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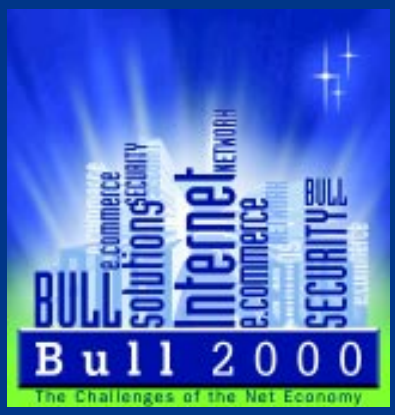
Boosting the Net Economy 2000

Results of an online think tank about the impact of the Net Economy



“The shift to a digital, knowledge-based economy should be capable of improving citizens’ quality of life and the environment”.

Jose Mariano Gago, Portugese Minister for Science and Technology and Chair, EU Council of Technology Ministers

“It is human nature that whenever we want people to change, the immediate reaction is to resist. We must not forget the social aspects whenever we introduce a new technology.”

Dr Eliezer Albacea, University of the Philippines Los Banos

“Policy making bureaux in most governments are limited in size, and are typically overloaded. The new technologies hold out the promise of drawing upon far wider expertise.”

Joseph Stiglitz, former Chief Economist, World Bank

“Internet voting may be a solution to low election turnouts. However there is also the question of the secrecy of the vote. Who can guarantee that a vote made at distance will not be influenced by the circle of acquaintances of the voter?”

Andre Santini, Chairman, French Parliamentary Internet Caucus and Mayor, Issy-les-Moulineaux

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Table of Contents

Introduction Boosting the Net Economy 2000

Welcome to the final report of 'Boosting the Net Economy 2000', an online debate from a new 'virtual think-tank' that spans the globe.

The debate was designed, managed and hosted by the independent new media and electronic publishing company Headstar (www.headstar.com) in partnership with leading IT company Bull. Those taking part included representatives of intergovernmental bodies like the World Bank and the United Nations; government ministers and advisers to heads of state; international business leaders; charities, leading academics and trade unions.

The final group represented all parts of society and more than 40 nations from every continent, from Cameroon to Canada, Peru to Portugal and Fiji to France. The result is an authoritative blueprint for the world's businesses, governments and intergovernmental bodies on how to develop a powerful, successful and accessible global digital economy.

The debate focused on four main themes: The New Economy, including efficiency gains in trading and the position of the developing world; Business survival issues, including how existing business models should be adapted for e-commerce; e-government, including the delivery of public services online and the regulation of e-commerce; and Citizens and Consumers, including accessibility issues and new forms of community in a virtual world.

The key points from all themes were drawn together into a framework for debate. Then, from 3-7 April 2000, the think-tank members logged onto our web site from all over the world and applied their enormous combined experience and knowledge to debating all the issues set out in the framework. Four experienced moderators were on hand throughout to help guide the debate, and there was also a chance for the public to contribute. The results have been woven into a compelling report, which you now have in your hands.

The entire debate, how it unfolded and what the think-tank members said, can be viewed online in an archive at: www.netecon2000.com Also on this site are full details, including biographies, of our think-tank members, and a 'resource room' with links to background materials across the web.

I hope you enjoy reading this report, and if its contents capture your imagination, please get in touch with Headstar or Bull to see how you may be able to play a part in future events.

Dan Jellinek
Director, Headstar
www.headstar.com

Sponsor's Message

Guy de Panafieu, Chairman and CEO, Groupe Bull

I am delighted that Bull has played a key role in producing this report on 'Boosting the Net Economy 2000'. The Internet is a major force for the globalisation of world markets and is increasingly driving the growth of world GDP. Experts predict that e-commerce will represent from 2 to 5% of global sales by 2003.

Internet sales, however, are only the tip of the iceberg. The move to electronic business will have a major impact on supply chain performance, procurement costs, relations with customers, and even the structure of entire industries.

Such massive change will not come about without dislocation to traditional ways of doing things, both in the commercial and governmental areas. Citizens and consumers too will have to learn new skills and approaches if they are to benefit fully from the new opportunities.

At Bull, we believe that the world community can best prepare for the future by openly discussing the implications of new technologies and achieving concensus on the actions to take. That is why we sponsored the preparation of this report, and the international think tank which produced it. The report draws on the combined expertise of specialists world-wide, drawn from many walks of life, as well as members of the public. And although these participants expressed many differing viewpoints, there was also clear agreement on key things which should be done.

The result is a series of recommendations for public and private organisations. As a leading European IT company, Bull is already taking account of these recommendations in our preparation for the Net Economy and I believe that many other companies, governments and charitable organisations will also benefit from them.

I wholeheartedly commend this report to you as essential reading about the potential benefits and pitfalls of the Internet. I trust that it will play its part in enabling you to thrive in the coming Net Economy.

Guy de Panafieu
Chairman and CEO, Groupe Bull

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About Bull

Bull is an international IT Group that operates in more than 100 countries. In 1999, the company earned revenues of 3.8 billion Euros with over 65% outside of France, its country of origin.

Bull's strategy is focused on the Internet and electronic business in three key domains: solutions with consulting and systems integration; infrastructure including 'Internet ready' enterprise systems, Smart Cards and software for secure infrastructure management; and managed services for Intranets and e-commerce sites and marketplaces.

Section 1 Debate summary and recommendations

Theme one

The new economy

National versus international policymaking

The current global intergovernmental structure for regulation of e-commerce is patchy, slow to adapt and poor at following its work through to implementation.

There is a clash of regulatory and policy frameworks and structures between commerce and technology. For example, some people prefer to use the World Trade Organization to formulate global e-commerce policy, while others prefer to use the International Telecommunications Union. The same dichotomy tends to arise at national level. There needs to be a way to get both perspectives into the policy melting pot.

The second key issue is accountability. Whether we revamp existing international institutions or create new ones, ultimately what matters is how open and democratic these are.

Various different solutions may be possible. The 'open source' model of software development, which emerged out of the hacker culture and created Linux, presents one implicit model of what Internet enabled global decision-making and representation/participation might look like. A new type of international organisation may be needed to oversee Internet trade and regulation – a 'learning organisation' that can cope with rapid change, perhaps to be called the 'World Internet Organisation'.

Or it might be best to look to the powerful non-governmental regulatory institutions that pervade almost every area of commercial activity from the travel industry to the legal sector, many of which have international ties.

Whether or not new bodies are needed, it seems clear that the existing bodies do not currently work well with each other, and are poor at following through and implementing their decisions. Some existing bodies may therefore need to be wound up and the remainder strengthened. Those which do have a genuine role must be persuaded to meet in the same room at the same time as those with which they overlap to avoid duplication.

Another possible tool for regulating the Internet on a national or international level is performance-based legislation, currently being piloted in New Zealand. Designed to cope with rapid change, performance-based Acts set out in general terms 'goals' to be met by performances', and forbidden performances which attract penalties.

In other words, this legislation sets out what people are required to do, but not precisely how they should do it (although a great deal of guidance including examples of effective performances is issued as well). Any action which results in the

required outcome is permissible, as long as it is not outlawed by another piece of legislation.

With this kind of legislation, you do not have to wait until the law is changed to do those things that were unknown when the Act was written. You can innovate as long as you comply with the goals and performances required by the Act. However, extensive training is needed for law enforcement officers, lawyers and the judiciary to implement such a system.

Recommendations:

1 *A model for more democratic intergovernmental regulatory bodies should be developed by the United Nations, to ensure greater openness in the global decision-making process and the creation of a common electronic forum for debate. A separate assessment should be made of whether it will then be necessary to set up a new body to fulfil this need, or whether (and how) existing bodies can be adapted.*

2 *Major injections of resources are needed into existing intergovernmental bodies to help them restructure and expand the ways in which they operate.*

3 *All intergovernmental bodies should examine the potential for using the performance-based approach to regulate the Internet. If so, there would have to be an international exercise to arrive at goals for legislation acceptable to all nations, prepare model acceptable solutions, and provide resources for the national educational work that will be required.*

The meaning of the Microsoft case

It is unlikely that one company's supposed monopoly of the high-tech industry such as that found against Microsoft could control all the spread of innovation in the industry, because of many start-ups that come from nowhere. There are also concerns that the Microsoft case distorts what is little more than normal competition, in which one player emerges dominate for a period of time.

However, the Microsoft ruling is a milestone because it is the first in what is certain to be a long line of efforts by national and international governments and legal systems to come to terms with issues raised by the rapid deployment of the Internet. Others have to do with intellectual property, the governance regime for various levels of domain names, and patent and copyright regimes.

Eventually, a series of landmark cases (of which the Microsoft ruling may or may not be one) will establish the principles for application in this new electronic venue. Many will involve regulation and governance across national boundaries.

e-Europe – a web of knowledge

The emerging European Action Plan is a key step to build an economy capable of sustainable growth, with more and better jobs and greater social cohesion.

But it is also important to adapt Europe's education and training systems both to the demands of the knowledge society and to the need for an improved level and quality of employment. There is a need to equip every citizen with the skills needed to live and work in this new information society in order to prevent information exclusion.

Characteristics of the new economy

The new economy is characterised by reduced transaction costs. Businesses which incur a major proportion of their costs as transacting their business will show increased productivity and decreased costs.

One of the widely forecast effects of e-commerce is disintermediation – the elimination of the traditional middle-man/broker. Another, less discussed issue is commoditisation, in other words. the conversion of previously premium or branded products into commodities. Both of these have enormous potential for reducing the costs to buyers. International distributors, telecommunications carriers and hardware and software infrastructure providers are also likely to be winners. But there are going to be plenty of losers as well – including many major suppliers of traded goods who will see their margins eroded.

However, as well as producing disintermediation, the Internet will increase new forms of mediation – digital ones – that will prevail because they add perceived value. In fact, the value chain, supply chain and customer chain are linked by a flow of exchanges capable of adding value at every step of the way.

A logistics system will be created that allows people to order and receive all kinds of physical and virtual goods without the need of being at home. This could allow people to put more time and energy into physical meetings and interactions that are really valuable to them: that is not going to a bank or driving to an office, but going to a hospital for a check-up; or visiting relatives.

In the long term the market must get more efficient, but very few companies have achieved this yet. They have possibly gained access to larger markets and new products and services, but they have not adapted internally to make their production and delivery of goods and services more efficient, because this is too complex and lacks glamour.

There are also problems modelling business value in e-world. In the past natural resources and physical investment have been the drivers and our measurement philosophy has focused on these only. Sectors where talent dominates such as the media have been secondary.

We now have the situation where investment includes sustaining the knowledge base, and the human talent element is dominating value in almost every segment of the economy. Knowledge and talent are not subject to physical limits; they are subject to architectural constraints, such as how good education is.

However, no government is adequately allowing for the knowledge economy in its financial monitoring or strategic planning, for example, in working out its potential impact on inflation.

Another change is a blurring of the distinction between capital and labour. Many of the new businesses that are being created do not depend on significant money input, nor do they generate fixed assets in the traditional sense. The knowledge economy enables organisations to be formed whose assets are simply the skills of the persons in the company and whose output may be highly ephemeral – the PC games industry. For example, there are considerable difficulties in valuing such companies, partly because their composition can change overnight.

** NB: For more on the theme of new business models and the new economy, see Theme two – Business: sink or swim?*

Recommendation: 4 *Governments and economic bodies should attempt to draw up models of how the knowledge economy works, so that assumptions about the value of knowledge in a company or national balance sheet, combined with the talent of its workers, can be expressed in terms of value.*

Information quality assurance

The volume of information and its accessibility are rapidly increasing. But how do you filter it to get what you want, what is high quality and what is accurate? There is an emerging market for 'quality assurance' providers, something equivalent to the security certification services already available. Such agencies would guarantee the quality and accuracy of data – particular critical data such as financial or medical information.

However, whether such services will evolve naturally or whether state intervention is required, desirable or even possible are controversial issues to be resolved.

Recommendation: 5 *National and international standards bodies should look at how their work could be extended to offer quality assurance for online information.*

Language, culture and the new economy

The nuances of language need careful attention in developing international business projects, particularly where there is a reliance on virtual communication between people speaking different languages. This is important where legal issues are

concerned, such as binding contracts and copyright assignments.

One way to go is to have a universal language such as English, and for most web sites to be published in the local language plus the universal language.

There are also other communications barriers than language – the brevity of Internet communications may seem rude in some cultures. The question of language skills and basic literacy is also very important in tackling the problem of digital divides.

No culture or society will remain 'virgin' in the context of the globalising influence of the Internet. It seems that some degree of homogenisation is the likely outcome. To try to meet concerns about closing the digital divide at the same time as meeting concerns about the preservation of indigenousness is wanting to have our cake and eat it. However, a better outcome is synthesis: a combination of cultures to strengthen them all, rather than homogenisation along the lines of a single culture, to the exclusion of others.

New technologies can also be used to spread knowledge about local cultures and local services quickly and easily over the Internet to an international audience. And digital technology could help multinational corporations respect local cultures using better customer knowledge tools and with cheaper costs of transmitting a specific message to a specific consumer.

Skills for the knowledge economy

In the net economy, the real capital of an enterprise is not made up of the physical assets but the intellectual and human capital. This means there is an inherent reliance on skilled workers. The US is already experiencing a major shortage of skilled workers. US companies have to look abroad to fill the void. Special residence visas are being issued to foreign qualified high-tech workers.

This shortage is also becoming increasingly apparent in Europe. Without planning to train the labour force, build new skills and transform existing competencies, the growth promise of the new economy might not materialise in Europe.

From developing countries' perspective, the increasingly aggressive trend in developed countries to look abroad for their skilled workers risks broadening the gap between the 'haves' and 'have-nots'. Developing countries need these skills even more than developed countries. The solution might be to allow these people to remain in their home countries and cultures, but telecommute via the Internet. This would counter the 'brain drain' and increase the wealth of developing nations.

Recommendation: 6 *Companies in the developed world should look at ways of using skilled workers from the developing world in an ethical way rather than simply poaching them, using telecommuting to allow developing countries to retain resources.*

Developing countries: the global digital divide

For remote and poorer nations like the 20 tiny Pacific Island states Internet connection costs are high: when an island establishes a connection to another nation like Australia or the US it has to pay for the full leased line (4,000 US dollars a month on average). This anomaly means that if a US citizen surfs an Island nation web site, the island nation pays for it at a dear price.

Such countries feel strongly that it is unfair to have to pay the whole cost of connecting when users in developed countries are increasingly wanting access to both their content and consumers.

In developing countries, giving everyone access is a distant goal, where more basic needs such as clean water and basic education are more pressing. A more realistic short term goal should be giving the decision-makers and development workers access, especially those in agricultural, education and health sectors. This will help them develop the country so that everyone can afford and make use of access to the net.

An important key will be the extent to which local leaders in developing countries have a real understanding of the geopolitical environment as it affects both suppliers and regulators. On the whole, local politicians are getting their inputs through distorting or even misinformed channels rather than direct from independent experts. Local decision makers also need to develop an understanding of what are the realistic possibilities for local development in the new economy.

Wireless technologies can be used to improve rural access at affordable rates. In many areas only a few will be able to afford to buy a telephone, but access can also be provided through the establishment of telecentres, as it is done on a franchise basis in Senegal and by local entrepreneurs in Ghana.

Although expensive compared to the level of income, the Internet (in particular e-mail services) is much cheaper than other types of infrastructure such as roads, railways and postal services. The Internet can also give local producers access to the global market.

The key to many of these issues is often how urgently government authorities in a developing country view the technology gap, and offer commitment to prepare the infrastructure. A government to government approach (direct or through certain bodies) could help some developing countries to catch up.

NB: For more on issues surrounding access for the developing world see Theme four: Citizens and consumers

Recommendations:

7 *Local and national leaders in developing countries should have easy access to a wide range of legal, social and technical advice and reference materials on the new economy to help them build strategies. Purpose-built online reference libraries could be one way.*

8 *Intergovernmental bodies in the developing world should make it a priority to look at ways of encouraging or assisting all their member states to develop a more modern communications infrastructure.*

A dangerous dependence on technology

Dependence on technology is creating risks, which fall into three categories: accidents, errors and hacking or sabotage. For industries like airlines, nuclear, transport and all other critical infrastructures, the stakes are high.

On the other hand, it is not clear whether the technology revolution is increasing dependency in ways that increase risk. The Year 2000 bug had little effect, and much of what could go wrong is less than will occur from a weather or other natural disaster.

Recommendation:

9 *A systematic review is needed of the risks to the various things that could go wrong with technology, so the benefits of technological dependence can be weighed against the risks in each area.*

The changing labour market: creative destruction or destructive creation?

New technologies can displace jobs through the automation of business and production processes, business process re-engineering and disintermediation within the value chain. Some new jobs are created, but not enough to remove the danger of high unemployment levels and a growing shortage of skilled labour.

In a global world it will be impossible to provide job protection locally. Either globally-accepted solutions must be found or those countries with more flexibility will create wealth at faster speeds and will feed from the inefficiencies of the rest to become the leaders.

Organised labour must also adapt to remain relevant in a world where increasing numbers of people are self-employed. One way might be for unions themselves to use the new technologies to develop collective positions through transparent online debate.

Freelance labour might in the future use the Internet to form spontaneous, short-lived ‘online unions’ which could provide information and collective bargaining power to their members.

These organisations could themselves be set up as private enterprises, acting as agents for a commission fee or for a cut in any deals reached with employers.

The greatest danger is that more and more people will not simply become unemployed, but unemployable, without an entrenched process of lifelong learning in the workplace and outside.

Recommendations: 10 *Governments and businesses around the world should commit to funding lifelong education for all.*

11 *Unions should examine ways of using new technologies for enhanced, open and participatory decision-making processes among their members.*

Market integration and taxation

One of the main obstacles to a truly single market in Europe is the fact that firms have been able to use their market power to segment markets and price discriminate between different sub-markets. e-commerce will change this dramatically. If consumers can shop around and do arbitrage at almost no cost, then the basis for market segmentation and price discrimination will disappear.

However, there could be a price to pay for this flexibility, in the potential undermining of the national tax base, and hence the ability of national governments to manage and control their economies, and to provide benefits and social safety nets for their citizens.

Recommendation: 12 *International agreements are needed regarding the taxation of online transactions.*

Will the dollar, euro and yen survive?

A dual economy is emerging made up of a 'real' sector that encompasses mature industries with low income and price elasticities; and a 'virtual' sector made of fast-growing activities linked to information and characterised by very high price and income elasticities.

Those high elasticities create potential for very large scale economies that feed strong competitive pressures, huge productivity gains, and ever-lower prices. Thus, one of the first consequences of the rise of net industries is to break the traditional relationship that linked inflation and economic growth. We have entered an era of enduring low inflation.

A second major consequence is a change in the forces that produce economic cycles. The old time economy was characterised by a demand-led cycle in which governments' monetary and fiscal policies played a major role. The new economy is a supply and capital spending led economy with a growth impetus coming primarily from new inventions and the

development of new territories. In such an environment, booms and busts depend more on financial markets than on government controls.

As for currencies, within 20 years the current 140 national currencies may reduce to a handful of common currency areas. Some believe the eventual emergence of a single world currency is only a matter of time, to achieve efficiency and stability in global markets. It will take a long time, however, and much political struggle.

Others believe a digital economy with low transaction costs does not lead to uniformity but high diversity, in parallel to the deregulated telecommunications or transport industries. The long-predicted demise of cash is also likely to occur eventually, with electronic money taking over. Under this model financial markets – not governments – would offer customers an increasing array of private money instruments tailored to their specific needs. These instruments will develop into private payment markets that will increasingly compete with national currencies.

The role and influence of national central banks would therefore be severely reduced, and which national currency will supersede the others would not be so important. But while power will be removed from governments, there could be liberating benefits for individuals.

The darker side: drugs, porn and gambling

Extreme pornography, untaxed gambling, the sale of hard drugs and other illegal activities are rife online, and it is easy for criminals to provide illegal content or services to a country via a small remote state where the laws are lax.

However, attempts to control everything that is posted up onto the Internet are likely to fail because it is easy to set up new and untraceable sites. Also, what one country bans another allows, and systems that automatically block some kinds of content tend to block out some desirable content as well.

The solution is for parents and guardians of children to be as vigilant with young people on the Internet as in many other areas such as television, making use of private blocking technologies where necessary. The education system can also play a part, teaching moral norms and values. Neutral international bodies such as the Internet Engineering Task Force (IETF) could also be given the responsibility of setting some standards and guidelines.

A degree of anarchy on the Internet is not necessarily a bad thing, as the freedom available has opened up a whole new

dimension that would not have otherwise existed. It enables people to communicate across boundaries, and to openly discuss issues relating to government and businesses – as this very debate has shown.

Debate summary and recommendations

Theme two — **Business: sink or swim?**

The right culture: 'Learning by doing'

Acceptance of change and an international perspective are important aspects of the right culture to succeed in the digital economy.

But perhaps the most important is to help shape employees' attitudes away from one of feeling threatened or left behind to one of full engagement with new technologies, and instilling in staff the desire and skills to help the customers use technologies. Staff must also be involved in drawing up technology and training strategies.

Often, by the time a problem is identified by a company which doesn't communicate at all levels, it has already damaged the company's reputation or staff morale.

Businesses must also carefully analyse technology and market trends, as failure to do so may now be the biggest competitive threat of all: threats do not always come from a bigger or more sophisticated player but more from an inability to analyse the market and trends.

Recommendations:

13 *Two-way internal dialogue between management and staff must be at the heart of all technology strategies. New ideas and solutions from staff must be taken seriously, and staff should have a chance to help shape technology strategy and training programmes.*

14 *Careful, in-depth analysis of the training needs of all different kinds and levels of staff, analysed against the background of a clear plan for future development of a business, must be carried out before thorough training programmes are put in place.*

15 *Staff must be encouraged to change but it is important not to exaggerate the difficulties associated with adapting to the net economy. Acceptance of new technologies should not be imposed on staff, they should be persuaded and their curiosity excited.*

e-business models: the next generation

Traditional business models are not compatible with new Internet-based models: differences include the speed of the decision-making process; 'learning by doing' instead of planning; creativity; innovation; the capability to develop or incubate new ideas; and the ability to form partnerships with innovators.

One solution for large companies could be to create subsidiary start-ups using an incubator approach, in addition to the core activity.

Current first generation e-business models translate existing models into a new medium, but future business models could include e-commerce systems automatically identifying market niches and negotiating with agents to fill the niches; or logistics companies strong on identifying the best resources and the best means of linking them.

Eventually, most of this could even be relegated to pieces of software on individual PCs, negotiating with each other.

Large established companies, particularly those in stable markets such as banking, still enjoy advantages such as cash flow, branding, and a wide range of knowledge assets. In setting up dot.com subsidiaries they should seek to capitalise on these strengths alongside innovation: there are cases of organisations which destroy a traditional brand by going gung-ho on the web.

However, the large corporation as a hierarchy is ceasing to be sustainable in some markets. As we move to products driven by information and knowledge, then individual employees will become much more aware of their real value, and will want to see a direct link between their personal inputs and any increase in value achieved as a result. Many traditional organisations will implode as employees seek to become contractors with profit shares and equity stakes.

Recommendations:

16 *Companies need to exploit cross-fertilisation opportunities both internally and with peers, with much less central control. The test will be how a large corporation can behave like a start-up, yet still exploit its architectural and corporate knowledge assets.*

17 *Companies should determine whether it might be helpful to experiment with project-based employment models, similar to those used in the film industry. This model has a producer responsible for overall resourcing, but the actual team forms and re-forms for each film.*

The privacy debate

It is very easy to follow the traces of a web surfer. By sending e-mails, buying with credit cards or simply by visiting certain sites, the surfer leaves his or her prints everywhere.

In this way companies can now determine your centres of interest, and even your psychological profile.One cannot create barriers on the web to prevent such firms from getting information, but to fight this phenomenon possible actions to protect privacy include informing Internet users of possible actions they can take to protect their privacy; or by voluntary ethical charters for business.

Nevertheless some users will not be satisfied with voluntary self-regulation by business, which could easily be broken, and will seek to create systems where the user is always in explicit control of his or her own data. Think-tank member Marcel Bullinga proposed an 'interactive hyperlink' system whereby the user allows strictly conditional use of his or her personal data within a particular network, automatically preventing any unauthorised use or misuse. The user could set different conditions for different pieces of data.

European data protection rules, which are generally considered to be among the strongest in the world, could also be a solution if adopted widely outside Europe.

On the other hand, privacy should not be confused with irresponsibility. Thus, for example, individuals who choose to post messages on public boards that pertain to commercial matters like stocks should not be protected under the rubric of privacy, or the very information flow we seek to protect becomes untrustworthy.

Recommendations:

18 *Governments, ideally working with business and the technology industry, should draw up, publicise, and keep under review advice to citizens on protecting their privacy online. Advice could include explaining how email aliases can be used, the use of anonymous e-cash compared with credit cards, and how the existing law stands on data protection.*

19 *Research should be carried out by companies or governments into new forms of automatic online privacy protection, either usable on the Internet or on parallel networks. One such project might be Marcel Bullinga's proposed 'interactive hyperlink' system.*

Doomed sectors and vulnerable industries

Sectors that are inefficient in the physical world will be the first to be adversely affected by the changing economy.

While basic goods like food and drink and services like holidays will still be needed, their sales and supply mechanisms will change radically. 'Broking' businesses like travel agents or stock brokers must find new ways to add value if they are to survive. High degrees of customisation of goods and services will be one area of development.

But in some sectors like banking, established companies will remain dominant as long as they act promptly to master the new technologies, and the precise effects across any one sector are hard to forecast. Cinema for example, is booming despite predictions of its demise by video, because people still enjoy the sociable aspects of many services.

In developing countries, newer more direct supply mechanisms might sweep away huge swathes of 'middlemen' and

bureaucrats that have previously flourished in an environment of cheap labour and state control. This might also have a positive effect in reducing corruption, although the more fundamental issue of access to online services will remain the key.

Current physical logistical businesses like flower markets might become entirely digital, with the same broking skills applied online and the goods shipped directly from producer to buyer without ever gathering at one place. But the same people involved in the business now might still profit if they adapt quickly and capitalise on their current brand.

Finally, the rise of ubiquitous networking, probably Internet-based, and the digitisation of all information, will lead to new business opportunities as services are delivered not through the PC but through more user-friendly domestic devices. Those who see how things will change quickly will be able to gain a foothold in this new age.

Recommendation: 20 *Companies should ask the question 'what are we good at doing?' and use it to answer the question 'what could we be good at doing in the new economy?' rather than the narrower traditional question of: 'what sector are we in?' For example, a key area might be logistical skill which was considered only secondary in the old economy.*

The dot.com feeding frenzy

The dot.com 'feeding frenzy' requires some rationalisation if consumers are to get to grips with the plethora of options available to them. One major concern is duplication: online portals are proliferating in every sector, each claiming (and aiming) to be the best and largest consumer gateway.

Likewise the proliferation of Internet 'incubator' companies is part of the land rush. There is a belief that "first mover advantage" is somehow an assured element of success.

There are two types of incubator. One is the scatter-gun scenario which has the gamblers placing their money in an incubator scheme to capture part of the benefits of a few winners out of a number of candidates. This is the home of the Internet bubble, and it will burst. Another model looks to providing more solid inputs in return for equity. Here one sees the old economy players like lawyers and accountants taking positions.

Dot.com stocks are still wildly overvalued despite minor market corrections in April; and their value is still often purely in what people expect the share price to rise to. In most of these companies, there is no business model which is likely to produce the 80% gross margins or market share that the current technology leaders command.

However, some companies that are using completely new business models that fit in perfectly with the new economics will fulfil their inflated promise. These are the companies which are redefining the way businesses of all kind are possible, not just the 'new shopping malls'.

While technology will greatly benefit businesses and the economy, the lasting gains are more likely to be incremental. The economy and society need time to digest the developments. And at some stage, e-business methods will (like other innovations) run out of room to grow unless we address the disparities between the 'haves' and 'have-nots' on a global scale.

Teleworking: flexible solution or domestic prison?

The future of work is related to more flexible structures and organisational arrangements, and companies need a flexible and highly qualified workforce.

Telework offers many benefits to companies, workers and society including decreasing travel costs, increasing freedom, the possibility of combining work and childcare and new opportunities for rural areas. However, there are also disadvantages such as an increasing sense of loneliness for workers and poorer social and labour protection, as well as problems for companies in building team work and motivating staff.

Telecommuting is only a realistic option for relatively few people, as most homes are too small and most people will prefer to work in an office environment. However, working at home some of the time is a very attractive option for a large proportion of middle class professional, managerial and executive people.

Freelance agencies will develop on the web providing a trusted infrastructure in which companies can find other companies or freelance professionals to contract to undertake a small, definable task. These online agencies will have low overheads which will make it more viable to find contractors for smaller and smaller jobs, as well as contracting with people worldwide.

Recommendation: 21 *Frameworks must be agreed between employers groups, unions and government which reduce the negatives aspects of telework and improve the security of workers and companies through legislation or common agreements.*

Strategic planning for change

Business executives face a series of alternatives in tackling the fast-changing challenges of the digital economy, ranging from precipitate movement to a strategic approach with medium-long term planning. Different approaches may work according to the type of business, the country, the moment, the competition in the sector, one's position in the market, and an endless list of other factors. Among them, the development of processes,

management models and techniques, systems, people and resources of the company may have an enormous weight.

But this is not new. Throughout the past three decades new information technologies and management techniques have caused a revolution in internal business processes and the relation between companies and the market.

One tool from the 1970s may prove particularly useful: Strategic Planning Processes. At present, a particular company may have a Strategic Plan which could include the integral development of business solutions in terms of processes, information systems, knowledge management and other strategic fundamentals. Facing the new challenge, the change towards a wide open attitude in terms of business-to-business, marketplaces, and other alternatives can be directed in different ways. It depends on the current company status, re-planning when necessary to adjust those developments to the new situation.

Conventional wisdom has it that there is a growing gap between the technology winners and losers, making and breaking fortunes in a broad range of computer-related industries. However, as painful as it has been for some, the turmoil has produced more winners than losers.

Recommendation: 22 *All companies must adapt to use technological support for doing business, but on the other hand they must never forget their basics of business, including strategic planning. The history of economics shows that the speed of change is no reason to neglect planning, but it is a motive for being more flexible.*

Security of e-commerce

Security problems can destroy an e-commerce company's business rapidly because the trust in a brand disappears. Four elements are important to get security right: the security of the interface between customer and the company (for example over the web); the security of back-office databases; the security connections between e-commerce infrastructures and other information systems; and the strength of the brand must be powerful, to create trust. If one link is missing, all the security is weak.

Metadata: a vital but overlooked ingredient

One new trend made possible by the digital economy is the ability to harness knowledge across companies to generate new high value services. However, most established organisations have information strategies based on homogeneous architectures which are unique to each company, and the ability to achieve integration with partners is extremely fraught. They may also have weak information management regimes, noting that the key to effective interoperability is the ability to preserve the meaning of information across different systems.

In general, the investment in drawing up consistent definitions of the meanings of data, known as metadata (that is data defining the properties of data) has been very limited, and this will prove to be a major retarding factor in forming agile, knowledge-based virtual businesses. The key advantage of established organisations, their ability to draw together their heritage of knowledge, will not be realisable.

There is a head of steam building around the metadata standard XML, but there is still a profound lack of interest in addressing data and basic information issues. There are groups of executives who mistakenly think data issues were resolved some time ago.

Many people working in IT know little about metadata – most of the expertise and understanding of this in practice lies with information scientists, who are barely if at all represented at senior levels of business.

Recommendation: 23 *Corporate boards must urgently develop a metadata strategy, and work with potential partners to agree standards.*

Debate summary and recommendations

Theme three

E-government

Online public services: mobiles, smart cards and digital TV

There are various options for public sector bodies to move towards total digitisation of services, without alienating less wired-up sections of the community. These include the use of mobile phones, once they have become fully transactional; 'digital paper' forms using barcodes so people could fill them out with a normal pencil but their results could be digitised; and the use of intermediaries in places like town halls and supermarkets to help people fill in digital applications for a government service.

Full digitisation will inevitably mean the eventual use of biometric smartcard solutions for identification. The technology for smart-cards is already well-developed, but the central issue now is to establish what level of privacy citizens will demand in the use of their personal data.

Digital television is another key emerging technology for digitised public services. However, controversy still surrounds the moves by governments to 'switch off' the analogue signal, begging the question, wouldn't it be better to rely on market forces to decide the transition? In Europe, if the EU presses ahead with setting a binding 'switch-off' date for all member states, it may leave itself open to legal challenge by citizens.

Recommendations:

24 *Governments should base their smart-card solutions on the infrastructures already being built by industry, to save money, but must drive forward negotiations on minimum standard specifications for card and reader schemes on which any public service is to be supported.*

25 *The European Commission and EU member states must look urgently at the question of the legality of insisting on a 'switch-off' date for analogue television signals.*

Realising efficiency savings

A more efficient digitised public sector will mean less time wasted in queues, less money spent on transport to visit public offices, and more efficient and flexible organisation of business and personal life. In the longer term, it should also mean tax savings.

However, change can be very slow, and organisations must focus on the social aspects of change – overcoming people's natural fears and resistance. It is also best to build on existing technology and investment.

Recommendation:

26 *Governments should carefully consider the resources they have already invested in technology and administrative systems, to take maximum advantage of them in moving forward. New systems should be implemented gradually and incrementally.*

Selling public data

An area of high controversy was whether all 'public information' – data and information such as scientific research or geographical data – should be made available free of charge to the public and business to enable small knowledge businesses to thrive by creating value-added information services.

It was suggested that for government departments to sell any information killed off such opportunities, and was costlier to society in the long run despite short-term revenues raised. It was also anti-competitive as large government departments often had a monopoly or near-monopoly on certain kinds of information like weather information.

However, to make all information free would be tough because there are now many vested interests, and in the developing world governments desperately need ways of raising revenue to pay their staff. There would also be severe problems in defining exactly what is meant by public information and exactly who should be entitled to receive it without charge – should foreign nationals be included for example?

Recommendations:

27 Local councils should attempt to take stock of the information resources they hold, and create an integrated database and ultimately a data warehouse. And they must be aware of what other councils are doing to ensure compatibility across local government.

28 The European Commission should undertake a long-range feasibility and impact study on the effects of making all scientific data funded via European state budgets freely and publicly available.

29 The international community and national governments should draw up a workable definition of 'public information', and how that definition might be applied consistently across the public sector in developing charging strategies or making information freely available.

30 All governments should consider funding a "public portal" that helps citizens navigate all public services and information (including that of non-profit organisations) based on an open model that would allow other sites to integrate the same basic directory data into their site.

Teledemocracy – power to the people?

Technology can and should be used to empower the people of a democracy to help set agendas, establish priorities, make important policies and participate in their implementation – a field known broadly as 'teledemocracy'. There is no one 'right way' to develop teledemocracy – a lively interaction between development ideas and viewpoints is essential to produce the greatest benefits.

There is significant potential for governments to benefit from involving citizens in their policy-making processes. Many key decisions are complex, and policy making bureaux in most governments are limited in size – 'closed circles' – and are typically overloaded. The new technologies hold out the promise of drawing upon far wider expertise. However, such deliberative processes must be carefully managed to be effective.

Obstacles to implementing teledemocracy include limitations of information processing in large-scale debates and the age-old human resistance to surrendering power. For teledemocracy to work, an administration needs to be receptive to the citizens it governs, and the input from online sources needs to be clear and focused – the latter requiring a sophisticated process of debate management.

Often, entirely new decision-making processes may have to be forged by major bodies to include online democratic debate. The public must be allowed input into every stage of the process, and have access where at all possible to precisely the same policy information as those in power.

Governments must also be on the guard for attempts by lobbying groups to skew online consultation processes using sophisticated methods.

Recommendations:

31 *Systematic research and analysis is needed into the demand for formal public online input into national and international governmental decision-making processes, the ways such input can be generated, and the ways it can be used.*

32 *Governments should consider the use of trusted non-profit bodies or other independent third parties to act as intermediaries between government and citizens in managing, moderating and summarising public debate.*

33 *The more structured the questions that are posed in an Internet policy dialogue, the more meaningful the responses will be. Participants in the dialogue could be required to provide evidence backing up their arguments.*

34 *Any system of public policy debate should require people to reveal their true identity, whether as a voter or a business, using smart cards or other devices, to avoid covert lobbying activity.*

35 *In drawing up freedom of information legislation governments should present information in a way that corresponds to the stages of their own decision-making processes, from the earliest stages of policy formulation to implementation, to allow citizens to have meaningful input to policy-making and monitor the impact of their contributions.*

Cooperation between governments and non-profit organisations		More and more non-profit organisations are now mature enough to work in partnership with government agencies to provide public services by delegation, and the web would make an ideal medium for co-operation, but administrations are reluctant to co-operate with outsiders.
Recommendation:	*36*	*Governments should look at using the web to collaborate more closely with non-governmental organisations to provide services, especially in the fields of social and environmental protection. Clear charters should be drawn up setting out the duties and rights of each partner in such projects.*
Competition between governments?		There is no natural law that says a citizen must take her public services from her own government. Services may increasingly be delivered by private sector bodies and even eventually by the government of another state, using the Internet. We are a long way from such a possibility now but that does not mean it will never happen, as free access to global information makes citizens aware of the differences between what one government delivers for one amount of tax and what another government delivers for another amount of tax.
Recommendation:	*37*	*Governments should be aware of the growing number of alternatives available to their citizens for online services and make sure they are well-placed to compete.*
The shortfalls of market power		Governments are currently relying too heavily on the power of markets to boost public access and services online. Market power alone will not create a true and efficient online public service, for example in education, where government funding is vital for training teachers to use technology properly.
Recommendation:	*38*	*Governments must consider how best to intervene to ensure market-provided Internet access and telecommunications access is able to meet the needs of online public service provision.*
Public sector trade unions		It is often considered that public sector trade unions are opposed to the introduction of new technology, because it is feared as a threat to jobs. However unions would accept and support experiments with new services if they were driven locally to improve services and not top-down with the sole aim of reducing costs. Some public sector labour regulations are becoming outdated in the age of teleworking. A rapid turnover of staff with more flexible conditions and the citizen's expectations of highly personalised services will require improved productivity to cope with a greater workload.

Recommendations:

39 *Public sector unions should establish an international dialogue to work out the way forward, and seek to learn from the faster-developing private sector's 'teleworking' labour market.*

40 *Public sector employers and staff should work together to chart new projects and new careers based around technology, and use pilot and experimental technology projects to test out new ways of working.*

Boosting the charitable sector

Governments have an opportunity to boost the charitable sector by altering regulations (for example on the requirement for signatures) to make it easier to donate online.

Recommendation:

41 *All regulations surrounding donations to charity should be examined with a view to making it simple to donate online.*

e-voting

Recent online voting in the Democratic Party primaries in Arizona showed a significant increase in voter participation, showing that Internet voting may be a solution to low turnouts. Such ballots will become more frequent, although there are many cost and technical problems to overcome.

There are also vital ethical problems to solve, such as how one maintains the secrecy of a ballot that is conducted at distance in an unknown environment, and how equal access to vote is provided to people who have no access to online media or people who use special access software such as text-to-speech software used by blind people.

Recommendations:

42 *Electronic voting should be tested on ballots characterised by low turnouts such as elections in schools, professional elections and so on.*

43 *Election managers and research bodies must urgently examine the question of how the secrecy of the vote can be maintained using electronic voting – how can it be guaranteed that a vote made at distance will not be overseen or influenced, if only by someone's relatives or acquaintances?*

44 *Online elections should always be accompanied by a well-publicised and easy-to-use postal voting option, to ensure access for all. Election web sites must also be thoroughly checked against accessibility standards to allow access by the blind and visually impaired people, disabled people, those with early versions of browser software and others (see Theme Four for more on this topic).*

e-mail overload?

Most government bodies are currently unable or unwilling to use email for real-time communication and co-operative work with

citizens. This is particularly obvious when a crisis situation requires quick answers from responsible bodies.

Reasons for the difficulty include staffing problems, unease with the technology and uncertainty about how to use direct public input. There are also serious legal implications, with email having to be answered by civil servants in direct charge of a particular matter and answers offered swiftly potentially being used against them in legal proceedings.

However, email is a fundamental tool of the Internet and its use is growing all the time, so public sector bodies need to urgently find ways of coping with messages from the public.

Recommendation: 45 *Politicians and government agencies need to develop or apply tools that make email communication to and from the public effective and rapid. Legal advice must be taken, and relevant disclaimers used. Sophisticated routing mechanisms must ensure that relevant staff field relevant questions, and that everything is not just sent to pile up at a general address.*

Technology for regeneration

There is a general lack of understanding in most governments about the potential for new communications technologies to regenerate economically deprived local communities.

This partly stems from a deep-rooted perception and fear of a divide between older people, with more political power and less technical knowledge, versus younger people, in subordinate positions but with greater understanding of new technologies.

The lack of awareness of regeneration potential seems to be even more acute among decision-makers in developing countries, although there is often a greater receptiveness to change in such countries, possibly due to the fact that solutions to problems are often needed with extreme urgency.

Recommendations: 46 *There is a need to increase awareness among decision-makers at all levels about what new technologies are and what they can be used for, including within local communities where development must be rooted.*

47 *Well analysed and presented reference cases of actual experiences of technology adoption and implementation in local communities, showing the positive and negative effects, actual costs and strategies adopted should be drawn up and circulated widely to assist in this process.*

Debate summary and recommendations

Theme four

Citizens and consumers

The exclusion of women from the 'power circle'

Governments tend to be male-dominated in general, but especially in the areas of business policy, science, technology, trade negotiation and e-commerce. This means that the process of technology development and dissemination is not always practised in a gender-sensitive way.

Policies that fail to distinguish between the needs and concerns of women and those of men, often reinforce obstacles that women face. For example, telecenters that don't distinguish between the needs and interests of women and men often fail to serve women entirely. They may, for example, be established in areas that women cannot reach due to alternative demands on their time, or to travel constraints imposed by society. The best way to ensure that women's needs are met is to bring women into the decision-making process. Programmes that seek to serve women, but do not involve women in their design and management, often fail to achieve their objectives.

How can women influence and access the power circle? Successfully targeted advocacy by women's organisations is critical. Such organisations can also offer access to contacts for sources of credit and access to training in international trade issues. Advocacy can help spark the reform of laws that hold women back from business ownership. It can also help get the message across to trade negotiators that they must be more conscious of the need to communicate the ramifications of trade pacts to small and medium business new owners – women business owners included.

However, targeted advocacy requires a deep understanding of the issues and of the policy and legislative process. It is very important for women's business associations or other women's groups to understand the complexities of e-commerce. Trade literacy programs, handbooks and primers already exist for women's advocates and business associations – the same strategy could be used for e-commerce.

Many women's organisations are pioneering information and communications technologies, and many women's organisations are using and shaping the Internet. However, more progress is needed to meet the requirement to increase the participation and access of women to expression and decision-making in existing and new media.

One important strategy is to strengthen women's voluntary and community organisations. Actions that are needed from local and central governments include the creation of strategies to enable funding to be targeted at women who are disadvantaged from all communities; building the capacity of women's organisations to use and shape the new technologies; a joined

up, mainstream approach to equalities and technology policy and practice; and ongoing consultation with women.

Recommendations:

48 *Policymakers at all levels must strive to distinguish between the needs and concerns of women and those of men, and to ensure both are met.*

49 *In creating more mainstream gender-sensitive policies, women must be brought into the decision-making process, and become involved in the design and management of initiatives.*

50 *Women's groups and other international bodies should develop learning materials to help women's advocates of all kinds gain a detailed grasp of the many complex issues surrounding international e-commerce.*

51 *Governments should seek to strengthen women's voluntary and community organisations generally, creating strategies to enable funding to be targeted at women who are disadvantaged from all communities and helping build the capacity of women's organisations to use and shape the new technologies.*

Exclusion by design

Are you young, healthy and experienced in using the tools of digital society? Welcome to the digital economy! If you are not – you are likely to be excluded. Common design problems for older people include tiny buttons which are hard to press, and a lack of assistance in understanding complex user software through prompting tools.

Recommendation:

52 *The technology and communications industries must tackle the ergonomics issues surrounding the use of technology by older people, and design more accessible products and services.*

Design for all – the role of government

Governments and intergovernmental bodies have an important role to play in ensuring that the design of technology products are accessible to all parts of society, including older people and disabled people. Technology increasingly dictates access to effective participation in community life, and so the need for products to be accessible is a fundamental right for all citizens, justifying strong intervention.

However, a direct legislative approach to force compliance is not desirable, as it is difficult to force any kind of technical development in a free market. Instead, governments should exert rigorous and balanced pressure on the design of technological products through the development of guidelines.

Possible other solutions include the use of International Standards Organisation (ISO) norms to ensure major government procurement projects include accessible design, thus influencing the industry as a whole.

There is also a need for the commissioning and widespread dissemination of research into the situation and needs of all users of technology. The accessibility problem is often caused not by an unwillingness for companies to solve it but by a simple lack of knowledge on the part of the designer of the cognitive and physical abilities of the individual user. If this knowledge was available, better products would reach the market, as most companies see the logic of customer orientation.

Recommendations:

53 *Governments should develop, through dialogue with citizens, commonly approved guidelines for the design and implementation of technology.*

54 *Governments should specify that only products meeting ISO 9241 and ISO 9355 regarding ergonomic requirements will be considered for large-scale purchase.*

55 *Governments, in partnership with business, should offer significant investment into detailed research of the situation, abilities and needs of all users, and see that the research is disseminated widely to the appropriate people.*

Consumer protection

A lack of transparent international legislation protecting consumer rights will inhibit the electronic market place from reaching its full potential, as consumers may be reluctant to engage in transactions on the Internet.

National regulation is difficult to maintain in a global market place, where the consumer may even be unaware of the nationality of the supplier. International co-ordination is complicated by the fact that different countries have different views on the need for regulation and the approach to be taken. Other problems with regulation on any scale include the inherent delays built into any regulatory system and the strains imposed by the increasingly rapid rate of technological change.

Another challenge is the difference between online and offline data protection. There are many vested interests offline whose survival depends upon continued exploitation of data which, online, are subject to intense scrutiny. However, no data privacy legislation can be enforced online if there is not an equivalent degree offline.

The best solution would seem to be ‘co-regulation’ – a term coined by the French government to mean a mix of government regulation through the adaptation of existing laws, alongside a system of self-regulation. The two strands could be drawn together by a flexible new international association with representatives of all stakeholders which would issue recommendations, codes of conduct, or certification for compliant web sites. Some areas – like the online sale of pharmaceutical drugs – may need tighter protection than others.

However various problems remain with the concept of self-regulation, including a conflict of interest between the business community pursuing its legitimate quest for profits, and private citizens. Self-regulation codes should be drawn up openly, with the co-operation of interested organisations, including consumer organisations. There must also be the threat of real litigation backing up self-regulation, perhaps through class action.

** NB: For more on privacy see Theme two: business – sink or swim?*

Recommendations:

56 *Governments worldwide must seek to work through intergovernmental bodies towards a flexible global system of consumer protection online. The best way forward is through 'co-regulation' – a combination of legislation and self-regulation, overseen by a flexible new association which could issue guidance to all parties.*

57 *Self-regulation codes on consumer protection from the business community should be drawn up openly, with the co-operation of interested organisations, including consumer organisations.*

Poverty and the cost of Internet access

In many developing countries, the main reason for not using the Internet is financial, with the price of a computer or Internet access well beyond the average person.

The best short-term solution is to extend access points in public places such as schools and libraries, even in remote areas, but many governments and citizens do not see the potential or relevance of the Internet in the struggle with more basic problems such as food and clean water.

However, there are examples of successful projects even in extremely poor regions. In Colombia, some organisations have started 'neighbourhood information units' in churches, schools or other centres with one or two computers with Internet access. Through the centres communities are able to connect to the rest of the country and participate in peace groups, solidarity efforts, education courses, and even do business.

United Nations Secretary General, Kofi Annan, has recently spoken out on not insulting the poor by suggesting that Internet for individuals is a real priority over more fundamental needs. However, he has unveiled a range of proposals for initiatives to help communities without assuming everyone must have their own computer. These include wiring up hospitals to provide access to the latest medical information; and a disaster response initiative to provide uninterrupted communications to areas hit by natural disasters.

Public or central access points, particularly in centres of learning, treatment or support, can be a crucial driver for education and

self-help. Rural communities in developing countries can send an envoy to a point of presence to carry out a range of important tasks and bring the results back to the group.

Wireless devices will also play a role in getting just-in-time information out to people and places that need it. One approach could be to develop a central, governed IT resource base to deploy the right kind of technology to fit the need. This could be a valuable foreign aid option in times of crisis.

Recommendations:

58 *Intergovernmental bodies and non-governmental organisations should look at ways of using technology to assist poor communities as a whole, through public access systems or wiring up bodies such as hospitals which in turn assist the community.*

59 *National and international aid agencies including government aid agencies should look at ways of developing extensive mobile or wireless central technology resources that could be deployed in the developing world temporarily in times of crisis.*

Accessible web site design

The majority of web sites and networks are not designed for the special access technologies used by many disabled people, for example test-to-speech readers used by blind people, and there is little awareness among designers and site owners about what actually needs to be done to make a site accessible. The problem could be exacerbated and significant populations locked out as the web advances from a text-based communication format to a robust, graphical format embracing audio and video tools.

This is not good business sense: by making an Internet service inaccessible an organisation potentially loses many millions of customers. The benefits of accessible web design also extend beyond the community of people with disabilities: consumers operating mobile devices or using early or basic technology will also benefit from clear and accessible sites.

Although it can be challenging to design for accessibility issues, it is possible to achieve the majority of design results without having to exclude anyone. However, many web agencies don't appear to recognise the issue; they tend to see it as a barrier rather than an opportunity and don't seem to have the time to do the necessary research.

As in other potential areas of Internet regulation, international enforcement would be all but impossible, but there are various actions governments could take to boost accessibility, including putting their own houses in order.

Recommendations:

60 *Governments should adopt accessible web design policies across all their sites without delay.*

61 *Lobby groups and others should develop portfolios of example web sites that are both highly accessible and highly attractive, to show people what is possible.*

Education is the key

Social exclusion from information and communication technologies is not simply a price problem: the real exclusion will be created by poor access to education, which means that people cannot handle information.

There may also be a need in all parts of the world to change the basic approach of education away from learning facts – which are soon outdated – and towards ensuring future citizens are better skilled at self-learning, coping with the flood of information and constant change. Another key aspect may be to ensure that everyone is competent to use the facilities of the information society at an early age.

The web can also be used to create online learning communities where students from developed and developing countries can come together and draw on the same information, research, and even lines of financial support for study. The development of free universities on the Internet would also help, as long as their courses were sufficiently recognised. Development assistance to poorer countries should also concentrate on education.

Recommendations:

62 *Academic institutions and curriculum bodies should look at how their courses may need to be adapted to move away from learning facts and towards more general self-learning skills, including how to cope with an ever-growing ocean of online information.*

63 *Academic institutions and organisations worldwide should look at the possibility of creating global learning communities where people from all nations can unite to share educational resources, research and even funding.*

64 *Governments should look into the possibility of funding free online educational institutions, accessible to all their citizens. Non-governmental or international bodies could do the same on a global scale. Governments should assist in ensuring qualifications from such bodies are widely recognised.*

Access for all – subsidiarity

It is difficult and expensive for governments to give all its inhabitants access to the Net, but a good possibility is to use the principle of subsidiarity. A given town or city could decide either that there are not enough currently deployed fibres, or that the existing fibres do not satisfactorily cover some important parts of the city (including places where there is still nothing but that must be developed).

The power of the collective

The Internet empowers consumers and citizens to act and influence collectively, which could have huge implications economically, socially and politically.

Mass-empowerment has already been experienced by lobby groups such as women's groups when working together to push for changes in legislation. Unions too have begun to use the new technologies to reach out to their members to mobilise and fight campaigns.

A group of people also has more buying power than an individual. One well-known company has already capitalised on this by allowing people to club together to buy products at a discount. This same result could eventually be achieved without an intermediary, using software agents which would interact with each other to automatically build communities of millions, with correspondent power to dictate terms and specifications.

Recommendation: 65 *The international community – in other words, responsible international social organisations of all kinds – must attempt to monitor, predict and influence the emergence of the new online mass power structures in a way which protects democracy and human rights.*

Information not infrastructure

It may not ultimately be hardware design that is the main obstacle to full digital citizenship, but rather problems in the design of information navigation systems, and how the information itself is structured. We have almost unlimited flexibility in the way information and services might be presented, yet we currently offer the same basic interface whether people are inexperienced, young, old, tired or bored.

In place of standard navigation systems like the language of the web, HTML, we should therefore be combining information design with the technology of intelligent agents to produce what Kevin Carey of HumanITy has termed PML – Personalised Markup Language – so that the system modifies information presentation according to the abilities and preferences of the user (which may change over time).

This system of 'adaptive personalisation' could work for all digital technologies, from the web to digital television. Interfaces and search facilities that can deduce our cognitive facilities and profile our role and needs. The basis for this already exists in many existing web-sites, but we do not seem to have got the psychology of the e-world properly integrated with our technological designs.

Recommendation: 66 *The technology and communications industries should work to produce solutions and standards for personalised information navigation systems, including systems for web browsing. The operation of such systems should be automatic and intelligent.*

The return of the village in human relationships

Despite its global reach, the Internet is actually set to replicate a key aspect of life in a small village: the opportunity for ordinary people to know a lot about the lives of others.

In a village you know everyone; you know not just the character and behaviour of everyone with whom you come in contact, you also know about their backgrounds, their parents, their childhood, their siblings. There is no privacy. That was why moving to towns was such a liberating experience for the generations who moved off the land. But that freedom removed the constraints on behaviour that a village imposed, in particular, the knowledge that whatever you did at any stage of your life would be remembered by your neighbours.

What the Internet does is to create a database which not only enables people to find out a great deal about anyone but also to track their behaviour (for example their credit record). Gradually the mass of information will grow, and it will become possible to track people's entire lives – subject to the development of clearing-houses that will sort information about people in an orderly and ethical way. Socially, the effect will be like living in a village. On the one hand it will be a powerful force establishing and reinforcing trust. On the other, it will mean that there will be no escape to the anonymous freedom of the city.

Positive implications include the ease of policing electronic commerce; self-policing will grow alongside official policing; and cross-border commerce will be assisted by the growth of trust. Societies will gain a new and powerful form of self-discipline, the self-discipline that villages once imposed. Negative effects include the need for stronger checks to control impersonation; dangers of social exclusion and loss of privacy; and people feeling unfairly "branded" because of confusion of identity.

Section 2 Debate transcripts

Theme one — **The new economy**

National versus international policymaking

Juanita Neale Saxby, Multidisciplinary Social Research, New Zealand, said: "A new type of international organisation is needed to look after the Internet that can cope with rapid change.

"Only an international body designed to be a learning organisation could do this, and traditional organisations are very difficult to turn into learning organisations, because staff have so much to unlearn. If the staff are also responsible to some other body as well (such as a national government) this compounds the difficulty, so it is much more likely to succeed quickly if it is a newly-created institution.

"This international learning organisation could not only oversee Internet trade and regulation, but also have a research and monitoring wing to predict problems and explore ways to prevent them. It could also act to encourage nations to do similar work. The body could be called the 'World Internet Organisation' promoting all aspects of the Internet like WHO promotes health."

Yong-Suk Lee of the National Computerization Agency, Republic of Korea, said: "There is currently a clash of regulatory and policy frameworks and structures between commerce and information and communications. For example, some people view e-commerce as a commerce issue and prefer to use the World Trade Organization to formulate global policy on e-commerce, while others view it as an information and communications issue and prefer to use the International Telecommunications Union.

"This is pretty much the same at national levels where commerce ministries and information and communications ministries are competing for jurisdiction. There needs to be a way to get both perspectives into the policy melting pot.

"Under the current structure, there is much confusion as to which issue falls under which organization and many jurisdictional overlaps continue to spring up. This is because the existing structures of government were devised in the industrial age and haven't kept pace with revolutionary changes in society.

"In the long term, the entire structure of governments and international organisations may have to go through some radical changes to be suitable for the new policy environment. Perhaps government structures will evolve into 'network of clusters' seen in some corporations."

Aileen Allen of UNIFEM said: "The key issue in the institutional debate is that of accountability. Whether we revamp existing institutions or create new ones, ultimately what matters is how

open and democratic these are. The creation of non-profit groups like the Internet domain name body ICANN and the Internet Society (ISOC) should be encouraged to democratise the debate around the information technology architecture and influence international policies and regulations in this area.

"Precisely because the information revolution affects all areas of our lives it might make more sense to have different bodies per sector. While there may be common underlying issues across sectors, there will also be sector specific issues that will require specialised expertise on the subject."

Morten Falch of the Technical University of Denmark said: "There is clearly a need for intergovernmental bodies, with the globalisation of the economy and a growing number of global challenges such as protection of the environment and peace-keeping. If democracy shall survive globalisation it is important that a model for more democratic intergovernmental bodies is developed. A first step will be to ensure more openness in their decision process and creation of a common (maybe electronic) forum for a debate on their decisions."

Dr Michael Gurstein of the Technical University of British Columbia, Canada, said: "There is a need to bring the existing institutions up to date, less in their use of the new technologies, than in the way in which the new technologies present opportunities for restructuring the ways in which the institutions approach their work. But in this the agencies are no better and little worse than their member states, and without major injections of new personnel and resources, the agencies are more likely to be followers than leaders.

"Where the really interesting opportunities are emerging is on the fringes of international governance. The Internet domain name body ICANN and the Internet Society (ISOC), both non-governmental groups with semi-official roles in global Internet governance, and the emerging networks of Internet enabled counter-hegemonists working against the World Bank/IMF, genetic manipulation and the World Trade Organization, are all in their ways looking for alternative mechanisms for representation in a globally networked polity.

"The 'open source' model of software development, which emerged out of the hacker culture and created Linux, presents one implicit model of what Internet enabled global decision-making and representation/participation might look like. It may not be especially pretty (or democratic) but at least it is truer to the spirit of the times than the auto-reply systems that pass for making use of the new media in most governmental jurisdictions."

Diljit Singh of the University of Malaya, Malaysia, said: "e-commerce is going to exist side-by-side with the normal trade

that has existed for centuries. This is especially so for the developing and less developed countries which cannot afford to plunge deeply into e-commerce. Any new intergovernmental agency would have to deal with issues related to the many grey areas of traditional commerce overlapping with e-commerce, in addition to the problems that exist in any international organisation."

Franck Martin of the South Pacific Applied Geoscience Commission, Fiji, said: "There are too many bodies, making too few actions. I have seen many reports by various organisations on how to implement the Internet in the Pacific island nations, but few of them did any real implementation. We should strengthen existing bodies."

Philip Virgo of the Parliamentary Group on the European Information Society (EURIM), UK, said: "We have too many inter-governmental bodies and non-governmental self-appointees tripping over each other, looking for roles, duplicating irrelevant discussions and running away from core issues – like liability for helping take effective action against fraudulent or criminal traffic – because they are 'too difficult' or do not fit the business/ technical models of the current players.

"We need to cull those which do not fulfil a role and to persuade those which do have a genuine role to meet in the same room at the same time as those with which they overlap and have the discussion once only."

Andrew Sleigh of the Ministry of Defence, UK, said: "Inter-governmental bodies look like a necessary idea, but can they actually work given the inherently non-centralised and fast moving nature of the web, quite apart from the problem of legitimacy? Might there be an equivalent of WTO, G8 and OECD for e-regulation? It is very difficult to see how any such body could be sufficiently agile to contain the huge dynamic pressures which characterise the new economy.

"Instead we need to rely on the distributed effect of non-governmental regulatory bodies that pervade almost every area of commercial activity. Almost every walk of life has its regulatory institutions, many of which have international ties, and the combined effect of these non-government bodies being a very powerful regulatory constraint on business behaviour.

"They derive legitimacy not from law but from common consent amongst the market sector or profession. This is a much more important effect than many people comprehend, and the digital economy, by further tightening globalisation, will shift the balance further in favour of these international regulatory bodies and away from government."

Lawrence Hecht of the Internet Public Policy Network, US, said: "We don't need new regulatory bodies. There are already too many regulatory institutions.

"The best approach might be to use alternative dispute resolution (ADR). ADR is a process in itself that lets different regulatory bodies work with each other. What is needed is an education campaign targeted towards bureaucrats who will use ADR."

Ian Pearson of British Telecom said: "The future world will undoubtedly be a highly dynamic mix of geographically and non geographically based structures. Regulating net-based communities will be more difficult due to the ability to have such groups without any identifiable leadership. They may sometimes be self-organising and self policing, without any regard to external regulatory bodies. Already, we have such groups in the software domain.

"Many of these groups will have very significant economic clout – environmental or feminist groups could be very large indeed. This could be good or bad, but will certainly be interesting. The power held by some such groups may far exceed any geographic nation, and the ability to act might outstrip any global governmental body in terms of speed of co-ordination."

Dr Anke Muller-Sloos of Berenschot, Netherlands, said there is an inclination in the new economy to adhere and revert to or perhaps even reinvent 'old economy' rules, regulations and hierachy. "Isn't it true that one of the prime advantages of the Internet is that it creates the possibility to cut through all this red tape?"

Helle Degn of the Parliamentary Assembly of the Council of Europe, said: "National governments will have to modify their role and behaviour in the new economy. Businesses have been linked up internationally for some time, but governments much less so. The current efforts at closer international co-operation among governments, and also parliaments, must be seen against this background.

"However, economic life – national businesses as well as multi-nationals – very much needs national state authorities since, wherever businesses operate, they are in a national setting. They cannot be pursued in chaos or in the absence of a valid legislation or social framework. The main guarantor of these are still, for better or for worse, the nation state. It is also the main vehicle for the expression of the popular will, and to ensure that the fruits of economic activity can be shared equitably among a population.

"The nation state is not so much under threat as in a process of transition, as it tries to meet the new challenges by building up

new forms of security for citizens in the social, environmental and so many other spheres."

Veni Markovski of Internet Society Bulgaria asked how far each European country needs to have national policy for developing technology regulation, and how far they should rely on EU-wide policy-setting. Some problems are specific to individual countries, he said, for example Bulgaria has a serious problem of the migration of IT specialists abroad, most recently to Germany.

Jean Paul Baquiast of Admiroutes, France, said it was a difficult task to harmonise legislation or basic applications across Europe but nevertheless, it is necessary to define common requirements, on a very practical level (for instance, in Europe do we need common ID for firms and/or citizens?) Consecutively, it would be possible to propose fast and easy tracks to reach some common goals.

"If governments are not able or ready to negotiate this between them, why not try on a private and non-commercial oriented basis, like the present think tank?"

Sam Lanfranco said progress would have to be made simultaneously on all levels. "The World Trade Organization, International Telecommunications Union, Internet naming body ICANN and others are beginning to build global policy, but do so where "answerable to who?" is a burning question.

"At the same time ICTs are changing the speed, scope and scale of all sorts of activities, across the economy, the polity, and society. This is having dramatic consequences (e.g. brain drain) for national entities. They cannot stand still and watch this happen. There is a need for national, regional, local and sectoral policies on ICTs and everything we do.

"Our practical need to have rules in place has run ahead of our knowledge and wisdom in these areas and we will be in a state of disequilibrium for quite some time."

The performance-based approach

Juanita Neale Saxby of Multidisciplinary Social Research, New Zealand, said: "Because the commercial system on the Internet is expected to change very rapidly, traditional methods of regulation will have difficulty keeping up with the change. It is necessary, therefore that we seek methods of regulating the Internet that can cope with rapid change.

"Performance-based wording copes well with change, and can be used to write both national legislation and international agreements. Therefore, I recommend that it be used to regulate the Internet for both national and international law.

"Performance-based Acts explicitly set out the goals of the Act and require "performances" that will achieve those goals. They also list forbidden performances; these attract penalties when a perpetrator is judged guilty. Performances are described in very general terms, with wording chosen to ensure that the Act states what people are required to do, but not how they should do it.

"For example, an Act dealing with computer viruses might use wording like this: "Goal" described as desired outcome: protection from computer viruses; "Required Performance" – being computer viruses to be used only for ethical purposes (such as working out how to reverse the effects of a virus); and "Forbidden Performance" – being malicious use of computer viruses.

"The performances are duties that must be carried out if you undertake the activities covered by the Act. In the above example, if you are not dealing with computer viruses you have no duty, but if you are, you have a duty to do so ethically.

"Performance-based Acts are worded in such a way that anything that does not include unacceptable practices complies with the legislation. With this kind of legislation, you do not have to wait until the law is changed to do those things that were unknown when the Act was written. You can innovate as long as you comply with the goals and performances required by the Act.

"New Zealand has been experimenting with this type of legislation since 1991, and now has several performance-based Acts. There have been a few problems, mainly caused by people not fully understanding how the Acts are supposed to operate. When such Acts are introduced into a community for the first time, there is considerable need for training for enforcement officers, lawyers and the judiciary.

"To use the performance-based approach to regulate the Internet may need a new international body to administer it, to prepare model acceptable solutions, provide resources for the national educational work that will be required. There would also have to be an international exercise to arrive at goals for legislation acceptable to all nations, and to work out who will be responsible for what, in the enforcement of the law. Will it be national enforcement only? Or will some of the enforcement be done at an international level?"

The meaning of the Microsoft case

Philippe Rose of Le Monde Informatique, France, said the ongoing case of the US Department of Justice against Microsoft will not change many things in the high-tech industry. "Consumers don't care about Microsoft's domination of its different markets. It is more a problem of 'fair competition' than a danger for consumers. So, from an economic point of view, the

impact is not real: the consumption of high-tech will not be upset with this affair.

"It is supposed that one company's 'monopoly' could control all the spread of innovation in the industry, but this is impossible, because of many start-ups that come from nowhere to fight against other high-tech companies. A monopoly can occur but be eliminated a few months later by innovation coming from competitors.

Jose Herrero Valdes of ISDEFE, Spain, said the Microsoft case illustrates that it is the nation state which is the only institution which can defend the general interests of the citizens. "Any other existing or conceivable bodies are still too far and distant from the citizen for the time being."

Sam Lanfranco of the Internet Societal Taskforce and York University, Canada, said: "This ruling is a milestone because it is the first in a long line of efforts by the state and the legal system to come to terms with issues raised by the rapid deployment of the Internet. Others have to do with intellectual property, the governance regime for various levels of domain names, and patent and copyright regimes.

"History will record that this all started around the turn of the century, and that some company called Microsoft was involved in one of the first cases. What will be landmarks are the actual principles which evolve for application in this new electronic venue. A surprising number will look like the actual principles that were evolved to deal with the older literal venues, and a surprising number will involve regulation and governance across national boundaries."

Juri Lichfield of the Estonian Innovation Foundation said: "The Microsoft case is an attempt to distort normal competition. Microsoft has made enormous work to offer consumers a complete set of software. Most consumers have no need to install any other solution other than Windows.

"To prohibit the sale of Internet Explorer together with Windows is like prohibiting Mercedes Benz from supplying cars with a stereo, forcing purchasers to buy a stereo separately."

e-Europe – a web of knowledge

Jose Mariano Gago, Portugese Minister for Science and Technology, said: "A European Action Plan for the development of the Information Society will be a key step to build the most competitive and dynamic knowledge-based economy capable of sustainable growth, with more and better jobs and greater social cohesion. This shift to a digital, knowledge-based economy should also be capable of improving citizens' quality of life and the environment.

"Citizens and businesses need to have access to an inexpensive, world-class communications infrastructure and a wide range of services ; creating the conditions for electronic commerce and the Internet to flourish. It is also important to adapt Europe's education and training systems both to the demands of the knowledge society and to the need for an improved level and quality of employment. There is a need to equip every citizen with the skills needed to live and work in this new information society in order to prevent information exclusion.

"The conclusions of the "eEurope – a Web of Knowledge" ministerial conference will contribute to the eEurope Action Plan, prepared by the Presidency and the Commission and presented at the European Council in June 2000."

Characteristics of the new economy

Alan Jones of the University of Teesside, UK, said: "The characteristic of the new economy is reduced transaction cost. Businesses which incur a major proportion of their costs as transacting their business will show increased productivity and decreased costs by use of the Internet. Either of these goals represents best practice. To have both at once is what marks the new economy.

"There is still a place for quality service and niche businesses. I use a similar one-man business for the maintenance of my car. He advertises minimally and lives on the repeat business of his growing band of satisfied customers. Sadly, this old model will not provide employment to the new world. But neither will they vanish."

Sarah Norris of the Charities Aid Foundation, UK, said: "A range of new dynamics in the workplace and the value chain make new economy business a more exciting place to be.

First, work is an activity not a fixed place – professionals are more mobile, they work remotely and at different times of the day. Second, the value chain, supply chain, customer chain is linked by a flow of exchanges capable of adding value at every step of the way. Customers help themselves, business is beginning to become more portable, so one can make a donation to Mozambique while reading FT.com.

"Third, invention and innovation are the killer applications. Some in industry are starting to use the phrase 'we're making it up as we go along'. This doesn't mean that they've forgotten their grounding in marketing, their business administration skills or their pragmatism. Rather, it means we are reading, consuming, seeing, feeling, anticipating and understanding at a grittier, less theoretical side of business. They are closer to the action."

Frank Bannister of Trinity College Dublin, Ireland, said: "One of the widely forecast effects of e-commerce is disintermediation –

the elimination of the traditional middle-man/broker. Another, less discussed issue is commoditisation, in other words, the conversion of previously premium or branded products into commodities.

"Clearly both of these have enormous potential for reducing the costs to buyers – undoubtedly a good thing. The question is, who else will profit? It seems to me that international distributors, telecommunications carriers and hardware and software infrastructure providers are likely to be winners. But there are going to be plenty of losers as well – including many major suppliers of traded goods who will see their margins eroded in this new world."

Rodolfo Carpintier of Grupo NetJuice, Spain, said: "The problem is different. The Internet will produce disintermediation but it will increase new forms of mediation – digital ones – that will prevail because they add perceived value from the customer's point of view."

Sam Lanfranco of the Internet Societal Taskforce and York University, Canada, said: "Much disintermediation is just stage one in reintermediation. This is what happened with the shift from agriculture to industry. Much of what was food processing on the farm, or in the kitchen, was (re)intermediated into jobs building tractors or packing food products.

"Production is not just about making things. It is also about giving things time and place utility. Only about 25% of the price of an automobile is represented by the cost of building it. The other 75% is marketing and distribution, in other words giving it time and place utility.

"The Internet Economy' is likely to change this. Business to business e-commerce is reducing the cost of procurement for car parts to make vehicles. Business to consumer e-commerce is threatening to make serious changes to how time and place utility are handled."

Bruno Oudet of Joseph-Fourier University, France, said: "Disintermediation is a very important question. We tend to forget the real world and imagine a very different cyberworld much too rapidly.

"We will need plenty of real middle person resources in the cyberworld. We will need them first for the large portion of the population which will be slow to adapt to the information technologies. We will need them because we will always like 'physical' relations.

"The question is not the suppression of intermediaries but rather how to adapt the intermediaries' task to be more effective through use of the Internet. For example, I do not want my

postman to disappear but I want them to bring me other services."

Sarah Norris of the Charities Aid Foundation, UK, said: "The digital world and the conventional world might actually one day get themselves linked. I might continue to use my web sites for repeat buying (I've touched and felt the product which I now know I trust), redeeming vouchers along the way which are posted to me to entice me back into the physical shop to see the new season range (which I haven't yet touched and felt and trusted)."

Marcel Bullinga, Author and Adviser on Internet issues to the Dutch Government, said: "I want a logistics system that allows me to order and receive all kinds of physical and virtual goods without the need of being at home. When I have more virtual choices, I can put my time and energy into physical meetings and interactions that are really valuable to me: that is not going to a bank and asking someone to hand me my own money, or driving every day to my office to do things I could do at home: it is going to a hospital for a medical inspection; or taking the car to visit my parents."

Javier Sola of the Spanish Internet Users' Association said: "It will be interesting to see how businesses such as recorded music (MP3) will develop when they are delivered through the Internet. Will they serve directly to the customer or let an MP3 intermediation industry come into being, quite different from intermediaries who sell music with physical support such as CDs?"

Xavier Garay of Booz·Allen & Hamilton, Spain, said: "The market must get more efficient, but very few companies have yet achieved this. They have possibly gained access to larger markets and new products and services, but they have not adapted internally to make their production and delivery of goods and services more efficient. This is way too complex and has very little glamour."

Carlos Rodriguez Braun of the Universidad Complutense, Spain, said: "The erosion of margins as a consequence of the cost-reduction process triggered by newcomers to the market is the 'ABC' of competition. The cost and price decreases are precisely the reason why competition is so useful.

"It's true that the pressure will eventually puncture the present e-boom and produce the outcome that some people are increasingly fearing: that an unknown but probably large number of companies that are thriving today will disappear. That has been always so in all markets; but if they are 'hypercompetitive' perhaps the dynamics will show more wide oscillations."

Andrew Sleigh of the Ministry of Defence, UK, said: "How can we model traded value in the e-world? Simplifying enormously,

total GDP is limited by some combination of natural resources, previous investment and human talent. In the past natural resources and physical investment have been the drivers and our measurement philosophy has focused on these only. Sectors where talent dominates (e.g media) have been secondary.

"We now have the situation where investment includes sustaining the knowledge base, and the human talent element is dominating value in almost every segment of the economy. Knowledge and talent are not subject to physical limits; they are subject to architectural constraints, such as how good education is. Clearly this is not a zero-sum game.

"It would be helpful to have a model of how the knowledge economy works, so that assumptions about the value of knowledge in a company or national balance sheet, combined with the talent of its workers, can be expressed in terms of value able to be appropriated. Just knowing what dimensions and factors are at work would be useful. To take one issue, how can we tell whether growth in GDP is inflationary or not unless we can tie this back to such a model?

"I am quite sure that no government is adequately allowing for the knowledge economy in its financial monitoring or strategic planning."

Geoff Stephenson, Policy analyst for DG XIII of the European Commission, Luxembourg, said: "One of the changes is a blurring of the distinction between capital and labour. Many of the new businesses that are being created, particularly the rapidly growing number of micro-enterprises, do not depend on significant money input, nor do they generate fixed assets in the traditional sense.

"The knowledge economy enables organisations to be formed whose assets are simply the skills of the persons in the company and whose output may be highly ephemeral – the PC games industry for, example. There are considerable difficulties in valuing such companies and this problem is one of the reasons that dot.com company valuations are so volatile. Their composition can change overnight."

** NB: For more on the theme of new business models and the new economy, see Theme two – Business: sink or swim?*

Information quality assurance

Frank Bannister of Trinity College Dublin, Ireland, said: "The volume of information is increasing and its accessibility is increasing even faster. This is leading to problems of quality and quantity. There is a vast amount of information available on the net. How do you filter this to get what you want? Furthermore, there is a vast amount of disinformation on the net. How do you tell what is accurate and what is not?

"There is probably an emerging market for 'quality assurance' providers, something equivalent to the security certification services already available. Such agencies would guarantee the quality and accuracy of data – particular critical data such as financial or medical information.

"Expecting users to sort this out for themselves via a process of evolution is optimistic, to put it mildly. A lot of people can get hurt before the public becomes aware of the dangers. What about people putting inaccurate medical information on the web?"

Sesh Velamoor of the Foundation for the Future said: "The market itself will give rise to the self-policing such as in ISO, or other standards. When evolved by government bodies, these same standards as mechanisms for protection have failed."

Language, culture and the new economy

Beth Porter of SW Interactive Media, UK, said: "The nuances of language needs careful attention in developing trans-national business projects, particularly where there is a reliance on virtual communication between people speaking different languages. This is important where legal issues are concerned, such as binding contracts and copyright assignments.

"The challenge is how to accomplish greater agreement of various regulatory issues across boundaries, while allowing free exchange of commercial ideas and partnerships."

Andrew Mancey of the Sustainable Development Networking Programme, Guyana, said: "The multiplicity of languages is obviously a problem and a barrier. I have several times been defeated by a Spanish web site (even with online translation). One way to go is to have a universal language such as English, and to publish your web site in your local language plus the universal language."

Mirka Negroni of Telemanita, Mexico, said: "A focus on language takes us away from the problems of the other communications barriers that exist on the Internet – the difference, say, between acceptable business English and business Spanish. The shortness of Internet communications is inherently rude in some cultures. Will we all have to adopt a new culture of Internet communication?"

Rosa Delgado of the Société Internationale de Télécommunications Aéronautique, Switzerland, said: "e-mail culture is the same in all countries and languages – short and rapid messages. e-mail language is not considered rude in other cultures anymore.

"The Internet is the mirror of the society, and societies speak many languages and have different traditions which could travel

through the net. However, we should have a type of common language that will allow people to communicate and perform commerce globally. This is the beauty of the Internet."

Piia-Noora Kauppi of the European Internet Foundation and a Member of the European Parliament for Finland, said: "The question of language skills is very important when we want to tackle the problem of digital divides. If we recognize that old divides in every society – such as language differences, cultural factors and generational gaps – have their own importance to the creation of new kinds of digital divides, we already admit that divides are inevitable.

"How can the person who is unable to read even their mother tongue acquire the skills to take part in the new economy? We have to remember that the world is already divided."

Rodolfo Carpintier of Grupo NetJuice, Spain, said: "Languages are a small barrier compared to the possibilities of searching for like-minded people in other cultures. An expert in Arabian horses has more to do with the same expert in a different country, than with their friend next door that hates horses. The Internet is ideal to create 'communities of narrow interest' of great value to their members."

Beth Porter of SW Interactive Media, UK, said: "There are already in train various technological mechanisms to minimise difficulties with net translation. There is a prototype for a voice activation system into which data is spoken, then the programme intuits by browser the country accessing the data and translates so anyone can receive the information."

Sesh Velamoor of the Foundation for the Future, US, said: "No culture or society will remain 'virgin' in the context of the globalising influence of the Internet. As long as the western paradigm of freedom, economic growth and scientific/ technological advancement are the driving forces, it seems that homogenisation is the likely outcome. The constant concern about the digital divide and preservation of indigenousness is akin to 'having the cake and eating it'. The best choice is synthesis: synthesis is good for evolution in the long term, homogenisation is not."

Horace Mitchell of European Telework Online, UK, said: "Barriers between cultures persist, as anyone who has been involved more than superficially with European transnational projects will readily confirm. It may be true that a fairly high proportion of Danes speak and read and write good English, but that doesn't make Danish society like English society. If you want to sell ideas or products or services in a particular society the best way to do so is through local natives, who add local value culturally and socially, not just linguistically.

"There are some products and services that people almost anywhere will buy online in a foreign language, and people who will buy in their own language even when it is culturally misplaced. But if you stay with this approach you will only ever capture a small proportion of the total market opportunity."

Christine Maxwell of Chiliad Publishing, France, and the Internet Society, said: "Local culture does persist, but people have to fight harder to maintain certain aspects of it. However, they also can use the new technologies to enhance their culture and to spread knowledge about it and local services over the Internet.

"It is very important that people be encouraged to always post their web sites in their native languages as well as English. This supports the increase on the Internet of non English languages."

Christopher Traggio of Sciences Com, France, said: "With streaming technology improving, and set-top boxes available to receive Internet on TV, French consumers will soon be able to watch the latest American TV series at their leisure.

"The web may allow foreign culture to enter more freely, but the web and digital technology will allow local culture to be transmitted to an international audience. The traditional barriers to producing content (culture) promoting it and distributing it are falling.

"Because of the ease of production and distribution, Internet and digital technology may actually strengthen less 'international' cultures. A new French TV channel focused on the Breton culture will soon start; the operation is possible because of reduced production and distribution costs of digital technology. This channel is meant to be a meeting point for Bretons dispersed throughout the world.

"Digital technology will also help large multinationals respect local cultures; there will be better supply chain functionality, better customer knowledge tools and cheaper costs of transmitting a specific message to a specific consumer."

Skills for the knowledge economy

Alain Buis of the Bull Users' Association CUBE, France, said: "In the net economy, the real capital of an enterprise is not made up of the physical assets but the intellectual and human capital. Human intelligence, expertise and skills are the very foundation of dot.com enterprises. The clearest example would be a young software company. If it is acquired and the key skilled people leave, the acquiring company may find it has paid $100 million for an empty shell. Virtually anything can be outsourced, except the key skills in the core business.

"But there are also risks. There is an inherent reliance on skilled workers not only in the IT department itself, but also for the use of IT for business within the new economy. The US is already

experiencing a major shortage of skilled workers. US companies have to look abroad to fill the void of the domestic pool of skilled labour. Special residence visas are being issued to foreign qualified high-tech workers.

"This shortage is also becoming increasingly apparent in Europe. Without planning to train the labour force, build new skills and transform existing competencies, the growth promise of the new economy might not materialise in Europe."

Keith Gardner of NATO, Belgium, said: "Human capital is the critical factor in continued growth of the net economy, but we need to see this from developing countries' perspective.

"Clearly there will be great pressures to seek skilled computer-literate workers, and the competition for people with these skills will be intense. By going abroad to find these skills, as the developed countries are doing in increasingly aggressive ways, we risk broadening the gap between the 'haves' and 'have nots'. Developing countries need these skills as much as, indeed more than, the developed countries. But they will be hard pushed to compete to retain their best and brightest.

"Perhaps a new paradigm might emerge. Will we not find that future businesses will take advantage of the non-geographic nature of the Internet? Wouldn't it be possible to leave these people in their home countries and cultures, but have them telecommute via the Internet to work for the rich companies who desperately need their skills? This approach offers a means to counter the 'brain drain' and increase the wealth, technology and human resources of the developing nations."

Danielle Jones of Ericsson, Sweden, said: "The effects on the world economy of a fast-growing, entrepreneurial 'knowledge' sector that can source its workers anywhere over the Internet would be a more international global market place hopefully with less cultural barriers.

"Certainly the reliance on 'who you know' will stay important. Though often when life and events are thrown open so much, people look for commonality and band together – people are inherently tribal perhaps? Look to the common reference of the Indian success in Silicon Valley and India's software success."

Developing countries: the global digital divide

Franck Martin of the South Pacific Applied Geoscience Commission, Fiji, said there were 20 Pacific Island Nations where the population varies from 3,000 (Niue) to 800,000 (Fiji). These island nations have an Exclusive Economical Zone which for most is bigger than a US state and for some as big as the US itself.

Some of these nations have attractive Internet domains like TO (Tonga), NU (Niue), and TV (Tuvalu), which can generate revenue

for the islands: there were talks about leasing the TV domain for 50 million US dollars to television companies, around the same as the total annual budget of Tuvalu.

The wealthier islanders find Internet postal shopping useful as there are currently few foreign imports, but there are payment problems as local banks do not offer visa cards.

And Internet connection costs are high: when an island establishes a connection to another nation like Australia or the US it has to pay for the full leased line (4,000 US dollars a month in average). This anomaly means that "if a US citizen surfs an Island nation web site the island nation pays for it at a dear price. I think when an island nation connect to the Internet the state on the other side should pay half of the bill", Martin said.

However, the islanders have the last laugh: "I prefer to be here coding on a beautiful beach with coconut trees than in the traffic jams of Silicon Valley."

Andrew Mancey of the Sustainable Development Networking Programme, Guyana, said: "In Guyana we do not have the major problem of being a group of small islands but many of the problems are the same.

Internet access is around $30 per month but all ISPs have waiting lists since they cannot get enough phone lines to meet demand. Teledensity is over 5% but many are unable to get a phone. As wages are low relatively few can afford a PC and many cannot afford a phone. However, we are still better off than some developing countries. Our first international optical fibre cable should be active soon and there is already a national optical fibre network.

"Why should so many countries have to pay the whole cost of connecting when users in developed countries are increasingly wanting access to both content and consumers in developing countries? Why is this not more talked about?

"Also, in developing countries giving everyone access is a distant goal. A more realistic short term goal should be giving the decision-makers and development workers access, especially those in agricultural, education and health sectors. This will help them develop the country so that all can afford and make use of access to the net."

Rosa Delgado of the Société Internationale de Télécommunications Aéronautique, Switzerland, said: "Decision-makers around the world need to focus on reducing IT inequalities between rich and poor countries. The fact is that 80% of Internet host computers are located in high income countries with only 15% of the world's population, and nearly 20% of all the countries do not have full-fledged connectivity.

"The majority of organizations and authorities are from countries with large incomes and cannot understand that a university professor gets $10-$20 per month in some countries, such as Sierra Leone. Internet access in Sierra Leone costs more than $20 a month."

Sesh Velamoor of the Foundation for the Future, US, said: "Inequalities have been a fact of history and it is a huge problem that is not easily solved.

"If we are anxious to solve these issues in our lifetimes, or in the lifetimes of the next generation, we are being unrealistic. It will take several hundred years and all we can and should attempt to focus on today is educating ourselves and our children first in the privileges and responsibilities of global citizenship.

"It may turn out that technology in all its wondrous forms is not what we need to be going forward. Has anybody thought about the fact that in the long term the Pacific island states, outside of our 'modern civilization', are really best equipped to serve as a model for the future, with their sense of who they are, what they are a part of, what they believe and what they hold sacred? Not being on the technological bandwagon maybe the best thing that happens to some of us."

Sam Lanfranco of the Internet Societal Taskforce and York University, Canada, said: "Rather than despair at the magnitude of the gaps and obstacles, we should take comfort in the speed with which we are able to get issues on the table. From that we can build strategies for just and equitable progress. The technologies give us speed, but effectiveness depends on how we use them. The reward for doing well is the opportunity to do better."

Debbie Singh, Journalist and consultant to the UN, Fiji, said: There is a pressing need for Pacific Island countries and territories to stay abreast of developments in the field of information technology. But how do we do this? It has been stated that primary users of this technology in the Pacific are expatriates, academics and some company employees – but this is less than half of the population of the islands.

"How then do we make this medium of communication accessible to all? Radio is still the most effective medium of communication in the islands due to its availability and provision of vernacular services. The Internet has bridged geographical divides and crossed cultural boundaries and has certainly made my job easier but is it really the answer to communication for small island communities – infrastructural and geographical challenges aside? Many Pacific Island states continue to be confronted with basic issues every day such as the need for safe drinking water, basic education, employment and health."

Horace Mitchell of European Telework Online said: "An important key to the adoption and use of these technologies will be the extent to which local leaders have a real understanding of the geopolitical environment as it affects both suppliers and regulators. On the whole local politicians are getting their inputs through distorting or even misinformed channels rather than direct from independent experts. Local decision makers also need to develop an understanding of what are the realistic possibilities for local development in the new economy.

Franck Martin of the South Pacific Applied Geoscience Commission, Fiji, said: "The solution is to get prime ministers and presidents online – for the Pacific it is a key factor. Tonga and its prince is now an Internet fan. Things seem slowly moving there. What is lacking the most is information on Internet actions when you start to develop connectivity in a developing country. Leaders should be able to find reference materials to help them build strategies."

Dr Abdel Danish of STANDARDATA, Egypt, said: "African governments are aware of the digital divide, at least in Egypt – our potential users are aware and the donor organisations are aware. However, in a continent where the total number of phone lines is less than the number of phone lines in Tokyo, it is very difficult to imagine how and when this digital divide will stop getting wider."

Morten Falch of the Technical University of Denmark said: "Africa still lacks an adequate telecommunications infrastructure. The penetration of phones is in many countries around 1 person per 100. And most of these phones are concentrated in the capitals, leaving rural areas without access to any type of telecommunication facilities.

"Wireless technologies can be used to improve rural access at affordable rates. In many areas only few will be able to afford to buy a telephone, but access can also be provided through establishment of telecenters, as it is done on franchise basis in Senegal and by local entrepreneurs in Ghana. In this way the number of people with access to telecommunications has increased dramatically.

"Although expensive compared to the level of income, the Internet (in particular e-mail services) is much cheaper than other types of infrastructure such as roads, railways and postal services. The Internet can also give local producers access to the global market. For example in Sri Lanka, local producers of handicrafts have been able establish direct links to the American market via access to the Internet from the local telecenter.

"Information technology related qualifications are becoming more important, and without upgrading human resources it will be even more difficult for African countries to compete at the world market."

Ikatri Meynar Sihombing of Bank Panin, Indonesia, said: "The important matter here is how urgently government authorities in a developing country view the technology gap between developed and developing countries. To develop a digital economy requires many aspects to be prepared such as legislation, telecommunications and other high value investment.

"In Malaysia, for example, the government has a high commitment and has prepared the infrastructure. But not every developing country can see it like this: it depends on their social, economic and cultural conditions and values and government priority in the development of the country itself. A government to government approach (direct or through certain bodies) will help some developing countries to catch up."

Andrew Mancey of the Sustainable Development Networking Programme, Guyana, said: "One possibility would be to have a free advisory service available online which will be able to give expert information and advice on technology issues (legal, social as well as technical) to developing countries. Often getting help requires much work in writing letters, drawing up proposals, buying reports, or travelling overseas. Can we not make better use of the technology to provide such help?"

Jean-Noel Tronc, Adviser to the French Prime Minister on the Information Society, said: "The principal question posed by the durable exponential development of the web remains that of coverage in geographic and social terms. Universal broadband coverage is technologically feasible, especially through wireless applications.

"But it would in no way guarantee that we will succeed in avoiding widening the gap between the technology-literate population and the rest of the population, and an 'infogap' between the developed countries and the rest of the world. Market forces alone will not provide broadband in remote areas, and national and local governments will have to answer on this emerging demand."

NB: For more on issues surrounding access for the developing world see Theme four: The citizen and consumer

The productivity challenge

Guy de Panafieu of Groupe Bull, France, said: "The 'New Economy' is a phenomenon viewed by many to be primarily related to the emergence of dot.com companies. In fact, the expression was coined in the US in the mid 1990s as observers tried to understand the mechanisms behind the unprecedented performance of the American economy. Since 1991, growth in the US has continued at a rate of 3.5%-5%, yet inflation has remained low. The only plausible explanation for such prolonged non-inflationary economic expansion would be substantial

productivity gains, possibly due to increased investments in information technology.

"These sustained investments in technology – not just the Internet – are seen to have enabled companies to transform their operations, drive out costs and achieve major productivity gains. The Internet has tremendous potential to accelerate this process. The emergence of business to business e-marketplaces is an excellent example.

"Much discussion of the new economy overlooks this fundamental issue of productivity. The new economy is much more than just new ways of selling over the web to consumers: the challenge of the Internet is the transformation of enterprises. The promise of the new economy is sustained growth and the creation of wealth, not just for Silicon Valley billionaires, but potentially for everyone."

Guarding against instant obsolescence

Jose Herrero Valdes of ISDEFE, Spain, said: "There do not seem to exist real and practical ways to stop or slow the increasing pressure of technology changes. Curiously, quality standards and effective by-laws to protect the consumer appear to be lagging far behind the actual pace of technology development, and they end up controlling merely the traditional products traded by traditional means and firms."

Mirka Negroni of Telemanita, Mexico, said: "Our small non-governmental organisation is dedicated to training women on how to use video production and editing equipment. As digital equipment became available, we started to change to non-linear digital and computer editing. In Mexico, very few women have access to these technologies so we have to continue repairing our linear editing equipment.

Yet while the costs of digital cameras, accessories and even computer video editing equipment continues to decrease, the costs of repairing our old equipment skyrockets because the companies want to force our move away from linear and into digital equipment. So should we only work with the privileged few who, like us, have access to digital equipment?"

Helle Degn of the Parliamentary Assembly of the Council of Europe, said: "Maybe the present rapid pace of scientific and technological development will, like in the industrial revolution, also slow down or plateau in the future, at least temporarily. This could happen if, for instance, we do too much damage to our environment or if new technologies are not socially acceptable. That is why we must not be soulless slaves under technological development but rather guide it in the most positive directions."

Danielle Jones of Ericsson, Sweden, said: "Why guard against the rapid development of new technologies in the first place? If the

product or service has inherent value which the marketplaces values, then it will endure longer than other elements.

"Guarding also brings up connotations of "regulated" markets, which serve to the detriment of the consumer and the long term business health and competitive psyche of the country in which they operate."

A dangerous dependence on technology

Philippe Rose of Le Monde Informatique, France, said: "The dependence on technology is creating huge risks, which fall into three categories.

"First, accidents. All economic sectors are vulnerable and web-based business and e-commerce, which rely on Internet and software infrastructures, particularly so. Second, errors. No one can be sure that software is bug free, because it is simply impossible to test all the code, even for commercial products. For industries like airlines, nuclear, transportation and all other critical infrastructures, it is crucial. Third, hacking and sabotage. Many companies are not aware of this risk, but research indicates that the situation is growing worse year after year."

Sam Lanfranco of the Internet Societal Taskforce and York University, Canada, said: "It is not at all clear whether or not this technology revolution is increasing dependency in ways that increase risk.

"We exaggerate the risks. Consider the Y2K bug. It barely struck in those areas where we took precautions, and it barely struck in those areas where we didn't. Much of what has gone wrong has been because of haste – forgetting to close access ports on system, coding errors, for example.

"Much of what could go wrong should evil forces go into action is little different from what could go wrong if those same forces spent the night attacking automobiles, or fee-for-parking machines. Even there, much of it is less than will occur from a bad storm.

"A major advance in the early part of this century will be the assignment of meaningful risk to the various things that could go wrong. Technological dependence has to be weighted against the costs and inconvenience of that dependence. This is yet to be done in any systematic way."

The changing labour market: creative destruction or destructive creation?

Charley Lewis of the Congress of South African Trade Unions said: "Research shows that the primary and initial impact of the introduction of new ICTs into the workplace is to displace the jobs of workers through the automation of business and production processes, business process re-engineering, disintermediation within the value chain and so on.

"Jobs are created by the introduction of ICTs, but this is scant comfort to those union members on motor car assembly lines, at chemical plants and in banks who now find themselves unemployed. And it leads us to an economy characterised by both high levels of structural unemployment and a growing shortage of skilled labour.

"The information economy is the way of the future, but there is a need for active and imaginative interventions from governments, unions and employers to minimise the destructive impacts and to secure labour market benefits. Until then union members will continue to see ICTs as a force of destructive creation."

Rodolfo Carpintier of Grupo NetJuice, Spain, said: "In a global world will be impossible to provide job protection locally. Either it is a globally-accepted solution or those with more flexibility will create wealth at faster speed and will feed from the inefficiencies of the rest to become the leaders.

"If present US GDP growth continues for a decade, Europeans will only be able to aspire to work for American Companies. It is worrying for unions, companies and governments alike."

Horace Mitchell of European Telework Online, UK, said: "Organised labour has failed to respond to the gradual trend for more individuals to become more self-determining. There is a growth in self-employment, and an increased propensity by individuals to change jobs and sectors, making them very difficult to 'organise'. And it is evident in the rise of empowerment within the job – increasingly employers rely on employees to think and act rather than to obey instructions and follow precedents.

"The risk to organised labour is that it will lose its engagement with people who become higher-skilled, higher-earning and more mobile, and only represent the lower-skilled, lower-paid. The risk to organised business is that the smaller, swifter-moving enterprises that are the main innovators and that create more new jobs will not bother to participate. So organised business ends up mainly representing older, more mature, stagnant or embattled sectors and enterprises. Although this doesn't stop innovation or mobile working, it does mean our regulatory environment is unduly influenced by those who are least in touch with the present and the future.

Sam Lanfranco of the Internet Societal Taskforce and York University, Canada, said: "Labour includes 'free agent' professionals who are currently selling their services to the highest bidders. It also includes immigrant women working in European sweatshops, as well as hundreds of millions of workers in developing countries, where conditions of work are determined by market and management forces driven primarily from Europe, North America and Japan.

"In the Net Economy, as far as labour is concerned, the questions are first, what does the net economy mean for the creation, destruction and redefinition of jobs? Second, how can these electronic venues be used to increase labour's productivity? And third, how does labour use these electronic venues to inform itself, develop collective positions, and better represent its interests?

"This third question holds the greatest promise for new forms of labour organization. These will include more transparent and participatory unions, and demands for more accountability on the part of employers and unions. The free agent vision of unorganised labour is a reaction to the current seller's market for certain labour skills, and a reaction to the problems of contemporary unions.

"Free agents are unlikely to be a lasting significant factor on the labour market landscape. This electronic venue as a social process space in which labour will organise will become a permanent fixture on that landscape."

Tim Cole, Journalist and Author, Germany, said: "Just as consumers will use the Internet to create instant online purchasing communities, unorganised labour might in the future use the net to form spontaneous, short-lived 'online unions'. These could very well replace organised unions in many fields, especially given the trend towards self-employment.

"Online unions could serve most of the functions of a real union, for example by providing information and collective bargaining power to their members. These organisations could themselves be set up as private enterprises, acting as agents for a commission fee or for a cut in any deals reached with employers."

Carl-Johan Westholm of the Swedish Federation of Trade said: "The terminology in itself is pejorative. To be 'unorganised' is nearly the same as being 'disorganised' – that is, unable to organise something. What is meant here is employees who don't have membership in a traditional trade union. This is terminology belonging to the old economy, not the net economy."

Charley Lewis of the Congress of South African Trade Unions said: "Many of today's 'individual' workers became so because of the global shift to contingent employment, driven by outsourcing, business process re-engineering, and technology-enabled job displacement. And that many of those jobs are precarious, poorly paid and without benefits or protections.

"Unions will continue to be needed for as long as there are employees. But they will need to ensure that their organizing strategies and portfolio of issues are appropriate to the needs of a changing constituency. And that includes raising the issue of life-long learning.

"We need joint, constructive and strategic engagement from both sides if we are to forge an information society that is to benefit all. And that must include the full range of social stakeholders, such as women's groups, civil society and non-governmental organisations."

Carlos Rodriguez Braun of the Universidad Complutense, Spain, said: "There is obviously a need for (freely) organised labour everywhere. The point is that the past experience is hardly encouraging. Here in Europe most unions are firmly anchored in the past, in the pro-interventionist Keynesian model that has made Europe the continent of taxes and unemployment.

"On the other hand, in the US the unions join the more reactionary movements, always against progress, against the market. Organised labour probably doesn't have any role if it follows the cranks that, for instance, recently paraded in Seattle against the free markets."

Christine Maxwell of Chiliad Publishing, France, and the Internet Society, said: "The new digital economy will continue to 'destroy' many jobs as we have known them – that is unavoidable. At the same time, it will also create many new ones.

"The largest danger is that we will be seeing more and more people who are not just simply unemployed – but unemployable. One of the critical keys is the implementation by governments and businesses around the world of lifelong education. This is one of the key requests that organised labour should be demanding governments/business to pay for."

Market integration and international trade

Professor Jan Haaland of the Norwegian School of Economics and Business Administration said: "One of the main obstacles to a truly single market in Europe is the fact that firms have been able to use their market power to segment markets and price discriminate between different sub-markets. Consumers and buyers traditionally could be taken to belong to one and only one sub-market and could not easily move around between the markets.

"e-commerce will change this dramatically, in the sense that the transaction costs for the buyers are significantly reduced. If the consumers can shop around, compare prices and do arbitrage at almost no cost, than the basis for market segmentation and price discrimination will disappear. e-commerce may therefore turn out to be as important for market integration in Europe as any previous liberalisation attempt."

Charley Lewis of the Congress of South African Trade Unions said: "One of the potential dangers of e-commerce enabled intregration of global markets is the potential this has to undermine the national tax base, to shift the tax burden further

away from companies and onto individual taxpayers. The result of such shifts is likely to be the undermining of the national tax base, and the reduction of the ability of national governments to manage and control their economies, and to provide benefits and social safety nets for their citizens.

"There need to be international agreements regarding the taxation of online transactions, such as the proposed bit tax, or other measures to ensure we do not create an e-black hole."

Will the dollar, euro and yen survive?

Alain Madelin of Democratie Libérale, France, said: "A dual economy is now emerging which is made up of a 'real economy' sector that encompasses 'old time' mature industries with low income and prices elasticities; and a 'virtual economy' sector made of new fast-growing activities linked to information (in the widest sense of the word) and characterised by very high price and income elasticities.

"Those high elasticities create potential for very large scale economies that feed strong competitive pressures, huge productivity gains, and translate into ever lower prices.

"Thus, one of the first consequences of the rise of net industries is to break the traditional relationship that linked inflation and economic growth. Inflation is gone. We have entered an era of enduring low (no) inflation.

"Sure, inflation is a monetary phenomenon. But at the same time the growing influence of the net economy puts severe limits upon the capacity of national monetary authorities to inflate as they might wish. This is true even for the dominant US economy since US monetary assets can now easily flee to nearby off shore financial centers offering competing privately issued monetary instruments. The displacement of dollar supremacy by the supply of such private currencies is an event that can no more be ruled out.

"A second major consequence is a big change in the forces that produce economic cycles. The old time economy was characterized by a demand led cycle in which monetary and fiscal government policies played a major role. The new economy is a supply and capital spending led economy with a growth impetus coming primarily from new inventions and/or the development of new territories. In such a new environment, booms and busts depend much more on financial markets characteristics and dynamics than on government policies and controls. Traditional macroeconomic tools lose most of their usual power."

Sam Lanfranco of the Internet Societal Taskforce and York University, Canada, said: "There is little doubt that within 10-20 years the world will no longer consist of 140 national currencies, but instead will consist of a handful of common currency areas.

Some will be based on new currencies such as the Euro and some on existing currencies (such as Ecuador's recent 'dollarisation'). Since this is both an economic and a political issue (and involves giving up discretionary monetary control) the pace and path are harder to predict than is the outcome.

"There is little doubt that except in extreme circumstances of war, or military/dictator rule, we have put a cap on the worst of inflation. Even Latin America has achieved a high degree of monetary discipline. Monetary policy has improved. Rather than trying to regulate money (an increasingly impossible task in a global economy where money flows with digital ease), central banks target an inflation rate target and adjust interest rate policies accordingly.

"The increasing globalization of financial and trade flows has put pressure on the ability of national governments to pursue national policy. What are the solutions to this?

"One is the growth of regional trading blocs that are not 'trade diverting' but look to better regional co-operation around national issues of mutual concern. Another is the evolution of global rules of the game in such diverse forums as ICANN and the World Trade Organization. Yet another is political entities (including nation states and trans-national groups such as (say) labour which learn to use these electronic spaces for more transparent and participatory collaboration in reaching consensus.

"Our macroeconomic goals are sustainable growth in the service of justice and equity. These electronic venues will serve as part of the workspace and arena for struggle in pursuit of those goals."

Andrew Mancey of the Sustainable Development Networking Programme, Guyana, said: "The emergence of a single currency is only a matter of time. When combining systems into one single system to achieve efficiency and stability, maximum compatibility is needed. This applies to electronic systems, organic systems and surely to economic systems too.

"It will happen as the perceived advantages overcome the resistance of vested interests. The trend seems to be already clear. Not to say that it will not take time and much talk. What currency? The choice of an existing currency may give a temporary advantage to some but may not be too important in the long run compared with the advantages gained. A global civilisation is emerging of which this is a necessary part."

Alain Madelin of Democratie Libérale, France, said: "A single world currency ? Surely not! A low transaction costs e-world does not lead to uniformity but its opposite: high diversity.

"In the money world we shall have developments similar to those that took place in the telephone/telecommunication or transportation industries after they were deregulated, and will also take place in the energy/electricity sector: increasing segmentation of supply to levels few may dream of.

"Financial markets – not governments – will offer customers an increasing array of private money instruments tailored to their specific needs and liquidity preferences, as they already tend to do. These instruments will develop into private payments markets that will increasingly compete with official national currency systems.

"The role and influence of national central banks is consequently doomed to be severely reduced. Which national currency will supersede the others is not relevant. The e-economy is already ushering us in a world of private money systems that will make it increasingly more difficult for governments to collect confiscating taxes and seignorage rents over their citizens.

"Some may find this evolution detrimental. They will want to curb it. This is why most of the discussion in this forum is dedicated to ways and means to introduce regulations into the e-world. However we should focus more on the liberating benefits the e-economy will bring to individuals. One should not forget how the e-world may immensely contribute to enlarge our individual freedoms. It is this potential that we – and regulators – should above all try to preserve."

Piia-Noora Kauppi of the European Internet Foundation and a Member of the European Parliament for Finland, said: "I have the feeling that the whole idea of cash will disappear in the cyber economy. Why do we need cash when all the transactions can be made in electronic form? If I can ask my salary to be paid to my 'virtual purse' and carry out all my personal purchases via e-commerce or cards, I have no reason use cash at all. This kind of development already shows in Finland, where most trade is paid with non-cash means.

"If this happens globally, however, it will bring enormous pressures for taxation systems. How could you tax for example a lawyer who conducts business over a server in the Virgin Islands and who takes all the payments in pure electronic form?"

The darker side: drugs, porn and gambling

Franck Martin of the South Pacific Applied Geoscience Commission, Fiji, said many small states are running offshore banks and allow people to set up businesses accessible worldwide which are illegal or dubious back in their country. Moreover, porn has been the real first Internet business, with a targeted audience, is private, does not require high technology and enough people are ready to pay for it. It is often the case a new media technology is always boosted at its creation by pornography.

"Furthermore casinos are set up in countries in need of cash, and drug money is now moving from host to host and bank to bank as never before. Can we face up to this reality? Where are the cybercops and cyber parliamentarians?"

Christine Maxwell of Chiliad Publishing, France, and the Internet Society, said: "We do need to face the fact that cyberspace is like our physical world in the sense that it harbours both the good and bad of humanity. But the path where well-meaning individuals would like to 'clean up cyberspace' for the rest of us is a slippery slope.

"As a parent of small children of course I care very much about what my children may inadvertently be able to find on the Internet – just as I do the fact that they can watch all the soft porn they want just by watching various TV stations every day. Parents and guardians need to be as vigilant with young people in the context of the Internet as they do in many other areas.

"There are sophisticated technologies available to block undesirable sites. Helping educate people take responsibility for themselves and their families is far preferable to having cyberparliamentarians making unilateral decisions affecting millions of people – that would effectively deny access to potentially critical information.

"For example, I know of a case where a large province somewhere in the Western world denied any access to web sites and discussion groups that mentioned the term 'breast'. This had the disastrous effect of stopping all medical information that referred to breast cancer!"

Carlos Rodriguez Braun of the Universidad Complutense, Spain, said: "Every step in the progress of mankind has been accompanied or even preceded by criminal activities. There had to be commerce before men decided to become pirates; and property must precede theft.

"Of course, the key to these kind of problem is to be able to disentangle the effects, that is, try to fight the pirates without destroying the commerce. Long experience with politicians' misguided interventions, full of unforeseen consequences, should have strengthened our desire to keep bureaucrats at arm's length. For instance, the ghastly drug business has little to do with drugs and much more to do with prohibition, just as alcohol was innocent of the crimes of Al Capone and the like in Chicago in the twenties. The State created the evil in the first place.

"However, facing the inconveniences of the e-world, some people are rushing to ask for a cyberstate. Beware."

Sanjay Charavanapavan of the Central Bank of Botswana said: "As one of the laws of thermodynamics states, things left alone

move towards a state of chaos. As in normal society, when people elect a government they effectively give them the right to either give or take away their freedom, and to implement laws to dictate (to some degree) how they live their lives.

"A degree of anarchy on the Internet is not necessarily a bad thing, as the freedom available has opened up a whole new dimension that would not have otherwise existed. It enables people to communicate across boundaries, and to openly discuss issues relating to government and businesses – as we are doing here.

"But there is a negative side, as hackers' manuals and tools become freely available to anyone, the potential for increased crime and terrorism also increases.

"The setting up of a cyber parliament basically means that the freedom we enjoy would be controlled. Do we want this? Do we need this? How can we implement some control without losing the uniqueness of the Internet? One suggestion might be to have a neutral body such as the IETF (Internet Engineering Task Force) be given the responsibility of setting some standards and guidelines".

Piia-Noora Kauppi of the European Internet Foundation and a Member of the European Parliament for Finland, said: "We cannot prevent the appearance of undesirable material online, so we should leave it up to the responsibility of the home, families and parents (with some part to play for education systems as well) to give upcoming generations moral values and a sense of social norms to help filter out malign influences.

"However, this doesn't mean that we should give up in the battle against cybercrime, moneylaundering or drugs. Even if we do not know the right solutions at the moment, we might find the measures needed in the future!"

Helle Degn of the Parliamentary Assembly of the Council of Europe, said: "The new Internet based economy provides many advantages: greater transparency of markets, greater competition and more direct contact between market participants. It could mean the dawn of a new era in human relations and prosperity. But it must serve society, not hold society hostage. For that, the world will no doubt need a number of conventions and agreements to avoid chaos, so as to protect consumers, prevent economic crime and so on.

"Differing ideas on how to shape a society will continue to exist, especially on how to organise a market-oriented economy. The debate will be about such things as how to maintain and improve democracy, protect human rights, sharing society's resources between winners and the weak in society, such as the least developed countries in the world. More generally, it will be about how to keep our societies humane."

Cyberspace – the first global civilisation

Christine Maxwell of Chiliad Publishing, France, and the Internet Society, said: "In many ways we are being liberated from nature's limitations. Cyberspace is indeed the apex of freedom and hopes for a better world. The lives of people of all kinds in many, many different countries have been changed absolutely by this phenomena. The new economy will be profoundly influenced by the vast increases in information flow and direction from an ever increasingly networked world."

Andrew Mancey of the Sustainable Development Networking Programme, Guyana, said: "The Internet is having a key role in the emergence of the first global civilisation. Part of this will involve a 'levelling of the playing field' and a redistribution of resources, or perhaps a careful distribution of new resources."

Sesh Velamoor of the Foundation for the Future, US, said: "While the digital divide may exist and still doesn't allow billions to get on the Internet, it is a matter of time.

"It is clear that the exchange of information and knowledge will increase exponentially. This spells doom for governments, borders, cults and religions. I am fairly certain that our understanding of our place on this planet is about to change forever. But I wouldn't hold my breath just yet . . . it is liable to take a couple of centuries. We must think in terms of at least 30 generations down the road."

Debate transcripts

Theme two

Business: sink or swim?

The right culture: 'Learning by doing'

Danielle Jones of Ericsson, Sweden, said the key components of a successful corporate culture in the digital economy are to be found in attitude. "Speed, acceptance of change and an international perspective are important aspects of the right culture, as well as hunger for business and success.

Sarah Norris of Charities Aid Foundation, UK, said: "It's an interesting thought that sometimes the greatest threat to a business which is not adapting comes from within, along with the greatest knowledge of how to change. There is a Chinese proverb "If we do not change our direction, we are likely to end up where we are headed." Some companies can be like this.

"The companies who have begun to adapt have considered first the challenge that is their own people. Getting them to adapt. Getting them to engage with new technologies, to find a path, to help the customers to find a path. The most central communication channel in a business should become a two-way system for internal dialogue at every level of the business. Intranets have enabled employees to express their concerns, ask questions and spark off new ideas. Employee canvassing when there is an issue at large, or even when there is not, helps to stem the void between management and workers, and sometimes management and customers. And it can provide real, practical solutions.

"If companies don't use knowledge management or open communications on all aspects of change at work and in the marketplace, if they don't train their staff in how to make best business use of the Internet, or in how to do things online, if they don't consider all views and judge them on their merits, they've already stagnated. People are the drivers today.

"Often, by the time an issue is identified by a company which doesn't communicate at all levels, it has already damaged the company's reputation or its staff's morale to a certain extent."

Francis Vidal of Francis Vidal Group, France, said the question of what can be done to ensure that technological developments do not upset the culture and social systems of organisations is not new, and involves reflection in several domains.

"Whatever the structure of the organisation, the issue most frequently raised by employees is "what will happen to me?" It would seem that the introduction of the net-economy into firms with a heavy organisational structure, operating in a stable environment (for example service industries such as banks and insurance) would have a much softer impact. However, the cultural transformation needed to cope with these new technologies will come as a shock to those who have not

prepared themselves, that is to say those who have not taken their own evolution into account.

"To encourage people to take charge of their own evolution, which can impact upon both professional and personal life, a differentiation must be made by strata (from the decision makers to the executors whose expectations and constraints are not the same); by the public, private, local, national or international environment, where the stakes differ; by organisation and occupation, which generate different needs; and by age, culture and other factors.

"It is therefore necessary to begin with an in-depth analysis. It is particularly important to anticipate future actions in order to effectively prepare the personnel for the net-economy.

"It is not advisable to exaggerate the difficulties associated with adapting to the net economy. Mankind has experienced many great changes since leaving the cave in prehistoric times, upto ordering a DVD via the Internet.

"Acceptance of new technologies should not be imposed on personnel, rather they should be gently persuaded and their curiosity incited. Extra care should be taken not to frighten them by all that is new, which is in fact all relatively simple, useful and often fun!"

Francesco Garibaldo of the Institute for Labour Foundation, Italy, said: "The right way to tackle the corporate culture problem is to consider that innovation, to be successful, has to be a mix of continuity and of breakthrough.

"People should be entitled to develop a personal path from the known to the unknown and must be supported in this accomplishment not only with education and training but also with a real participative design and development of the technological and organisational issues bundled together."

Sam Lanfranco, Canadian member of the international Internet Societal Task Force, said: "While there is a "first mover" mentality around change at the moment it is too early to tell if the old parable of the Tortoise and Hare is no longer true. Corporate cultures that "run with change" and Corporate cultures that "refuse change" are not only polls apart, they bracket a lot of strategies in between.

"The difference is not between change and no change, it is between 'smart and wise' and 'not smart and not wise'. Even there, in a race good runners come in second, third or last, depending on the quality of the contestants. There will be winners and losers, based on strategies and luck. That is how life operated in the old economy and how it will operate in the new economy.

Ikatri Meynar Sihombing of Bank Panin, Indonesia, said: "Every business in its own capacity has to find their path in the net economy: they just need to analyse and implement the right strategy, for example, whether they need to merge with others in the same market, concentrate in one core business or diversify. Threats do not always come from a bigger or more sophisticated player but more from an inability to analyse the market and trends."

e-business models: the next generation

Cyrille du Peloux of Groupe Bull, France, said the Internet will redefine the strategic landscape in every industry due to changes in the interactions of all players in the market.

"Traditional IT players are not always equipped to compete with new entrants and new competitors coming from other converging industries such as telecoms, media and web portals. The traditional way to run a business is not compatible with the way the Internet should be addressed: differences include the speed of the decision-making process, 'learning by doing' instead of planning, creativity, innovation, extraordinary value creation in a short period time, capability to develop/incubate new ideas and initiatives, and the availability of financial resources, both to seed new ideas and to create partnership with innovators.

"To succeed, setting up start-ups through an incubator approach in addition to the core activity could be the solution. The advantages include development of skills, higher focus on core business, openness to new opportunities, ability to attract new talents."

Ian Pearson of British Telecom said there would be several stages of corporate evolution over the next decade or two. "Today we mostly have traditional companies evolving into virtual companies, with a small core of critical staff and a lot of contractors brought in for specific projects and disbanded as soon as they complete.

"Soon, we will see the e-commerce systems automatically identifying market niches and automatically contacting and negotiating with these contractors' agents to fill the niches. These will be bottom-up companies and will have much lower cost bases so will often wipe out virtual or traditional companies where they compete.

"Next, we will see logistics companies who are very strong on identifying the best resources and the best means of linking them to fill particular needs, much better than standard e-commerce applications.

"But eventually, most of this could be relegated to pieces of software on individual PCs, negotiating with each other with intelligence superior to humans. At this point, we will have

industrial companies based on expensive physical resources such as factories, but many information type companies will no longer be needed and cease to exist. The vast bulk of the information economy before it finally fizzles out will thus be implemented by freelancers."

Andrew Sleigh of the Ministry of Defence, UK, identified three generations of e-business so far. "First generation e-business translates existing business models into a net medium, such as online shopping. Its form is conventional, but the dynamics and growth rates have fewer constraints.

"Second generation e-businesses like knowledge portals take an existing product but use the net to deliver fresh dimensions of value to clients, either by being faster, higher quality, easier to use or combining several complementary offerings to generate enhanced value. We can expect to see this extending into many more areas, for example, delivery of legal services, consultancy and contract research.

"Third generation e-business is concerned with entirely new forms of creating value, generally through a novel use of knowledge or entertainment opportunities.

"Any business – or government agency – not embracing the first or second-generation e-business model will fail within the next half-decade, so we can take it as a given that they will have to make the transition. This will require major changes to management philosophy to exploit cross-fertilisation opportunities within companies and with peers, with much less central control. The test will be how a large corporation can behave like a start-up, yet still exploit its architectural and corporate knowledge assets.

Clive Holtham of City University Business School, UK, said: "My own feeling is the large corporation as a hierarchy is at the point of ceasing to be a sustainable approach in some markets. It is ideally suited to the mass production, marketing and distribution of standardised products, but as we move to products driven by information and knowledge, then individual employees will become much more aware of their real value, and will want to see a direct link between their personal inputs and any increase in value achieved as a result.

"Many traditional organisations will implode as employees seek to become contractors with profit shares and equity stakes. One new model which might work in some markets is the way movies are produced. They have a producer responsible for overall funding and resourcing, but the actual teams form and re-form for each picture. Your reputation is enhanced by working on the best teams."

Michel Diaz of the National Centre for Scientific Research, France, said there was a need to distinguish between two different business models, one for which the sold items are physical, and one for which the sold material is not physical and as a consequence can be transmitted digitally.

"In the second case it is quite easy to reproduce the material, as only a digital copy is needed and at the same time it is quite easy to send it over the Internet. As a consequence, there is no reason to have taxes on the copying or duplication process, and there is no reason to have taxes on the transport process."

William Zucker of Gadsby & Hannah, US, said bricks and mortar companies still have a tremendous advantage: "It is called cash flow.

"The first generation of e-business models have basically created a way of doing business over the Internet. For the most part, they have done it internally and added various technology modules or business modules as needed. The next generation will outsource not just horizontally but vertically the front room (the look and feel of the site) and the back room (the transactional functionality of the site).

"The models that are evolving are teaming or partnering models with the existing business. The business will then be left to concentrate on its core competency of producing a material item or service for sale. Bricks and mortar companies may not be able to make the transition because it means giving up control over key functions. Those that do are likely to form .com subsidiaries with different management who will handle the conduct of business over the web."

Philip Virgo of EURIM (Parliamentary Group on the European Information Society), UK, said the cost of customer acquisition over the Internet is ranging up to seven times revenue per customer. Moreover few companies who currently spend most heavily on promotion have any record of repeat business.

A common occurrence is dot.coms running out of cash before they have sorted out their fulfilment problems. Obsession with the technology, as opposed to the business objective, is a major risk factor.

"There are cases of organisations which destroy a traditional brand by going gung-ho on the web and organisations which have spent very little on technology (just adding an optional web front end to an existing telephone selling or mail order business) who are making serious money.

"In conclusion, few of the current e-commerce models, save for that which treats the web and e-mail as just another channel to be integrated with those already in use, have yet demonstrated

serious validity. Most are guesses (at worst) or extrapolations from defective samples (at best). In business, as in regulation and liability, reality is overtaking illusion as "real" people try to use the technology to do "real" transactions."

The privacy debate

Professor Francois Scheid of EM Lyon, France, said: "It is very easy to follow the traces of a web surfer. By sending e-mails, buying with credit cards, going from web site to web site, giving an e-mail address to get information, and simply by using the web thanks to logging, the surfer leaves his or her prints everywhere.

"In the past, before the widescale use of the Internet, it was very difficult to observe people's actions and thoughts except by tests. Yet companies can now spy on their customers or potential customers. Marketers are also capable of determining your centres of interest, and even of elaborating your psychological profile.

"Invasion of privacy is not new. It also happens when cash registers in a supermarket record what customers buy and determine their profiles to enable the firm to adapt its offer. Today we have a new way of discovering profiles. I think it is pure illusion to fight this phenomenon because one cannot create barriers on the web to prevent such firms from getting information.

There are two possible types of action to protect privacy: First, by informing Internet users (and perhaps advising them to use various e-mail addresses); and second, by creating an ethical charter protecting privacy which marketers would agree to respect.

Clive Holtham of City University Business School, UK, said: "One of the most fascinating things in the UK about the growth of free web-based Internet Service Providers is the way that people are setting up multiple accounts with multiple identities. I have already seen people adopting different persona under different identities, and this is the most likely way that people worried about privacy will deal with the problems mentioned here.

"I also suspect that anonymous e-cash which has been slow to take off, will become very popular on the net as is will be a technique for preventing the merchant knowing exactly who they are dealing with."

Marcel Bullinga, Author and Internet Adviser to the Dutch Government, said the use of different e-mail addresses or voluntary charters for companies is too little to protect privacy.

"On the Internet, I do not want ethical rules in combination with the hope that everyone will follow these rules, as I mistrust all

people and organisations until proven otherwise. So, what I need is hard trust, hard evidence, and hard rules that cannot be avoided or misused. Not 'hope'! I want to be able to prevent the invasion of my privacy and the misuse of my data, and I want that protection to be in my hands.

"I think the privacy invasion that we are currently witnessing on the Internet, is just a temporary phase. The solution to the privacy threat is in the use of privacy-enhancing technologies like digital cash.

"As a user, I want to be able to surf the web under different identities and/or partial identities. If a shop wants to know something about me and asks for it (for example, are you capable of paying, are you a member, are you X or Y) then I want to be able to hand out that specific information, and only that – including of course the guarantee that it is true by a Trusted Third Party.

"Furthermore, I want to be and remain the true owner of my data. I am working on an idea for a new type of privacy technology which allows anything in a network to be captured and put into 'conditional' use, with the conditions restricted by the owner of the data: you and me. I call it 'the interactive hyperlink'."

"The fun thing is that the Interactive Hyperlink makes no distinction between a phone number and a 100-page e-book; both can be protected and made 'conditional.' And once you can control who uses your content or your data and for what purposes, you can ensure no one steals it or misuses it.

"I can even envisage the rise of a new, controlled and conditionable Internet next to (not instead of) the old one that is based on free copying and free exchange. Both Nets have their own undoubted merits."

Abdel Danish of STANDARDATA, Egypt, says we are overreacting to the personal privacy issue. "If you do not want anyone to know which sites you are visiting, then just do not visit them. We will never get around this privacy issue: the only totally private place is your own mind.

"Why would we want to prevent someone from knowing which movies we would be watching over the Internet while we have no problem showing up in a movie theatre or renting a movie in a video store. I think that privacy is a relative issue and as the society will get more and more online the threshold of "privacy" will keep moving up.

"The privacy I am looking for in the Internet age is quite similar to the privacy I was seeking before: when I speak in a public space and do not want to be overheard I lower my voice.

Similarly on the Internet, which is a public space, if you want to have a private conversation you can encrypt your messages.

Marcel Bullinga, Author and Internet Adviser to the Dutch Government, said: "In a movie the cinema-owner does not know who we are (we paid him by cash, remember, not by identifying ourselves) and therefore he cannot sell my whereabouts to anyone interested. On the Internet, my visit to the cinema can be connected to every other shop without me knowing it.

"And that is the basic point in the whole privacy debate – choice! The consumer needs to be aware and needs to make a choice and to be in control! If YOU decide to sell your privacy to the highest bidder, fine! But I want to have the choice no to."

Jean-Noel Tronc, Adviser to the French Prime Minister on the Information Society, cited Prime Minister Lionel Jospin's December 1999 speech on Internet regulation : "Relating to protection of privacy and personal data, Europe and the US have made different choices. The European approach, which is sometimes criticised, is based on laws laying down clear rules that are applied by independent authorities.

"Now, with the explosion in processing of personal data brought about by the growth in electronic commerce, this method of regulation, whose underlining design Europe has never insisted on imposing on others, answers the requirement of solid guarantees expressed by our fellow citizens".

William Zucker of Gadsby & Hannah, US, said the debate on privacy and how one controls data is critical to the protection of democracy and individual rights.

"There is a difference between the concepts of privacy and anonymity as they apply to actions taken on the web. To my mind, privacy is the protection of private data when engaging in purely personal transactions. In this sense, what you buy, where you go, what you may download are private actions much like walking down the street and visiting a store or a cafe are private actions. Similarly, there can be private chats.

"On the other hand, privacy should not be confused with irresponsibility. Anonymity should not be a cloak that one invokes under the guise of privacy when the purpose is to act publicly. Thus, for example, individuals who choose to post messages on public boards that pertain to commercial matters like stocks should not be protected under the rubric of privacy. Otherwise, we encourage irresponsibility by ensuring that there is no accountability. The very information flow we seek to protect now becomes untrustworthy.

"How do we permit one but not the other? That is the key question."

Clive Holtham of City University Business School, UK, said: "Plato was very concerned about writing. He felt that the technology of impersonal writing was going to replace personalised speech, where you could actually see the person who was making the statement. Plato saw writing as a less authentic experience than speech, and was worried that it could be used to mislead the hearer.

"Recently a campaign started in Britain to preserve handwriting, on the grounds that it is more authentic than computerised inputs. I think that we will see people in at least three different ways on the Internet:

First, where we know who the real person is. This will clearly require some kind of biometric-based smart card reader, as in sometimes it is critical to know exactly advice, for example. Second, anonymous identities. This will be the favoured method for many people to go online shopping. And third, anonymous identities with personas, which people can change at will (and which may even sometimes be their real identities). Currently many e-mail names are of this type, as we cannot tell whose a Hotmail address really is."

Geoff Stephenson, Policy analyst for DG XIII of the European Commission, said prevention of 'misuse' of personal data "unfortunately begs the question of whose 'misuse'. I do not want some anonymous computer to decide whether I am committing 'misuse' in some country or in relation to some social group in which I have no democratic rights. The US attempt to claim extra-territorial rights for all sorts of offences over non-US citizens who have no say in the US legislative process is a serious issue."

Doomed sectors and vulnerable industries

Rodolfo Carpintier of Grupo Netjuice, Spain, said that sectors that are very inefficient in the physical world will be the first to be adversely affected by the changing economy. "Also digital delivery of goods – software, books and so on – will be affected first due to the effect of "instant satisfaction" produced by Internet delivery."

Frank Bannister of Trinity College Dublin, Ireland, said: "At the end of the day, people still need to eat, drink, travel, take holidays, and so on. The Internet does not change this fundamental fact. As in previous revolutions, the sectors that will suffer and die are those whose products can be substituted by the new medium. This is not always easy to forecast. For example, where is the cashless society? Where is the paperless office? I read last week that paper consumption is still climbing.

"Television and then videos were going to spell the end of cinema. Here in Ireland at least, the cinema industry is booming.

Why? Because in all the hysteria about whizz-bang technology, we often forget how real people like to go about their lives.

"The industries that are most immediately vulnerable are those in what might be termed the 'broking' business: insurance and stock brokers, travel agents, ticketing services and so on. They are going to have to find new ways to add value if they are to survive. But elsewhere there is too much hype. Take banks for example. Traditional bricks and mortar banks may be threatened if they do not move fast, but despite all the hype about Internet banking, it is going to be damned difficult for any startup dot com to get into the banking business to a level where they can compete with the Citibanks or Deutschbanks of this world. Banking requires a lot more than flashy access systems and two-hour loan decisions: it requires capital, experience, robust systems, good judgement, good strategic management, contacts and a hundred subtle skills that are only acquired with time. In other words, most good traditional industries can readily defend their patch if they act promptly.

"As for those who brew the beer we drink, fry the chips we eat or build the planes we fly in – the Internet may well change their procurement, sales, delivery and service methods – but it won't make the beer taste any better or produce a crisper chip."

Satish Hulyalkar, Telecom & Knowledge Management Consultant, India, said: "In India, once you go away from metropolitan areas you do get hot and flat beer and cold and soggy chips, and the manufacturer is nowhere in sight. To get your own money from the bank you have to queue up and to get a loan you need to bribe the officer and you can finish up having to pay 20% interest.

"Another example: we have a considerable number of large industries, which manufacture voltage correctors, uninterrupted power supplies, generating sets and (electric) motor rewinding, all because the electric power supply company is inefficient. These industries generate employment and a value chain in the fabrication, painting, copper and sheet metal industries. If the electric supply company improves its performance, the second-tier economy will collapse.

"Then there are middlemen in certain government-controlled service sectors like issuing driving licenses, passing your vehicle every year for fitness, getting your train reservations and so on. This situation exists in most under-developed or developing nations. These new digital economies will have a drastic effect on them and they will be doomed totally if the net economy takes deep root.

"The difference may be the time-frame but middlemen will be demolished if net economies will emerge in true sense. Because at the end we do want cold beer and crisp chips."

Morten Falch of the Technical University of Denmark said: "I think the question about doomed sectors should deal with relocation of activities rather than complete disappearance of particular sectors. Some sectors will disappear in Europe, but grow in other parts of the world. Use of IT change the cost profile of many businesses. Work functions, which used to be labour intensive, become capital intensive and vice versa.

"This implies that particular sectors may be out-sourced to developing countries while others may be more concentrated in a few high tech areas where certain specialised capabilities are available. This development is particularly important in information-intensive parts of the service sector such as accounting, banking and other financial services.

"Today, international trade in services is still comparatively limited compared to trade in goods. Even within international service companies, division of labour between subsidiaries located in different countries is rather limited. Each subsidiary produces mainly services sold to customers at the local market. However, the international division of labour is growing. International accounting firms build regional centres of excellence, where specialised expertise related to a certain industry are concentrated. These centres may act as facility centres that can support for national consultants in their work."

Marcel Bullinga, Author and Internet Adviser to the Dutch Government, said that if a product or service is suitable for interaction with the consumer, then the product is better. "Think of the car you buy that you can assemble within given parameters, based on a modular construction facility behind the screen."

Marcel Bullinga also offered an example of the relocation of a business by digital means. "The flower auction of Aalsmeer, Holland used to be a physical one. Flowers from all over the world were brought to Aalsmeer by plane and redirected after sale towards other parts of the planet. Now, Aalsmeer is beginning to make itself virtual. If Aalsmeer acts as a real virtual logistic centre instead of a physical one, the flowers can be brought directly from the production site to the end consumer site, and it is no longer necessary to fly flowers to Aalsmeer first.

"So Holland may well loose an important part of its share in physical transport of goods, but it may gain a new role as a centre for virtual logistics. That means that a fair share of goods handled and transported now on Dutch territory will be handled and transported elsewhere. That is a benefit in terms of environmental damage due to transporting goods."

Horace Mitchell of European Telework Online said there were "Lots of doomed companies, but not doomed sectors. The horse sector is rather different today than it was before the arrival of

the motor car, but still thriving. On the other hand, companies that stayed too long in the buggy-whip business were doomed.

"Companies have to ask "what are we good at doing" and "what could we be good at doing", rather than "what sector are we in". The main visible problems may arise with the largest, oldest, most successful companies, for whom it is very difficult indeed to unthink their present business. And for smaller family firms where the business was inherited by people who lack the entrepreneurial spark of those who created it.

"I don't think any of this is novel by the way, it has happened before. The novel aspect is pace. We can see it happening in weeks, months and years where in past technological revolutions it happened across a generation or so."

Sesh Velamoor of the Foundation for the Future, US, said that both the intermediaries and the physical market place will eventually disappear.

"The typical household may have to contend with not just the postman, but a variety of delivery boys/girls? The pizza man, the grocery boy, the courier, the singing florist, the book delivery boy. With these new business models, the household and individuals will be more of an island (in the west, one already hardly knows who the next door neighbour is).

"Increasing social isolation will result in "apoptosis", a whole host of pathologies associated with social isolation – physical, psychic and psychological – essentially representing death. Children not knowing how to write anymore would be the least of our worries, the more dangerous outcome is that they could all emerge as sociopaths! What are the costs and consequences of the new models to humanity in these new emerging social contexts?

"A social context where everyone in the world is connected to everyone else but no-one feels, touches, sees, hears, smells anyone else anymore is an extraordinary and impending outcome that is contrary to the social contexts that have been existence throughout our evolution over millions of years."

Jean-Noel Tronc, Adviser to the French Prime Minister on Information Technologies and the Information Society, Said two developments in the new generation of Internet technologies are clear: a high-bandwidth multimedia Internet and the ability for individuals to have a permanent connection.

"'IP (Internet Protocol) over everything', together with the complete digitalisation of all information, will complete the convergence phenomenon. But IP over everything doesn't mean using PCs for everything. On the contrary, we can forecast an accelerating process of diversification for personal devices,

wireless phones, Web TV, wearable PCs, as well as embedded Web access in cars and many household appliances. I am convinced that existing PCs will never be used by on third, if not one half of the population.

"In this context, more user-friendly applications become the priority, including technology for disabled persons, automatic translation and voice recognition and information selection systems. The "learning machine" must come to do the work instead of the user, who is growing tired of having to constantly learn new skills.

"For Europeans, this is a challenge to be taken up. Europe completely missed out on the PC revolution, and as a result, has performed poorly in the area of PC software and the first generation of Internet software. The same will not necessarily be true for the next generation of the Internet, if second-generation Internet research is made a priority."

The dot.com feeding frenzy

Sarah Norris of the Charities Aid Foundation, UK, said: "There is no doubt that the Internet has led to an explosion of economic and productivity growth. But it couldn't be true to say that all of this frenzy of activity has lead to positive change or vastly improved service. That's only just beginning to come.

"I rather suspect that only a small percentage of our common lifestyle activities have actually improved in their online mode, and the rest is still a form of novelty factor, part of the fairground. There appears to be ample evidence that everyday consumers and netheads alike are finding this new economy to be over-stimulated and under-thought.

"I think this feeding frenzy requires some rationalisation if consumers are to get to grips, and benefit from, the plethora of options available to them. (More so if those options can come down the PC, the phone, the TV, the fridge freezer). Mediation has a role to play, and there will be other self-help solutions coming from new business models in today's portals and intelligent agents.

"Coming from the voluntary sector, my major concern is duplication. Each week I receive a new proposal to provide the same one-stop shop for charity fund-raising that I saw last week under a different brand (I've seen 20 in the last 6 months). Few take on board my cries that it is a poor use of a charity's resources to have to sign into talks and deals with countless portals in the hope that one might really prove a good place to pick up new donors. Few also endorse CAF's view that a charity portal should be a not for profit activity."

Sam Lanfranco, Canadian member of the international Internet Societal Task Force, said: "Part of what is going on with Internet 'incubators', 'spawners', 'breeders' and so on is a land rush. There is a belief that "first mover advantage" is somehow an assured element of success (or at least good for quick profits on inflated stocks).

"It is a bit like those companies of adventurers who accompanied the European Colonial expansion into North, Central and South America. They came to conquer, but they mainly perished, even though others did conquer. There are two visions of incubators. One is the fast mover scatter gun scenario which has the gamblers placing their money in an incubator scheme to capture part of the benefits of a few winners our of a number of candidates. This is the home of the Internet bubble. It will collapse and with it so will many of the incubators.

"Another incubator model looks to providing more solid inputs in return for a piece of the equity. Here one sees the old economy players taking positions so as to not miss out on the potential gains to be made. It is also where they have to be to stay in the game, even as old economy players.

"For example, lawyers and accountants will have to grow, and grow with their clients. This opens up both new opportunities and new scope for conflict of interest. Once legal landmarks settle these issues, there will be incubators that look a lot like the pre-digital incubators except that they will be quicker, and have broader scale and scope, and they will be digital-smart, even as they look a bit "old economy".

"Few will be from the company of adventurers we see stepping off of the law school and MBA battle ships currently moored in the harbours of the new economy. Some will be the result of luck, most will result from solid business strategies and alliances that recognise the role of information and communication technologies in redefining the speed, scale, and scope of the "New Economy" playing field.

Christian Campbell of the Centre for International Legal Studies, Austria, said: "There is much hype surrounding e-business, but perhaps we are now entering a phase of greater sobriety, at least with the recent shaking out of poorly performing businesses.

"Information, quality of information, timing of information and the ability to use it are the cornerstones of all good investment decisions not just in the "e-business" field. When the public and media's infatuation with e-hype fades people will realise that e-commerce is not for the most part some fantastic new wonder-business sector, but a new way of doing old business: more efficient logistics and expanded user-interfaces – electronic storefronts.

"I think the important thing is to realise that while IT applications will greatly benefit businesses and the economy the lasting gains are more likely to be incremental. The economy and society need time to digest the developments. And at some stage, e-business methods will (like other innovations) run out of room to grow unless we address the disparities between the 'e-haves' and 'e-have-nots' and more importantly the fundamental global disparities that underlie this division such as literacy, access to basic education, electricity and clean water.

"e-business will do little to alleviate these problems if the public and the media continue to treat it as a get-rich-quick scheme for those who on a global scale are already relatively well off. So all of us, with media and governments in the lead, should remaining cautiously optimistic, flexible and open-minded and not try to profit on the short swing."

Frank Bannister of Trinity College Dublin, Ireland said there were striking parallels between the stock market crash of 1929 and today's "wildly overvalued" dot.com stocks. "In 1928, people were talking about a 'new economy' and 'new paradigms' and the small man was getting into the market in a big way – though on nothing like today's scale", he said.

"I think that it was Rockefeller who said that he decided to get out of the market when his shoe shine boy started to give him market tips. All bubbles – the Dutch tulip bubble, the South Sea bubble, the 1980s property boom in the UK, have a germ of reality underneath. But a bubble is a bubble is bubble.

"The value of Amazon and Lastminute.com are purely in what people expect the share value to rise to. In most of these companies, there is no business model which is likely to produce the 80% gross margins or market share that the current technology leaders command. Unless your favourite share is going to do that well in the long term, you'd better time your exit well!"

Rodolfo Carpintier of Grupo NetJuice, Spain, said: "The problem is that, at present, business models are mainly old ones with a more efficient – Internet-based – processing. Where the fantasy is really acceptable is in those businesses that, instead of using old models, are redefining the way businesses of all kind are possible. Think of Priceline or Mercata and viral developments like ICQ and Hotmail.

"What can a company like that go on to do, that has proven it can capture and keep happy several million customers in less than 14 months? Markets are now likely to place increasingly high values on companies with new business models, and yawn at 'new' shopping malls."

The role of the media

Philippe Rose of Le Monde Informatique, France, said the role of the media in creating the current atmosphere of hype for e-business must not be overestimated.

"Of course many journalist are viewing e-commerce and e-business as a good raw material for papers. But who is to blame for the hype in the e-business ? Not the press but analysts, both business analysts and financial analysts. They have all pointed out that the markets will explode.

"Moreover, the concept of the new economy has appeared without a strict definition: any high-tech company qualifies. But a difference must be made between companies that have a strong market share, clients and strong research and development investment, and companies who have hyped their strategies to capture market shares and new niches, especially web start-ups.

"It is sure that, when they read the press, the managers tend to believe that e-commerce is an Eldorado. But the journalists do not invent those things, they only recycle trends and figures they have not created. And these trends can be seen as 'e-commerce or death'. On this point the hype is true, no matter what figures are published or what technology will prevail.

Hamish McRae of The Independent, UK, said: "Journalists are also to some extent prisoners of their readers, or rather their readers' expectations. The primary reason for the vast amount of additional space devoted to all aspects of the Internet is that readers (and viewers and listeners) seem to want it.

"As the new economy becomes more a normal part of the whole economy, expect the hype to go into retreat. Yes, there will still be an enormous amount of coverage, but it will be part of the media's general activities, rather than a separate element."

Teleworking: flexible solution or domestic prison?

Maria-Clara Torrens of the Institut Català de Tecnologia, Spain, said the future of work is related to more flexible structures and organisational arrangements, and companies need a flexible and highly qualified workforce.

"People want a better quality of life: proportions of a third of a person's time for work, a third for learning/training and a third for pleasure will be a reality in a short time (in developed countries).

"Telework offers to companies, workers and society in general a lot of benefits such as decreasing travel costs, increasing freedom, the possibility of combining work and childcare and new opportunities for rural areas. However, there are also disadvantages. For the worker and for society, these could include an increasing sense of loneliness, less salary, and poorer social and labour protection. For the companies the

disadvantages are generally related to organisational aspects, such as difficulties with team work and informal communication and decreasing motivation of staff. Companies will also need to improve communications equipment and systems.

"As the notion of working time changes as technology pervade all workplaces, it is necessary to establish concerted action within a framework which reduces the negatives aspects of telework as much as possible and which improves the security of workers and companies though legislation or common agreements."

Horace Mitchell of European Telework Online, UK, said: "Telecommuting (working physically within the home) is only a realistic option for a relatively small minority of the workforce, for purely practical reasons. Most homes are too small to allow for two people to comfortably use a single residence as both their workspace, living space, playing space. There are also many other reasons why, for most people, going to work will remain preferable to working at home.

"That's not to say there is no future in teleworking. Working at home some of the time is a very attractive option for a large proportion of middle class professional, managerial and executive people. In numeric terms this kind of "part time telecommuting" is now widespread and growing fast, but still far from becoming mainstream.

"But the more obvious approach to issues of environmental damage, transport infrastructure and so on is much broader than teleworking. e-business in the supply chain, for example, has already had an impact on the "order-taking" style of travelling salesperson. I get far too many phone calls from people trying to make appointments for someone to come and sell me double glazing, but I can't remember the last time someone came knocking on the door uninvited to sell me something.

"There is a recent European start-up, smarterwork.com, which provides an infrastructure in which a company or an individual manager or professional can find another company or freelance professional and contract with them to undertake a small, definable task for an agreed payment.

"The significance of the infrastructure is that it handles some aspects that have been real barriers to this kind of transaction. For example smarterwork.com organises the payment process, so that the freelance knows he or she will get paid, while the commissioning company knows no money will be paid until the task has been completed satisfactorily.

"Generically, this is of course the kind of thing that a temporary help or IT contracting agency has been doing in "local geography", but as with most valid e-business models the Internet approach drives down the overhead costs, as well as

removing barriers of geography, making it easier and more economically viable to find contractors for smaller and smaller jobs."

Strategic planning for change

Angel Abos of the Pepsi Bottling Group, Spain, said the sudden large amount of information, advertisements, offers, proposals and all kind of messages pouring over the business world, the market and citizens about e-commerce is producing perplexity and a mix of sensations, from opportunities to threats, going through risks, doubts, changes to market rules and so on.

"The fact that all organisations have seen many of their strategic developments paralysed during the last two years by the Year 2000 effect, and also by the adaptation to the Euro in many countries, has much to do with this phenomenon. Moreover, the end of those processes is releasing many resources in consultancy firms and services companies, who have now simultaneously redirected their efforts towards implementation of e-commerce.

Concurring with other non-technological phenomena, such as geopolitical changes, capital movements and merger processes, these events mean business executives face a series of alternatives. The response may range from precipitate movement to a strategic approach with medium-long term planning. Different approaches may work according to the type of business, the country, the moment, the competition in the sector, one's position in the market, and an endless list of other factors. Among them, the development of processes, management models and techniques, systems, people and resources of the company may have an enormous weight.

But this is not new. Throughout the 1970s, 80s and 90s new information technologies, and management techniques, in parallel with new economic, social and political factors, have generated scenarios that have caused a revolution with regard to internal business processes and the relation between the companies and the market. We can remember the impact of concepts such as data communications, and later PCs and LANs, client/server architectures and so on, until the appearance of Internet and new telecommunications solutions, mobile computing and so on. At the same time, management concepts such as value chain, business clusters and re-engineering have had a significant impact.

"So questions as "how can existing business models be adjusted for e-trading" could have various answers, trying to bring together the experience of the last 25 years. This would mean a huge effort. Just think about the hundreds of books on management, strategy and technology produced in this period all round the world.

"However, I would try to focus a certain part of the debate on a particular point of view: Strategic Planning Processes. From the long and static planning periods typical of the 1970s, to the revival of this tool in the 1990s with more dynamic views and the typical three-year horizons, Strategic Planning has helped companies to adapt to the complex challenges they face.

"At present, a particular company may have a Strategic Plan which could include the integral development of business solutions in terms of processes, information systems, knowledge management and other strategic fundamentals. Facing the new challenge, the change towards a wide open attitude in terms of business-to-business, marketplaces, and other alternatives can be directed in different ways. It depends on the company current status, re-planning when necessary to adjust those developments to the new situation.

"On the other hand, a precipitate response produced by the panic that radical movements of competitors might make would try to position the company in a possible advantageous situation right away. A very usual, tough situation would be a company that tries to open itself to new compromises that result from the appearance of those new external processes before its own processes are all set and mature enough (for instance those related to the Supply Chain Management).

"Shall we take that train or shall we wait for next one? Are we in time or too late? If one throws oneself on the latest challenge can we get well-enough prepared for a new one next year?"

Elisabeth Slapio of the Cologne Chamber of Commerce and Industry, Germany, said: "This picture symbolises the strained relationship between keeping successful business strategies and following modern trends in electronic business.

"The sinking cost of computing power and a sea-change in how businesses use computers have divided the industry into distinct camps of winners and losers. The news conveyed by experts is that the gap between the camps is widening more quickly than expected, making and breaking fortunes in a broad range of computer-related industries.

"As painful as it has been for some, the turmoil has produced more winners than losers. The declining cost of microprocessors, along with vicious price wars, makes it possible for everyone to use new technologies.

"In the 'sink or swim?' questions this means swimming – in the sense of using technological support for doing business. On the other hand it means sinking, if you should forget your basics of business. The history of economics shows that the speed of change is no reason to neglect strategic planning for business and processes. But it is a motive for being more flexible.

"You always must keep swimming, perhaps a little bit faster!"

Eric Hayat of SYNTEC, the French Computer Services Software and Consulting Union of employer's syndicates, said an evaluation of the return on the investment in technology can be approached by the cost of finding a new customer. Cost of acquisition, sales development and expenses to keep the business should also be taken into account.

Security of e-commerce

Philippe Rose of Le Monde Informatique, France, said: "The biggest security concern, for an e-commerce company, is to avoid a loss of trust from its customers due to security concerns. And the biggest problem is the theft of clients' files and credit card numbers.

"For an e-commerce company, this can destroy its business rapidly because the trust in a brand disappears. Typically, for an e-commerce project four elements are important: the security of the interface between customer and the company (for example over the web); the security of back-office databases; the security connections between e-commerce infrastructures and other information systems; and the strength of the brand must be powerful, because it is associated with consumer trust. As in a chain, if a link is missing, all the security is weak."

Metadata: a vital but overlooked ingredient

Andrew Sleigh of the Ministry of Defence, UK, said that one new trend made possible by the digital economy is the ability to harness knowledge across companies to generate new high value services. "For example, the normal contract research business model can be re-written to be several orders of magnitude more responsive and deliver a higher quality product, more intimately linked to client needs.

"However, most established organisations have information strategies based on tightly-controlled homogeneous architectures which are unique to each company, and the ability to achieve tight integration with partners is extremely fraught. They may also have weak information management regimes, noting that the key to effective interoperability is the ability to preserve the meaning of information across different systems.

"There are some exceptions: the banking industry have set out a disciplined set of metadata (that is data defining the properties of data) to enable transactions to be exchanged with preserved meaning. Defence has also had to grapple with this issue and there is a rich set of metadata standards that support interoperability between nations' command and control systems.

"But in general the investment in drawing up consistent definitions of the meanings of data has been very limited, and this will prove to be a major retarding factor in forming agile,

knowledge-based virtual businesses. The key advantage of established organisations, their ability to draw together their heritage of knowledge, will not be realisable.

"There is a head of steam building around the metadata standard XML, and its use to promote more efficient and advanced services on the web. But how many corporate boards have developed a metadata strategy, and are they working with potential partners to agree standards? Much greater attention must be paid to this important area.

"In the future we are all going to have to be information scientists. When we create ideas on our corporate information management systems (on our information appliances at home) we will be required to codify knowledge contained in the idea to enable it to be integrated and exploited in ways beyond the conception of the originator. This requires a different mindset from writing messages to defined recipients, or storing a document in a local directory structure.

"Some leading organisations are already moving towards this culture, and the technology is there to do it. For example, Word templates can be used to enforce the capture of meta-data, which is then automatically manipulated as paragraphs are stripped out into a common source database and associated search constructs. Most companies could do this now for trivial cost, but with huge culture implications.

"Will knowledge workers of the future be paid by the hit rate onto their information objects? Those who get their information science right will earn a lot more money!

Clive Holtham of City University Business School, UK, said there was "a profound lack of interest in addressing data and basic information issues. There are groups of executives who mistakenly think data issues were resolved some time ago. The laudable emphasis on the net economy and getting things done quickly is taking some attention away from the fundamental question raised here of the data infrastructure.

"Moreover, many people working in IT know little about metadata – most of the expertise and understanding of this in practice lies with information scientists, who are barely if at all represented at senior levels of business. My major worry is that what are increasingly becoming strategic issues will go by default due to lack of interest and expertise both managerially and technologically. Either standards will be driven by the few who are interested, or there will be only limited effective standards."

Alan Jones of the University of Teesside, UK, said the metadata question was the single most important concept in the debate. "I am repeatedly struck by the contrast between the language I use when teaching technology, and the derivations of the names of

the students in my class. I cannot derive European or Asian names, but English, Welsh, Scottish and Irish family names go back hundreds if not thousands of years. An IT vocabulary changes even as I write.

"Last year, Internet business was e-commerce. Now B2C is e-commerce and B2B is e-business. Meta-data is wonderful. What a pity it's all after-the-fact."

Horace Mitchell of European Telework Online, UK, said the way to avoid meta-data always being added on 'after the fact' was to use some system of "self-declarative data sets", which are possible using XML and other mechanisms.

Debate transcripts

Theme three — **e-government**

Online public services: mobiles, smart cards and digital TV

Marcel Bullinga, Author and Internet Adviser to the Dutch Government, said there were several options for public sector bodies to move towards total digitisation of services, without alienating less wired-up sections of the community.

These included the use of mobile phones, once they have become fully transactional; 'digital paper' forms using barcodes so people could fill them out with a normal pencil but their results could be digitised; and the use of intermediaries in places like town halls and supermarkets to help people fill in digital applications for a government service.

However he said full digitisation would inevitably mean the eventual use of biometric smartcard solutions for identification. Governments can benefit from the e-commerce smartcard infrastructures that are currently being built and paid for by industry, rather than develop their own system, he said.

Perri 6 of Strathclyde University, said: "The problem here is nothing to do with smart card technology, and everything to do with what governments and public authorities want to offer their citizens, and what privacy protection citizens demand from public agencies.

"For example, smart card schemes – and more importantly, smart card reader devices (including mobile phones and televisions) can be designed to provide individual citizens with greater subject access to data held on them.

"Second, a variety of privacy enhancing technologies are available, if clients and government scheme designers want to use them. The key issue, then, is how the public and private sector negotiations go, on minimum standard specifications for card and reader schemes on which any public service is to be supported."

Andreas Gruenwald of Digital Law Net, Germany, said: "Recent studies show that television rather than computer networks will become the key technology to facilitate the growth of e-commerce services. However, this requires that television turns from analogue to digital.

"In its green paper on spectrum policy, the European Commission therefore raises the issue of stimulating the analogue switch-off by administrative means. Amongst others, the Commission considers to set a switch-off date on the community level which would then be binding for all member states. But wouldn't it be better to rely on the market forces in this issue? Are there alternative ways to support the analogue switch-off? And finally, would the Commission be legally allowed

to set such a date at all, considering that its legislative competence in the field of spectrum matters seems to be rather vague anyway?"

Realising efficiency savings

Stefano Kluzer of the development agency of the Emilia-Romagna Regional Authority in Italy (ERVET), said a more efficient public sector would mean less time wasted in queues, less money spent on transport to visit public offices, and more efficient and flexible organisation of business and personal life.

"In the longer term, I would expect efficiency gains to translate into actual efficiency savings or vastly improved services for the same price.

"Many of these are likely to come from replacing work in back-office administrative procedures and human interaction in services delivery. Specific administrative procedures might be managed by dedicated units for the whole civil service, regardless of the physical location of the customers and access points. On the other hand, the large number of physical contact points for face-to-face interaction, might be reduced to much fewer multi-service one-stop-shops.

"We are starting this latter process in Italy with one-stop-shops for business administrative services. It's not easy: lots of cultural, procedural and political changes are needed."

Professor Bruno Oudet, Chairman of the French Chapter of the Internet Society, said the introduction of technological innovation in public administration will take time, ideas . . . and money. "We are dealing with introducing change in slow-moving organisations, and unfortunately change in these organisations do not follow the speed of technical innovation.

"For example, the New Zealand government is known for its successful use of Internet. But when I asked them whether the Internet has really changed their administration, they replied that: 'It's too early to tell. At this stage it hasn't changed the administration in any real sense, but it has added another layer to the onion'."

Dr Eliezer Albacea of the University of the Philippines Los Banos said: "Aside from time, ideas and money – the greatest barrier of all is the social acceptability of the change. It is human nature that whenever we want people to change, the immediate reaction is to resist. We must not forget the social aspects whenever we introduce a new technology."

Gerd Welin of the Swedish National Security Service said: "I agree that organisations can't be changed as quickly as technology. It's not only how people are organised but also how the routines work and what systems you have today. Because if

you bring in new technology it is often on top of something else, with the hope that everything will work together.

"So consider the resources you already invested, so you can take advantage of them, and don't try do everything at once. Take time to implement the new solutions, step by step."

Selling public data

Samantha Hellawell of the UK Government's Action Team on ICTs and Urban Renewal, said local authorities have attempted to create an integrated database, let alone started work on a data warehouse.

Newham Council in London was an exception, she said. "Its fully postcoded corporate database delivered a few surprises: it had 5,000 properties it didn't know about and more people on housing benefit than lived in the borough! Its data warehouse requires managers to think in new ways – they have to think up joined-up questions to exploit its ability to provide joined-up data.

"But even if and when all local authorities have databases, where are the business models and partnership working required to deliver commercial benefits from their combined data?"

Hellawell said the Local Government Improvement and Development Agency (IdeA) has developed such a model, Its National Land and Property Gazetteer, which will contain address data stored in a standard format. The data relates to everything that has a permanent physical space such as houses, commercial and public buildings and masts. Data supplied by local authorities is cleaned up and processed by a private company. The IdeA will then sell the data on their behalf – for conveyancing for example – either paper based or online.

Horace Mitchell of European Telework Online, said European countries were embracing the idea that governments can make money for the taxpayer by selling back to the taxpayer information that the taxpayer has already paid government to collect. However, making government information generate profits for government simply means that large, mature, slow moving organisations that could afford to collect their own information or pay for commercially collected information (but are highly unlikely to respond innovatively) will get the information the taxpayer has paid for, while entrepreneurs, micro enterprises and small firms will continue to work in the dark.

"Making all government-collected data and information available free of charge would deliver much greater strategic leverage than the short term profit approach. And the marginal cost of doing this is now approaching zero. There are of course vested interests that will be deeply upset by this change of tack, but why should government defend vested interests?"

Daniel Soderman of Weather Service Finland said that in the meteorological community the basic observational and model data which have been publicly funded are seen by many governmental agencies as their property, which they in the absence of competition can sell at excessive prices. But ironically the technical facilities operated by governmental agencies are often well behind the technologies used within the private sector.

"The remedy is simple: to declare, ideally by means of an EC Directive, that all scientific data funded via European state budgets must be made freely and publicly available at once to all those interested. In some cases this may require guaranteed longer term funding for the establishment and maintenance, ideally with the help of the private sector, of modern facilities for public data distribution."

He said that in the US, the problems have been solved neatly as all data held by governmental agencies belong to the people by law.

Franck Martin of the South Pacific Applied Geoscience Commission (SOPAC) said the problem often coincides with privatisation of scientific agencies like geological bodies or oceanic institutes.

"Governments are asking more and more that these institutes should generate revenue. Selling data may be one revenue, even if this data has been paid by the taxpayer. Also it adds an indicator of the usefulness of these institutes in providing data." In developing countries this practice restricts development, he said, even if it does allow poorer administrations to pay their officials.

Yong-Suk Lee of the National Computerization Agency, Republic of Korea said that before the problem could be tackled, we first need to define precisely what is meant by 'public information'.

"I don't mean philosophical definition but a regulatory definition which can be incorporated into laws and regulations in real life. Some argue for an absolutely free system. But what is meant by free? If I want to access public information by Internet, does it mean that the government should provide me with computer and an Internet connection?

"And what is the scope of public information, in terms of the organisations it covers (for example, does it include quasi-governmental organisations?) and who has a right to access (do we include foreigners?)

"Important point to consider is that no matter what kinds of standards we create for easy access to public information by citizens, it should be consistent across government organisations.

Currently, different agencies seem to have different standards. Therefore we need to do two things: create a working (regulatory) definition of 'public information', and apply it consistently."

Dr Eliezer Albacea of the University of the Philippines Los Banos said: "With free information, the playing field would be levelled between small and medium-sized businesses and large corporations. We would hope therefore to see more small businesses graduating to become large corporations, generating more wealth and more employment.

"Thus free information to the public is the key for a country to become a knowledge economy."

Steven Clift of Democracies Online, US said governments should fund a "public portal" that helps citizens navigate all public services and information (including that of non-profits) based on an open model that would allow other sites to integrate directory data into their site.

"Our national government has not developed a single main portal, but a confusing array of overlapping entry sites that don't present government at all levels as a whole. It's OK if a commercial body has the best site, but government needs to catch up – not by competing, but by sharing and promoting greater competition among commercial sites (they have the users!) to provide better and better access into the heart of government. Government should of course use the directory data to develop a banner ad free site, but the core directory information must be syndicated."

Teledemocracy – power to the people

Joseph Stiglitz, former Chief Economist of the World Bank and Chairman of President Clinton's Council of Economic Advisers, said there was significant potential for governments to use the Internet to involve citizens in their deliberative processes.

"Many key decisions are complex, and there is considerable uncertainty about the consequences of alternative measures. The policy making bureaux in most governments are limited in size, and are typically overloaded. The new technologies hold out the promise of drawing upon far wider expertise.

"The challenge is how to do this in the most effective way. I suspect that the more structured the questions that are posed in the Internet dialogue the more meaningful will be the responses. Participants in the dialogue could be required to provide evidence backing up their arguments.

"One advantage of this approach is that it would widen the circle of expertise which the government could draw upon, which all too often is limited by circles of personal acquaintance."

Clive Holtham, Professor of Information Management at City University Business School, said: "The way representative democracy has worked for the past 100 years or more has reflected the mechanics of an industrial era. But citizens are no longer willing to just believe everything government tells them. So the first condition for widening the involvement of citizens in deliberations is access to exactly the same policy advice as the politicians are getting.

"It implies an aggressive form of public rights to information. I cannot see why every internal document behind a planned decision should not be presumed to be in the public domain, unless it is commercially sensitive or personal to named individuals. That is a precondition of public deliberation on policy matters.

"The second issue relates to identity. Many policy issues have lobbying groups of various overt and covert types constantly pumping out messages – some of this is now very sophisticated." He said any system of public debate should therefore require people to revealing their true identity, whether as a voter or a business, using smart cards or other devices.

Auli Keskinen of the Ministry of the Environment, Finland said: "The dialogue between administrations and citizens can be enhanced by using deliberative democratic interaction models. This is the approach called Teledemocracy, which means the use of modern information and communications technology (ICT) as instruments to empower the people of a democracy to help set agendas, establish priorities, make important policies and participate in their implementation.

"There is no one 'right way' to develop teledemocracy – a lively interaction between development ideas and viewpoints is essential to produce the greatest benefits for the broadest base."

Dr Janice Brodman of the Education Development Center, US said: "Most of the efforts, heretofore, to use technology to expand participatory decision-making have involved NGOs and individuals networking via the Internet and using their combined influence to affect the formal, conventional decision-making process.

"So what does this mean for teledemocracy? For one thing, it's necessary to have an existing process in place that is responsive to public opinion. If the delegation in question had been from an authoritarian country, they wouldn't have cared how many people voiced concern about the issue. Second, this situation suggests that technology can be used by NGOs to collaborate and to consolidate their influence in order to pressure key decision-makers on specific political decisions. Third, it suggests that the input has to be extremely clear and focused.

"Far more exciting than the conventional approach is one that charts a new path in participatory decision-making. This approach seeks to create new channels through which people who are affected by decisions can have input into those decisions. Despite much talk about expanding participation in decision-making, few international or national organisations are actually altering their decision-making processes to include input from those ordinarily outside the process. One of the crucial areas that needs exploration and serious work is to forge new processes in international organisations like the World Bank, and in national and local governments, to include and process public input.

"The major obstacles this approach faces are resistance among decision-makers (it is a cliché that those with power are unwilling to reduce it; yet it is true) and information processing limitations.

"On the demand side, it is necessary to encourage and assist the public to communicate their views and experience. It is also essential to help ensure that the input is conveyed in a useful way, i.e., the messages are clear, relevant and meaningful to the decision they are intended to influence.

Dafne Sabanes Plou of the Women's Networking Support Programme of the Association for Progressive Communication, Argentina, said: "In March, I was part of the WomenAction team that worked in New York during the annual meeting of the UN Commission on the Status of Women. We worked on news and analysis of what was going on in this meeting, and networked our information to dozens of women's electronic networks around the world in three languages – Spanish, English and French. The information we sent was reproduced by radio, fax and print. We knew we were getting to thousands of groups that in this way were able to organise their own proposal, get to their government delegates, do their lobbying and struggle for their rights and interests with day-to-day information at hand. This sort of effort is part of what we should mean by teledemocracy."

Professor Stephen Coleman of the Hansard Society, UK, said: "Many e-democracy enthusiasts over-emphasise the spontaneity of online discussion. To ensure that citizens are able to contribute usefully calls for sophisticated management of such deliberation, including moderation, filtration and summary; educating people in both political and media literacy; connecting the energy of public discussion to resources of public knowledge and providing not only safe public spaces for democratic engagement, but rational incentives for entering them.

"All of this must be conducted by trusted bodies. Neither government nor commercial firms are sufficiently free of interests to enable them to build such trusted structures. We need more and bigger independent bodies charged with enabling and resourcing civil society.

Rodolfo Carpintier of Grupo NetJuice, Spain, said: "I believe the merit of teledemocracy will be to provide an interactive way for politicians to really understand what voters think about major subjects without the present situation where they merely receive interpretations from 'experts' that are often very different from the real positions of voters.

"Another major effect will be massive voter movements behind major issues both to stop or promote legislation that they do not approve."

Yong-Suk Lee of the National Computerization Agency, Republic of Korea said: "The first step we can take on the long road to a better democracy is to make public as much government information as possible and present the information in a structured way.

"Many governments already have Freedom of Information laws in place. But it is the way information is presented to the public that will be critical. By this I mean that the information should be presented so that the anyone can follow the "decision making process" more easily. This means information from the earliest stages of policy formulation to implementation. This should allow citizens to provide input at specific points during the decision making process and see how their input has been incorporated into the policy or not."

Mirta Galesic of the Institute for Consumer and Social Research (IPSA), Croatia, said: "Most Internet users will have already participated in various online surveys about different issues, including political ones. But how reliable and accurate are they? Not very, because nobody can guarantee your identity and nobody can tell how different you are from the total population.

"We are now starting a project that will enable conducting of online surveys whose results would be projectable on the whole of the Croatian population. This is going to be achieved by creating a panel of persons of known sociodemographic and personality characteristics, accessible online. Answers of that group of people will be generalised on the total population by weighting the results according to relevant sociodemographic and personality characteristics.

"Once created, the panel could be used for getting a fast and accurate picture of the public opinion on different socio-political issues, raising debates about various socially important subjects, and even for online forecasting of election results. This will help the young Croatian democracy to develop in-line with the real needs of its users."

Marion Scott of Women Connect, UK, said: "Recently residents and ex-residents of a women's aid refuge for women experiencing domestic violence were involved a 'teleconsultation'

on domestic violence, run by the Hansard Society for a UK Parliament working group. This electronic opportunity was a chance for women who have experienced domestic violence to tell their stories direct to parliamentarians.

"It was not an easy experience to tell the story of violence and poor services and laws but some spoke, in effect, of the validation hearing other women's stories gave them. That is perhaps an unexpected outcome. Now they want to know what will become of their testimony – the challenge to politicians. Of course that may take time.

"These stories have been told many, many times, and enough research done. However it is a fact of life that the stories will have to be repeated until the violence stops. Telling them in cyberspace is still novel and gives new life to the interaction and new hope for change to these women."

Cooperation between governments and non-profit organisations

Jean-Paul Baquiast of Admiroutes, France, said that more and more non-profit organisations are now mature enough to share some public responsibilities by delegation, especially in the fields of social or environment protection, and the web would make an ideal medium for co-operation, but administrations are still reluctant to co-operate.

"Charters protecting both sides would be surely necessary. But, as far as administrations are concerned, the idea that they may use Internet networks and non-profit partners for providing services which they cannot assure alone would have to be encouraged by governments."

Competition between governments

Horace Mitchell of European Telework Online, UK, said: "There is no natural law that states that certain things must be organised by governments and paid for through taxes while certain other things must be organised in the private sector and paid for through consumer choice. Indeed the specific boundaries between what is a public service and what is handled by the market already vary considerably from country to country.

Second, there is no natural law that says a citizen must take her public services from her own government. It takes a leap of the imagination to perceive that something that is "of course" reserved for the state to deliver might be delivered to the same citizens by another state.

"Few people developing the strategies for e-government appear to understand the extent to which the commercial market is gathering itself to substitute well-marketed commercial products for poorly marketed public services. As free access to global information makes citizens aware of the differences between what one government delivers for one amount of tax and what

another government delivers for another amount of tax. It is a little difficult to work out exactly how citizens will start to make a "virtual move" to get this service from this government while still taking that service from that government; but then the future has never been entirely obvious until it becomes history."

Mark Gladwyn of the UK Government's Central IT Unit said the UK government already has a 'Channels Policy' which will result in an environment where a market in public services can develop, so that there will be real customer choice as to how and where the service is taken.

The shortfalls of market power

Dany Vandromme, Director of the French National Research and Education Network (RENATER), said governments were currently relying too heavily on the power of markets to boost public access and services online.

"Market power will not create a true and efficient online public service. Let's consider the education system, which in recent years has seen a real competition between politicians to announce: 'We have X% of schools connected to the Internet'.

"What is the reality behind that? Most of the time, there are, in a school, a (very) few PCs connected to the outside world, with an extremely small bandwidth capacity, teachers are generally not trained to teach technology to young people, and the pedagogical material suffers from an extreme scarcity and dispersion. Drastic effort is needed on the training of teachers."

Furthermore problems of widespread access in society will not be solved by waiting for the telecom market to lower the prices, he said. "These sectors require public funding, not only to buy telecom services, but also to force telecom operators to tailor their offers to the needs of public services."

Public service trade unions

Jean-Paul Baquiast of Admiroutes, France, said that in France, the media generally consider that trades unions are opposed to the introduction of Internet services and new technology. But he said that "In fact, we all know that they could accept and even support local experiments, if these were not imposed top down in the only aim of reducing costs.

"European dialogue between syndicates would be useful, if it does not exist yet."

Frank Bannister of Trinity College Dublin, Ireland, said that many government departments in Ireland have moved well beyond using cost reduction and staff savings as the primary rationale for investing in IT, although others are still at this stage of evolution. "A new model of the function of IT in public administration is emerging, but it needs to be formalised."

Eric Hayat of SYNTEC, the French Computer Services, Software and Consulting Union of Employer's Syndicates, said that a recent French government study on the introduction of technology into the public sector revealed there is a fear that new technologies are being considered as a way to reduce employment and remove hierarchical structures. "In fact, this situation is unimaginable and new professional projects and new careers can reinforce personal hopes".

Alain Poussereau of the French Pensions Agency CNAV (Caisse Nationale d'Assurance Vieillesse), said: "Labour regulations governing social security employees must evolve to tackle the special conditions of teleworking. Learning from private sector experience in this area could ease the evolution and could allow greater harmonisation of labour regulations in public and private sectors.

"A rapid turnover of social security work forces and the client's expectations of highly personalised services requires improved productivity to cope with the coming workload increase.

"Teleworking will progress faster than the adaptation of the current labour regulations and despite some reluctance of employers or employees. Experiments of the delivery of public services electronically will boost this adaptation and at the same time serve as test bed for a better tuning of a modern labour law."

Boosting the charitable sector

Sarah Norris, Head of New Media at the Charities Aid Foundation, UK, said the UK's Chancellor of the Exchequer Gordon Brown has recently confirmed a set of initiatives to make it easier for people to donate to charity online. These include the removal of the need for signatures for online donations, to paperless direct debits and online donations.

"I am convinced that a healthy regulatory framework, based on new economy rules and not on offline conventional processes, can make a real difference to the economic contribution the Internet can make to civil society, as well as to business."

e-voting

Andre Santini, Chairman of the Internet Caucus in the French Parliament and Mayor of Issy-les-Moulineaux, said recent online voting in the Democratic Party primaries in Arizona showed a significant increase in voter participation, showing that Internet voting may be a solution to low turnouts.

"I believe that we should test e-vote on ballots characterised by a strong rate of abstention such as elections in schools, professional elections and so on.

"However there is also the question of the secrecy of the vote. Who can guarantee that a vote made at distance will not be influenced by the circle of acquaintances of the voter?"

Steven Clift of Democracies Online, US, said that online voting would happen within about 10 years – although its implementation would be gradual and there are various cost and technical problems to overcome. "But it is more of a political choice. Just because you can technically vote online doesn't mean that a democracy will choose to vote more often.

"What I oppose is a system that does not also greatly increase voting by mail options. Internet voting in binding government elections, even alongside traditional polling, is too exclusive and fundamentally anti-democratic without enhanced access by mail."

Cynthia Waddell of the City Manager's Department, City of San Jose, US, said the serious accessibility problem of the Arizona online voting primary must be addressed before we are ready to embark on this new form of voting.

"The Arizona online ballot was posted on a web site in an inaccessible format. In fact, the ballot was invisible to people using screen-readers to access the ballot. Members of the blind community, who for the first time thought they would be able to vote in privacy without assistance from anyone at the polls, discovered that their right to vote was taken away by the design of the web site. Because the ballot did not have ALT-tags and other accessible coding navigation helps, people with assistive computer technology could not vote."

e-mail overload

Jean-Paul Baquiast of Admiroutes, France, said: "In France public sector bodies are now able to develop web sites, but they are still unable to use e.mail for real-time communication and co-operative work with citizens. This is particularly obvious when environment, health, security problems and so on, require quick answers from responsible bodies.

"In the recent so-called Erika oil pollution crisis for instance, administrations never answered e-mails asking questions or proposing solutions. The alleged reason of that is that they have not enough people to manage e-mail communication. But my personal feeling is that they (still) generally consider that citizens are troublesome, dangerous, and that the less they are associated to administrative business, the better."

Bruno Mannoni of the Ministry of Culture and Communication, France, said: "It is not as easy as it seems to be. e-mail has to be answered by the civil servant in charge of the matter, which may have legal implications.

In my ministry all e-mail is routed to the person in charge to be answered. A very technical question can be difficult to answer, and we must provide a clear and correct answer. In a crisis situation, I do not think that e-mail is of any help: mass media like TV, radio, newspapers and the web are more efficient."

Steven Clift of Democracies Online said: "e-mail is the fundamental tool of the Internet. Elected officials and government agencies need to develop or apply tools that make it an effective communication tool. Citizens will expect it, and to be competitive with commercial sites, government has no choice but to ensure a right of e-mail correspondence with citizens to remain legitimate.

"The truth is that e-mail from insiders to government staff is one of the most effective tools to influence government, while general e-mail from citizens to general addresses is often the least effective."

Closeness to the citizen and date protection

Alain Poussereau of the French Pensions Agency CNAV (Caisse Nationale d'Assurance Vieillesse), said that citizens now expect social security organisations to consider them as 'clients', and offer a quality and level of service similar to those delivered by commercial organisations. They expect both a global and a personalised service. "For instance, the automatic collation of pension data from the various organisations at home and abroad where a person worked is a common expectation. Social service bodies must also be able to provide equal treatment to urban and rural inhabitants.

"The future social organisation's structure around teleworkers and virtual offices will allow this closeness to the citizen. While visiting small businesses, for example, the employee of the social organisation can assist in the establishment of the social statements. While visiting individuals at home, in particular disabled or handicapped people, the employee can not only deliver the service scheduled for the visit but also treat new needs and requests.

"Closeness or proximity to the citizen can also be achieved through the direct access to social services information via a common portal including personal data, pension simulation to determine the best or most convenient age of retirement, the establishment of salary statements for SMEs, the status and tracing of individual requests, and access to the social security regulation and procedures databases.

"There are some problems around the new ways of working, however. The confidentiality and integrity of personal data must be maintained whatever the access mechanism. The offering of personalised services implies holding complete personal data for the whole career of the beneficiary, perhaps

exchanged between several countries, increasing risks of breaches of confidentiality."

Gerd Welin of the Swedish National Security Service said: "The data protection issue is key in areas like social services because of the types of private information held by government systems. Financial fraud is also a possibility in the systems that handles social benefits.

"In the Swedish social insurance system, all users have an electronic ID-card for authentication and all use of the system is logged so that in case of fraud it is possible to see who did what and when. The opening up of our private network to Internet meant that the security around these system have been improved. The first Internet services were just for information. But now we have some services to order documents and are starting up with possibilities to apply for benefits.

"Before we can introduce services to authorise payment from electronic information from the citizens more security functions must be applied and digital signatures must be approved by the law."

Technology for regeneration

Stefano Kluzer of the development agency of the Emilia-Romagna Regional Authority in Italy (ERVET), said that there was a lack of understanding, and tools to support its growth, on what can be done -by governments and other public entities- to promote local regeneration and local development in general. He said three measures can address this issue:

"First, you need to increase awareness of what new technologies are and what they can be used for, among decision-makers at all levels, including within local communities where development must be rooted.

"Second, you need well analysed and presented reference cases of actual experiences of technology adoption and implementation in local communities. I'm always amazed by how difficult it is to find good quality case studies showing the positive as well as negative effects, the actual costs, the strategies adopted and so on by local authorities, small firms, and the like.

"Third, you need to stimulate and facilitate wide participation and a social discourse on the changes ahead.

"The perception and fear of a new age divide between older people, with more political power and less technical knowledge, versus younger people, in subordinate positions but with greater understanding of new technologies, are running wide and deep. They are clearly an obstacle to a fuller adoption of innovative technology-oriented policies, particularly in the public sector."

Richard Mancey of the Sustainable Development Networking Programme, Guyana, said: "It is noteworthy that the same problems are common to both developed and developing countries. I would suspect that lack of awareness is more acute in developing countries amongst decision-makers but that there may possibly be a greater receptiveness to change – maybe because of the perception that the need for change is so much greater and even from of a sense of desperation."

Ikatri Meynar Sihombing of Bank Panin, Indonesia, agreed that it is not only in developing countries that governments are not putting in their best efforts to use technology for development.

"In Indonesia the government has not worked hard in this area, despite the fact that technology development could be a useful tool to help growth at a time where its citizens are facing economic turmoil and are working hard to survive. However, some private firms are working it out on their own.

"Governments in some developing countries have put major effort into meeting the challenges of the information age. However governments in other countries might not have done, not because the government were not concerned about it or did not realise the trends but because other internal conditions are higher priorities.

"This may affect business growth in the future if the global market demands become higher. Without government support, it will be hard for an enterprise to contribute and play in the global market. The development of an infrastructure for the net economy in a country is fundamental."

Debate transcripts

Theme four

Citizens and consumers

The exclusion of women from the 'power circle'

Maureen Vargas of ICCI Consultora, Costa Rica, said: "Globalisation has diverse and sometimes contradictory economic effects for women – especially in developing countries – because it generates more wage-earning opportunities and higher wages for some women while forcing others to return to home-based and temporary work in the informal or semi-formal sector.

"The economical and social value of investing in technologies for women is appreciated, but the process of technology development and dissemination is not always practised in a gender-sensitive way. Technology for women's businesses and activities must be appropriate in terms of viability, acceptability and need.

"And there still remains the all-important question of accessibility. Access to finance, access to the market and access to information and technology are closely connected. There is also a need to confront the new challenges of globalisations and new technologies, to ensure women are not left out in the way they have been in previous technological revolutions.

"However, governments tend to be male dominated in general, but most especially in the areas of business policy, science, technology, trade negotiation and e-commerce. How can women influence and access the power circle?

"For women's businesses to flourish in the global economy they need to be represented by organisations that do more than just provide access and networking. Successfully targeted advocacy is critical if women are to overcome the institutional and informal constraints that continue to hamper them in many parts of the world – in developed as well as in emerging economies.

"Such organisations can also offer access to contacts for sources of credit, access to training in international trade issues, as well as access to the more basic skills of operations management and marketing. Advocacy can help spark the reform of laws that hold women back from business ownership and hamper their ability to use collateral to obtain financing. It can also help get the message across to trade negotiators that they must be more conscious of the need to communicate the ramifications of trade pacts to small and medium business new owners – women business owners included."

Dr Janice Brodman of the Education Development Center, US, said: "Policies that fail to distinguish between the needs and concerns of women and those of men, often reinforce obstacles that women face. The inequalities and disparities are evident from the policy-making level down. For example, policies may

foster individual access to computers to the detriment of education technology programs – in a context where women are primarily concerned with the use of computers in children's education.

"At the organisational level, telecenters that don't distinguish between the needs and interests of women and men often fail to serve women entirely. They may, for example, be established in areas that women cannot reach due to alternative demands on their time, or to travel constraints imposed by society. The best way to ensure that women's needs are met is to bring women into the decision-making process. Programmes that seek to serve women, but do not involve women in their design and management, often fail to achieve their objectives, and may even deepen women's plight.

Microcredit is a good example. For years, microcredit programs for women have been touted as inevitably beneficial. Only recently have studies revealed that programmes that don't take account of the real circumstances women face may lead to inescapable debt, increased domestic violence and a range of other problems.

All too often, those promoting e-commerce for women assume that simply providing access to the World Wide Web, and establishing a web site, will help women entrepreneurs gain greater access to markets. This approach fails to address the range of needs that women entrepreneurs face when they seek to compete in a global market, for example knowledge about product design, financing, marketing segmentation and so on. All these issues need to be addressed.

Aileen Allen of the United Nations Development Fund for Women (UNIFEM) said: "Targeted advocacy requires a deep understanding of the issues and of the policy and legislative process. It is very important for women's business associations or other women's groups to understand the complexities of e-commerce.

"What often happens is that women advocates have the gender expertise but lack the technical expertise. One of the strategies that the women's movement is using is developing trade literacy programs for women advocates and publications such as handbooks and primers. Maybe, the same strategy could be used for women's business associations and women advocates around e-commerce issues".

Marion Scott of Women Connect, UK, said: there was a tendency for governments and others to ignore a mainstream gender perspective in seeking to create an inclusive and accessible information society.

"Most often women are only indirectly referred to, as lone parents, carers or the elderly, and less often seen explicitly as a group or in terms of gender. Women from all backgrounds experience forms of social exclusion and are likely to be poorer than comparable men. Policy makers need to see women as a diverse group, but sharing some experiences and characteristics.

"Effective responses to barriers to women's participation in the information society will include a gender analysis. They will address, for example, poverty, safety, culture and language, expectations and realities around the male 'ownership' of IT, lack of basic skills and confidence necessary to access learning, and lack of access and involvement in a range of democratic processes.

"We know that women make up the largest proportion of the poor of the world. We know that the numbers in computing related professions has dropped in the UK and there are issues about women's progression with technology skills and their access. It seems as if women are underrepresented or may contribute less in debates such as these. These are some of the reasons why we need a gender perspective.

"We do have strong evidence that women's organisations are pioneering with information and communications technologies, and many women's organisations are using and shaping the Internet. However, more progress is needed to meet the requirement to increase the participation and access of women to expression and decision-making in existing and new media; and to promote a balanced and non-stereotyped portrayal of women in the media.

"The problems of inequality between men and women are deep seated and complex requiring a comprehensive response. But one important strategy is to strengthen women's voluntary and community organisations. Their role is critical and proven to address a wide range of women's unmet needs and aid women's access, take up, competence and content creation in the use of new technologies.

"Actions that are needed from local and central governments include the creation of strategies to enable funding to be targeted at women who are disadvantaged from all communities; building the capacity of women's organisations to use and shape the new technologies; a joined up, mainstream approach to equalities and technology policy and practice; and ongoing consultation with women.

Mirka Negroni of Telemanita, Mexico, said: "Working for a small non-governmental organisation dedicated to training women on the use of electronic technologies such as video and electronic mail in Mexico and throughout Latin America, I cannot stress enough the need for funding to carry out work with indigenous and rural women.

"Recently we visited a group of indigenous women in Cuetzalan, in the Sierra Norte of Puebla. These women own a co-operative shop and an ecotourism hotel. Recent rains had them unreachable for almost a month. We went and did our training, but how do we ensure that they have continued access to equipment? We assist them in part to fund-raise but thanks to governmental policies that claim Mexico is a first world country, the access to funding continues to shrink.

"Furthermore the high level humidity in which these women live means that they have to have healthy repair budgets for any equipment they buy for video production – an important tool for organising, documenting human rights violations and even for promoting their microenterprises."

Dafne Sabanes Plou of the Women's Networking Support Programme of the Association for Progressive Communication, Argentina, said: "It's true that there are difficulties obtaining funding for women's networking and technology projects, but it's still more difficult to create awareness in local governments about the importance of encouraging young girls and women in the use of technology. Much lobbying remains to be done".

Exclusion by design

Elisabeth Slapio of the Cologne Chamber of Commerce, Germany, said: "Are you young, healthy and experienced in using the tools of digital society? Welcome to the digital economy! Everything will work for you, and rules and guidelines will be easy to understand.

"But what's happening for those who are not part of the favourite target group of digital economy? Do they have any chance to become part of the digital future? The demographic development shows that the generations to come are not part of the digital world of today. Where is the discussion about problems to handle tiny push-button-phones? Who is interested in helping citizens and consumers to understand complex user software? Where we will find details about the efforts to simplify prompting?

"There is an urgent need to discuss the various aspects of ergonomics in digital economy, especially surrounding the use of technology by older people. Only those citizens and consumers who are enabled to use modern technologies can be part of the digital world. One of the greatest challenges for digital industries will be the ability to design more accessible products and services."

Design for all – the role of government

Professor Elsa Rosenblad of the Chalmers University of Technology, Sweden, said that governments and intergovernmental bodies had an important role to play in ensuring that the design of technology products was accessible

to all parts of society, including older people and disabled people, although a direct legislative approach was not desirable. "I don't think it is successful to force any kind of technical development. But I can see two ways of reaching the same goal. One is enforcement using ISO-standards, the other is research to create new knowledge of the user's situation.

"ISO-standards, especially ISO 9241 and ISO 9355 regarding ergonomic requirements, could be used for control, criteria and evaluation of products at governmental and other greater purchases. That would bring forward a development of measurable accessibility. Only products that would meet these criteria could then be considered for large-scale purchases.

"But probably a more successful way of achieving products that are accessible to all would be governmental investment in research and development of new knowledge of the user's situation. The severe problem of accessibility is the lack of knowledge on the part of the designer of the cognitive and physical abilities of the individual user.

"Accessibility problems do not exist because companies don't want to solve them, but because they have not got the knowledge to do it. They are used to work with their customers – the purchasers – but not with the individual end-users. It is not enough to develop and test a good interface: accessibility is determined by much more, for instance a knowledge of the users' goals and handling capacities, their values and benefits of the use and the context of use. If this knowledge was available, much better products would reach the market, as customer orientation is an aim today."

Yong-Suk Lee of the National Computerization Agency, Republic of Korea, said the question of government intervention in product design can be simply answered by saying that governments should apply current policy for the disadvantaged to the information and communications issue.

"Of course, it's not as simple as it sounds but the principle should be the same. One thing we need to think about is the need to distinguish the citizen from the consumer – we all wear different hats, one as a citizen, one as a consumer. Appropriate policies for the citizen may be different from appropriate policies for the consumer. As such, citizen's rights may be different from consumers' rights.

"When governments are making policies, it is important to make this distinction. For example, when we want companies to make products for the disabled, the logic for the policy would not come from "consumer" area but from the "citizen" area. In other words, this probably has little to do with consumer protection but involves protecting the quality of life for all

citizens, or the basic rights of citizens – thereby justifying the strongest of government interventions."

Dr Mariama Williams of the Institute for Law and Economics, Jamaica, said: "Government, based on considerations and commitment to underlying principles of fundamental human rights, democracy and participation, have the responsibility to ensure that all citizens have the means for effective participation in community life.

"Community life is very broad, meaning not just the ability to secure economic provision for family and self but to be involved with other members of society in the organisation, ebb and flow of life. In order for each citizen to truly have this ability the mechanisms needed to function daily ought to be available in terms of utility, accessibility and affordability to the maximum number of people, if not on an individual basis then through some communal process such as public libraries or schools.

"In this regard, government must exert proper, rigorous and balanced influence on the design of technological products. These products have the capacity, more than most traditional goods, to become an enclave to which only a few have access and regular usage. Government, therefore, must be concerned not only with the rate of diffusion of the technology through appropriate market and policy mechanisms, but must develop, through dialogue with citizens, some commonly approved guidelines for the design and implementation of technology. We have already developed such norms and expectations where it comes to the protection of privacy, health and safety."

Kevin Carey of HumanITy, UK, said: "The juggernauts of deregulation and commercial competition are about to smash the bicycle of human rights, so there's no point relying on government at a national level for anything in the information sphere.

"As information in the "Information Age" will be lifted out of the World Intellectual Property Organization (WIPO) into the World Trade Organization, the best we can look forward to at the governmental level is a long haul at the global level. On the other hand, if people understand the demographics of access then the market will adjust to the needs of, for example, the elderly and people who need screen magnification. There's no point in the disability lobby sitting on the steps of Parliament – it needs to be working in the atria of the multinationals."

Consumer protection

Morten Falch of the Technical University of Denmark said: "The emergence of a new Internet consumer market has created a whole new set of regulatory problems. A lack of transparent legislation protecting consumer rights will inhibit the electronic market place from reaching its full potential. Consumers may be

reluctant to engage in transactions on the Internet without knowing their rights and obligations.

"There are two inter-related dimensions of this regulatory problem: national versus international regulation and self-regulation versus state-regulation.

"National regulation is difficult to maintain in a global market place, where the consumer even may be unaware of the nationality of supplier. International co-ordination is complicated by the fact that different countries have different views on the need for regulation and the approach to be taken, and different perceptions of consumers rights. An example of this is the dispute on data-protection and privacy between the US and the EU. In the US data protection is much more focused on abuses from the public sector, while the EU is more concerned about misuse of personal data for marketing purposes.

"The primary argument against state regulation is that it tends to stifle development and innovation. It is very difficult to tailor regulation to effectively protect consumers, be part of a coherent international legal framework, and be so flexible that it takes future technical developments into account.

"Self regulation seems to be the answer, but who is the 'self'? If we were dealing with business-to-business commerce, it could be argued that the 'self' is the business world. However, even here, there are often large differences in interests. When we are dealing with sellers and consumers, there is also a built-in contradiction of interests. Can the market solve these contradictions or is there a need for state intervention?

Jonathan Robin, a French member of the international Internet Societal Task Force, said: "Consumer protection rights should be universally recognised in such a way as to preserve flexibility for future developments into the system while providing minimum guarantees.

"What is disturbing is the lack of consensus regarding what constitutes privacy protection in the changing environment. There are two areas that require attention.

"First, how do biometric techniques interface with privacy protection, and does a voice print or retinal scan constitute 'indirectly nominative identification'?

"Second, the main challenge to be faced in the area of data protection is the difference between online and offline protection. There are many vested interests offline whose survival depends upon continued "exploitation" of data which, online, are subject to intense scrutiny. However, no data privacy legislation can be enforced online if there is not an equivalent degree of offline enforcement.

"One democratic solution for flexible international regulation would be the introduction of a universal smart card with a protocol offering the individual a complete breakdown of the information held by any intermediary – be it an on line site, an off line shop or corporate entity, or a government institution. If a rectification right was built into the system then this would put the responsibility of data and privacy protection where it should be – in the hands of the individual.

"Finally, it is over-simplistic to say that state regulation tends to stifle development and innovation. State-sponsored research has produced innovation into areas which private investment never dreamed possible. The Internet itself is a prime example. What is cause for concern is the inherent delays built into any regulatory system and the strains to which such systems are subjected by the increasingly rapid rate of change. Innovation and creativity are essential characteristics of humanity. There is, as elsewhere, the need to educate the legislator.

Jean-Noel Tronc, Adviser on the Information Society to the French Prime Minister Lionel Jospin, said M Jospin has proposed the notion of 'co-regulation', which is defined as government regulation alongside self-regulation.

"Existing practices of self-regulation are essential and need to spread over the web, whether it is a matter of newsgroup moderation, strict ethics in the use journalists decide to make of often hard to verify information circulating the web, or a code for good conduct when processing customer data put forward by a big company.

"Existing laws in many fields will need adaptation. For example, in Europe, legislation is evolving to adapt the laws concerning proof to digital documents and recognise electronic signatures, to permit strong protection for privacy or intellectual property, to define the legal basis for electronic contracts and enable efficient protection of online consumers.

"The French government does not subscribe to the idea of creating a new regulator for the Internet. One possible alternative is the creation of a flexible association, that could be established by law to strengthen its legitimacy, and that would gather representatives of all stakeholders in the web to help foster this concept of co-regulation through issuing recommendations, codes of conduct, or labels."

Astrid Thors of the European Internet Foundation and Member of the European Parliament for Finland, said: "I wonder whether the difference in perception of need for data or privacy protection is so big between the US and EU member states as is usually said. Aggressive marketing practices which do not respect privacy can be found everywhere, and it is not impossible to get hold of personalised official information and registers in EU

member states. The vigilance of the citizen is vital if he or she wants to avoid being scrutinised, and US consumers are getting more vigilant on these issues.

"The real conflict lies in the fact that many companies' business ideas lie in gathering profiles of customers, while this might be against the interest of the private person. I agree that the solution is not a choice between self-regulation or regulation, but both can coexist. But it is not acceptable that those self-regulated rules are elaborated in a closed business environment. They should be drawn up in the public sphere, with the co-operation of interested organisations, including consumer organisations. A self regulation can also be such a one that is scrutinised by a public authority.

"In different countries of groups of countries these could be elaborated and lead to "certification" either by some business or some organisations. Also, everyone should realise that self-regulation or codes of conduct goes together with litigation and damages, or even so called class action. If you listen to some voices you would believe that the only thing is self-regulation."

Morten Falch of the Technical University of Denmark said: "It is right that personal data can be misused everywhere, but still it makes a difference whether it is legal to keep personal information on customers and whether it is allowed to sell this information to others. As long as there are countries without legislation on privacy, it will be possible to circumvent national regulation.

"Consumer protection involves many other aspects than privacy. Many of the traditional consumer issues related to ordinary trade are at least as relevant in the area of electronic commerce. These include marketing; price labelling; consumer redress; and safety and quality of products. Without some kind of international co-ordination, it will be impossible to ensure any protection of consumers.

First, consumers may be unaware of their rights and obligations, as they do not know the rules in the country of origin for the supplier. Second the rules will soon be developed according to the least denominator. If one country maintains less strict regulation regulation than others, this country will soon host the most successful suppliers.

"One example is pharmaceutical drugs. Drugs demanding a medical prescription from a doctor can already easily be bought on the Internet from a country where a prescription is not required.

"It is therefore important to set up some type of international body, where it is possible to agree upon a certain minimum for consumer protection. This does not exclude national regulation

or self-regulation. Certificates can be developed in conjunction with suppliers and consumers to ensure a higher level of protection in certain areas."

** NB: For more on privacy see Theme two: business – sink or swim?*

Poverty and the cost of Internet access

Mirta Galesic of the Institute for Consumer and Social Research (IPSA), Croatia, said: "In Croatia, as in other developing countries, the main reason for not using the Internet is financial. A new PC alone costs around five times the average monthly income, and then there are connection costs.

"There are currently only around 245 000 Internet users in Croatia, just under 6% of the population. They are an exclusive class of people: younger, well-educated, with higher income, living in big cities. It will take a very long time for the average Croatian – a person living in a small town of around 20,000 persons, with mediocre education, unemployed or with low-paid job – finally gets a chance to use the Internet regularly.

"Efforts should be taken to ensure that the Internet is freely available in every school and public library, even in the smaller settlements. But what government would invest in boosting the Internet before the reparation of war-damaged houses?

"Many Croatian people, including decision-makers, still can't see the potential of the Internet. They still think of it as of something that can't help them or influence much of their everyday lives. In everyday struggling for essential things, like for food and housing, many people just have no time to notice the rise of the new virtual world around them."

Dafne Sabanes Plou of the Women's Networking Support Programme of the Association for Progressive Communication, Argentina, said even the most poverty-stricken and needy area could still make some efforts towards connecting to the information society. "In Colombia, some organisations have started 'neighbourhood information units'. They don't need fancy buildings, or shiny furniture. Just any place in the neighbourhood (church, school, club, centre) and one or two computers with Internet access. They do a great job and they have been able to get the community connected with the rest of the country and people are able to participate in peace groups, solidarity efforts, education courses, and even do some business. Of course, it needs organisation from the community itself and people willing to push wide access to technology."

Franck Martin of the South Pacific Applied Geoscience Commission (SOPAC) said: "In every developing country there are always the questions: food or Internet? water or Internet? roads or Internet? To prioritise needs, the question to ask is

which need you should solve first, that will then help solve another need? Giving food to people do not teach them to grow their own food. Does giving Internet and e-commerce to people allow them to grow food, dig wells and build roads?"

Kevin Carey of HumanITy, UK, said: "The significance of the Internet for many developing countries is that it allows the creation of wealth in places without natural resources such as fertile agricultural land and minerals. The development of the Back Office economy of India is a particularly good example.

"One of the problems faced by developing countries is that they don't have a tax-paying, socially mediating middle class and part of that problem is graduate unemployment. There isn't much point putting people through university if they end up doing nothing, so it isn't a choice between the Internet and food; the Internet could be a wealth creator.

Sarah Norris of the Charities Aid Foundation, UK, said: "United Nations Secretary General Kofi Annan has recently spoken out on not insulting the poor by suggesting that accessing the Internet is a real priority over more fundamental needs. However, he does mention initiatives that can help civil society directly without assuming everyone must have their own computer.

"He listed a number of proposals including a volunteer corps called the United Nations Information Technology Service to train groups in developing countries how to use information technology; a Health InterNetwork to establish 10,000 online sites in hospitals and clinics in developing countries to provide access to the latest medical information; a disaster response initiative, "First on the Ground," to provide uninterrupted communications to areas hit by natural disasters; and a global network to explore new approaches to youth employment.

"Public or central access points, particularly in centres of learning, treatment or support, can be a crucial driver for education and self-help. Rural communities in developing countries can send an envoy to a point of presence to carry out a range of important tasks and bring the results back to the group. What these initiatives are suggesting is that it can be just as useful to have occasional access to wired technology than to have it in front of you everyday.

"Of course, wireless devices will also play a role in getting just-in-time information out to people and places that need it, and that need not be on a permanent basis. Technology is mobile, and one approach could be to develop a central, governed IT resource base (via a bilateral agency or similar) to deploy the right kind of technology – including non new media ones like global positioning – to fit the need. This could be a valuable foreign aid option for the developing world at critical times.

"This is not to avoid the question of identifying sustainable solutions for poor countries. But I think it's a good start to actually share the resources we've got. Where were such initiatives during Mozambique when communications delays were reported to have cost lives?"

Todor Yalamov of the Center for the Study of Democracy, Bulgaria, said: "I would stress the positive possibilities of Internet use in developing countries. Many young people have remained resident in Bulgaria partly due to Internet development, by working for companies abroad – that would include both individual assignments or registered subsidiaries of foreign companies in areas such as software development and web-design. There are examples of Business Schools that provide international virtual teaching or at least extensive use of the Internet in classes, and programs that provide free Internet access to high-schools.

"Problems include trust and ethical standards of online behaviour. These issues hinder the possibilities of e-commerce and e-governance all over the world, but in transition countries it might be expected to be even harder. Responses in Bulgaria have included legislation on digital signatures.

"The government is also concerned with the IT development – the Parliament has passed an Act on High-Technology Parks to attract foreign investors. Pilot projects for municipal e-governance are being prepared. My guess is that the rush of going digital, even in transition countries with small GDPs, will have an extremely positive effect – both on education, reducing barriers and costs of doing business including reducing possibilities for corruption, and on economic development as a whole."

Accessible web site design

Cynthia Waddell of the City Manager's Department, City of San Jose, US, said: "It is critical that policymakers and designers of technology be reminded about the need to address digital barriers created by inattention to accessible web and accessible system design. Unless accessibility components are built into the design of our web sites and networks, significant populations may be locked out as the web rapidly advances from a text-based communication format to a robust, graphical format embracing audio and video clip tools.

"Of particular concern is the denial of access to electronic information on the basis of disability. This form of discrimination can easily occur when web sites do not incorporate accessible web design features like those specified in the guidelines released by the World Wide Web Consortium's Web Accessibility Initiative (www.w3.org/WAI)

"Yet, we have learned that the benefits of accessible web design extend beyond the community of people with disabilities. Consumers operating cell phones, personal digital assistants (palm pilots) and information appliances can readily reach the content of the web because accessible web design separates the content from the presentation. Most importantly, however, accessible web design enables low technology to access high technology. Consumers with slow modems and low bandwidth can access the web even if they do not have state-of-the-art technology.

"The past month has brought significant breakthroughs in the area of industry consensus in accessibility. For example, the over 400 members of the W3C have reached consensus on not only web authoring tool accessibility features but also user agent accessibility features. The Internet industry recognises the benefits of standards setting for global interoperability and accessibility and, by default, this development enables the human right of accessibility to be achieved in the electronic marketplace.

"Governments must also adopt accessible web design policies and implementation steps so that access to the content of the web is equally available to all. From August all US federal government web sites and higher education institutions will have to incorporate accessible web design by law. In fact, US federal contracting officers for web design sites and services will be personally liable if they do not procure products or services that have accessibility components.

"This new federal law also requires that a business losing a bid for a federal contract can challenge the awarding of that contract if the business can demonstrate that their product or service exceeds the accessibility features of the business that won the contract. The business incentive seeks to reward those businesses who have devoted research and development on accessibility."

Sarah Norris of the Charities Aid Foundation, UK, said: "Education and willingness are not on our side in this debate. The majority of existing web sites are not designed for access technology, and there is little awareness of what actually needs to be done to make a site accessible for most people.

"In August 1999, Disability Now said that by making an Internet service inaccessible an organisation potentially loses 8.5 million disabled customers. Even though it can be challenging to design for accessibility issues, it is possible to achieve the majority of the results you want without having to exclude anyone. However, many web agencies don't appear to recognise the issue; they tend to see it as a barrier rather than an opportunity and don't seem to have the time to do the necessary research. However, some agencies do find the time to take these concerns on board.

"I believe that in the future some of the answers will come not from willingness or education, but by a better breed of web browser with in-built functionality to cope with speech html (reading the page contents aloud) or keyboard-driven links (navigating using the keypad). But I would still like to see a much greater recognition of the issues involved and an effort to accommodate all users rather than develop for the high end. This is an area where government can play a role."

Kevin Carey of HumanITy, UK, said: "Without some enforcing body no form of civil rights works, and at the universal level the UN has not been much use enforcing its declaration on human rights. To ask for tight rights regulation on the Net would run slam into the libertarians, and that is a fight we can do without. The best way to assure accessibility is to manufacture highly accessible and aesthetically pleasing content and show other people how good it is. There is a slogan about Circulating Good Practice, but there is just about no good practice to circulate, so instead of lobbying for rights create some content."

Education is the key

Kevin Carey of HumanITy, UK, said: "The idea that social exclusion from information and communication technologies is simply a price problem is already dated. Granted, it will be some time before the technology is cheap but within two decades communications will be as ubiquitous as roads and electrical power.

"As usual the real exclusion will be created by those who cannot handle information; so we're back to education. The only secure source of jobs in the next 20 years will be in information; the 'back office' strategy can work, particularly in countries that do not have natural resources – minerals, agricultural land and so on – but that can only happen if development assistance concentrates on creating a middle class in poor countries. That's what's happened in India, and it needs to happen in Africa.

"It will be no different in rich countries. Governments are struggling and losing the battle with a stubborn percentage of the population that simply can't deploy informational skills. There is a totally false assumption that you can train everyone to perform a fixed set of skills – you can't."

Dafne Sabanes Plou of the Women's Networking Support Programme of the Association for Progressive Communication, Argentina, said: "Education and access to information are very important, but also access to technology. In the late 19th century, Argentina was able to offer universal access to education. Thanks to this, the illiteracy rate in Argentina is very low and we still have free education at all levels, including State universities. This helped to build a strong middle class and also to integrate the hundreds of immigrants that came to the country.

"Just as there was a good public policy that enabled access to education, governments should work now to enable access to new information and communication technologies. Information is the key now and the private sector has shown that information for them is mostly a commodity and little efforts have been made to widen access. But I also believe in citizens' movements and a lot has to be done from this side, too."

Franck Martin of the South Pacific Applied Geoscience Commission (SOPAC) said: "I agree that most of the jobs will be in the information sector, but will that help or create a bigger divide?

"Developed countries needs skilled people in these domains and do not find enough at home. A lot of Indians are migrating to the US. Similarly, in the Pacific a lot of islanders are migrating to Australia, New Zealand and the US. In one way developed countries have aid programs to encourage education in developing countries, in the other hand they encourage migration of these young graduates.

"Sometimes you wonder if you should teach people just enough to grow the economy but not too much for people to stay. I have heard that someone in the US is proposing to build a free Internet university. I hope the courses will be sufficiently recognised, and that it will give access to more knowledge."

Sean Connolly of the Office of the Revenue Commissioners, Ireland, said: "Basic literacy is a pre-requisite for participation in the Net Economy and Teledemocracy. By present standards, our education systems are unsuccessful in imparting the three 'R's, even in the developed world.

"Two issues arise here. First, should our approach to educating future citizens change so that they are better skilled at coping with the flood of information and constant change? The old model is one of a teacher imparting fixed knowledge with an emphasis on memorising, but the foundations of certainty have crumbled in most areas. Therefore, people need to learn the skills of self-learning and how to navigate through oceans of information. Can education curricula and teaching methods be changed at the pace needed?

"Second, equality requires that everyone be competent to use the facilities of the information society. Achieving competence at an early stage in the education process will improve basic literacy and better prepare people for participation in the unpredictable world ahead."

Astrid Thors of the European Internet Foundation and Member of the European Parliament for Finland, said: "Education and culture are keys. But what do we mean by education? In the new

European Union initiative on the information society, eEurope, the emphasis is on getting youngsters and elderly digitally literate. But what do we mean by that? That they can manage on the net? That does not take many hours of tuition. What are needed are basic scientific knowledge and insight, and societal values, and that takes years.

Mirta Galesic of the Institute for Consumer and Social Research (IPSA), Croatia, said: "The Internet can be used to improve the poor state of the educational system in Croatia. Although our educational programme is comprehensive, the resources for additional advanced education are rather low. It is close to impossible here for young people to learn more about specific scientific areas or to conduct scientific projects on their own. They cannot rely on any financial help and are seldom informed about where to look for it. Nor can they receive scientific advice from their low-paid and busy professors.

"Therefore, a virtual scientific community is going to be formed, named Matrix. It will serve as a meeting point for young people and scientists interested in conducting research in different areas, scientists that are looking for assistants on their projects, and possible investors. Matrix is also supposed to be a place for meeting with foreign experts and for finding information about the latest scientific findings throughout the world.

Stephen Coleman of the Hansard Society, UK, said: "There is scope for such mutual learning, but we need to be sure that it is indeed happening in debates such as this. Once this online discussion concludes questions need to be asked to ascertain just how much we really learned from one another. Included in that assessment should be questions like were participants listening to one another or just speechifying? Did participants make real-world contacts with one another and what do these networks signify? What did participants think they were gaining from participating here?

"Such research needs to be systematic and scientific. We need to test our assumptions by the most rigorous empirical methods – otherwise we may well fall prey to a form of cyber-rhetoric which is convincing to nobody but ourselves."

Access for all – subsidiarity

Michel Diaz of the National Centre for Scientific Research, France, said: "It is difficult and expensive for governments to give all its inhabitants access to the Net, but a good possibility is to use the principle of subsidiarity. A given town or city could decide either that there are not enough currently deployed fibres, or that the existing fibres do not satisfactorily cover some important parts of the city (including places where there is still nothing but that must be developed)."

The power of the collective

Beth Porter of SW Interactive Media, UK, said: "Perversely, although the Internet enables huge organisations and states to communicate better with their publics, it also empowers consumers and citizens to act and influence collectively. This has huge implications economically, socially and politically and presages power games and, if the anarchists get their way, a dismantling of societal structures as we know them.

"The role for responsible people is to ensure that power structures for good are in place before power structures for bad – there is a race to be won. This will be impeded, however, unless the international talking shops which governments seem so keen in promoting, focus on developing coherent strategies rather than the woolly consensus to which they are always prone."

Dafne Sabanes Plou of the Women's Networking Support Programme of the Association for Progressive Communication, Argentina, said: "I've seen a lot of this empowerment experience in women's groups when working together to push for changes in legislation; bringing new issues before international conferences; or lobbying their government representatives in international fora.

"But I've also seen this empowerment in poor neighbourhoods in Rio de Janeiro, where teenagers were taught to access information on the Internet so as to be able to improve their community, widen their knowledge or even simply surf the web page of their favourite rock group. This was done thanks to community efforts, that with the help of donor organisations, some local and some from abroad, were able to provide public cabins with free and open Internet access. These efforts not only empowered individuals and groups but the whole community, because there was a sense of ownership of what they were doing."

Charley Lewis of the Congress of South African Trade Unions said: "Unions too have begun to use the new technologies to reach out to their members to mobilise, fight campaigns and forge ties of solidarity. Examples include the global campaign a few years ago in support of the Korean federation KCTU, then under heavy government persecution, the campaigns against multinationals Bridgestone and Rio Tinto mounted by the metalworkers' and miners' international ICEM, and the exposure of UK multinational Biwater by the South African municipal workers SAMWU.

"Unions have also begun to wage campaigns to secure access to technology in the workplace for union officials and members.

Ian Pearson of British Telecom said: "A group of people generally has more buying power than an individual. One well-known company has already capitalised on this by allowing people to

club together to buy products at a discount. However, in the same way as nature abhors a vacuum, the Internet abhors intermediaries, or at least will do once the software is up to it. Simple software agents will soon allow people to club together into virtual communities with very little or no personal action. Instead of a few dozen or hundred people, communities of millions could easily be formed, with correspondent power to dictate terms and specifications."

Ethnic minorities – and the trouble with men

Samantha Hellawell of the UK Government's Action Team on ICTs and Urban Renewal, said: "People from ethnic minorities are particularly disadvantaged in accessing technologies. Possible proposed solutions from a recent UK government action team initiative includes the excellent idea of providing laptops at home for women for whom it is culturally difficult to attend mixed technology centres.

"Interestingly however, research shows that the next generation of groups to be excluded from the digital economy are former manual workers, many now long term unemployed. Many, though not all, will be white.

"From formal centres offering call centre training to the sort of informal settings which are vital for enabling people to develop the self esteem and self confidence to move to more formal technology training, the people we saw using these facilities were predominantly – sometimes exclusively – female. And research shows that the gap between Internet use between men and women is fast closing.

"Men just do not attend technology centres when they see provision as being 'for women' – in other words, office-based courses. I asked the only man to come into one mobile technology training centre, parked on a West London estate, why men just wouldn't come in – the lorry was packed with women, mainly from ethnic minorities, doing all sorts of courses. It's probably best not to repeat his very politically-incorrect remarks (!) but let's just say he made it clear that most men in his peer group would not attend because it was not relevant to them and they would get taunted by their peer group if they did.

"There are huge repercussions in terms of men's health, crime and disorder and the role models they provide for their children, particularly their sons, if we do not address the needs of this group as part of a socially inclusive approach to technology provision. There are good models around of projects that can work with men, for example getting them in to build computers. We will have failed if the next generation of men see little point in bothering with education because only 'mums' have jobs."

A shift of political power

Franck Martin of the South Pacific Applied Geoscience Commission (SOPAC) said: "Political leaders do not support the Internet because it makes them lose control. Political leaders emerge from a political system that they know well and master. But the Internet and other digital technologies breaks these barriers that makes citizens ask their representatives to get things done.

"With the Internet an idea can mature, without official support. The Internet has proven that a group of committed people can do things that a group of elected people cannot do. There is a new revolution where the democratic flow of power is changing.

"For the moment the tendency among politicians is to try to stop the inevitable, to regain control by introducing Internet laws and regulations. But this is an error. The politician who understand the new democratic process, will help by co-ordinating these groups of committed people, and will bring the political debate online before bringing it to parliament."

Maha Tissot, Consultant, Switzerland, said: "At first, political leaders were very reluctant towards people accessing and participating to decision-making. They are used to a system which is based on hierarchy and which assured their leadership.

In traditional scheme of communications politicians emit the message, which is filtered by media and other relays, and citizens could not reply or provide input. With the Internet, anyone has the opportunity to emit and to receive a message, and to react live. Political leaders are still thinking they could dominate these new technologies and transfer their traditional way of thinking to the Internet (via laws and regulation). But perhaps in the future politicians could suggesting 'one to one' programmes targeting every individual voter (perhaps by monitoring and analysing their behaviour on the net)."

Information not infrastructure

Kevin Carey of HumanITy, UK, said: "It is not hardware design and infrastructure that is going to be the main obstacle to full citizenship; it is going to be problems in the design of navigation systems and the information itself. Instead of having to put up with SGML, HTML, XML, WML, SMIL and so on we should be combining information design with the technology of intelligent agents to produce what I call PML – Personalised Markup Language – so that the system modifies information presentation according to the strengths and weaknesses and preferences of the user which, of course, might change over time.

"This looks a long way off at present because we are so tied up with scheduled, analogue TV, but it is perfectly possible with unscheduled digital TV."

Andrew Sleigh of the Ministry of Defence, UK, said adaptive personalisation of information was indeed the way forward. "We have almost unlimited flexibility in the way information and services might be presented, yet we currently offer the same basic interface whether people are inexperienced, young, old, tired, bored and so on. We need interfaces and search facilities that can deduce our cognitive facilities and profile our role and needs.

"The basis for this already exists in many existing web-sites, and the framework of XML could provide many more powerful hooks for adaptive services. But we do not seem to have got the psychology of the e-world properly integrated with our technological designs."

Jonathan Robin, a French member of the international Internet Societal Task Force, said: "Context influences content and there are a number of interesting implications to be considered when extrapolating the influence of tomorrow's high bandwidths on individual learning processes – especially regarding children under five.

"As a Western reader reads this message their mind is likely to be forming letters into a coherent string. This is very different from the icon and pictogram mental impressions or ideograms of Chinese and other Asian, languages. The Internet hypertext link is setting the stage for a completely new thought structure and though this will become second nature to those currently under 10 or especially under five, although for most on the Internet today it is difficult to conceive.

"The hyper text link encourages lateral thinking and the thread relationship of which this message is a part. The Internet acquires a new dimension when we look into the implications of introducing preschool children to an online environment. In many cases children already start school knowing how to read and to type but not how to write. This will become increasingly true as personal giga-bandwidths become available. The ability to switch subjects or angles 'at a click' not only offers the ability to learn more, or learn faster, but will enable the individual to learn differently.

"PML – why not – a personal markup language would also increase individual disparities and this is not necessarily a disadvantage because much creativity is enhanced by a meeting of minds".

The return of the village in human relationships

Hamish McRae of The Independent, UK, said: "The idea that a village has especially desirable qualities is embedded deeply in our psyche, as picked up by book titles like 'The Global Village' or 'It Takes a Village'. And there is one practical aspect of village life that is increasingly being replicated through the Internet: the

opportunity for ordinary people to know a lot about the lives of others.

"To explain: In a village you know everyone; you know not just the character and behaviour of everyone with whom you come in contact, you also know about their backgrounds, their parents, their childhood, their siblings. There is no privacy. That was why moving to towns was such a liberating experience for the generations who moved off the land; suddenly they were free. But that freedom removed the constraints on behaviour that a village imposed, in particular the knowledge that whatever you did at any stage of your life would be remembered by your neighbours.

"What the Internet does is to create a database which not only enables people to find out a great deal about anyone but also to track their behaviour over their entire lifetime. Of course it does so crudely, inadequately and doubtless unfairly. But we can already catch a glimpse of how it will affect society, recreating some elements of the village.

"For example, at the moment an individual's credit record has become an important discipline on his or her behaviour. But the information is, in practice, available only to businesses or financial institutions, it does not reach back for the entirety of a life, and in any case only covers one aspect of a person's activity. What the Internet is gradually doing is democratising and extending the process.

"At the moment, the main information is put there by people who want to present themselves to a wider public. It is incomplete, uneven and possibly inaccurate. But gradually the mass of information will grow, its quality seems likely to improve, and it will become possible to track people's entire lives. Socially, the effect will be like living in a village. On the one hand it will be a powerful force establishing and reinforcing trust. On the other, it will mean that there will be no escape to the anonymous freedom of the city.

"This has a number of implications, some positive, some negative. The positive implications include that it will gradually become easier to police electronic commerce; self-policing will grow alongside "official" policing; and cross-border commerce will be assisted by the growth of trust. Negative effects include that there will have to be stronger checks to control impersonation; there are dangers of social exclusion and loss of privacy; and some people will be unfairly "branded" because of confusion of identity.

"In business terms there are specific opportunities, or at least specific needs, like clearing houses that will sort out information

about people in an orderly, and ethical way. But the most important fact here is that societies will gain a new and powerful form of self-discipline, the self-discipline that villages once imposed."

Appendix 1 Boosting the Net Economy 2000 – Think-tank members

Abos, Angel
Business Processes and IT Director
Spain Pepsi Bottling Group
Spain

Angel Abos Ugarte has been Business Processes and IT Director at Pepsi Spain since 1991. Born in Bilbao, he holds a Computer Science Engineering degree from Deusto University.

Abramatic, Jean-Francois
President
World Wide Web Consortium
France

Albacea, Dr Eliezer
Director and Professor
Institute of Computer Science
University of the Philippines Los Banos
Phillippines

Dr. Albacea is Director and Professor at the Institute of Computer Science, University of the Philippines. He is a member of the National Research Council of the Philippines, and a member of the DOST's Science and Technology Strategic Thinkers in Advanced Science and Technology. In 1994 he was awarded a doctoral degree in computer science from the Australian National University.

Allen, Aileen
Programme Specialist
Economic Empowerment Section
UNIFEM

Aileen Allen is Programme Specialist for the Economic Empowerment Section at the United Nations Development Fund for Women (UNIFEM), covering among other issues the use of ICTs for women's economic empowerment.

Before joining UNIFEM in 1997 she worked on government projects with multilateral funding in Argentina, which included the establishment of a social investment fund to support civil society initiatives and the formulation of a major health sector reform programme. She has also consulted for The Synergos Institute, a US based NGO that works in Latin America, exploring private sector-community partnerships in Mexico.

Ms Allen holds a Master's degree in International Affairs from Columbia University.

Attali, Jacques
President
PlaNet Finance
France

Jacques Attali was founder and first president of the European Bank for Reconstruction and Development from 1991-1993, and a special adviser to François Mitterrand from 1981-1990.

He is president of an international consulting firm, and founder and president of PlaNet Finance, an international non profit organisation using the Internet against poverty focusing on structuring the microfinance sector.

Babin, Dominique
Director General
Chamber of Commerce and Industry
Bordeaux Gironde
France

Bannister, Frank
Trinity College Dublin
Republic of Ireland

Frank Bannister is Senior Lecturer in Information Systems at Trinity College, Dublin. Prior to joining Trinity College, he worked in operations research in the Irish civil service and with PricewaterhouseCoopers, for whom he remains a Consulting Associate. He has published many articles on information systems and is the Editor of IT Policies and Procedures, Ireland.

Baquiast, Jean Paul
Chairman
Admiroutes (Association for Modernisation of Public Administration with Internet)
France

Jean Paul Baquiast is Chairman of Admiroutes, an association dealing with the modernisation of public administration with the Internet. From 1984-1995 he was General Secretary of the French Prime Minister's Interministerial Committee for Informatics, and between 1996 and 1999 he was Euro Mission for the Ministry of Economy, Finances and Budget.

He has written two books: Les administrations et les autoroutes de l'information (1996) and Internet et les administrations. La grande mutation (1999).

Batra, Evi
President
EDEM
Greece

Evi Batri is President of EDEM, the Greek Women's Engineering Association. EDEM is a non-governmental, non-profit body whose aims include promoting equality between women and men in employment, education and society in general.

EDEM also carries out research into problems concerning women engineers and seeks solutions; and liaises with other organisations (both in Greece and abroad) involved in similar issues.

Berger, Pierre
President, Club de l'Hypermonde and Consultant, Logiciels et Systèmes (Magazine)
France

Blain, Jason
Head of Interactive and New Media
Universal Music Group
UK

Jason Blain is Head of New Media, Universal Music UK. He has developed Universal Music's Interactive Strategy and has responsibility for implementation of this and ensuring Universal maximises the opportunities the digital music era presents. Jason joined Universal Music from Universal Studios Networks, where he had responsibility for the development of the iTV strategy.

Jason's first new media role was at Scoot, one of the first UK Internet start-ups. His career began in media sales at the Express and Guardian newspapers.

Boucher, Rick
Member of Congress, US House of Representatives
USA

Congressman Rick Boucher is serving his ninth term in the US House of Representatives, representing Virginia's Ninth Congressional District. His first Internet-related legislation, which became law in 1993, authorised e-commerce by permitting for the first time messages with commercial content to traverse the Internet backbone. He is currently authoring legislation which will establish fundamental federal policies for the Internet.

He originated the House Internet Caucus in 1996, and sits on committees dealing with commerce and intellectual property. Since 1995 he has served as an Assistant Whip. A native of Abingdon, Virginia, he read law at the University of Virginia and then practised on Wall Street, New York, prior to his election to Congress.

Bouteiller, Jerome
Proprietor
NetEconomie.fr
France

Jerome Bouteiller is the owner of NetEconomie.fr, a French web site dedicated to the Net Economy. The site is an ideas and innovation hub which brings together thousands of people who want to understand the new economy, using virtual forums, interviews and online information.

A graduate in Economics and Politics studies, M Bouteiller is currently examining the development of 'International private states' based on private currencies, which could threaten the traditional nation state. He is also studying the birth of a new kind of man, who uses virtual worlds and mobile technologies to communicate with others – a kind of cyborg.

Braun, Carlos Rodríguez
Professor of History of Economic Thought
Universidad Complutense
Spain

Carlos Rodriguez Braun is Professor of the History of Economic Thought at the Universidad Complutense in Madrid, Spain. A prolific writer and editor, he has published several economic studies, translated prominent economists into Spanish and written some two thousand articles in the Spanish press.

He is currently a columnist in Spain's leading economic newspaper, Expansion, and broadcasts on Spanish radio. Born in Buenos Aires, he is a member of the American Economic Association and the Mont Pelerin Society.

Brodman, Dr. Janice
Director
Center for Innovative Technologies Education Development Center
USA

Dr Janice Brodman is Director of the Center for Innovation Technologies at Newton, Massachusetts. She has 20 years of experience in designing, evaluating, and implementing organisational development programs in the US and in developing countries.

During the past 10 years, she has conducted numerous assignments in technology transfer for the United Nations, the World Bank, the US Agency for International Development (USAID) and other major firms. The author of several books on technology transfer in developing countries, she holds a PhD from Harvard University.

Bucanave, Roberto
Secretary General
INDICOD
Italy

Roberto Bucaneve is Secretary General of Indicod, the association representing the EAN network in Italy.

Indicod's focus is the efficiency of industry-trade relations, mainly in the consumer goods markets. Its member base comprises 24,000 manufacturing and retailing companies, accounting for more than 70% of the total commodity value in the Italian consumer goods market.

Bullinga, Marcel
Internet adviser to Dutch government and Author
Netherlands

Marcel Bullinga is adviser on digital strategy to the Dutch Government, and has written several books on the impact of digital technology, including the first Dutch novel on the Internet, Flush of the senses.

Based in Amsterdam, he is currently working on a new book which will describe 'ten rules' for the network economy and 'barcode government'.

Campbell, Christian
Assistant Director
Center for International Legal Studies
Austria

Christian Campbell is Assistant Director of the Center for International Legal Studies, a non-profit Austrian society co-ordinating international legal research and professional training programs. He is also Secretary of i-Lex, an informal international association of lawyers specialising in ITC, in particular e-commerce and the Internet.

From 1992-1996 Mr Campbell was a lecturer in the Department of International Law at the University of Salzburg. He has edited several volumes including 'Law of International On-Line Business' and 'International Media Liability'. He trained as a lawyer in Edinburgh and California and was admitted as Attorney-at-Law in New York in 1992.

Carey, Kevin [Moderator]
Director
HumanITy
UK

Kevin Carey is Founding Director of HumanITy, a consultancy which advises the British Government on technological issues facing visually impaired people. Prior to this he was project director and research director for the management consultancy Lateral Thinking, which carried out extensive IT work for the Royal National Institute for the Blind in the UK. Between 1972-1992, Kevin held various executive posts with Sight Savers, a multi-national organisation responsible for the integration of eye care into national health systems. A graduate of Cambridge and Harvard universities, he has written and broadcasted extensively on IT and visual impairment issues, and has held several voluntary posts in a range of public organisations.

Carpintier, Rodolfo
Vice-President
Grupo NetJuice
Spain

Rodolfo Carpintier is Vice-President, Business Development for Grupo NetJuice, the leading Internet incubator in Spain. He was Founding President of Sistemas Modernos de Márketing SL, a consultancy and marketing company to promote Internet business before merging with NetJuice in 1999. He is also a Professor of marketing and new media at the Insitute for Executive Development.

Between 1993 and 1996 Mr Carpintier was International Director of SERVICOM and Commercial Director of SERVICOM, Spain's largest ISP, and before this he was Managing

Director of KRONE SA, a German telecom contacts manufacturer.

He has published widely on Internet and e-commerce issues, and is President of Commerce Net Español, the Spanish chapter of the non-profit organisation that promotes e-commerce.

Carrier, Jean-Guy
World Trade Organisation

Caspersen, Kim
Head of Information
Baltic Media Centre
Denmark

Kim Caspersen has been Head of Information at the Baltic Media Centre, Denmark, since 1994. He is web editor of the BMC's homepages and edits a media magazine The Baltic Media Monitor. Previously he worked as a magazine editor and sub-editor for ten years.

He is on the selection committee of the Balticum Film & TV Festival and has negotiated TV programmes and documentaries between Eastern producers and TV2 Bornholm. In 1988 he gained an MA in Television Science from the University of Copenhagen.

Cerf, Vinton G
Chair
Internet Societal Task Force
USA

Widely known as the 'Father of the Internet', Vinton G Cerf is Senior Vice-President of Internet Architecture and Technology for MCI WorldCom. Mr Cerf was co-designer of the TCP/IP protocol, the computer language that gave birth to the Internet. In 1997, President Clinton presented him with the US National Medal of Technology and he is now a member of the US Presidential Information Technology Advisory Committee. He was also Founding President of the international Internet Society from 1992-1995.

Winner of numerous awards for his Internet work, he also holds honorary doctorates from five universities worldwide. Personal interests include fine wine and science fiction, and he is technical advisor for the popular TV science fiction series Gene Roddenberry's Earth: Final Conflict.

Charavanapavan, Sanjay
IT Consultant, Central Bank of Botswana
Botswana

Sanjay Charavanapavan is IT Consultant for the Central Bank of Botswana. He currently heads a number of projects to perform systems analysis of various networks and applications used within the organisation. He is also implementing state-of-the-art network and security management systems.

Chryssicopoulou, Nadia
Vice President
EDEM
Greece

Nadia Chryssicopoulou is Vice President of EDEM, the Greek Women's Engineering Association. EDEM is a non-governmental, non-profit body whose aims include promoting equality between women and men in employment, education and society in general.

EDEM also carries out research into problems concerning women engineers and seeks solutions; and liaises with other organisations (both in Greece and abroad) involved in similar issues.

Clift, Stephen
Online Strategies Consultant
Publicus.Net
USA

Steven Clift is an Online Strategies Consultant at Publicus.Net, which focuses on the use of the Internet in democracy, governance, and community. He is an adviser to the Markle Foundation for their ‚Web White & Blue, 2000 online election information partnership and served as Project Co-ordinator in 1998. He is also Board Chair of Minnesota E-Democracy, a non-profit organisation which created the world's first election-oriented web site in 1994 and hosts ongoing citizen discussions on state and community affairs.

A frequent media commentator, he runs the popular Democracies Online Newswire email service and has presented in seventeen countries over the past four years. He served as Co-Editor for the G8 Democracy and Government Online Services Publication in 1999. From1995-1997 he co-ordinated the State of Minnesota's online services and served as the Executive Director for the Minnesota Government Information Access Council.

Cole, Tim
Journalist and Author
Germany

Tim Cole is a freelance journalist and book author specializing in Internet and online topics. In 1994, he founded the first German newsletter for the online industry, Internet Report, and until June 1999 he was the editor of NET-Investor, the leading German business magazine for Internet and Electronic Commerce. Prior to 1995 he was head of the Multimedia Group at Motor-Presse, Stuttgart.

An American citizen who has lived in Germany on and off since 1961, Tim Cole has been a public speaker at numerous company meetings and seminars, allowing him to engage in a continuing dialogue with industry leaders and entrepreneurs. His books include 'Success Factor Internet', a current bestseller in Germany.

Coleman, Stephen
Director
Electronic Media Programme
Hansard Society
UK

Stephen Coleman is Director of Studies at The Hansard Society for Parliamentary Government and heads its Parliament and E-Democracy programme. A lecturer on Media and Citizenship at the London School of Economics and Political Science, he is also a member of the Commission on Electronic Voting and hosts the parliamentary section of the BBC Online web site.

Recent publications include Televised Election Debates: International Perspectives (Macmillan 2000) and Electronic Media, Parliament & the Public: Making Democracy Visible (Hansard Society 1999). He is on the editorial board of the journal, Information, Communication and Society and is currently running a series of online public consultations linking citizens to parliamentarians.

Connolly, Sean
Director of ICT Division
Office of the Revenue Commissioners
Republic of Ireland

Sean Connolly is ICT Director at the Office of the Revenue Commissioners, Ireland, a post he has held since 1998. He has worked on all aspects of IT software development since 1969 and lectured at Trinity College Dublin for 25 years. Mr Connolly is a former President of the Irish Computer Society.

Couvois, Georges
President
European Federation of Financial Executives Institutes
France

Georges Couvois is President of the European Federation of Financial Executives Institutes, the member organisation for over 9000 finance executives in Europe.

He started his bank career in 1968 at Crédit Commercial de France Bank. In 1993 he joined ABN AMRO BANK Group as Corporate Manager. M Corvois holds a Technical Bank Institute Diploma, an Arts & Métiers Engineer Diploma and is a graduate of the Insurance Polytechnique School.

Craig, Russell
Government IM/IT advisor
Strategic Development Branch
State Services Commission
New Zealand

Danish, Abdel
Managing Director
STANDARDATA
Egypt

Dr Abdel Danish is Managing Director of STANDARDATA Egypt, a company he founded in 1978 which provides IT solutions to the Egyptian market. Dr. Danish is also co-founder of SAQQARA Systems, a leading e-commerce vendor of software and services in the electronics component industry worldwide.

He is author and co-author of several European and American patents in the areas of telecommunications and IT.

Degn, Helle
Chairperson
Economic Affairs and Development
Parliamentary Assembly of the Council of Europe
Denmark

Helle Degn is Chairperson of the Committee on Economic Affairs and Development of the Parliamentary Assembly of the Council of Europe, one of several chair and membership posts in Danish and European politics she has held since the 1970s.

In 1999 she was re-elected as President of the OSCE–Parliamentary Assembly. She was Vice President of the Socialist International Women movement from 1993-99, and has been politically active since 1969.

de Jonquieres, Guy
World Trade Editor
Financial Times
UK

Guy de Jonquières is World Trade Editor of the Financial Times. A long-standing member of the Financial Times' news team, he was the paper's Business Editor 1994-1998, and between 1986 and 1994 he edited the paper's international business and consumer industries coverage. Based in London, he travels regularly.

de Larrinaga, Christian
Internet Societal Task Force
Internet Society
UK

Christian de Larrinaga is a Member of the interim Internet Societal Steering Group of the Internet Societal Task Force and co-chair of the Internet Society chapters e-commerce initiative. He is founding Chairman of the Internet Society of England. He is also strategic Internet development adviser to War Child Italia, West Africa, and USA, and chairs the Working Group on the Greenwich Tema Link's meridian Sustainable Internet Training Centre Initiative.

Previously he was Chief Executive of BlueWater group and publisher of Design86, an award winning CAD package. He enjoys skiing, sailing, cooking and playing the guitar.

Delgado, Rosa [Moderator]
Director
Internet Industry Relations
Société Internationale de Télécommunications Aéronautique (SITA)
Switzerland

Rosa Delgado is Director of Internet Industry Relations at the Societe Internationale de Télécommunications Aeronautique, based in Geneva. Prior to this she was Internet Technology Expert for the International Telecommunications Union, African Division. In the early and mid-1990s she undertook Internet work for the United Nations in Geneva.

In 1997, Rosa worked with the Indian Telecommunications Department to develop a plan for the implementation of Internet services in India. She was elected member of the Executive Committee of the Internet Council of Registrars in 1999. She is of Peruvian nationality, and speaks four languages.

de Panafieu, Guy
Chairman and Chief Executive Officer
Groupe Bull
France

Guy de Panafieu was appointed Chairman & Chief Executive Officer of Groupe Bull in September 1997. In 1983 he joined the Lyonnaise des Eaux Group where he was eventually appointed Chief Executive Officer of the newly-formed group, Suez-Lyonnaise des Eaux.

He is President of the International Commission of the MEDEF (Mouvement des Entreprises de France), and a member of GTM's Board of Directors and several supervisory boards: Thomson SA, Crédit Agricole Indosuez, Industrial Development Institute of France and Gras Savoye.

Guy de Panafieu is a graduate of the Ecole Nationale d'Administration, the French Senior Civil Service College.

Diaz, Michel
Chief Scientist
Systems Architecture & Analysis
National Centre for Scientific Research
France

Michel Diaz is Director of Research at the French National Centre of Scientific Research (CNRS) and leads the Communications Software and Tools Research Group at the centre's Laboratoire d'Automatique et

d'Analyse des Systèmes. He has been working on the development of formal methodologies, techniques and tools for designing distributed systems during the last ten years.

In 1989 and 1990, he spent a year as a visiting staff member at the University of Delaware at Newark and at the University of California at Berkeley. He was the prime manager of the EC ESPRIT SEDOS project and headed the CNET-CNRS project CESAME on the formal design of high speed multimedia cooperative systems, the French TOPASE project on Distributed Multimedia Professional Education and is heading the European IST project GCAP on multi-cast and multimedia end-to-end protocols.

He is expert for many European and French Programmes. He was member of the Advisory Board on the future of the Internet at the EC and wrote a report for the future of the French national research network (Renater). He has also written one book and more than 150 technical publications. A Senior Member of the IEEE, he has received the Silver Core of the IFIP and is a member of the New York Academy of Sciences.

Dimcea, Costica
Electronic Publishing Development Program
Co-ordinator
Open Society Foundation
Romania

Dobson, Jan
Independent Television Commission
UK

Jan Dobson is Project Manager at the Independent Television Commission, responsible for broadcast multimedia. Her current projects include the development of Avatar-based deaf signing for broadcast systems and Internet site construction.

From 1986-1995 she ran her own ergonomics and systems design consultancy, and has held senior academic posts at Crickdale College and Bristol University in the UK.

Donfried, Paul
Chief Marketing Officer
Identrus
USA

Paul Donfried is Chief Marketing Officer at Identrus, New York, responsible for business strategy, marketing, public relations, channel support, and relationships with application developers and security partners who use Identrus' infrastructure.

Before joining Identrus in 1999, Mr Donfried was Chief Strategy Officer for Bank of Montreal – Cebra Inc, an e-commerce solutions provider. He worked for nine years at Apple Computer, where he won numerous sales awards. In 1996 he was honored with the prestigious Golden Apple award.

He holds a Bachelor's degree in computer science from Rensselaer Polytechnic Institute.

Doroja, Gerry S
Deputy Director
Science and Technology Information Institute
Department of Science and Technology
Philippines

du Peloux, Cyrille
Chief Operating Officer
Groupe Bull
France

Cyrille du Peloux joined Bull in early 1999 as Executive Vice President. Later that year he was appointed Chief Operating Officer, with overall operational responsibility for all divisions and countries in the Group. Before joining Bull he was he was CEO of Lyonnaise-Communications, President of Paris-première and Multivision, and General Manager of Paris-TV Cable and Télévision par Satellite. Other positions include Deputy General Manager of the TV channel TF1 (1989-1992), CEO of Téléshopping and TF1 Enterprises (1988-1992) and General Manager of Eurosport (1991-1992).

He is a graduate of the Ecole Polytechnique and an engineer des Ponts et Chaussées. From 1979-84 he was an engineer at the French Energy Ministry. He became head of Bouygues' group diversification service from 1985 to 1986 and was Secretary General from 1987 to 1989.

Etienne, Norbert
PACA Entreprendre
France

Falch, Morten
Associate Professor
Center for Tele-Information
Technical University of Denmark
Denmark

Morten Falch is Associate Professor at the Centre for Tele-Information at the Technical University of Denmark. He has participated in a large number of international research projects and performed consultancy work for the European Commission, ITU, UNCTAD and the World Bank.

Awarded a PhD from the Technical University in Denmark in 1993, he specialises in the socio-economic implications of telecommunications services.

Farooq, Janet
Chief
Development Policy Analysis Section
UN Economic and Social Committee Asia & Pacific Division
Thailand

Mrs Janet Farooq is Chief of the Development Policy Analysis Section of the United Nations Economic and Social Committee, Asian and Pacific Division, based in Bangkok. She is currently working on designing a 'Virtual Conference' on the web as a training tool on the problem of integrating environmental considerations into economic decision-making.

Prior to her present post, she worked at UNCTAD for 16 years, developing a programme on commodity price risk management, and taught at the University of Ife, Nigeria, for three years. Of Canadian nationality, she holds a PhD from the University of Pennsylvania.

Fritz-Jules, Ebelle Eboumbou
Senior Press and Communication Officer
Prime Minister's Cabinet
Cameroon

Ebelle Eboumbou Fritz-Jules is Senior Press and Communication Officer for the Prime Minister's Cabinet in Cameroon. He joined the Cameronian administration in 1989. He is a journalist and communications expert who was trained at the Yaounde Higher School of Journalism and the International Institute of Communication in Montreal.

Gabeiras, Jose
Managing Director
Visa España
Spain

Jose Gabeiras has been Managing Director of Visa Espana since 1992, and is also an adviser to Visa International. He is also Chairman of the Board of the Sociedad Espanola de Medios de Pago, and Chairman of the Board of Directors of the Global Trust Authority in Belgium.

Prior to his business career he was Professor in Mathematics, Statistical Methods and Econometrics at Madrid University. His interests include astronomy and the composer Haydn.

Gago, Jose Mariano
Minister for Science and Technology
Portugal

Jose Mariano Gago has been Portuguese Minister for Science and Technology since 1995, and he represents Portugal at the Council of Ministers for R&D of the EU. He was in the Chair of the European EUREKA initiative from July 1997 to June 1998. Trained as a high-energy physicist at the École Polytechnique in Paris, he is Professor of Physics at Instituto Superior Técnico in Lisboa, and has worked at CERN (European Nuclear Research Organisation) in Geneva for several years. He was President of the Portuguese National Board for Science and Technology from 1986 to 1989.

Gaillat, Eric
Co-President
BusinessAngels.com
France

Galesic, Mirta
Senior Researcher and Assistant Manager
IPSA
Croatia

Mirta Galesic is a senior researcher and assistant manager at IPSA, an independent institute for consumer and social research in Zagreb, Croatia.

Since 1999, she has been responsible for conducting periodical research on Internet users in Croatia. The resulting reports are still the only full Internet reports on Croatia. Currently she is establishing a basis for conducting population-projectable online research in Croatia.

Gallegos, Hugo
Executive Director
Peruvian Electronic Commerce Institute
Peru

Garay, Xavier
Vice President and Partner
Booz·Allen & Hamilton
Spain

Xavier Garay is a Partner and Vice President with Booz·Allen & Hamilton, focusing on the telecommunication industries. He has worked extensively in Europe and Latin America, and some of his work in the telecommunications sector includes formulating the strategy and organization for a European PTTand the design and implementation of an outsourcing strategy for a major manufacturer of telecom equipment in Brazil.

Prior to joining Booz·Allen & Hamilton in 1997 Mr Garay worked for Gemini Consulting in Spain and in Brazil. He also worked for Petroleos de Venezuela for seven years in operations, strategic planning and mergers and acquisitions. Mr Garay has an MBA with honors from Carnegie-Mellon University.

Gardner, Dr Keith L
Deputy Assistant Secretary General for Scientific & Environmental Affairs
NATO
Belgium

Dr Keith L. Gardner joined NATO International Staff in 1985 after spending 15 years in various posts, including Head of the Target Recognition Systems Branch at the Naval Weapons Centre, California. In 1987 he became Head of NATO's Defence Research Section.

In 1998 he was appointed as NATO's Deputy Assistant Secretary General for Scientific & Environmental Affairs. In this post he has been involved in the development of a new structure for the NATO Science Programme.

Born in California, Dr Gardner is a member of the Sigma-Xi Physics Society and is the author of several technical reports. He also holds seven patents.

Gardner, Nick
Partner
Herbert Smith
UK

Garibaldo, Francesco
Director
Institute for Labour Foundation
Italy

Francesco Garibaldo has been Director of the Institute for Labour Foundation in Bologna since 1998. In a career spanning almost thirty years, he was Director of the IRES Economic and Social Research Institute in Rome for six years and was General Secretary of the Metalworkers' Trade Union between 1972 and 1991.

A prolific author, he has written more than 50 papers, articles and book contributions and has presented research on technological innovation at universities worldwide. Among his professional memberships, he belongs to the International Association for Industrial Relations, and the Italian Association of Sociology. He was born in Bologna.

Gilardi, Pascal
Information Systems Director
Groupe Servair
France

Gladwyn, Mark
Deputy Director
Central IT Unit
Cabinet Office
UK

Golding, Paul
Partner
Nabarro Nathanson
UK

Paul Golding is the London Head of IT, Communications and New Media at Nabarro Nathanson, a leading UK law firm which specialises in e-commerce matters ranging from financial services through to car auction sites.

The author of a guide to e-commerce, Mr Golding has spoken at various conferences on issues such as e-commerce security and the role of information in the electronic age.

Gruenwald, Andreas
Chairman
Digital Law
Germany

Andreas Grünwald is a co-founder and chairman of Digital Law Net, a company providing web consulting services for lawyers. He also works as a legal adviser with @gora, a company offering e-commerce solutions in the financial sector, where he is also responsible for setting up the law and policy section of the company's web site. Mr Grunwald was Visiting Scholar with at New York Law School's Communications Media Center in 1998 and is now International Fellow at the Information Society Project at Yale Law School. His publications cover broadcasting, media and European law, and he is currently preparing his PhD thesis at the Institute for Information, Telecommunications and Media Law, University of Münster.

Guha, Tamal Kumar
Indian Institute Of Technology
India

Gurstein, Dr Michael
Associate Professor
Management and Technology
Technical University of British Columbia
Canada

Dr Michael Gurstein is Associate Professor Management and Technology and Director, Centre for Community Informatics, Technical University of British Columbia.

From 1996 to 1999 he was Director of the Centre for Community Enterprise Networking in Sydney, Nova Scotia, and President of Socioscope Inc, Ottawa, from 1979 to 1993. Author of several books and articles on the Internet and community access issues, he holds a PhD from Cambridge University.

Haaland, Professor Jan I
Head
Department of Economics
Norwegian School of Economics and Business Administration
Norway

Professor Jan I. Haaland is Head of the Department of Economics at the Norwegian School of Economics and Business Administration. His research interests include international economics and general equilibirum modelling.

He is a member of Kluwer Academic Press' editorial board, and has had visiting scholarships at Southampton University in the UK and the Centre for Economic Policy research in London. He has published widely on international trade and market issues.

Halliday, Stewart
Spokesman for IT and Business Development
Federation of Small Businesses
UK

Hallstein, Patricia
Webgrrls Germany
Germany

Patricia Hallstein is Internet Presence Manager, Fragment Art & Research, New York a post she has held since 1998. She is responsible for the concept, design and implementation of webgrrls.de, the Internet site for the 'webgrrls' international network for women in new media.

Prior to her current post she gained 12 years' experience as a technical writer and communication consultant with firms in Germany.

She is a member of the Society for Technical Communication.

Harper, Jennifer
National Co-ordinator
Malta Council for Science and Technology
Malta

Jennifer Harper has been National Co-ordinator for the Malta Council for Science and Technology since 1997. In 1995 she was appointed Chief Executive of the National Co-ordinating Unit for Malta's participation in the EU's Framework Programme for Research and Technological Development. In 1997-98, she was Malta's delegate to the United Nations Commission for Science and Technology for Development. She holds a PhD from the University of Malta and has written numerous papers on international technology issues.

Hawle, Dr. Reinhold
Head
ICT Development and Evaluation
Ministry for Education and Cultural Affairs
Austria

Dr Reinhold Hawle has been a member of the Federal Ministry of Education and Cultural Affairs of Austria, sector New Technologies in Education, since 1978. In 1985 he was made Head of Department for the ICT-Development and Evaluation sector.

Between 1971 and 1978 Dr Hawle lectured at the Technical University of Vienna, where he studied for his doctorate.

Heath, Don
President
Internet Society
USA

Donald Heath is President and Chief Executive Officer of the Internet Society. He is also currently a member of the Advisory Committee on Telecommunications of the Government of Ireland; a member of the US State Department Advisory Committee on International Communication and Information Policy; and a member of the World Property Organization's Panel of Experts on Internet domain names. He has held executive posts in major corporations such as MCI, BT and Transaction Network Services.

Hecht, Lawrence
President
Internet Public Policy Network
USA

Lawrence Hecht is Founder and Administrator of the Internet Public Policy Network. He is responsible for providing the IPPN's primary services and marketing. A leading researcher in the fields of community computer networks and technology training centers, he developed a national e-commerce web site while working for the American Secretariat for Electronic Commerce.

Mr Hecht has worked as a research associate with the Delaney Policy Group and worked for the Democrats in New Jersey as a campaign assistant and a legislative aide for a state assemblyman. He holds a Masters degree in public policy from Georgetown University.

Henriques, Michael
Director
Job Creation and Enterprise Department
International Labour Organization
Geneva

Michael Henriques is Director of the Job Creation and Enterprise Development at the International Labour Organization. The Department implements a large worldwide portfolio of technical assistance programmes in the areas of small enterprise development, cooperative development, and programmes aimed at productivity promotion and socially sensitive enterprise restructuring.

Prior to his assignment to the ILO in 1993, he was responsible for the ILO's enterprise development programme in the Asia and the Pacific Region.

Before joining the ILO, Mr Henriques worked as a management consultant and held several management positions in the private sector. He has Masters degrees from Denmark and Harvard universities.

Hellawell , Samantha
Member, DTI Policy Action Team on ICTs and Urban Renewal
UK

Samantha Hellawell is a Member of the UK Department of Trade and Industry's Action Team on ICTs and Urban Renewal, and Director of IS Communications, a consultancy specialising in helping local authorities and cross-sector regeneration partnerships develop telematics strategies.

She is the joint author with Michael Mulquin of Putting IT into Practice:New Technology and the Modernising Agenda, which looks at the key issues facing local government as it delivers citizen-focused services, best value and economic regeneration through the use of new technologies.

Hewitt, Patricia
Minister for Small Business and E-Commerce
Department of Trade and Industry
UK

Patricia Hewitt MP is Minister for Small Business and E-Commerce in the British Government. She is MP for Leicester West, and was formally Economic Secretary at the Treasury. Ms Hewitt has been a Member of Parliament since 1997. She was Deputy Director (1989-94) of the Institute for Public Policy Research and Director of Research for Andersen Consulting (1994-97).

She was also Deputy Chair of the Commission for Social Justice (1992-94) and a member of the Social Security Select Committee before taking up her ministerial post. She was educated at Newnham College, Cambridge and enjoys reading, theatre, music and gardening.

Holtham, Clive [Moderator]
Professor of Information Management
City University Business School
UK

Clive Holtham is Bull Information Systems Professor of Information Management and Head of the Department of Management Systems and Information, City University Business School, London, where he has been since 1988.

He is director of the IT Centre for Excellence (Virtual Work and Commerce). This is a project set up by the UK government to create innovative approaches to executive learning about the digital world. Professor Holtham has been one of the world's leading architects of the "electronic boardroom", involving the use of information technology by executives in meetings.

He is author of a large number of publications and he lectures, broadcasts and consults in the UK, US and continental Europe. After taking a Masters degree in management, he trained as an accountant and was Young Accountant of the Year in 1976.

Hulyalkar, Satish
Telecom & Knowledge Management Consultant
India

After posts in the Indian manufacturing, mechanics and electronic industries, Satish Hulyalkar now runs a telecom and knowledge management consultancy in Pune, India. With his wife, he also runs a telecommunications products business selling to the Indian market, which is set to expand to cover computers and software.

Since 1989 Mr Hulyalkar has been an active member of the Centre for Telecom Management and Studies, and is Founder of the Institute of Telecom Management. He is Past President of the Entrepreneur's Club of Pune.

Hyat, Eric
President
SYNTEC
France

Eric Hayat is President of SYNTEC, the French Computer Services Software and Consulting Union of employer's syndicates. He is also President of STERIA group, a leading French software and e-business company, and President of the Innovation and Research Department within MEDEF, a firms union in France.

Jasper, Lee
Director
The 1990 Trust
UK

Lee Jasper is the Director of 'The 1990 Trust, an award-winning policy organisation on issues affecting African, Asian, and Caribbean communities living in the UK and Europe. The 1990 Trust is at the forefront of information technology development within black communities and runs a well established programme which includes the Black Information Network web site, BLINK.

Mr Jasper is National Secretary of the National Assembly Against Racism,

and a member of the British Government's Race Relations Forum. He is also Co-Chair of Communities on Line and a board member of the Royal Commonwealth Society. In 1998 he won a community award from the Voice newspaper for his work in Race Relations.

Jellinek, Dan
[Moderator & Debate Chair]
Director
Headstar
UK

Dan Jellinek is a journalist, editor and publisher specialising in politics, finance and technology. He is Director of the new media company Headstar, which specialises in online debates, electronic publishing and research into the information society.

Dan has written extensively for the Guardian and BBC Online, and is editor of E-Government Bulletin and E-Access Bulletin, two of Headstar's email publications. He is also the author of Official UK, the first comprehensive guide to British government web sites. He was educated at Cambridge.

Jones, Dr. Alan
IT Response Unit
University of Teeside
UK

Dr Alan Jones is Principal Lecturer and Director of the IT Response Unit, University of Teeside, where has taught since 1986. He has over twenty years academic research and consultancy experience in software development, telecommunications, real-time defence and air-traffic control, performance modelling and measurement, language compilers and CASE tools. As Director, he aims to promote measurable e-business improvements in Tees Valley region.

A Chartered Engineer, he is a regular writer and speaker on IT, Internet and e-commerce issues.

Jones, Danielle
Global Business Manager
Mobile E-Commerce
Ericsson
Sweden

Danielle Jones joined Ericsson as Global Business Manager for Content Companies and Internet Service Providers in 1996, after being Account Director in Online Business for Telecom New Zealand. Her work at Ericsson has involved sales and marketing across several telecommunications fields, including mobile phones, datacoms and wireless Internet.

Based in Sweden, she holds an MBA with distinction and is a regular speaker at conferences on mobile e-commerce and wireless Internet topics.

Jordan, Robert
Partner
Henry Davis York
Australia

Bob Jordan is Partner at the law firm Henry Davis York, specialising in a range of commercial negotiations including the implementation of legal and management procedures for IT and other technology projects.

He has worked with the computer and technology industries since the late 1970s, advising users, manufacturers and distributors of mainframe and network systems, and a wide range of suppliers of other hardware, software and telecommunication systems. He assists banks and other financial institutions, insurance companies, government departments and authorities and a wide variety of other users in the development and implementation of their information and communication systems.

He is a member of the Australian Retail Traders Association Electronic Commerce Committee and the Law Council of Australia's International Trade and Business Committee.

Jupp, Ben
Demos
UK

Kalapurakal, Rosemary
Information Specialist
Organizational Learning and
Resource Development Unit
UNIFEM
USA

Rosemary Kalapurakal is an Information Specialist at the United Nations Development Fund for Women (UNIFEM). As part of UNIFEM's Organizational Learning and Resource Development Unit, she focuses on issues of information coordination, management and outreach in the context of the organization's mandate for gender equality and women's empowerment.

Prior to joining UNIFEM, Dr. Kalapurakal served as Information Programme Advisor to UNDP's Gender in Development Programme in New York, and as the marketing manager of the Women, Ink. project of the International Women's Tribune Centre.

A native of India, Dr. Kalapurakal holds a Ph.D. in Business and a Master's degree in Economics from Ohio State University. She has also completed a post-doctoral fellowship on marketing research and business development at the University of London.

Kauppi, Piia-Noora
Member of European Parliament and
Founder member
European Internet Foundation
Finland

Piia-Noora Kauppi is Member of European Parliament (Finland) and Founder member, European Internet Foundation.

Among her most recent official posts, she is Vice-President of the National Coalition Party (Kokoomus) in Pohjois-Pohjanmaa (Northern Ostrobothnia), Vice-President of the European Movement of the Oulu District 1998-1999 and Member of the Energy Board of Oulu Energy 1997-1998. She sits on the European Parliament's Economic and Monetary Affairs and Employment and Social Affairs committees.

Holder of a Master of Law degree from Helsinki University and a newspaper columnist, she was also Finland's national ballroom dancing champion in 1986.

Keskinen, Auli
Director
Research and Development
Ministry of the Environment
Finland

Dr. Auli Keskinen is Director, Research and Development, for the Finnish Ministry of the Environment, where she works at the interdisciplinary field of integrating of information society and sustainable development.

She was the Finnish Representative and EU Co-ordinator of issues within "Telematics for Administrations" and "Telematics for Environment" from 1993 to 1997. Since 1994 she has worked as consultant/expert for the EU Commission (mostly DGXIII/ Telematics for Administrations) in

various tasks within 4th and 5th RTD Framework Programmes. She is also the Finnish representative for the joint G7 and EU Information Society Pilot Project 'Government On-line' (GOL), and member of the Expert Forum for the Finnish Information Society Advisory Board set up by the Government in 1996.

She holds a PhD in Political Science from Tampere University, Finland.

Kluzer, Stefano
Co-ordinator
Information Society
Development Agency of Emilia-Romagna (ERVET)
Italy

Stefano Kluzer is Head of the Information Society Projects Department at Ervet Politiche per le imprese Spa, the development agency of the Emilia-Romagna Regional Authority in Italy. His most recent work has been to help develop the region's first plan for telematics development.

Prior to his current post, Mr Kluzer carried out consultancy work for Italian public and private sector organisations on the socio-economic impact of new technology. A graduate of Bocconi University in Milan, he also holds a PhD from the London School of Economics.

Koutsogiannis, Panagiota
Richard & Robic
Canada

Kuner, Christopher
Attorney
Morrison & Foerster and Member, Legal Advisory Board of DG XIII
Belgium

Christopher Kuner is an attorney in the Brussels office of the international law firm Morrison & Foerster LLP, specializing in electronic commerce and legal aspects of the Internet. Mr Kuner is a member of the Legal Advisory Board of DG Information Society of the European Commission, and a member of legal working groups on e-commerce issues of the International Chamber of Commerce (ICC) and the United Nations Commission on International Trade Law (UNCITRAL).

A frequent lecturer and author of numerous articles and a book, he also maintains a web site on recent legal developments in Internet and e-commerce in Germany.

Lanfranco, Sam
Internet Societal Task Force
Internet Society
Canada

Dr. Sam Lanfranco is a Member of the Internet Society's Internet Societal Task Force, and Associate Professor, York University, Toronto Canada. He is also Fellow of the York Centre for Research On Latin America and the Caribbean (CERLAC), and a Senior Consultant to the UNDPSU/TCDC WIDE Initiative.

He holds a PhD in Economics from the University of California at Berkeley.

Lebec, Herve
Chairman
Immedia
France

Herve Lebec is Founder and Chairman of Immedia SA, a web agency whose clients include Meteo France, La ville de Paris, Crouzet, Bertelsmann Music Group, Investir, Vivendi and France Telecom. Before founding Immedia in 1994, he held various commercial posts within computer multinationals, including Digital Equipment.

In 1993 he was co-founder of the Club de l'Arche, a think-tank on new technologies and in 1995 co-founder of the French Association for Electronic Trade and Commerce (Association Française pour le Commerce et les Echanges électroniques – AFCEE).

Lee, Yong-Suk
Policy Analyst
National Computerization Agency
Republic of Korea

Yong-Suk Lee is Policy Analyst at the National Computerization Agency in the Republic of Korea, a government funded entity conducting work on information society policy research and IT project planning & management. He is currently doing work on e-commerce and e-money policy.

Mr Lee holds a BSc in Computer Engineering from Seoul National University.

Lewis, Charley
Head, Information Technology Unit
Congress of South African Trade Unions (COSATU)
South Africa

Charley Lewis heads the Information Technology Unit of the Congress of South African Trade Unions (COSATU), where he is responsible for IT policy interaction for the federation and overseeing the federation's e-mail/ Internet service.

He is currently Deputy Chair of the National Information Technology Forum (NITF). He has been involved in a range of information society processes and activities, including the National Science and Technology Foresight Project; the SA Acacia Advisory Committee; the SA Information Technology Industrial Strategy Project; and the E-commerce policy process.

A regular conference speaker, Mr Lewis is currently completing a Master of Commerce degree in the Management of Information Systems at the University of the Witwatersrand.

Lichfeld, Jüri
Director
Estonian Innovation Foundation
Estonia

Juri Lichfield has been Director of Estonian Innovation Foundation since its establishment in 1991. He has 30 years' experience in research and development.

Liikanen, Erkki
EU Commissioner
DGXIII (Enterprise and Information Society)
Finland

Erkki Liikanen is EU Commissioner for the EU's DGXIII, Enterprise and Information Society. In a political career spanning almost 30 years, he became a Finnish Member of Parliament in 1972. During the 1980s was Secretary-General of the Social Democratic Party, Parliamentary Commissioner to the Bank of Finland, Minister of Finance and Minister in the Ministry of the Interior. In the 1990s he was Head of Finnish Mission to the European Union and became a Member of the European Commission in 1995, before taking up his present position in 1999.

Mr Liikanen holds a Masters degree in political science from Helsinki University.

Madelin, Alain
President
Democratie Libérale
France

Alain Madelin has been President of the Démocratie Libérale since 1997. He has been Mayor of Redon since 1995.

Between 1992 and 1998 he was vice-president of the Conseil Régional de Bretagne and in 1995 he was Minister of Finance and Economy. He was Minister of Enterprise and Economic Development between 1993 and 1995.

Author of several books, he has also been President of the Association for Individual Initiative and Enterprise since 1995.

Magnusson, Robert
Manager
Association of Swedish IT and Telecom Industries
Sweden

Mancey, Andrew
Network/information specialist
Sustainable Development Networking Programme
Guyana

Since 1997 Andrew Mancey has been an Information/Networking Specialist running a non-profit Internet Service Provider for the Guyana Sustainable Development Networking Programme, which hosts many local web sites and provides Internet services for government, non-governmental organisations and the education sector. He has recently advised on the development of a national IT strategy.

Born in the UK but resident in Guyana for 25 years, Mr Mancey has taught physics and IT at schools and universities and has carried out consultancy work.

Mann, Erika
Member of the European Parliament and Co-chair
European Internet Foundation
Germany

Erika Mann has been a Member of the European Parliament since 1994. She is a board member of the Information Society Forum of the European Commission. She also sits on the Committee on Industry, External Trade, Research and Energy; and the Committee on Agricultural and Rural Development.

Ms Mann has spoken on e-commerce issues at several conferences worldwide, and written articles covering e-commerce and telecommunications issues. She was born in Leipzig.

Mannoni, Bruno
Head of Computing
Ministry of Culture and Communication
France

Bruno Mannoni is Head of the Computing the French Ministry of Culture and Communication, one of the first French ministries to go online in 1992.

He was the chief architect of the Ministry of Culture's network and was responsible for interconnecting some 6,500 PCs located in 200 different places using Internet technology. Mr Mannoni is currently promoting the use of GNU/Linux in France's administration.

Markovski, Veni
Chairman
Internet Society Bulgaria
Bulgaria

Martin, Franck
Network and Database Development Officer
South Pacific Applied Geoscience Commission
Fiji

Franck Martin is Network and Database Development Officer at the South Pacific Applied Geoscience Commission, Fiji. For the past five years he has been building ISPs in Fiji, Tuvalu, Samoa, and other Pacific Island countries.

Maxwell, Christine [Moderator]
Vice Chairman, Internet Society and Chairman, Chiliad Publishing
France

Christine Maxwell is Vice Chairman of the Internet Society and Chairman of Chiliad Publishing Inc. She has 27 years experience in scientific, educational and technological publishing. Since 1982 her market research firm 'Research on Demand' has been performing extensive online and manual research projects for major corporations and academic institutions. For the past five years Ms. Maxwell has been concentrating her information architecture expertise on building new web frameworks for high value content online.

Ms. Maxwell co-founded the The McKinley Group, creators of MAGELLAN, one of the first search engines and online Internet guides, and written "New Riders" and "McKinley Internet Yellow Pages" for Macmillan Publishers. During the 1980s and early 1990s she was a director for Pergamon Press and Macmillan. Born in France, she holds Bachelor degrees in Sociology and Latin American Studies from Pitzer College, Claremont California and a graduate Teacher's Diploma from Lady Spencer Churchill College, Oxford, UK.

McRae, Hamish
Associate Editor
The Independent
UK

Hamish McRae is Associate Editor and principal economic columnist of The Independent newspaper. Before entering national newspaper journalism he was Deputy Editor of the Banker and Editor of Euromoney. Winner of several journalism awards, he has written four books on international economics. He holds a degree in economics and political sciences from Trinity College, Dublin.

Mitchell, Horace
Director
European Telework Online
UK

Horace Mitchell is Director of European Telework Online. He is a former director of the UK trade association for the IT and telecommunications industries and a board member of Communities Online and UK Citizens Online Democracy. He led the European Commission's main telework awareness campaign, European Telework Development 1996-1999, and is a regular adviser to national, regional and local governments on the economic development aspects of the networked economy, as well as consultant to e-businesses.

In 1992 Mr Mitchell wrote an influential 1992 UK Government report on Telework and Teletrade. His background is in marketing, product management and market development with IBM and he was also chief executive of a successful software house.

Muller-Sloos, Dr Anke J
Senior Consultant
Berenschot
Netherlands

Dr Anke Muller-Sloos is Senior Consultant with Berenschot BV, a Netherlands business consultancy. Prior to her present post, she was senior project manager with the Gak Groep, a major Dutch social security organisation; information manager with various Shell companies; and senior lecturer in Operational Research at Erasmus Univerisity, Rotterdam. She holds a BSc from Leiden University.

Negroni, Mirka
Project Coordinator
Telemanita
Mexico

Mirka Negroni is Project Co-ordinator Telemanita, a Mexico-based non-governmental organisation which provides training, production and distribution of electronic media for women's movements throughout Latin America.

Established eight years ago, the centre offers access to production and video editing equipment and enables women to learn about the new technologies available. It has worked with over 40 women's groups to provide both training and assistance with video production.

Ngwakwe, Joy
Program Officer
Social and Economic Rights Action Center (SERAC)
Nigeria

Joy Ngwakwe is Program Officer with the Social and Economic Rights Action Center, a non-governmental organisation concerned with the promotion and protection of social and economic rights in Nigeria.

Ms Ngwakwe undertakes project development and implementation including research, community outreach and report writing. She also co-ordinates SERAC's Micro-Credit Project, working with women's groups in local communities. She holds a degree in English and Literary Studies.

Norris, Sarah
Head of New Media
Charities Aid Foundation
UK

Sarah Norris is currently Head of New Media and Information at the international charity Charities Aid Foundation (CAF). At CAF, she is responsible for all international e-business strategy, development and operations and has launched seven successful web sites and a number of intranets/extranets, each focused on creating collaborative environments for charities and donors.

She has since worked on numerous new media projects in the commercial sector, voluntary sector and through her partner's Internet consultancy, whose clients have included Microsoft, Freeserve and Beatties.

Oberleitner, Dr. Guenter
Ministry for Education
Austria

Oudet, Bruno
Chairman
Internet Society France and Professor of Economics
Joseph-Fourier University
France

Bruno Oudet has been Chairman of the French Chapter of the Internet Society since 1995, and is Professor of Economics at the Joseph-Fourier University, Grenoble.

From 1991-1995 he was Science and Technology Attache to the French Embassy in Washington DC. Since 1970 he has taken up professorships at universities in Indiana, Tunis and Grenoble.

Owen, Simon
Senior Manager
Arthur Andersen
UK

Simon Owen is a Senior Manager in Arthur Andersen's Computer Risk Management (CRM) group, based in London.

He represents Arthur Andersen at the Information Security Forum and has contributed to numerous forums and initiatives on e-commerce security including those led by the Department of Trade and Industry, the Confederation of British Industries and the British Banking Association.

Owens, Richard C
Smith Lyons
Canada

Richard C. Owens is a partner at Smith Lyons, Barristers and Solicitors, Patent and Trade-Mark Agents, Toronto. He is a corporate lawyer specialising in the regulation of financial institutions and high-technology related law.

He is adjunct professor at the University of Toronto Faculty of Law, teaching the Law of Information Technology. Mr Owens is a member of The International Bar Association, The Canadian IT Law Association, The Computer Law Association and The Toronto Computer Lawyer's Group and has been recognised as one of Canada's leading computer lawyers in the 1999 and 2000 'Leading 500 Lawyers in Canada' guide published by Lexpert.

He was called to the Bar of Ontario in 1989.

Page, Margaret
Women Connect
UK

Patil, Vishwas
REC Surat Research Institute
India

Vishwas Patil is studying Computer Science at the REC Surat Research Institute in India. His areas of interest include virtual private networks, network security, operating systems and e-commerce.

The recipient of several scholarships, he is also a member of the Indian Society for Technical Education.

Pearson, Ian
Futurologist, C2G, British Telecom
UK

Ian Pearson is a futurologist with C2G, British Telecom's new communications consultancy group.

He joined BT Laboratories in 1985 analysing computer networks and protocols and helped develop ATM transmission over optical networks. From an initial focus on broadband networks and services, he now concentrates on mapping the progress and social implications of new developments in information technology.

Pèlach, Albert
Managing Director
Círculo de Lectores
Spain

Albert Pèlach has been Managing Director of the Círculo de Lectores in Barcelona since 1996. From 1983-1995 he was Commercial Director at Ebro Agricolas.

Born in Barcelona, he holds Masters degrees from the universities of Barcelona and Michigan, USA.

Phute, Thembile
Senior Documentalist
Women in Development Southern Africa Awareness Programme
Zimbabwe

Thembile Phute is Senior Documentalist for the Women in Development Southern Africa Awareness Programme, a regional organisation based in Zimbabwe which collects and disseminates information on the participation of women in development in Southern Africa.

A librarian by profession, she holds a Bachelors degree in sociology and industrial psychology and lectures part-time. She is a member of the Gender in Africa Information Network (GAIN).

Plou, Dafne Sabanes
Chairperson
Latin American and Caribbean News Agency
Argentina

Dafne Sabanes Plou has been Chairperson of the Latin American and Caribbean News Agency since 1992. She is also a member and online discussion facilitator of the Women's Networking Support Programme of the Association for Progressive Communication. Between 1985 and 1998 she was a member of the Communications Committee of the World Council of Churches.

A journalist by training, she specialises in social issues, religion and ecumenism. She has written five books, one of which examines the place of human dignity in global communication.

Porter, Beth
Chair
SWIM.org.uk
UK

An independent media consultant, Beth Porter is Founding Member and Chair of SW Interactive Media (SWIM), the regional trade association for the media industry in South West England. Beth's present and past clients include SelectScience, ChannelWest, the University of the West of England, Granada TV and BBC Online. She has lectured and conducted seminars for Shell International, Birkbeck College, the BKSTS, the University of Bristol, and The University of the West of England.

A writer and broadcaster on Internet matters, Ms Porter contributes to the UK Department of Trade and Industry's Innovation Unit think-tank on multimedia and is a nominating judge for the international Digital Academy of Arts and Sciences which presents the prestigious 'Webby' awards for best web sites.

Before specialising in new media, she led a successful acting career, starring in Hollywood feature films and a hit TV series, and writing radio plays for the BBC.

Poussereau, Alain
Director
CNAV (French Pensions Agency)
France

Alain Poussereau is Director of the CNAV (Caisse Nationale d'Assurance Vieillesse), the pensions agency of the French Social Security department. The pensions agency has 14 million contributors, and each month it pays the pensions of 9.4 million people, amounting to 360 billion francs.

He joined the CNAV in 1972, becoming manager of the National Centre for Computer Science (Centre Informatique National). In 1993 he was appointed Director of Planning for the Pensions Department, and since 1997 his duties have included the functions of Director of Information Systems.

Prohaska, Maria
Economic Program Co-ordinator
Center for the Study of Democracy
Bulgaria

Maria Prohaska is Economic Program Co-ordinator at the Center for the Study of Democracy in Bulgaria, a post she has held since 1995.

From 1995-97 she was Country Director for MBA Enterprise Corps and between 1987-93 she was Research Fellow at the Institute for Trade Union and Social Studies, Sofia.

She has been representative of the Confederation of Independent Trade Unions of Bulgaria and a member of the Expert Group on Privatization and Social Security Reform with the Government of Bulgaria. She holds a PhD in International Relations from the Russian Academy of Sciences, Moscow.

Robin, Jonathan
Internet Societal Task Force
Internet Society
France

Jonathan Robin is Vice President of the Internet Society French Chapter, and a member of the Internet Society's Internet Societal Task Force.

Since 1995 he has been on the Board for the Club de l'Arche, a top french IT think tank. He is also Vice Président of the Association Française de Télétravail et Téléactivités, a French teleworking association. He is a founder member of the English Chapter Internet Society.

Rosé, Philippe
Senior Editor
Le Monde Informatique
France

Philippe Rosé is Senior Editor at Le Monde Informatique, a weekly IT magazine published by IDG (International Data Group) in France. He covers e-commerce, venture capital and IT markets. Before that he was in charge of credit card security at Groupement Carte Bleue, the French Branch of Visa International. He also took part in the 1980s in the creation of the first methodology to combat computer risks, for insurance companies.

Philippe Rosé has spoken at several conferences in Europe and the US, and is the author of around a dozen books on computer crime, information warfare and web commerce. He has a PhD in economics.

Rosenblad, Professor Elsa
Human Factors Engineering (HFE)
Chalmers University of Technology
Sweden

Professor Elsa Rosenblad is Professor in the Human Factors Engineering Department at Chalmers University of Technology, Sweden.

Her career started with textile research and continued into the newly formulated area of consumer technology. After a period at the Defence Material Administration developing the new Swedish field uniform system, she continued as Head of Research at the Swedish Furniture Institute. In 1989 she joined Chalmers University as Professor of Consumer Technology, and went on to form the new Human Factors Engineering Department.

Saarikivi, Pirkko
Managing Director
Weather Service Finland
Finland

Pirkko Saarikivi is Managing Director of Weather Service Finland, a privately-run weather service which has provided forecasts and software to Finnish industry and media since 1997. During the 1990s she was Head of the Weather Service Division at the Finnish Meteorological Institute, and between 1995-1997 she was Managing Director of Saarikivi Weather and Law.

Born in Helsinki, she holds a PhD from the city's university. In 1997 she received the Innovative Woman Entrepreneur of Europe award.

Sandler, Joanne
Chief of Organisational Learning and Resource Development
UNIFEM
USA

Joanne Sandler has been Chief of Organisational Learning and Resource Development (OLRD) at the United Nations Development Fund for Women (UNIFEM) since 1997. UNIFEM provides financial and technical support to innovative programmes that promote women's human rights and their economic and political empowerment.

Before joining UNIFEM she worked as a consultant on organisational and economic development for international and US organisations including UN organisations, the Ms. Foundation for Women, UNFPA, and the U.S. Department of Agriculture. She has also managed special projects for the International Women's Tribune Centre, based in New York.

Santini, Andre
Chairman of the Internet Caucus in the French Parliament and Mayor of Issy-les-Moulineaux
France

Saxby, Juanita Neale
Consultant
Multidisciplinary Social Research
New Zealand

Juanita Neale Saxby runs a research and training consultancy in Wellington, New Zealand, contracting with public, private and voluntary sector clients. Her wide-ranging experience includes eleven years as a parliamentary policy researcher, three years as a training needs analyst and brief stints working in architect's offices and as an enviromental design researcher. She also holds an MA in Sociology.

She has written four books dealing with local government, occupational health and safety and training, together with related conferences papers and articles. In the mid 1990s she was one of the core members of the Electoral Reform Coalition, a political pressure group.

Scheid, François
Professor in Business and Technological Innovation Marketing
EM Lyon
France

François Scheid is Professor in Business Marketing and in Technological Innovation Marketing and Strategy at EM Lyon, France. He is Director of three 'Mastères Spécialisés' programmes including Technology Management, Agro-Industrial Management and Information and Communication Technology Management.

Before joining the EM Lyon, he was Project Manager 1988-1992 with ALSYD, an international software and hardware distributor. In 1996 he was awarded a DEA in Management Science from the Université Jean Moulin in Lyon, and is a published writer on marketing and IT issues.

Schlapfer, August
Institute for Sustainability and Technology Policy
Murdoch University
Australia

August Schlapfer is currently completing a PhD at the Institute for Sustainability and Technology Policy, Murdoch University,Western Australia. He is considering questions on renewable energy technologies in rural communities, and the barriers to innovation in rural Indonesia and Aboriginal communities. He is also associated with the Australian Co-operative Research Centre for Renewable Energy.

Schmuck, Claudine
President
Club Internet
France

Claudine Schmuck is President of Club Internet, France. Since 1996 she has been Project Director for the OC2E (Observatoire du Commerce et des Echanges Electroniques); a consultant to the European Commission and a consultant on consumer rights and new technologies for the National Consumer Council.

A published writer on multimedia issues, she holds Masters degrees from Columbia University, New York, and the Institute of Political Science, Paris.

Scott, Marion
Consultant
Women Connect
UK

Marion Scott is an independent consultant for Women Connect, specialising in working on women, social change and networks and in the application of information and communication technologies in organisational and community settings.

She has worked in teaching and training, policy analysis and development, project design and implementation and women's equality initiatives, and one of her roles was as head of a local authority women's unit. Ms Scott is a member of the UK UNESCO Commission's Communication Committee.

Meynar Sihombing, Ikatri
Assistant Vice President
Bank Panin
Indonesia

Ikatri Meynar Sihombing is Assistant Vice President, Trade Finance and Correspondent Banking Department at Bank Panin. Before that she has held managerial positions at Generalindo Inti Finance and Bank Bali, and other banking and finance positions including experience of international trade.

She has also been involved in developing Canada-Indonesia and Japan-Indonesia youth exchange programmes, and helping the Indonesian Ministry of Education evaluate the programmes. Other organisations she has undertaken work for include the ASEAN Regional Youth Forum. She has a Sarjana Degree in Economy Management from the Universitas Kristen Indonesia.

Simon, Pierre
General Manager
French Association of Financial Institutions
France

Pierre Simon is General manager of the French Association of Financial Institutions. He is also Vice Chairman and Treasurer of the Paris Chamber of Commerce, a Member of the French Economic and Social Committee and Vice Chairman of the Financial Commission.

Mr Simon is Chairman of the Payment Systems Steering Group of the European Banking Federation.

Singh, Debbie
Freelance journalist and consultant to the UN
Fiji

Debbie Singh is a freelance journalist and university lecturer, based in Fiji. She has just completed a six-month consultancy with the United Nations office working on the Small Island Developing States Network Internet project (SIDSnet) in 12 Pacific Island countries.

She has held communications workshops on Internet use in the Pacific Islands, and has a personal interest in women's role in new media.

Singh, Diljit
Deputy Dean
Faculty of Computer Science
University of Malaya
Malaysia

Diljit Singh is Deputy Dean of the Faculty of Computer Science & Information Technology, University of Malaya. Prior to joining the University of Malaya in 1995, he has held various academic posts in higher education and the secondary school sectors, over a 25-year period.

6, Perri
Senior Research Fellow, Strathclyde University
UK

Dr Perri 6 is a Senior Research Fellow in the Department of Government at the University of Strathclyde. He is also a Senior Research Fellow with the independent think tank, Demos; a Research Associate with the Centre for Social Inclusion and a Research Associate with the commercial think tank, the Future Foundation.

He was formerly Director of Policy and Research at Demos (1994-9); a leader writer on the Independent newspaper (1999); Lecturer in European Social Policy at the University of Bath (1993-1995); Head of Policy Analysis and Research at the National Council for Voluntary Organisations (1990-1993); and Honorary Research Fellow in the Personal Social Services Research Unit, then at University of Kent (1992-1995).

He is the author, co-author or editor of over twenty books, and appears regularly on national broadcast media and in the national broadsheet press.

Sjöberg, Professor Lennart
Head, Economic Psychology Unit
Stockholm School of Economics
Sweden

Professor Lennart Sjöberg is Head of the Economic Psychology Unit of the Stockholm School of Economics and Head of the Center for Risk Research. He recently co-ordinated a major CEC project called Riskpercom, focusing on risk perception.

He is a member of the Royal Academy of Engineering Sciences.

Slapio, Elisabeth
Managing Director
Cologne Chamber of Commerce
Germany

Elisabeth Slapio is Managing Director of the Cologne Chamber of Industry and Commerce. She is in charge of information and communication technologies and the in-house computer centre. While studying law at the University of Cologne, she focused on competition law, intellectual property and media law, and has additional qualifications in data processing and electronic business.

Sleigh, Andrew
Capability Manager (Information Superiority)
Ministry of Defence
UK

Andrew Sleigh works for the UK Ministry of Defence at Director General level, defining the equipment capability programme for Information Superiority. Information Superiority embraces surveillance and information gathering and the information infrastructure across all elements of defence, including protection from cyber-attack and interoperability with allies.

He is the UK Principal on the NATO C3 Board, and a member of the DTI Spectrum Management Government Advisory Group. Previously he was the Managing Director for Analysis in the Defence Evaluation and Research Agency (DERA). He read physics at St. Catherine's College, Oxford.

Soderman, Daniel
Manager
Scientific Computing and International Projects
Weather Service Finland
Finland

Daniel Soderman is Manager of Scientific Computing and International Projects, Weather Service Finland.

In 1999 he was Technical Co-ordinator of the EU research project RAMSES at the University of Malta, and from 1996 to 1998 he was Overall Co-ordinator of the EU-supported Project MEDUSE (The Mediterranean Dust Experiment) at Mediterranean Research Centre (MRC), Sicily. Between 1990 and 1998 he was Project Manager for various education and training projects for developing countries at

the. MRC. He holds an MSc and Lic.Phil in Meteorology from the University of Helsinki.

Solá, Javier
Director
Spanish Internet Users' Association
Spain

Javier Sola has been Executive Director, Spanish Internet Users' Association since 1995, and is also President of the European Internet Business Association. In 1998/99 he was Vice President of the Internet Society. Until November 1999, he was a member of the Names Council, the body of Internet Corporation for Names and Numbers in charge of developing domain name policy, and now he is chair of the working group on new top level domains.

In the early 1990s, he led a distinguished academic career, lecturing at top French and Spanish universities. Born in Chile, he likes square dancing, and doesn't own a television set.

Solís, Juan Antonio
Managing Director
Safelayer Secure Communications
Spain

Juan Solis is Managing Director of Safelayer, a leading Spanish company solving computer and communications security issues for e-commerce.

He has been in the computer industry since 1982, when he founded the ComputerLand franchises for Madrid and Barcelona. He later created a computer distribution company, Keylan, which he sold in 1994 to Ingram Micro.

Stephenson, Geoff
Policy analyst for DG XIII of the European Commission and Managing Director, KET
Luxembourg

Geoff Stephenson is Managing Director of independent management consultancy Knowledge Exchange Technologies Ltd. providing policy analysis services to government, and multimedia product research since 1992. He is also Policy Analyst for DG XIII of the European Commission.

Between 1980-1992 he held management positions at CEC, CRI and Logica SA, and in the 1970s he was Statistician in with UK Treasury Cabinet Office. The author of papers on economics and computing, he is a board member of European Multimedia Forum and holds a BSc in Mathematics from the University of London.

Stiglitz, Joseph
Former Chief Economist, World Bank and Chairman, US Council of Economic Advisers
USA

Joseph Stiglitz is Former Chief Economist of the World Bank (February 1997- January 2000) and was appointed Chairman of the Council of Economic Advisers to the US by President Clinton in 1995. He is currently on leave from Stanford University where he is the Joan Kenney Professor of Economics.

Joseph Stiglitz was appointed Professor of Economics at Yale University at the age of 26. He was vice President of the American Economic Association 1985-1997 and has also held the Drummond Chair in Political Economy at All Souls College, Oxford. He obtained his BA from Amherst College and his a PhD from the Massachusetts Institute of Technology. He taught the Principle of Economics and gave graduate courses in macroeconomics, microeconomics and the economics of the public sector at Stanford University.

Elected member of the National Academy of Sciences, the American Academy of Arts and Sciences and the Econometric Society, Professor Stiglitz is also a Corresponding Fellow of the British Academy. In 1988 he received the International Prize from the Academia Lincei (Italy), an honorary doctorate from the University of Leuven (1994) and the UAP Scientific Prize awarded in Paris in 1989.

Tandon, Nidhi
Founder
Networked Intelligence for Development
Canada

Nidhi Tandon is Founder of Networked Intelligence for Development, a Canada-based consultancy that helps marginalised communities in developing countries harness the benefits of information and communication technologies.

She has held management posts at the Overseas Development Institute, the Commonwealth Secretariat and the British Broadcasting Corporation. She has also been policy adviser to Oxfam UK and an adviser to the Fourth United Nations Conference on Women. She was born in East Africa.

Theophile, Josette
Director General
RATP
France

Thors, Astrid
Member of the European Parliament and Founder Member, European Internet Foundation
Finland

Tissot, Maha
Consultant
Switzerland

Torrens, Maria-Clara
Associate Director for Corporation Development
Institut Català de Tecnologia
Spain

Maria-Clara Torrens has been Associate Director for Corporation and Development at the Institut Catala de Tecnologia since 1999. Prior to this she was the ICT's Studies and European Programmes Director and its Cultural Agenda Director. In the mid 1980s she was consultant for the Spanish Ministry of Industry and Energy, and a Professor of Electrical Machines at the High School of industrial Engineers in Barcelona.

Ms Torrens has been a speaker at several European conferences on socio-economic and technological issues. In 1994 she was awarded the 'Chevalier des Palmes Academiques' by the French Ministry of Education.

Traggio, Christopher
Director General
Sciences Com
France

Christopher Traggio is Director General of Sciences Com, a progressive non-profit communications school in Western France that trains students and professionals in internal communication, advertising, marketing, PR, audiovisual production, multimedia production and journalism. Before joining to Sciences Com in 1998, he worked with Time Warner for several years. Originally from Massachusetts, US, he now lives in Nantes.

Tronc, Jean-Noël
Adviser to the French Prime Minister Information Technologies and the Information Society
France

Jean-Noël Tronc is Adviser for Information Technologies and the Information Society to the French Prime Minister.

From 1995 to 1997, he served as an expert on communication networks and the Information Society at the Commissariat Général du Plan, the French public agency responsible for strategic studies and evaluation of public policies. From 1993 to 1995, Mr Tronc was a senior consultant with Andersen Consulting where he focused on the telecommunications sector, especially in mobile and satellite communication.

Mr Tronc is currently teaching at the Institut d'Etudes Politiques de Paris. He is a graduate of the Institut d'Etudes Politiques de Paris and of the Ecole Supérieure des Sciences Economiques et Commerciales.

Valdes, Jose Herrero
Consultant in Information Society Technologies
ISDEFE
Spain

Jose Herrero Valdes is Consultant in Information Society Technologies at ISDEFE, a publicly-owned Spanish IT and communications engineering and consulting firm. ISDEFE is currently working on modernising the Spanish government and the implementation of the information society in Spain.

Mr Valdes is participating on behalf of ISDEFE's 150 professional staff.

Vandromme, Dany
Director
RENATER
France

Dany Vandromme is director of GIP RENATER, the French National Research and Education Network.

In 1991-1992, he founded the regional network of upper Normandy (SYRHANO) and the networking and computing center (CRIHAN). In 1993, he started to work for the director of the Engineering Sciences Department of CNRS, where he was in charge of networking and computing, together with the supervision of the fluid Mechanics CNRS laboratories. He became full professor at INSA of Rouen in 1988.

He is author or co-author of more than 100 scientific publications, and serves as referee for various fluid mechanics scientific journals and conferences. He has participated in more than 90 PhD committees, among 60 of them as a reporter.

van Nispen, Joost
Chairman
Institute of Direct Marketing
Spain

Joost van Nispen is Founder and Chairman of El Instituto de Marketing Directo, the only training and research institute in the Spanish-speaking world to specialise in e-commerce. He is the Co-Founder and now Board Member of the Spanish Association of Electronic Commerce.

He also runs a successful marketing and e-commerce consultancy and writes regularly for business and marketing publications. In the 1980s he held various senior management posts around the world with the Ogilvy & Mather Group. A citizen of the Netherlands, he lives in Spain.

Vargas, Maureen
Consultant
ICCI Consultora
Costa Rica

Maureen Vegas has been a gender consultant for 13 years. She specialises in women entrepreneurs, especially in Costa Rica and Nicaragua, and has held leadership and management workshops. She has also undertaken consultancy on industrial competitiveness in Canada.

She has twenty years' experience as a professor of human resources and organizational psychology and her published work to date includes The women in the management sector: history and power.

Velamoor, Sesh
Deputy Director of Programs
Foundation For the Future
USA

Sesh Velamoor is Deputy Director of Programs at the Foundation for the Future, a trust dedicated to spreading knowledge to further humanity. Before joining the foundation Mr Velamoor was President at Kistler-Morse Corporation in Bothell, Washington, a manufacturer of instrumentation.

He has more than 30 years experience in senior management in industrial corporations. A regular writer and speaker on management and business issues, he serves on the board of Racon Corporation and is a Foundation Associate of the Pacific Science Center. He is active in community affairs and has served as President of the India Association of Western Washington.
He holds Masters degrees in industrial engineering and business administration, and has completed several marathons.

Verzola, Roberto
Secretary-General
Philippine Greens
Philippines

Roberto Verzola is Secretary-General of the Philippine Greens, a local group that advocates principles of ecology, social justice and self-determination. An electrical engineer by training, he has had several years' experience in computer hardware and software design. He operates an email network for local non-governmental organisations.

Vidal, Francis
Chief Executive Officer
Francis Vidal Group
France

Francis Vidal has been Chief Executive Officer of the Francis Vidal Group since 1978, which focuses on social strategy, mobilisation, communication, outplacement and outsourcing. In 1994 he founded Telpro, a telemarketing, Internet and intranet company.

Before entering consultancy he worked set up the French arm of the British Leyland car company, and between 1970-77 he worked as General Counsel and Secretary (HR/PR/Logistics) in charge of managing acquired companies for Swedish firm Sandvik.

He is a Knight of the National Order of Merit, and holds a PMD from Harvard Business School.

Vidigal, Luis
Deputy Director General for IT, Tax and Customs
Ministry of Finance
Portugal

Luis Vidigal is Deputy Director General for IT, Tax and Customs at the Portuguese Ministry of Finance. He is the creator and Executive Coordinator of INFOCID, a national information infrastructure placing multimedia kiosks with Internet access all over Portugal.

Mr Vidigal is also a member of the Task Force for Information Society in Portugal and Professor at the National Institute of Public Administration, co-ordinating Internet and multimedia training activities. A member of numerous scientific and technology boards during his career, he has also published over 20 papers on information management and is a regular speaker at international conferences.

Virgo, Philip
Secretary General
EURIM
UK

Philip Virgo has been Secretary General of EURIM (the UK Parliamentary Group on the Politics of the Information Society in an EU Context) since 1994, and is also Strategic Advisor for IMIS, a professional body for IS/IT managers. He is director of Winsafe Ltd, a project/investment appraisal, monitoring and audit company.

He has published numerous studies and reports on technology, market and skills issues.

Waddell, Cynthia D
Disability Rights Compliance Officer
City of San Jose
USA

Cynthia D. Waddell is the Disability Rights Compliance Officer for the City of San Jose, California, where she has developed accessible web page design standards.

An internationally known speaker and author, she holds federal, state and local government appointments in the USA addressing policy, legislation and compliance with disability rights laws.

Waldner, Jean-Baptiste
Carrefour
France

Welin, Gerd
Swedish National Security Service
Sweden

Westholm, Carl-Johan
President and Chief Executive Officer, Swedish Federation of Trade
Sweden

Carl-Johan Westholm is President and Chief Executive Officer of the Swedish Federation of Trade. The author of several books, he holds a PhD in Political Science from the University of Uppsala.

Williams, Dr. Mariama
Gender/trade and development Consultant
Institute for Law and Economics
Jamaica

Dr. Mariama Williams is a Researcher and a Member of the Board of the Institute for Law and Economics and a member of Women Working for Transformation (both in Jamaica). She is also the Research Coordinator for the Women's Strategic Planning Seminar on Gender and Trade, a project of the Center of Concern and Development Alternative with Women for a New Era (DAWN-Caribbean).

Dr. Williams has worked as a consultant with a many international and national non-governmental and governmental organizations including the Planning Institute of Jamaica and the Commission on the Status of Women, San Francisco. She also worked for two years on the Economics and Trade Project of the Network for Women in Development Europe (WIDE) in Brussels.

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“Programmes that seek to serve women, but do not involve women in their design and management, often fail to achieve their objectives and may even deepen women’s plight”.

Dr Janice Brodman, Education Development Center, US

“Are you young, healthy and experienced in using the tools of digital society? Welcome to the digital economy! Everything will work for you. But what’s happening for those who are not part of the favourite target group of digital economy? Do they have any chance to become part of the digital future?”

Elisabeth Slapio of the Cologne Chamber of Commerce, Germany

“The effects on the world economy of a fast-growing, entrepreneurial knowledge sector that can source its workers anywhere over the internet would be a more international global marketplace with less cultural barriers”.

Danielle Jones, Ericsson, Sweden

“ When I have more virtual choices, I can put my time and energy into physical meetings and interactions that are really valuable to me: that is not driving every day to my office: it is taking the car to visit my parents.”

Marcel Bullinga, Author and Adviser on Internet issues to the Dutch Government

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