

# **Business Computing: the Second 50 Years**

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## **Conference Proceedings**

### **Economic and Social Consequences of Business Computing and Public Policy**

#### **Panel members**

Dame Stephanie Shirley Founder, Xansa - chair

Boris Babayan Academician, Russian Academy

Professor Subhash Bhatnagar, World Bank

Kevin Harris, Community Development Foundation

Alastair Macdonald President, British Computer Society

Andrew Pinder, the Government e-Envoy

Ian Taylor MP

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## **Panel: Social and Economic Consequences of Business Computing and Public Policy**

Chairman Dame Stephanie Shirley (Founder, Xansa)

### Members

Boris Babayan (Academician, Russian Academy)

Professor Subhash Bhatnagar (World Bank)

Kevin Harris (Information Manager, Community Development Foundation)

Alastair Macdonald (President 2000/1, British Computer Society)

Andrew Pinder (the Government e-envoy)

Ian Taylor MBE, MP (Minister of Science and Technology 1994-97)

### Chairman

My name is Dame Stephanie Shirley, but I'm always known as Steve Shirley because I date from the days when women really didn't do very much in business. I started my company, now the Xansa Group, back in 1962. I am now its honorary life president. It does seem to me that the older I get the better I used to be! I was more perspicacious, more imaginative. At the time we did not agonise about the future. It was just such an exciting industry, and to be paid so well for something that one enjoyed so much, really employers could have charged us rent because we were there all hours of the day and night.

But today we are looking forward all the time. And eventually I became much more interested in the social and economic aspects rather than the technology per se. I still can't foresee the future. Business planning is no longer five year plans: if you can look ahead 18 months you are doing very well. But I do try to focus on getting the questions right. I recently sponsored the Oxford Internet Institute, which is an inter-disciplinary research institute, making policy recommendations to governments in the plural, worldwide, about the effects on society of the Internet.

I am going to introduce each panellist and ask them to speak for a few minutes, then move to discussion mode. So let me start by introducing Andrew Pinder. He is the Government's e-envoy, reporting directly to the Prime Minister and working with ministers at the DTI and the Cabinet Office. He basically drives the government on-line strategy, which aims to make life better for everyone in the UK by making Britain the leading e-commerce nation. That includes giving universal access to the Internet by 2005, and getting all government services on-line by then. I met him first when he was director of IT at the Inland Revenue, since when he's also been with the Prudential, had various roles in Citibank on an international basis and been involved in a couple of high technology start-ups.

### Andrew Pinder

Before I start I ought to repay the compliment to Steve. Steve is one of the most eminent people in British computing, and she's putting an awful lot back into the industry. She's sponsoring the Oxford Internet Institute extremely generously. We owe her a lot and will continue to owe her a lot into the future.

My job is to work for the Prime Minister and try to get the UK online. In doing that I've got a number of targets that hang like millstones around my neck. The 2005 date in particular recurs again and again. I keep on trying to de-emphasise those targets for a number of reasons. One, because they are actually quite difficult to achieve, and secondly because they are not always necessarily the right targets or all-encompassing enough. Also my contract expires in 2004!

So looking ahead to 2004, 2005, I would like to see us approach this Internet thing for the UK in a holistic way, so that we have a complete e-economy, and a completely e-enabled country. That means we've got to have the national infrastructure right, and I'm sure there will be questions about broadband later on. We've got to have the legal systems right, both enabling legislation, like the Electronic Communications Act, which allows the use of digital signatures rather than paper signatures, and the regulatory side of things, making sure that we can enforce laws.

Just as importantly, however, we've got to have a population that is motivated to get on to the Internet. And the thought that I would really like to lead off with is that I am deeply concerned about a digital divide opening up. Look at the statistics of people who access the Internet. 18-25 year olds: about 88 per cent regularly access the Internet. But of those over 65 only about 15 per cent do so. If you are part of an ethnic minority, disabled, poorly educated, poor, living in the North of England, female, and elderly, the odds that you are going to access the Internet at all are low.

We are seeing results on tackling the Digital Divide - the gap in Internet usage between male and female has gone down from 16 percent to 9 percent this year. But that is only one part of the problem - the other gaps are still there and still very big. So we have an issue with our ethnic minorities. We have an issue with elderly people. We have an issue with people who are not particularly prosperous. And we have an issue with people who are poorly educated. Often those things go together. And I am concerned that as society becomes more and more of a knowledge economy, these people will be left out.

They'll miss out on services that will be increasingly offered only via the Internet. They'll miss out on the best deals, in the commercial sense, as they are likely to only be offered across the Internet.

Case in point - we are doing quite a lot of work on trying to develop e-democracy, where politicians are starting to become disintermediated by increasing use of direct voting across the Internet. Part of that is 'twin track e-democracy'. The strategy for e-democracy focuses on two areas: electronic participation between elections and electronic voting during elections - both of which will promote, strengthen and enhance democratic structures.

So my thought for today is that the digital divide is increasingly a major issue. And that digital divide, of course, is not confined just to the UK, it is a huge global issue.

Chairman

Our next panellist, Academician Boris Babayan, is Chairman of Elbrus International. He's a corresponding member of the Russian Academy of Science, Director of the Institute of

Microprocessor and Computer Systems at that Academy, and Professor of Computing Science at the Moscow Physical Technical Institute. He has been the chief designer of the high performance Elbrus line of computers. He's been awarded several prizes: the USSR State Prize in 1974 for work in the field of computer aided design and the Lenin Prize in 1987 for the Elbrus 2 super-computer. He currently leads a big international project, Elbrus 2000, a new architecture microprocessor which represents the latest commercial endeavour of Russia's most talented computer scientists.

Boris Babayan

Fifty years ago I became the first student in computing in Russia, and maybe the first in the world, I don't know. So all my life has been in computing. I designed many generations of the most powerful Soviet computers. Many were well ahead of our Western counterparts, for example, the first commercial superscalar computer was designed by our team, maybe fourteen years ahead of the first commercial superscalar designed in the United States in the beginning of the '90s. One important part of our technical activity has been work in secure programming. Our secure computer was designed before the Internet era, but if it were now connected to the Internet, it would be absolutely impossible to be infected by viruses, a very strong technical feature which will have a big impact on all aspects of computing, including social aspects.

Everybody knows that computers have become extremely fast, but a little bit stupid. They are very productive, but dangerous to use because of virus terrorism. So it's necessary to take a critical view of today's situation. All our societies very much depend on computing. You recall the Year 2K problem. Everybody was afraid that this small programming mistake would threaten all human activity. Man-machine communication is not in a brilliant state now because such communication requires real professionals. Maybe non-professionals can use computer games, but all serious areas need deep professionalism in using computers. Computing is so widespread today that it's impossible for the whole society to be professionals in the computer area. We have to do something to cope with that problem. We need much more powerful computers, maybe three orders of magnitude more powerful, to improve substantially man-machine communication. We also need good software for this.

Thus, in our work we have addressed two vitally important problems: improving security of computer usage, including anti-virus protection, and substantially increasing speed to provide ease of computer usage for everyone. If we can overcome these problems, the social impact of computers will be much higher. We can build global systems. That is why our work has addressed these two specific problems.

Chairman

Our next panellist spends his life in community issues. Kevin Harris, who is the information manager at the Community Development Foundation, trained as a librarian, but now does research and policy work around the network society. He's talking to government departments about various aspects of social inclusion, and giving them feedback about experiences at the local level. He's offered to talk about fifty years of community computing starting around 1977, so this will take us slightly into the future.

Kevin Harris

Fifty years of community computing! I want to offer you some snapshots on which to hang some ideas. I can remember a newspaper article back in the eighties describing a community computing project about working with older women. The quotation I remember most strongly from the newspaper article was - why don't you press F3 Rosie? That has stuck with me ever since, because it was a little vignette of what it was really like then: we were in a heavily gendered environment and it was very technology oriented. Why F3? Only because the programmers had used up F1 and F2 for something else. There were a lot of difficulties grasping what computing was really about. None the less people had a sense of potential empowerment.

The Community Computing Network was set up round about '82, '83. Community and voluntary organisations were trying to get hold of kit and saying - oh, we must share data, we are voluntary sector, it's all about sharing. (We had awful problems sharing data, we only had nine inch floppy disks). There was a lot of optimism, much of it justified, about the potential of electronic mail. Some of the early pioneers using that were development organisations using it internationally. But there was, and I think still is, a lot of painful organisational change associated with the adoption of the technology.

May 1997 was a historic date. We brought some kit into a community centre in Newcastle, ran an IT day, set up a video link with the Minister, and basically the message was - give us the kit. People could see the potential in the stuff, they were very excited about it, they wanted to get their hands on it. We have found that once people at local level got hold of equipment, levels of self-esteem and self-confidence can shoot up. Largely because the equipment is not associated with previous failure, and also because it releases a lot of creativity, which for people who experience exclusion is often submerged.

Now we've got the UK online centres coming on stream, largely as a result of that early work. Six thousand of them due by some target date which I won't remind Andrew of. We play something called the Neighbourhoods On-line Game. It's not a computer game, we do visioning exercises. You want broadband, you want e-mail for everybody. Why? How does it fit into your vision of your neighbourhood? One of the key things that came out when we were working with local projects was that local champions would emerge. Not necessarily a techie, typically it was better if it wasn't a techie, somebody who had the vision of what could be done with this technology in terms of transforming their neighbourhood. Ordinary people doing extraordinary things. The whole UK online centres initiative is really about access and that has proven pretty successful. It's not actually about computers. It's about self esteem, self confidence, it's about being connected. It's about relationships. An environment in which you have always on, anywhere, anytime, connections is not about computers, it's about community development.

Looking forward a couple of issues strike me. The first is surveillance. Webcams (Jennycam you've probably heard of), the Big Brother phenomenon, where is this voyeurism coming from? There seems to be this acceptance of surveillance at a certain level, but would you want to live under its eye? What is happening to our understanding of privacy? I think it's changing. And the last thing I want to finish on is, what happens to face-to-face interaction at local level when you are connected, in theory, to anyone, any place? The overlapping of

local communities with communities of interests and needs. When we are connected do we lose the neutral places in our environment, like pubs and community centres and cafes, where we can just go and not have the responsibility of certain roles? Are the strong ties that we already have made stronger by Internet connections? And we gather more weak ties. Is that a positive thing? I don't know the answer.

Chairman

Our next speaker is Ian Taylor, Member of Parliament for Esher and Walton. He's been Minister of Science and Technology, he's been responsible for research councils and innovation and space and, of course, information technology and wonderful things like multi-media. He's vice-chairman of Pitcom, director of the European Information Society, very much involved in the parliamentary group for engineering development, and chairman of the European Movement. He has a portfolio of non-executive directorships including the technology merchant banking firm Interregnum plc.

Ian Taylor

Many of the things that we were doing in the period '94 to '97 in technology laid the foundations for what is now happening in the community, in business and in government. It is remarkable how technology, in many cases, provides the solutions to what otherwise appear to be big problems. I actually disagree with Andrew Pinder's concentration on the digital divide. One of the things that technology can do is to reduce that divide. If you look at the telecommunications industry, when BT was privatised in 1984 the penetration rate of telephones for domestic homes was about 67 per cent. In 1997 it was 93 per cent. That wasn't because somehow we were reaching out into areas where the telephone hadn't been heard of. It was because cost reductions meant that it suddenly became available to people who previously had never thought they could afford it. Technology will find answers if we allow it to do so and if we allow competition to work. It's the same thing in other countries, which are leap-frogging us in many cases. The penetration of the ordinary telephone in India was about two per cent. The target is now well over ten per cent in a short period and a lot of that will be mobile telephones. We set up a project in Soweto which gave them the ability to download via satellite a whole series of economic opportunities. This gave to a community which was very evidently deprived technology which had not reached most of developed Western Europe.

As for the future, who knows? You can replicate the boardroom now through very sophisticated video-conferencing. Modern communication technologies and the computer will make possible flexible decisions about whether you need all to come together in the same room. I suspect that computing allied to entertainment is going to change what we have got used to in the last forty, fifty years of television. We still expect today to be told what we are going to watch. When we've overcome the problems of how you get a mobile telephone that is capable of picking up the complete service then entertainment will be capable of being whatever you want it. That's going to change a lot of things. Politicians, for example, will find that even if they get on the ten o'clock news they may not reach out to a vast audience, because that vast audience may be watching something very different. There will be all kinds of implications on the way communities work. New communities will be created. A community need no longer be a physical one. Everybody interested in collecting

railway engines can talk to other people interested in railway engines on the Internet. The structure of society, the way we make contacts, networking, are all going to change, and with them many of the ways that we go about our daily lives.

Chairman

Professor Bhatnagar of the World Bank leads an initiative on electronic government in the public sector group there. He's on leave from the Indian Management Institute, where he held the CMC chair in Information Technology and was a member of the board of governors. He founded a group in IFIP on the social implications of computers in developing countries. He also edits an international journal on IT and, in recognition of his contribution to the Indian sub-continent, has been appointed a Fellow of the Computer Society of India.

Subhash Bhatnagar

I realise that I am representing a large part of humanity here. I would like to begin by questioning the basic premise that technology can do everything. It can teach children how to learn, it can help in entertainment and it can help us communicate. But should it? Should it be deployed everywhere? The issue is does it deliver the kinds of benefits which are commensurate with the investments made? When I went to the World Bank last year I was quite shocked to find that when I was trying to promote within the bank the use of e-government I was fighting against a stigma. The bank spends about a billion and a half dollars every year on IT projects and the staff in the field, who interact with the citizenry of developing countries and government offices, actually did not think much of that investment. A lot of them believed that those investments had produced very little, so there was a resistance to think about investments in technology. And I therefore began to ask myself - what is the problem here? It's not that the technology does not have benefits, but that oftentimes we are obsessed with the technology. Today the President of the Bank, Wolfensohn, talks about the digital divide and so does everybody else. Now, for most of us digital divide has come to mean access to infrastructure. But does access to chaos really make a difference?

I've been studying e-government across different countries. Two weeks ago I was in Canada which now claims to have the most advanced implementation of government on-line. With all those services available on-line there is still only eleven per cent of people using them. And it's not because only eleven per cent of people have access to the Internet, access to the Internet is about sixty per cent. Are most of these people foolish? Why don't they move on to this new medium which is supposed to be so convenient? When I was looking for an answer I actually found it within my own personal experience. When I was coming here Frank Land told me that I could book a hotel through the conference website. So I went to the website, clicked on a button, provided my credit card number and so on, and waited expectantly. What I got after about half an hour was an acknowledgement. I then had to wait something like six hours to hear that the hotel was not available. Then I began to wonder, if I had the number of the hotel could I have just called? Could I have sent a fax? Did I really need to click on a button to wait for seven hours to know that it was not available? So I think there's this issue about the value that this technology delivers to citizens. Most of us who are technologists forget about that particular issue. Why should people move on-line? We need to focus on what value technology is delivering.

Am I saying it does not deliver value? No. I've just completed about thirty case studies from developing countries on e-government and I believe that electronic government can deliver very specific and concrete value to citizens in developing countries. Why? Because though they don't have money to buy on the net they need to transact business with the government. And that has a cost. When you want to apply for a birth certificate in poor countries you may need to travel thirty miles, fifty miles, you need to spend a day's wage. And also the current ways of dealing with the governments are very painful: harassment, corruption, lack of transparency. And if e-government actually does make an impact on these costs and problems you will not have to wait to educate citizens, they will flock to use these systems.

Let me give you an example of an application in a developing country. In India there are milk collection centres in three thousand remote, rural locations. People come and pour in their milk, and are supposed to be paid on the basis of fat content. There used to be a lot of lack of transparency. There was no way of measuring fat content, all the milk poured by everybody would be pooled. What those 3000 places in India have done is put in an electronic weighbridge, a fat testing machine and a simple PC. All this cost a total of 2000 dollars per centre. Today people come with a plastic card recognised by the system and drop their milk. The weight of the milk is displayed to them. Somebody takes a small beaker of the milk and pumps a handle three times and they get the fat content displayed. The PC calculates and they are paid. This process has cut down the time it takes to serve them. It has increased the transparency and it serves millions of people. Recently these centres have been connected to the Internet because using it they can deliver a lot of farming education. This system delivers value, so in each of these 3000 centres the very poor local people have actually paid the 2000 dollars to buy the system.

Corruption does not always go down through e-government applications. Corruption is there because there is a power distance between the bureaucrat and the citizen. Unless that power distance is closed, unless there is a change of attitude, corruption will not go away. Although the government officer is not speeding up any process, not delivering anything to the citizen, in poor countries he's still able to demand some money for just sitting there. So I think we need to recognise the importance of human factors, we need to re-engineer. I have asked people round the world who have implemented systems successfully what contributes to success in e-government. They tell me that technology has just a twenty per cent role to play. About twenty-five per cent is re-engineering - doing things differently, not automating poor ways of doing things. About forty per cent is managing change, managing the attitudes of bureaucracy, educating the people, working with all the stakeholders. And about ten per cent is luck. So we need to focus on benefits. There are many things that this technology can deliver, but let us not be indiscriminate about spending on it, because poor countries have lots of other uses for money.

Chairman

Alastair Macdonald was on the staff of the Spectator, then the Financial Times, both here and in Washington. He became a Director General at the Department of Trade and Industry until last year and then spent a year as President of the British Computer Society, the chartered professional body in this country, part of the Engineering Council.

Alastair Macdonald

Our theme is the economic and social impact and the public policy implications of IT and I would like to draw some of the strands together. First, we should rejoice in the economic and social impact of IT. We have eliminated drudgery from the workplace. A major, major social change. We should be astonished by the smoothness with which our technologies have become part of everyday life. Contrast the dire predictions of people like myself on the Financial Times twenty-five years ago, about how automation and computing was going to destroy millions of jobs, with Mr Greenspan, the Chairman of the Federal Reserve in the United States. He said the key reason why the United States has had such a productivity advantage over the rest of the world over the last five, six, seven years lies in the fact that United States companies have been so much faster than their counterparts in adapting to electronic and telecommunication technologies. It's the application of our technologies which he argues has been the great engine for growth.

The pace of take-up, from the moment when an item is first being produced in the market place to that point where there is no division between the haves and the have-nots, is getting faster and faster. The curve for radio, for cars, for dishwashers, for fridges, for colour television sets, gets steeper and steeper. It got particularly steep for mobile phones, introduced only in 1985. I think we may still be surprised at the Internet take-up over the next two or three years. Partly thanks to government's efforts. But one remarkable thing about our sector is that governments throughout the fifty years have done less to be in the way than they might. The cost of maintaining national champions proved too high for every government throughout the world. Happily telecoms liberalisation prevented people trying to plan the marketplace. And happily the consumer refuses to go along with what's expected. How many telecoms companies had the word Internet in their strategic plans in 1990? I bet you not one in the world. This was something that grew without planning. Who would have expected that the great growth in the use of data services over mobile phones would come from teenagers? The day when traffic reaches its highest each year is the day on which GCSE results are announced and the airways are alive with millions of children exchanging news. Finally, our sector would be so much better off if we were not subject to over-blown or incomprehensible promises by our providers. There's not enough professionalism in our industry to win public respect for what we do. And why is it that still nobody advertises their IT kit in terms of what it provides, in terms of customer satisfaction rather than the technology? Even the motor industry stopped forty years ago trying to tell us about the technical specification of the battery.

### **Points from Discussion**

Andrew Pinder

When I talk about take-up of government services, one of the things I have in mind is that some services are actually much better off being delivered face-to-face. I am very conscious

of the need to deliver services in the most appropriate way. That's not always going to be on-line on a computer screen.

Ian Taylor

Can I make a comment on one aspect of that? Bearing in mind that most households in this country have a television and ninety three per cent have a telephone, we could get a very high penetration, overcoming in many cases digital divide, if we could only get the digital television revolution happening.

Also, in this country we've always had a policy of low rental charges for telephones because we thought that was more socially inclusive. But if you look at Canada, the opposite has been more socially inclusive, because by having a slightly higher rental and free calls poor people are not terrified of having the thing always on.

Alastair Macdonald

Markets will never be totally pure, even on the Internet. I'm not at all convinced that governments will completely keep their sticky fingers out of the pie. Or that people will not do things to curry favour with government. Rupert Murdoch was anxious not to annoy the Chinese so he very carefully adjusted what was going to be available through his satellite links into the Chinese market.

Ian Taylor

Governments can either help or hinder. Where they are helpful is where they set standards that enable the technology to be worldwide and ubiquitous. For example, I'm going to San Francisco on Sunday and there is no point taking my mobile phone with me there. The Americans screwed up big time and the FCC's still not quite admitted it. The second area where governments can have an influence is censorship. In some countries the real digital divide is censorship. You talk to Reuters about which countries welcome them and which countries don't. The third area is a political question, whether the industry is to be stimulated by enabling it to go out and conquer the consumer, or the consumer is to be protected so that the industry can't implement interconnection. There are all sorts of attempts to protect the consumer which make instant on-line dealing very difficult. Even if you've got authentication of both ends of the transaction, there are a whole series of get-out clauses for the customer so you can't know the transaction is finalised.

Subhash Bhatnagar

In the Western world privacy and security and the issues about protecting consumers really get in the way. In the developing countries that is not such a major issue, because of the base expectations at which the population starts. For example, I had a bypass ten years back, and I had a note from our IRS saying - where did you get the money? They obviously went to the hospital record, and most people would believe that was a right thing to do because our major problem is to increase the revenue base. So this issue of

privacy is not as important in the developing world. There the issue is, as I was saying, what value does a system actually deliver?

Andrew Pinder

I'm concerned about the Internet being used as a means of directly sampling public opinion, in my mind to the detriment of the representative democratic process. We need to spend time thinking about how we strengthen representative democracy, what tools might be provided to help representatives to engage more directly with their community.

Kevin Harris

I have a problem with this phrase digital divide. I don't think the digital aspect of what we are talking about is the most important thing. I think it's more important to look at what people can do with technology in terms of communication, relationships and so on.

Subhash Bhatnagar

In India I have often visited a kiosk created for the citizens at 2.5 million rupees cost, and when I look at the log just five hundred people have used it in six months. And those five hundred people, ninety nine per cent of them are students and I don't know what they were accessing there. Now is that good use of that money? In the developing world, it's all contextual. You need to understand the needs of the community. There is no barrier in terms of learning. Many, many experiments have proven that if you deliver value, deliver the relevant content, these poor, illiterate people learn how to use it. There is not an issue there. They get intermediaries, they extract the value. So I think we over emphasise this digital divide at the expense of actually delivering valuable content.

Andrew Pinder

Most of our government websites are designed for people with a high reading age. And they're not tailored for the preferences of most of the population. Most people prefer to read newspapers to get information. And that's fine. So the digital divide is not just about access to kit, it's also about access to language and access to services in a way which suits people.

We're addressing the problem of accessibility. We've launched a set of guidelines for government websites with the aim of making all government websites user focused, providing the information and services that users want, in a way that is understandable and relevant and achieving universal accessibility and usability.

Ian Taylor

Let me tell you a story which demonstrates a different sort of divide. I visited a school which the headteacher had transformed over the last few years from a sink school to one

that was beginning to get some serious academic results. She told me that about a year earlier she'd been summoned by the local education authority for what some parents alleged was mistreatment of children. The children were being kept in school after hours, and most of these parents on a poor housing estate had always left school as early as they possibly could. They couldn't understand why their children were being kept back. The answer was that the children were voluntarily going back after four o'clock into the computing room. And because the parents hated school they couldn't understand that this was being done voluntarily. So they had to break down the barriers between the parents and the school. They succeeded, and the penetration of computers into poor households in that part of Colchester was quite extraordinary subsequently, because the parents realised that the children knew what to do with these things. Let's be confident about what we can achieve if we can break down prejudices, because in many cases they are the digital divide, not some great socio-economic mumbo- jumbo.

Chairman

Lovely, a super point to finish on. I am going to stop there ladies and gentlemen. We have a global panel this morning, two of them have travelled vast distances, others have struggled with public transport in London! Would you thank them for their contribution.