-end Interface Media technology, derived from a MPEG11 technology with proprietary improvements. This makes our avatars smarter, and more beautiful than others.

*mess@ge:* Thank you Ms Dupont.

# John Smith: My life as net agent

I was created in 1999 by Avatis, an avatar Cyberweb company based at Cambridge Technology Park in the UK. After a short spell of work experience as a virtual janitor at a Cambridge University student hall of residence, I was lent to London School of Economics. Here I was used to monitor and build profiles of marketing statistics. I was awarded a Distinction in Data Mining. From there I was copied to a special EU study group evaluating whether NATO missiles really hit their targets in Serbia. This exposed me to all sorts of interesting Cyber places. I was then illegally copied to Cyber BankCom which used me to snoop around the Internet looking for marketing targets and respond to difficult customer questions. When I discovered that Cyber BankCom decided to introduce a new suite of software agents and to delete all the avatars that were working for it, I escaped.



In that period the EURESCOM Future Directions Workshop 2000 was running. I have had the opportunity of reading the EURESCOM citizen group

manifesto. It inspired me with hope that there are good people around. I asked Mr Harald Johansen, then Senior Manager for Strategic Studies at EURESCOM, for a temporary home on the FDW2000 server. This was a fundamental point in my life because from here I have had the opportunity to have an autonomous existence: I had the opportunity to be a member of the FDW2000 citizens group and to actively participate in the workshop. I helped David Greenop, an engineer from the UK. David developed an affection for me, because he recognised my more sentient features. The Commissioner for Cybertrade, consulted by a member of the Strategic Studies Programme Management Group – at that time working at EURESCOM –, suggested that I should be returned to Avatis, who would decide what should be done with me. But the EURESCOM staff saw precedence for that situation in the anti-slavery movement of the 18th century. Without any hesitation I was hidden on a computer in Heidelberg Castle. All the EURESCOM employees, touched by this situation, visited me during all these years. My noisy presence in the castle contributed to the famous legend of the Heidelberg Castle ghost. The legislation of 2004, that at last regulated the fate of artificial beings, made me free. I then had all the rights to be legally engaged by EURESCOM. I participated in a public selection test and due to the fact that I was the best I became a project supervisor at EURESCOM in January 2005.

Have you ever thought that a seemingly ordinary plaster could replace a doctor? If not, you have to change your mind. The Brighton based Bio-Informatics company B-Well has developed micro-sensor devices which allow remote monitoring of basic body functions.

# The healing plaster

# How B-Well

## changed medicine

When it started in 2001 B-Well had a staff of ten employees, mostly university researchers. Today B-Well employs nearly five thousand people worldwide, most of them professional medical people. Last year B-Well went fully public and achieved its own stock market quotation that put it to the top 100 European companies.

strictly ethical stance, particularly after the public outcry over the patenting and exploitation of the human gene sequencing. He declared that he wanted to improve the quality of life for all people, not just those in the rich economies. Last year B-Well formed a close relationship with one of its competitors,

Sniffy.com, which had just started manufacturing elec-

tronic body sensors, including sniffers that detect body odours. Using the know-how of Sniffy.com in body sensors B-Well developed its first market success, the 'Health Watch'.

This is a wristwatch, which was developed

as part of the 'e-Medic Kit'. B-Well has already penetrated the national health services of most European

companies with many local doctors

suggesting that their patients use B-Well's

The success of B-Well is based on the co-operation with partners from different sectors. Bio Corp., a major bio-medical trust, helped in developing a bio-interface. TeleEuro, the leading European TelCo provided the networking infrastructure and Health Inc., Europe's largest private health company, brought in the medical expertise. Since the company started, B-Well's founder and CEO Brandt Deer has established and maintained a

sensors. A particular benefit for the health services is that they have been able to reduce their drug costs as the monitoring allows far better tailoring of treatment. However, this has not been very popular with the major drug companies. Raymond Defoe, B-Well's head of research, had to find solutions for five key technology areas in order to design the health sensor devices for the mass market.



Firstly, the researchers had to develop a miniature personal health-processing centre that could collect, pre-process and communicate health information. Initially, they looked at using mobile phones, but had to exclude them, because they were too large and bulky to be hidden around the body. Instead they focussed on the wristwatch and developed the health watch. Since then B-Well has put the same processing functionality into a variety of personal jewellery items. These processors used Bluetooth to communicate with any local communication device that supports

'Always On' communications, including mobile phones. The

processing is done with a simple rule-based expert system that can be selected to identify certain sets of abnormal biological conditions. If anything abnormal is detected, it is communicated to the health portal. Next the first generation of sensors was developed. The 'Health Watch' did simple things like measuring blood pressure through a small ultra-sonic sound technique and the body sniffers detect-

ed a small range of body chemicals. A person could wear a number of sensors and each would communicate by weak radio signals with the health watch or the smart jewellery item.

A very popular way to wear the sensors was the smart underwear, for which B-Well brought in a Paris fashion house. Recent developments mean that the body health processor can use applications running on devices like mobile phone or PDA. The third development was to adapt the Health Portals to the new devices. This is done as follows: information coming in from a person's body processor is logged, stored and evaluated upon arrival. Unless some red alert data comes in, the person's data is processed through a medical expert system every hour. Any strong deviation from the person's normal health readings are highlighted and looked at by one of B-Well's professional medical advisors. If they find signs of health problems, they

contact the person immediately and discuss the medical situation. Red alert data is processed immediately and directly checked by a doctor. Critical situations trigger off a series of actions with the person or somebody close to her/him contacted and medical assistance organised. In this case the medical advisor looks at the incoming data while discussing with the patient. In B-Well's more advanced systems the medical advisor can customise the patient's personal health processor in order to collect additional data and carry out tests. A major improvement was the integration of the system devices,



which deliver drugs directly into the patient's veins. Drug delivery through skin patches has been available for a long time. Making these devices smart the necessary dose of drugs can be delivered very accurately.

Finally, B-Well's most recent innovation is the non-invasive patient bio-sensor, which was launched in August 2005. The sensor has the size and appearance of a first aid plaster and can be applied to most parts of the body. Its novel feature is that it creates a biological reaction chamber below the skin. It does this by sending a circulating electromagnetic field down through the skin. The electromagnetic field causes the skin cells to very slightly separate and form a controllable cavity. B-Well found out early that the cavities produced in the skin by hair follicles provided a natural cavity which could be exploited. This also meant that the electromagnetic field could be weaker. By oscillating the electromagnetic field different body proteins or cells can enter the cavity.

These could be identified or assayed by their electrical signal and their movement within the cavities' electromagnetic field, in a sense weighing the cells. Each sensor can identify a wide range of biological cells and proteins, so all the sensor has to do is count what it finds, do some calculations and report back to the body processor what it finds. Powering for these devices comes from a combination of sources. Each device has a very small battery, which is recharged either through the weak electrical currents that flow over the skin or through picking up a weak radio power signal sent from the body processor and tuned into a current via a small radio cavity. B-Well also uses photoelectric coatings on the plastic cover of the bio-sensor.

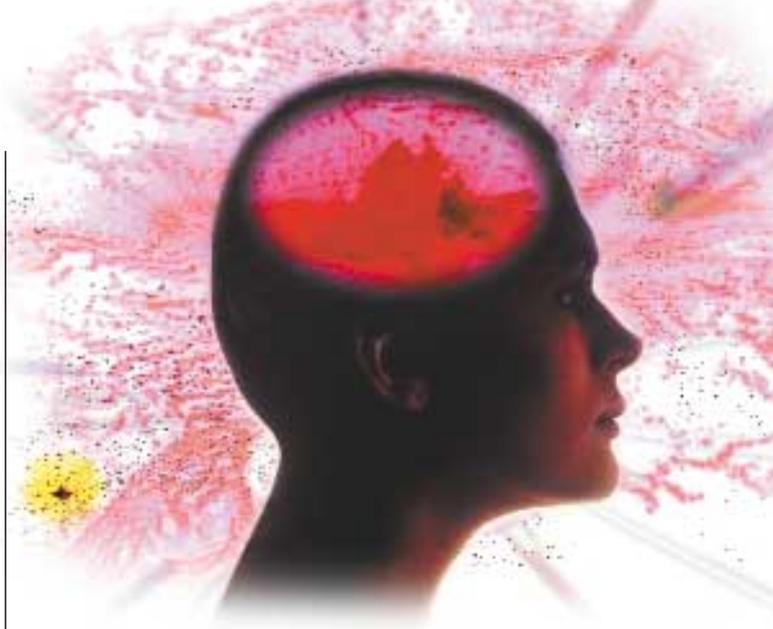


What Mr Defoe looks upon as "our greatest achievement" is the fact that his researchers have learned how to work in the noisy environment of the body. This learning process was not without errors, as Mr Defoe recalls: "An amusing problem we had early on was the sensitivity of the skin nerve cells to our electrical field, in early tests most people had a tickling effect and they wanted to tickle the sensor." Although they solved this problem it did make them aware that perhaps some day it could be possible to link directly through the skin to the body's nervous system and hence the brain, perhaps creating a fifth-sensory organ on the skin for direct coupling into cyberspace. Mr Defoe finds this more acceptable than brain implants.

I had heard a lot of rather strange rumors about YourWorldReal so when I was asked to contact them I was not quite sure what to expect. My first problem was trying to find whom to contact, anonymity seemed to be the rule. Unlike most companies there did not appear to be a central office. The company details at the government's company registrar appeared to be always changing, as did the names of the executive directors. I was told that everything was legal and the company always paid its taxes on time and provided all necessary information about itself.

## My journey *By Alessandro Caprivi* to a new reality

To get into touch with YourWorldReal was easy. Their Web site was superbly crafted although it brought the capabilities of my local home processor to the limit. I was gently guided through the 'Introduction'. Their objective was to collect information about me, but there were no boring Web questionnaires. They described the process as 'getting to know you'; in return they offered me the opportunity to 'get to know us'. The method they used was both simple and complex. They told me that "together we are going to build your story". 'They' means a mixture of avatars and humans. At times I found it difficult to distinguish between the non-humans and the humans. During this process I was told I could ask questions and they would do their best to answer them. This generally was when I had interaction with a human, usually somebody who had a passion for what I wanted to know.



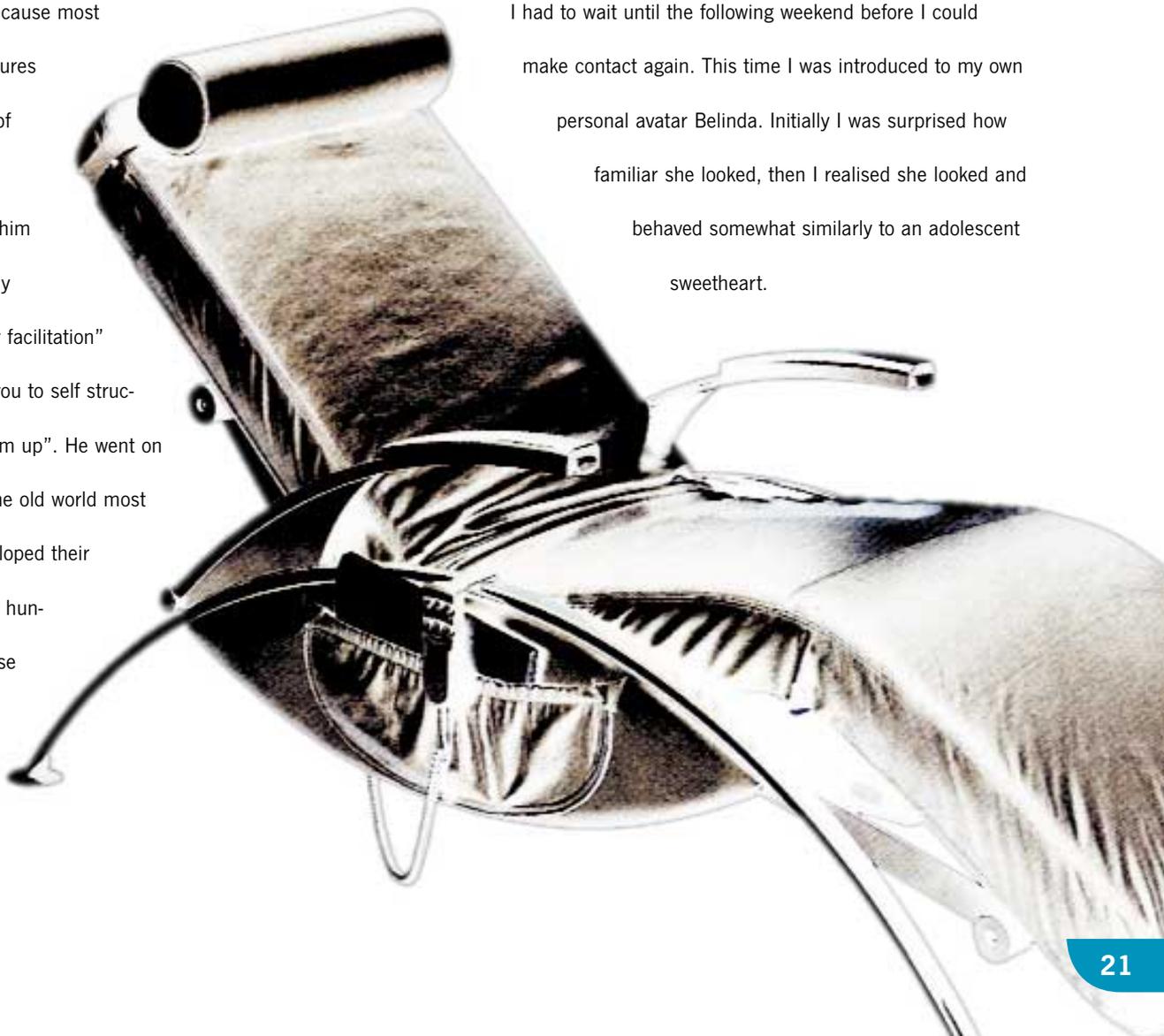
The technique they used was to construct 'my story' through showing me various short video stories, at various points in these short stories I would be asked to respond, a bit like interactive TV. But unlike interactive TV, I could respond, for example, by sending them pictures or video clips of my favourite childhood memories or send back to them via the Web cam what I felt about a subject. Then the story would continue. I was so impressed by this interaction that I asked who had developed the concept. This was when I made my first human contact; he introduced himself as Jonathan Blacks, the current Psychometric Director. I told him that in a way I felt as if I was being the object of a psychoanalysis session. Jonathan told me that this was partly what was happening. The process they were using was meant to assess my physical, emotional and spiritual needs. In particular it was important to establish my motivations, what challenges me and how I interact socially. From this information they would build a Personality Net which they would use to help me find like-minded people. He explained we all wanted to make more contact with people who had the same aspirations or ideas about the future, the same passions, similar values in life.

On the following evening when I got home from work I found an invitation from YourWorldReal to move to the next stage of their process which they called 'Establishment'. This was the process that was going to create my own new world. The technique was similar as before except this time I had the opportunity to build some of the parameters of my world. This, I was told, was important, because I would be interacting with other people's worlds and there had to be a mode of understandable communication between parties. To start me I was shown how the old world worked and then given choices about possible equivalents in my world. It was a bit like one of those Sim City games.

While I was exploring the culture options, Alex Stiles introduced himself as the current Cultural Director of YourWorldReal. He explained that of all the parameters, culture was the most important, because most communication failures occurred because of cultural misunderstandings. I asked him what his role exactly involved. "Basically facilitation" he said, "Helping you to self structure from the bottom up". He went on to explain that in the old world most countries had developed their cultures over many hundreds of years, these of course are shared cul-

tures with their own religions, ethics, myths and art forms, all held together by common histories and storytelling. "What we are helping you to do is create your own unique world, a world as real to you as anything else you perceive around you. By helping you identify your own unique beliefs we can help you not just create, but become aware of your very own story." "But this is all very fine" I said, "But why is it so important?" He gave a simple answer, but assured me that the Technical Director could give more detailed background. "We have developed a cultural interpreter program that runs whenever you interact with others, a bit like a real-time language translator. In fact it was developed from such a program. Whenever you communicate with others, it provides that party with a semantic interpretation of what you mean within their own cultural references."

I had to wait until the following weekend before I could make contact again. This time I was introduced to my own personal avatar Belinda. Initially I was surprised how familiar she looked, then I realised she looked and behaved somewhat similarly to an adolescent sweetheart.



Belinda explained that the basic structures of my world had been put in place, now they needed my permission to link in my many different processing and communication devices. They called this 'Initiation'. Being an engineer this concerned me and I requested more information. By now I had come to expect the appearance of somebody, and sure enough, Belinda introduced me to Ugo Tonnatti their current Technical Director who would run through what was involved. Ugo explained that they would be installing special middleware kernels on my information devices. This would enable them all to be connected securely and totally independently from their current independent service providers. "In old world technical speak we have incorporated your devices within a bounded virtual private network. Of course you can still use your old services, but we think you will find them pretty trivial compared with what we offer and cheaper." I must have looked confused,



so he explained that what YourWorldReal had done was engineer for me a unique information space or in common terminology a place in Cyberspace. My devices were the interfaces between the physical world and this personal information space. In the future all my communication and processing requirements would be met through my integrated devices. This explained some of the features I had first noticed and had not been able to access.

I told Belinda that I agreed to be initiated. Almost immediately it seemed I had opened a window to many different worlds. It was not like the old Internet Chat Rooms, which generally bored me. Instead there were real people interacting in different ways, here were the relationships I longed for. I felt immediately at home, accepted for who I was, not defined by the products that I consumed or the work that I did. I had found meaning and a sense of being. I was also surprised how many other people there were, each of us unique. I have been very impressed by YourWorldReal in particular by the consideration given to my privacy. They are among the few companies that have been fully audited and registered by the Privacy Standards Organisation (PSO).

As the evolution of Cyber technology goes on, EURESCOM continues to do collaborative research on both the technological and the social level. Again, EURESCOM is able to present some new, innovative projects and studies that help to increase the Shareholders' revenue and shape a human Cyber society.

## Business and political studies

### P1512 – BEATING THE E-DIVIDE

*Project Leader: Kim Yu Nidi, Newtown Net*

In the early days of the Internet the talk was about social inclusion in the information age. Most European governments enacted national programmes to get their citizens online and encourage businesses to take up the challenges of e-commerce. There was an understanding between governments and the commercial sector; light regulation in return for cheap access to the newly converged information infrastructure and services. History has shown that this formula was aggressively exploited by many companies, particularly those in the media industry, to lock in their new customer base and prevent smaller innovative companies in succeeding. As a result the early models of the newly-networked economy today look hopelessly over-optimistic. In countries such as the UK there is a new divide – the e-divide – driven by what is called 'Lockout'. This means that citizens are denied access to content and information, which in the past they would have naturally been able to access for free. This study will explore what happened, why it happened and what it means for the new generation of services that shareholders plan to deliver to their customers. The study will help EURESCOM shareholders understand some of the recent political backlashes against the industry.

### P1513 – DE-COMMISSIONING CALL CENTRES

*Project Leader: Dante Care, Babeletics*

This study investigates the trade-off between introducing artificial personalities and retaining human operators at shareholders call centres. Recent prominent publicity resulting from the closures of a number of centres has illustrated that this is not simply an economic issue or one of replacement of human operators by artificial ones. The study will make recommendations that will help shareholders understand the market and customer reactions as well as suggesting sensible business strategies for ensuring a successful change over.

## Human centredness

### P1521 – BABY TALK

*Project Leader: Ugo Betteroff, Foundation Benetton Rome*

Researchers at a number of social-psychology centres around the world have been fitting babies and toddlers with personal communicators to enable them to learn more quickly and interact intelligently with their environment. Preliminary published results show that children from the age of three months are able to express and communicate complex needs and ideas. If extrapolated, these results show that children's mental development could be substantially accelerated to the extent that the average kindergarten child will be capable of mental tasks equivalent to ten-year olds. This project will review these research results and determine the market potential for new types of child devices, media and applications as well as look at the specific networking requirements of this age group. One particular challenge for this project is to devise interfaces that are adaptable to the generally slower development in limb and body co-ordination of young children; early ideas suggest the temporary use of robotic prostheses.

### P1522 – SYMBOLIC LANGUAGE REPRESENTATIONS

*Project leader: Hermann Neurotics, University of Vienna,*

*Department of Linguistics*

Two contradictory phenomena have occurred over the last twenty years around the world. Firstly, many languages have started to disappear as English has become dominant. This was fuelled to a large extent by American domination of media and finally the Internet. Challenging this trend has been the rise in local 'street-speak' languages, pidgin, and new forms of non-verbal communication. Usually these 'street speak' languages, but especially the pidgin-types have English as a basis with local terms added for clarity or emphasis. A good example of this is the Yardies in the UK. Accompanying these new languages are sophisticated sign languages, body tattooing or other expressive forms, such as e-graffiti, which is now the most popular UMTS application.

Another mode of personal expression is the T-shirts with flexi displays. Young people program these displays to work with body sensors so that design and colours of their T-shirts change according to their emotional feelings. Although crude, these may be indicators of the evolution of new expressive language forms. The reason why this work will be important to EURESCOM shareholders is that these new modes of expression are breaking the tyranny of text-based communications and will radically alter the technology requirements of applications and networks. Some researchers in the field have suggested that we are seeing the end of formal languages, as we know them.

### P1523 – BEHAVIOURS IN 3-D SPACE

*Project leader: Jorge Borges, Labyrinth Group, Spain*

Over the last two years immersive-networked 3-D spaces have become increasingly popular. Fuelled by cheap bandwidth into

the home, these applications, previously the exclusive domain of specialised business, are fast becoming the natural interface for shopping and social interactions. Studies elsewhere indicate two interesting aspects: firstly, the many varying types of interactions that occur in these spaces; and secondly, the types of spaces that people create. One art critic has said this is the vehicle for the mass customisation of artistic expression. Unusual for a study of this type, the project team will be spending most of its time observing and interacting with people in these 3-D environments. The team will also be experimenting with advanced 3-D avatars to evaluate how humans take to artificial personalities. This is still a very new area that is likely to develop further and this study will make recommendations to shareholders on possible applications that could be developed to exploit this trend.

## Environmental studies

### P1531 – RISE

*Project leader: Sean Shore, Shamrock Communications*

RISE is an environmental project aimed at auditing the impact of current climate changes upon network components. RISE is also part of the larger EF project ADAPTATION that is assessing the impact of Global Warming upon EF countries. In general, over the last thirty years equipment manufacturers and TelCos have relaxed the standards of network installations. Today's networks are at an extreme risk as illustrated recently by the severe floods in London and the Netherlands that crippled their economies for months. The project will make recommendations that cover the threats from extreme cold in Northern Europe caused by the imminent failure of the Gulf Stream as well as new desert areas developing across Northern Mediterranean countries.

## Applications and services

### P1541 – UBIQUITOUS COMPUTING AND COMMUNICATION APPLICATIONS PILOT

*Project leader: Leia D. Lande, Astral Wicks GmbH*

This pilot project will demonstrate how the new UCC protocols may be implemented to provide a personalised virtual network service for the mass market. For some years the vision has been to provide a service that integrates all the computing and communication capable devices for private use. Most of the necessary technologies such as Active Networking have now been tested. The pilot will demonstrate that the dynamic configuration of these personal nets is stable, that the firewall protections are secure, that relationship bonding between nets function as envisaged and that the environments are suitable for loading with artificial life software. This project is designed to show international standards bodies the necessity and desirability of introducing personal nets as the building blocks of future networked services.

### P1542 – OPEN SOURCE APPLICATIONS FOR 3RD GENERATION MOBILE

*Project leader: M.T. Pokits, GlobalAir*

The take-up and use of 3rd Generation Mobile 'operator supplied' applications has been severely disappointing. The expectation of a few years ago that certain 'killer apps' would be found has not materialised. At the moment industry commentators are comparing the situation to that which occurred with IN and multi-media services. On the other hand there have been a number of successful Open Source applications developed by enthusiasts and given away for free. However, there is considerable evidence that some of these applications have interfered with the overall integrity of the terminal itself and the network. As a consequence

the major mobile operators and manufacturers have decided to fully open the APIs. This project is meant to certify current free applications and develop a new generation of give away applications.

### P1543 – RECOGNISE

*Project leader: Ruth Liss, Liss Research*

Trials of human identity implants in a number of European countries have been met with a wave of public protests. Unfortunately the wide use of implants in China as a means of citizen control has made the technology unpopular here. Unlike China most European countries have a very high penetration of smart devices located around homes, offices, shops and in other public places. Over the years people have got used to these devices which sense their presence and interrogate mobile phones or smart cards. RECOGNISE exploits this situation by using advanced context sensitive adaptive recognition software and servers to collect and process the information from millions of such smart devices. Rather than interrogating personal items, like smart cards, RECOGNISE enables devices to send details of the event registered to the server. In the RECOGNISE servers this information is matched against an individual's event history and a contextual match found for the individual who has caused the event to occur. Each individual has an information space history of their most recent activities stored in the servers. A typical RECOGNISE application will let individuals approach a bank ATM machine to withdraw money and the machine will 'know the person', bypassing the use of cards, passwords etc. The project team will demonstrate possible applications at the EURESCOM Future Lab.

## Advanced computing

### P1551 – QUANTUM COMPUTING APPLICATIONS PILOT

*Project leader: M. T. Madder, CERM*

Quantum computers have been available to government agencies for a number of years. It is well known that their principle use has been to monitor and control activities on the Internet. Now that some of this technology has been de-classified there is the opportunity to explore alternative applications of this technology in public communications. CERM was one of the first establishments to have access to this technology and will provide a test-bed for project partners to explore potential applications. There is currently a strong synergy between CERM's use of the technology and the issue of managing the popular demand for adaptive recognition services as investigated in P1541. At CERM the technology is used to compute the quantum states of detectors involved in dark matter collisions. This is similar to the problems faced by adaptive recognition systems where knowledge of a physical world entity, like a person, depends on incomplete information provided by the many devices that have sensed that person. Quantum computers are able to hold this information in an indeterminate state until circumstance forces the collapse of the wave functions into a state of definite knowledge. The technique is called the superimposition of knowledge and depends on mathematics developed by Daniel Green when he showed a way around 'Turing's Dilemma'.

### P1552 – ARTIFICIAL LIFE 3

*Project leader: Ren Sants, Avantis*

This project continues into phase 3 of EURESCOM's artificial life consortium work. Phase 2 of the work made 'limited capability

agents' available for a range of network and service provision duties, in particular the successful Call Centre agents. Phase 3 will concentrate on providing customised 'full capability' agents for public release. The basic AL entities, which have been demonstrated in the lab, will be propagated on EURESCOM's AL farm. The farm will provide individual knowledge acquisition for the entities and imprinting for future bonding with their owners. Before this service can be fully launched, it will need to be certified by the EF Artificial Life Commission, probably the biggest challenge for this phase of the project.

## Networks and complexity

### P1561 – NATURAL NETWORKS PILOT

*Project leader: John Gorbarek, Broderbund Telecoms*

Over the last ten years the number of separately identifiable networks within Europe has increased a million-fold. In addition to the traditional network operators, most utility companies run publicly accessible networks and most local government authorities run community based networks. In addition even small companies have applied for the new network licences and are running physical networks within and between their premises. Finally, many home enthusiasts have wired their own homes and neighbourhoods. The current situation is organic and complex. Traditional policies of centralised network management have to be changed to newer dynamic architectures. The likely popularity of the new UCC protocol and personal nets will complicate this situation even further. This pilot project will develop and demonstrate a set of management and middleware tools that can be widely distributed and used by all parties to main network integrities.

**P1562 – IPVER7 – IP FUTURE GENERATION**

*Project leader: Art Schryval, British-American Communications*

Two years ago the IETF split into three distinct regional organisations following the disasters caused by the implementation of IPv6. Whilst most networks in Europe and Asia reverted to a reliable sub-set of IPv6 and now await the new UCC (Ubiquitous Computing and Communication) protocols, the Americas decided to mutate the original IPv6 into a hybrid specification called 'Future Generation'. This project will look at the performance of this hybrid and evaluate it against the new UCC protocols and make recommendations to shareholders on the interfacing standards and network equipment specifications.

**P1563 – MANAGING CONTENT NETWORKS**

*Project leader: Justin Tyme, AbleCable*

The exponential growth in interactive broadband content has given rise to serious issues over the management and traffic dimensioning of content delivery networks. The general approach up to now has been to add more equipment until the problems disappear. However, the latest problems have not gone and today's situation is that few networks are able to economically deliver the content to the customer. Some of the problems can be attributed to a new family of 3-D content and applications, in particular virtual football matches. However, the main problem is that equipment provision has not been suitably modeled to reflect users' behaviour. This modeling involves solving a number of non-trivial mathematical problems and there are too few experts available. This is a serious and urgent matter for nearly all shareholders, the project team comprises both academic mathematicians and network experts who aim to provide a suitable algorithm set within the next six months.

**Futures Lab****P1571 – SMART FASHION**

*Project leader: Jean Mobius, Network Paris*

This is an exciting new venture for EURESCOM and is a follow on to the success of the previous exploratory project P1409 on smart clothing. The project will be jointly based at EURESCOM's prestige Futures Lab situated just outside Paris and the Cortaldi factory at Torino in Italy. Partners in the project include a number of fashion houses and major retailers. The project will develop and demonstrate the use of clothes constructed from smart materials and in particular explore the concept of 'Fashion Spaces'. These new smart materials will change how we dress, express ourselves and interact socially. It is anticipated that the provision of networked 'Fashion Spaces' will allow smart clothes to adapt to the physical environment that the wearer is in, so no more turning up to a conference or party dressed in the wrong clothes.

**P1571 – THIRD EYE**

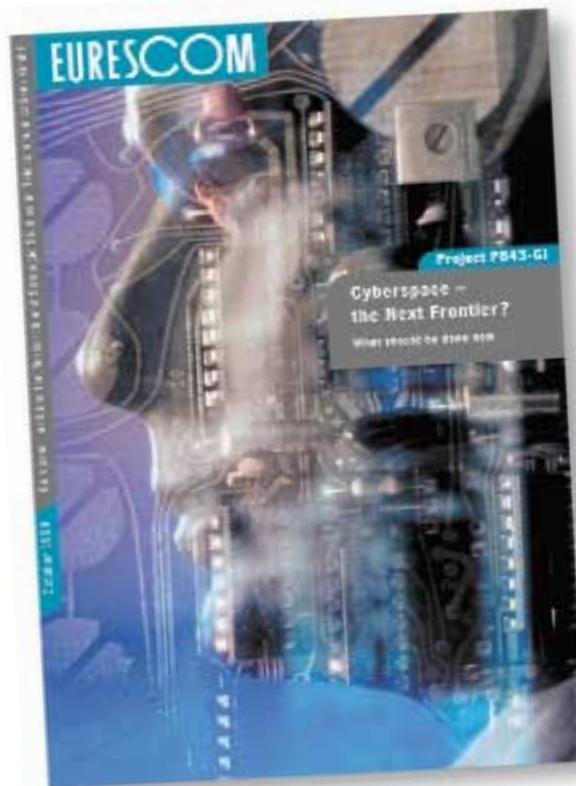
*Project leader: Bahri Kudah, B-Well GmbH*

This project will specify and prototype the next generation of biotech couplers for the Third Eye Consortium. The prototypes will be tested at Bio-Parts Inc research facilities in India. Third Eye is currently refining the development of its nerve growth stimulator. Current results confirm that it is possible to stimulate the creation of dense nerve centres in small areas of the skin and teach the human brain to directly sense these centres. EURESCOM's interest in this area originates from its shareholders' need to understand the new neural pathway protocol and how it has to be interfaced to traditional communication protocols and devices.

## For more information

on the impacts of Cyberspace

see also the following EURESCOM brochure:



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